



2024 ATLANTA REGIONAL FREIGHT MOBILITY PLAN

Needs Assessment Report

December 18, 2024

**PREPARED FOR THE ATLANTA REGIONAL COMMISSION BY
ICF AND CPCS Transcom Inc.**

Cover photo: UrbanTrans Inc.

Contents

Acronyms	viii
Executive Summary	xi
1. Introduction	1
Study Overview	1
Structure of Report	1
2. Literature Review and Inputs from Stakeholder Outreach	3
Description of Literature Review	3
Needs Identified from Plan Review	5
Needs Identified from Stakeholder Outreach	9
3. Existing and Future Conditions and Freight Needs	15
Highway Infrastructure	15
Freight Rail Infrastructure	22
At-grade Rail Crossings	27
Air Cargo Facilities	29
Port Facilities	33
Truck Parking Facilities	35
Intermodal Connectors	44
Freight Flows	47
Summary of Key Findings	96
4. Regional Freight Needs	98
Freight Bottlenecks	98
Rail Bottlenecks	117
System Gaps	118
Freight Crash Analysis	120
Resiliency	134
Intelligent Transportation Systems (ITS) and Technology in Freight Transportation	139
Alternative Fuels and Electric Vehicles in Freight Transportation	150
Access to Jobs	171
5. Priority Corridors	184
Recommendations to the Critical Urban Freight Corridors	184
Local Truck Routes/Prohibition Corridors Criteria	187
Appendix A: Rail-Served Facilities	193

Appendix B: Commodity Flow Analysis Data Sources	199
Appendix C: Employee Home Locations	201
Appendix D: Bicycle and Pedestrian Crash Hot Spot Analysis	210
Appendix E: Transportation Demand Management Case Studies and Resources	227
Appendix F: ARC’s Candidate CUFCs	231
Appendix G: Public Truck Parking Facilities Inventory	234
Appendix H: Privately Owned Truck Parking Facilities Inventory	235
Appendix I: Industrial Outdoor Storage Sites Inventory	237

Illustrations

Figures

Figure 1: Regional Highway Infrastructure	17
Figure 2: Georgia Statewide Designated Freight Corridors	19
Figure 3: National Highway System in the ARC Region	21
Figure 4: Atlanta Region Freight Rail Network	23
Figure 5: Atlanta Region Freight Rail-Served Facilities	25
Figure 6: Freight Rail Capacity	27
Figure 7: Busiest At-grade Rail Crossings	28
Figure 8: Airports with Cargo Service in the ARC Region	30
Figure 9: Public Truck Parking Facilities in the Region, 2023	37
Figure 10: Privately Owned Truck Parking Facilities in the Region, 2023	40
Figure 11: Changes in Privately Owned Truck Parking Facilities, 2018-2023	41
Figure 12: Industrial Outdoor Storage Sites in the Region, 2023	42
Figure 13: Intermodal Connectors and Facilities	46
Figure 14: Top 10 Commodities Moving into, out of, or within Metro Atlanta, 2019 (Tons)	49
Figure 15: Freight Transportation Service Spectrum	50
Figure 16: Top Commodities by Truck by Tonnage and Share of Total Commodity Tonnages (2019)	51
Figure 17: Top Commodities by Truck by Value and Share of Total Commodity Value (2019)	51
Figure 18: Top Commodities by Rail by Tonnage and Share of Total Commodity Tonnages (2019)	52
Figure 19: Top Commodities by Rail by Value and Share of Total Value (2019)	53
Figure 20: Top Commodities by Air by Tonnage and Share of Total Commodity Tonnages (2019)	53
Figure 21: Top Commodities by Air by Value and Share of Total Commodity Value (2019)	54
Figure 22: Top Trading Partners—Inbound to Metro Atlanta (Tons)	55
Figure 23: Top Trading Partners—Outbound from Metro Atlanta (Tons)	56
Figure 24: Top Trading Partners by Truck (Tons)	59
Figure 25: Top Trading Partners by Rail (Tons)	60
Figure 26: Top Trading Partners by Air (Domestic, Tons)	61
Figure 27: Top Trading Partners by Air (International, Tons)	61
Figure 28: Daily Truck Volumes, 2022	64
Figure 29: High Truck-count Locations, 2022	65
Figure 30: Levels of Service Definition	67
Figure 31: Base Year PM Peak Period Level of Service (2020)	68
Figure 32: Future Year No Build Scenario PM Peak Period Level of Service (2050 No Build Scenario)	69
Figure 33: Future Year PM Peak Period Level of Service (2024 MTP 2050 Scenario)	70
Figure 34: Through Traffic by Truck Units (2019 Annual Volume)	73
Figure 35: Raw INRIX Data Grids and Custom Polygons Used for Queries	76

Figure 36: Major Roadways Serving E-commerce Facilities—All Truck Vehicle Classes	79
Figure 37: Major Roadways Serving E-commerce Facilities—Heavy- and Medium-Duty Trucks	80
Figure 38: Major Roadways Serving E-commerce Facilities—Light-Duty Trucks	81
Figure 39: Local Roads Serving E-commerce Facilities—All Truck Vehicle Classes	83
Figure 40: Local Roads Serving E-commerce Facilities—Zoom in Area 1	84
Figure 41: Local Roads Serving E-commerce Facilities—Zoom in Area 2	85
Figure 42: Local Roads Serving E-commerce Facilities—Zoom in Area 3 and Area 4	86
Figure 43: Local Roads Serving E-commerce Facilities—Heavy- and Medium-Duty Trucks	87
Figure 44: Local Roads Serving E-commerce Facilities—Light-Duty Trucks	88
Figure 45: RITIS Medium- and Heavy-Duty Truck Trip Origins	89
Figure 46: RITIS Medium- and Heavy-Duty Truck Trip Destinations	90
Figure 47: STB Waybill Sample 2022 – All Commodities	91
Figure 48: ATL Cargo Volume–Inbound vs. Outbound (2018–2022) (1,000 Metric Tons)	94
Figure 49: ATL Cargo Volume–Domestic vs. International (2018–2022) (1,000 Metric Tons)	94
Figure 50: ATL's Top Domestic Trade Partners by Volume (2022) (1,000 Metric Tons)	95
Figure 51: ATL's Top International Trade Partners by Volume (2022) (1,000 Metric Tons)	95
Figure 52: Top International Export Commodities at ATL by Volume (2021) (1,000 Metric Tons)	95
Figure 53: LZU Air Cargo Volume – Inbound vs. Outbound (2018-2022) (Metric Tons)	96
Figure 54: Top 10 Bottlenecks in the ARC Region Based on Delay per Mile, 2022	101
Figure 55: Morning Peak Period Freeway Bottlenecks	106
Figure 56: Afternoon Peak Period Freeway Bottlenecks	108
Figure 57: Morning Peak Period Non-Freeway Bottlenecks	110
Figure 58: Afternoon Peak Period Non-Freeway Bottlenecks	112
Figure 59: ATRI Bottlenecks, 2023	114
Figure 60: Weight-restricted Bridges in the Atlanta Region	116
Figure 61: Truck-involved Crashes (2018-2022) in the Atlanta Region	120
Figure 62: Truck-involved Crashes by Functional Classification of Roadways (2018–2022) in the Atlanta Region	121
Figure 63: Light Conditions for All Truck Crashes 2018–2022	122
Figure 64: Crash Type for All Truck-involved Crashes 2018-2022	123
Figure 65: Heat Map of All Truck-involved Crashes 2018-2022	124
Figure 66: Location of Fatal Truck-involved Crashes 2018-2022	125
Figure 67: All Crashes at Railroad Crossings 2018-2022	127
Figure 68: Truck Crashes at Railroad Crossings	129
Figure 69: Poor Condition Bridges in the Atlanta Region in Special Flood Hazard Areas	136
Figure 70: In-Cab Driver Safety Alert from DriveWaze	140
Figure 71: GPA Freight Signal Priority Pilot	141
Figure 72: Aurora Terminal	149

Figure 73: Autonomous Medium-duty Box Trucks	149
Figure 74: Alternative Fuel Corridors with Freight Assets from GDOT NEVI Plan	153
Figure 75: EV Charging Stations in the Atlanta Region, January 2024	154
Figure 76: CNG, LPG, and LNG Refueling Stations in the Atlanta Region	158
Figure 77: Amazon Electric Delivery Vehicle	162
Figure 78: Location of Each of the Eight Freight Cluster Areas Used for Analysis	172
Figure 79: ARC's Candidate CUFCs	187
Figure 80: Northwest Cobb and Dobbins Employee Home Locations	202
Figure 81: FIB, Northwest Atlanta, and South Cobb/Douglas Employee Home Locations	203
Figure 82: ATL Airport, Conley, and Southlake Employee Home Locations	204
Figure 83: South Fulton, North Coweta, and Peachtree City Employee Home Locations	205
Figure 84: Henry and Spalding Employee Home Locations	206
Figure 85: Southeast DeKalb, Rockdale, and Covington Employee Home Locations	207
Figure 86: Norcross, Tucker, and North Gwinnett Employee Home Locations	208
Figure 87: South Forsyth Employee Home Locations	209
Figure 88: ATL Airport Bicycle and Pedestrian Crash Hot Spots	211
Figure 89: Conley Bicycle and Pedestrian Crash Hot Spots	212
Figure 90: Dobbins Bicycle and Pedestrian Crash Hot Spots	213
Figure 91: Fulton Industrial Boulevard Bicycle and Pedestrian Crash Hot Spots	214
Figure 92: Henry Bicycle and Pedestrian Crash Hot Spots	215
Figure 93: Norcross Bicycle and Pedestrian Crash Hot Spots	216
Figure 94: Northwest Atlanta Bicycle and Pedestrian Crash Hot Spots	217
Figure 95: Northwest Cobb Bicycle and Pedestrian Crash Hot Spots	218
Figure 96: Peachtree City Bicycle and Pedestrian Crash Hot Spots	219
Figure 97: Rockdale Bicycle and Pedestrian Crash Hot Spots	220
Figure 98: South Cobb/Douglas Bicycle and Pedestrian Crash Hot Spots	221
Figure 99: Southeast Dekalb Bicycle and Pedestrian Crash Hot Spots	222
Figure 100: South Forsyth Bicycle and Pedestrian Crash Hot Spots	223
Figure 101: South Fulton Bicycle and Pedestrian Crash Hot Spots	224
Figure 102: Southlake Bicycle and Pedestrian Crash Hot Spots	225
Figure 103: Tucker Bicycle and Pedestrian Crash Hot Spots	226

Tables

Table 1: List of Literature Reviewed	3
Table 2: ARC Highway Infrastructure Fast Facts	15
Table 3: The National Freight Network in the ARC Region by Subsystem	17
Table 4: National Highway System in the ARC Region by Subsystem	22
Table 5: Atlanta Region Freight Rail Mileage and Ownership	22
Table 6: Rail-served Facilities in the Atlanta Region	26
Table 7: Busiest Public At-grade Rail Crossings, 2019	29
Table 8: Atlanta Region Air Cargo Facility Fast Facts	29
Table 9: Intermodal Connectors Serving ATL	31
Table 10: ATL Cargo Facilities	32
Table 11: Port of Savannah Terminal Capabilities	34
Table 12: Port of Brunswick Terminal Capabilities	35
Table 13: Truck Parking Facilities Fast Facts	36
Table 14: Changes in Privately Owned Truck Parking Facilities, 2018-2023	39
Table 15: Public Truck Parking Site Utilization Rates—ARC and Adjacent Counties (2020)	43
Table 16: Intermodal Connectors in the ARC Region	45
Table 17: Tonnage of Freight Flows (Tons) in the Atlanta Region, 2019	47
Table 18: Value of Freight Flows (Billions of USD) in the Atlanta Region, 2019	48
Table 19: Total Commodity Flow Volume (Tons) to/from Select Metropolitan Areas	57
Table 20: Metro Atlanta–Savannah Region Commodity Flow by Mode	58
Table 21: Projected Commodity Flows (Tons), 2050	62
Table 22: Projected Percent Growth and Compound Annual Growth Rate (CAGR) of Commodity Flows, 2019-2050	63
Table 23: Top 10 Interstate Truck-count Locations, 2022	66
Table 24: Top 10 Non-Interstate Truck-count Locations, 2022	66
Table 25: Pass-through Truck Commodity Flows, 2019	71
Table 26: Truck Commodity Flows by Direction, 2019	71
Table 27: Top Commodities of Pass-through Truck Flows by Tonnage	72
Table 28: Top Commodities of Pass-through Truck Flows by Tonnage	72
Table 29: Top Origin-Destination Pairs for Pass-through Truck Flows by Tonnage	74
Table 30: Pass-through Flows Top Origin-Destination Pairs by Value (Million USD)	74
Table 31: Average Trip Distance by Vehicle Classes and Major E-Commerce Carriers	77
Table 32: Top 20 Bottlenecks in the Atlanta Region Identified in the Georgia Freight Plan	99
Table 33: Top 10 Bottlenecks in the Atlanta Metro Region as per the FHWA Freight Bottleneck Dashboard, 2022	100
Table 34: Spot Speed Index Thresholds	103
Table 35: AADTT Thresholds	104

Table 36: Morning Peak Period Freeway Bottlenecks	105
Table 37: Afternoon Peak Period Freeway Bottlenecks	107
Table 38: Morning Peak Period Non-Freeway Bottlenecks	109
Table 39: Afternoon Peak Period Non-Freeway Bottlenecks	111
Table 40: Truck-involved Crashes by Functional Classification of Roadways and Crash Severity Type (2018-2022) in the Atlanta Region	122
Table 41: Truck-involved Crashes by Manner of Collision of Roadways and Crash Severity Type (2018–2022) in the Atlanta Region	123
Table 42: Potential Pilot Projects Identified in FCPs	143
Table 43: Pros and Cons of CNG, LNG, and LPG	156
Table 44: Percentage Mode Split for Eight Freight Cluster Analysis Zones (Rounded to Nearest Whole Number)	173
Table 45: Transportation Demand Management Programs and Recommendations	176
Table 46: Metro Atlanta’s Potential Share of Georgia’s CUFC Mileage	185
Table 47: ARC’s Candidate CUFCs	186

Acronyms

AADT	Annual average daily traffic
AADTT	Annual average daily truck traffic
AASHTO	American Association of State Highway and Transportation Officials
AFW	Airport code for Fort Worth Alliance Airport
ARC	Atlanta Regional Commission
ASTRoMaP	Atlanta Strategic Truck Route Master Plan
ATL	Airport code for Hartsfield-Jackson Atlanta International Airport
ATRI	American Transportation Research Institute
ATTAIN	Advanced Transportation Technology and Innovation
ATTIMD	Advanced Transportation Technologies and Innovative Mobility Deployment
BEA	Bureau of Economic Analysis
BEV	Battery electric vehicle
BFP	Bridge Formula Program
BMI	Business Market Insights
BTS	Bureau of Transportation Statistics
CAGR	Compound annual growth rate
CCTV	Closed Circuit Television
CCW	Counterclockwise
CFI	Charging and Fueling Infrastructure
CFS	Commodity Flow Survey
CID	Community improvement district
CNG	Compressed natural gas
COFC	Container-on-flatcar
CRFC	Critical Rural Freight Corridor
CRISI	Consolidated Rail Infrastructure and Safety Improvement
CRP	Carbon Reduction Program
CUFC	Critical Urban Freight Corridor
CV	Connected vehicle
C-V2X	Cellular Vehicle-to-Everything
CVG	Airport code for Cincinnati/Northern Kentucky International Airport
CW	Clockwise
DC	Distribution center
DCFC	Direct current fast charging
DMS	Dynamic message sign
DOT	Department of transportation

DSRC	Dedicated short-range communications
EB	Eastbound
EV	Electric vehicle
FAF	Freight Analysis Framework
FAST Act	Fixing America's Surface Transportation Act
FCP	Freight cluster plan
FHWA	Federal Highway Administration
FLOW	Freight Logistics Optimization Works
FRATIS	Freight Advanced Traveler Information System
GCO	Georgia Commute Options
GDEcD	Georgia Department of Economic Development
GDOT	Georgia Department of Transportation
GEARS	Georgia Electronic Accident Reporting System
GPA	Georgia Ports Authority
GPS	Global Positioning System
HEPGIS	Highway Environmental Planning Geographic Information System
HSIP	Highway Safety Improvement Program
ILN	Airport code for Wilmington Air Park
IND	Airport code for Indianapolis International Airport
ITS	Intelligent transportation systems
JETSI	Joint Electric Truck Scaling Initiative
LNG	Liquefied natural gas
LOS	Level of service
LPG	Liquefied petroleum gas
LZU	Airport code for Gwinnett County Airport
MARTA	Metropolitan Atlanta Rapid Transit Authority
MCSAP	Motor Carrier Safety Assistance Program
MEM	Airport code for Memphis International Airport
MHDV	Medium- and heavy-duty vehicle
MIA	Airport code for Miami International Airport
MPO	Metropolitan planning organization
NACTO	National Association of City Transportation Officials
NB	Northbound
NBI	National Bridge Inventory
NCHRP	National Cooperative Highway Research Program
NEVI	National Electric Vehicle Infrastructure
NHFN	National Highway Freight Network
NHFP	National Highway Freight Program

NHS	National Highway System
NPMRDS	National Performance Management Research Data Set
NS	Norfolk Southern
OD	Origin-destination
ODMTS	On-demand multimodal transit systems
PDA	Probe data analytics
PHFS	Primary Highway Freight System
PHL	Airport code for Philadelphia International Airport
PPP	Public-private partnership
RFD	Airport code for Chicago Rockford International Airport
RHCP	Railway-Highway Crossing Program
RITIS	Regional Integrated Transportation Information System
Ro/Ro	Roll-on / roll-off
SB	Southbound
SCTG	Standard Classification of Transported Goods
SDF	Airport code for Louisville International Airport
SMART	Strengthening Mobility and Revolutionizing Transportation
SR	State route
SS4A	Safe Streets and Roads for All
STCC	Standard Transportation Commodity Codes
STIP	Statewide transportation improvement program
STRAHNET	Strategic Highway Network
TAD	Tax allocation district
TADA	Traffic Analysis and Data Application
TEU	Twenty-foot equivalent unit
TMC	Transportation management center
TOFC	Trailer-on-flatcar
USD	U.S. dollar
USDOT	U.S. Department of Transportation
USPS	United States Postal Service
WB	Westbound

Executive Summary

This Needs Assessment Report serves as a foundational element of the *2024 Atlanta Regional Freight Mobility Plan*, informing future policy and project recommendations through a comprehensive analysis of existing and future conditions and stakeholder insights.

The literature review and stakeholder outreach reveal the following needs:

- The region's expanding population and economy are set to significantly boost freight movement, with trucking expected to see the largest growth. This surge in freight traffic will strain the transportation infrastructure, exacerbating pavement, bridge, and rail infrastructure deterioration. E-commerce's rapid growth and global supply chain diversification are among the trends expected to influence freight movement, along with evolving urban and rural development patterns and advancements in freight technology.
- Highway bottlenecks emerged as major concerns for freight mobility, with several key congestion points causing significant delays and increased transportation costs.
- Freight safety issues, particularly on key Metro Atlanta freight corridors, necessitate targeted interventions to reduce crash rates and improve overall road safety. Safety risks at at-grade rail crossings underscore the need for infrastructure upgrades and public awareness campaigns to mitigate collisions between trains and roadway vehicles.
- Shortage of truck parking is a critical issue throughout the region, impacting both local and through freight movements. This shortage forces trucks to park in unauthorized or unsafe locations, like off-ramp shoulders and commercial lots, which raises safety concerns and adds to congestion.
- To align with national strategies like the National Zero-Emission Freight Corridor Strategy, which aims to establish zero-emission freight hubs and infrastructure, the Atlanta region should consider broader adoption of alternative fuel vehicles (AFVs) and electric vehicles (EVs) in freight. Despite the recognized benefits of AFVs and EVs, several barriers hinder their widespread adoption in Atlanta's freight sector. The key challenges identified are related to charging and fueling infrastructure.
- Other identified needs include improving roadways serving freight clusters, expanding capacity to accommodate traffic growth, enhancing freight resiliency, increasing inland intermodal/transload facility availability, local road design compatibility with truck activity and the necessity for technological integration and intelligent transportation systems (ITS) to optimize freight operations were also highlighted.

Existing and future conditions analysis highlights the complex interplay between different modes of transportation, the critical role of infrastructure in supporting freight movement, and the evolving needs of the Metro Atlanta area's freight system. Addressing capacity limitations, enhancing intermodal connectivity, and preparing for future growth are imperative to ensure the efficiency and sustainability of freight operations in the region.

The Atlanta region faces several challenges and needs related to its freight system, which affect its performance, efficiency, safety, and sustainability. Freight transportation demand in Metro Atlanta exceeds highway capacity, causing bottlenecks that affect the economy. Truck and rail crashes not only cause injuries and fatalities, but they can also lead to traffic and supply chain disruptions that negatively impact the economy. Additionally, employees in the freight industry face challenges related to access to jobs due to the location and the timing of their work, especially when public transit is limited or unavailable.

Proactive freight infrastructure and policy planning and investment are needed to address these challenges facing the freight industry in the region. Planning for freight system resiliency can offer the ability to cope with and recover from various disruptions that affect the movement of goods, especially during or after unprecedented incidents. Planning for ITS and alternative fuel technologies in freight could help lower greenhouse gas emissions, use less fossil fuels, and lessen the environmental harm of freight operations.

1. Introduction

Study Overview

Atlanta's roots as a freight nexus stretch back to the 1830s when it became the terminus for multiple rail lines, which is why it was once named "Terminus." This foundational aspect of Atlanta's identity has only grown in complexity and importance, with the city now standing as a pivotal junction for highway, rail, air, and ocean freight, serving both national and international markets. The Atlanta Regional Commission (ARC), as the federally designated metropolitan planning organization (MPO) for the expansive 20-county Atlanta region, has undertaken the critical task of updating the *Atlanta Regional Freight Mobility Plan* for 2024. This update is propelled by the need to align the plan with current conditions, forecasts, and legislative requirements, underscoring Metro Atlanta's historical and evolving significance as a premier transportation and freight hub.

The ARC's 2024 *Regional Freight Mobility Plan* update is motivated by four primary objectives:

- to assess the achievements and gaps in the 2016 plan,
- to reflect the latest in federal, state, and regional policies,
- to comply with the U.S. Infrastructure Investment and Jobs Act, and
- to pinpoint projects of regional, state, and national significance.

Structure of Report

This Needs Assessment Report serves as a foundational element of the 2024 *Atlanta Regional Freight Mobility Plan*, informing future policy and project recommendations through a comprehensive analysis of existing and future conditions and stakeholder insights. The report is structured into the following chapters:

- **Literature Review and Inputs from Stakeholder Outreach:** Details the methodology and findings from the literature review and stakeholder engagement activities, offering a robust understanding of current needs and perspectives.
- **Existing and Future Conditions:** This chapter discusses the existing and projected conditions impacting the freight infrastructure network serving the metro Atlanta region. This chapter covers the following:
 - Freight Infrastructure: Inventories existing freight highway, rail, air cargo, truck parking, and port infrastructure in the region and analyzes current freight flows, and forecasts future conditions.
- **Regional Freight Needs:** This chapter discusses challenges and needs related to considerations such as:

- **Freight Bottlenecks:** Identifies critical highway and rail bottlenecks that impede the efficiency of the freight system, proposing areas for targeted improvement.
- **Freight Safety:** Examines safety concerns related to highway and rail freight movements, highlighting strategies for enhancing safety measures.
- **Freight Resiliency:** Discusses the importance of building a resilient freight network capable of withstanding various disruptions and challenges.
- **Alternative Fuels and Freight Technology:** Explores the potential of alternative fuels and innovative technologies in transforming freight operations, including potential pilot projects and funding sources.
- **Access to Jobs:** Analyzes the relationship between freight infrastructure and job access, emphasizing the role of freight in supporting economic development.
- **Priority Corridors:** This chapter provides recommendations for critical urban freight corridors and criteria for local truck routes and prohibition corridors considerations.

2. Literature Review and Inputs from Stakeholder Outreach

This chapter integrates the knowledge gained from the literature review and the input from stakeholder outreach efforts. This chapter presents the current trends of freight movement, freight bottlenecks, safety issues, and other needs and priorities that emerged from a review of plans and studies at the state, regional, and local levels.

This chapter also presents the findings from stakeholder outreach, providing a comprehensive view of their collective views on critical freight system needs. This chapter presents the needs identified from stakeholder outreach, such as truck parking, safety concerns, alternative fuels, sustainability, freight technology, and access to jobs.

Description of Literature Review

A comprehensive review of plans and studies at the state, regional, and local levels was conducted to gain an understanding of existing and future freight transportation conditions in the region, gaps and needs identified, freight-related projects and policy recommendations, and perspectives of key stakeholders on important issues. Table 1 lists the studies and documents reviewed, sorted from newest to oldest.

Table 1: List of Literature Reviewed

Plan Name	Publishing Agency	Year Published
Statewide Studies		
Georgia Freight Plan	Georgia Department of Transportation (GDOT)	2023
Georgia National Electric Vehicle Infrastructure Deployment Plan	GDOT	2023
2021 Statewide Strategic Transportation Plan (2050 Statewide Transportation Plan)	GDOT	2021
GDOT Statewide Transportation Improvement Program (STIP) fiscal years 2021-2024	GDOT	2021
Georgia State Rail Plan	GDOT	2021
Georgia Commission on Freight and Logistics Final Report	Georgia General Assembly House Budget & Research Office	2020
Georgia Statewide Freight and Logistics Action Plan	GDOT	2018
Freight Movement, Port Facilities, and Economic Competitiveness: Final Report	GDOT	2016
Regional Level Studies		
The Atlanta Region's Plan (Development Plan and the Unified Growth Policy Map)	ARC	2021

Plan Name	Publishing Agency	Year Published
Regional Transportation Plan Update/RTP/Transportation Improvement Program (TIP)	ARC	2020
Atlanta Regional Truck Parking Assessment Study	ARC	2018
Atlanta Regional Freight Mobility Plan	ARC	2016
Atlanta Strategic Truck Route Master Plan (ASTRoMaP)	ARC	2010
Local Level Plans		
Metro South Community Improvement District (CID) Freight Cluster Plan	Metro South CID	2023
Freight ATL: Northwest Atlanta Industrial Area Freight Study	City of Atlanta	2023
Cobb County 2040 Comprehensive Plan	Cobb County	2022
Cobb Forward Comprehensive Transportation Plan 2050	Cobb County	2022
DeKalb 2050	DeKalb County	2022
Dekalb 2050 Comprehensive Transportation Plan	Dekalb County	2022
Foster Forsyth	Forsyth County	2022
Fulton Industrial Boulevard Freight Cluster Plan	Fulton Industrial	2022
Plan A: City of Atlanta 2021 Comprehensive Development Plan	City of Atlanta	2021
Connecting Coweta	Coweta County	2021
Doraville Citywide Mobility Plan	City of Doraville	2021
Douglas County Comprehensive Transportation Plan	Douglas County	2021
Horizon 2040	City of Alpharetta	2021
Spalding County Freight Cluster Plan	Spalding County	2021
Tucker Summit CID Freight Cluster Plan	Tucker Summit CID	2021
Aerotropolis Atlanta Freight Cluster Plan	Aerotropolis Atlanta CID	2020
Gateway85 Gwinnett CID Freight Cluster Plan	Gateway 85 Gwinnett CID	2020
Southern Fulton Comprehensive Transportation Plan	City of South Fulton	2020
Fayette Transportation Plan	Fayette County	2019
Buford 2040	City of Buford	2019
Clayton County Comprehensive Plan	Clayton County	2019
Gwinnett 2040	Gwinnett County	2019
One Atlanta Strategic Transportation Plan	City of Atlanta	2019
Clayton County Comprehensive Transportation Plan	Clayton County	2018
Douglas County Comprehensive Plan	Douglas County	2018
South Fulton CID Multimodal Study	Fulton County CID	2018
Forsyth Transportation Plan	Forsyth County	2018
North Fulton Comprehensive Transportation Plan	Fulton County	2017
Cherokee County Comprehensive Transportation Plan	Cherokee County	2016
Imagine Henry 2040 Comprehensive Plan	Henry County	2016
Barrow County Comprehensive Transportation Plan	Barrow County	2015
Cargo Atlanta: A Citywide Freight Study	City of Atlanta	2015

Needs Identified from Plan Review

Important Trends Impacting Freight Movement in the Region

Georgia's population and economy are expected to experience significant growth in the coming decades,¹ leading to a substantial increase in freight movement across the state and particularly in Metro Atlanta. Over one-third of Metro Atlanta's employment is in industries that are heavily reliant on freight transportation. These sectors are expected to expand, causing freight volumes to surge, with trucking accounting for the biggest growth in commodity flow.

However, the projected growth in freight traffic could have an additional strain on the region's transportation infrastructure. For example, in the Tucker Summit Community Improvement District (CID) most roadways received scores in 2018 indicating poor, very poor, or serious pavement conditions. The increased wear and tear from higher truck volumes could further exacerbate the deterioration of pavements, bridges, and rail infrastructure throughout Georgia.

Several other trends are expected to impact freight movement in the region:

- The rapid growth of e-commerce is reshaping delivery networks, with more fulfillment centers being established in Metro Atlanta and larger distribution centers in rural areas, generating additional truck trips.
- The establishment and expansion of traditional warehouses, distribution centers, and e-commerce fulfillment centers are expected to continue in the region.
- The diversification of global supply chains, coupled with the Panama Canal expansion, is leading to a higher proportion of containerized imports arriving at East Coast ports, positioning Georgia's ports for potential growth.
- Urban and rural development patterns are evolving, affecting industrial land use compatibility and creating last-mile delivery challenges.
- Advancements in vehicle and freight technology, such as connected and autonomous vehicles, are anticipated to transform freight operations and infrastructure needs in the future.
- The adoption of alternative fuels and electric trucks for long-haul and local deliveries is expected to accelerate in the coming years, leading to a change in the need for infrastructure development to support trucks using these fuels.

¹ Atlanta Regional Commission, News Center (2024, February 14). *Metro Atlanta Population to Reach 7.9 Million by 2050, ARC Forecasts Show*. <https://atlantaregional.org/news/the-atlanta-region/metro-atlanta-population-to-reach-7-9-million-by-2050-arc-forecasts-show/>

Freight Bottlenecks

Highway bottlenecks are a major concern for the region, with Metro Atlanta being home to several of the nation's top truck traffic bottlenecks. These congestion points cause significant delays in freight movement, increase transportation costs, and hamper the efficiency of supply chains. Based on a literature review of the *Georgia Freight Plan* several bottleneck locations were identified in the regions including I-285 at I-85, I-85 at I-75 North, I-20 at I-285 East and I-285 West, I-285 at SR 400, and I-75 at I-285 North. Some freight cluster plans have performed analysis or have identified bottlenecks within the freight clusters. Examples of these locations include locations on Fulton Industrial Boulevard, Bolton Road, Donald Lee Howell Parkway, Marietta Boulevard, Howell Mill Road, and Chattahoochee Avenue (Northwest Atlanta FCP), Bouldercrest Road in the vicinity of I-285 and Clifton Church Road east of Bouldercrest Road (Metro South CID FCP), and the intersection of Camp Creek Parkway (SR 6) and Washington Road (Aerotropolis Atlanta CIDs FCP).

Rail Howell Junction, highlighted in several past plans as a major challenge for freight rail traffic,² has seen some improvement since the partial closure of Tilford Yard. However, stakeholder interviews revealed that with approximately 80 trains still moving through the junction daily, and dispatching managed by a single entity, it continues to be a point of interest for further freight rail operation improvements. The 2021 *Georgia State Rail Plan* highlights the need for a comprehensive rail capacity study to identify specific bottleneck locations and coordinate with freight railroads to prioritize investments. Enhancing rail capacity is crucial to accommodating the projected growth in rail freight volumes and offering a viable alternative to trucking for certain commodities.

Additional freight bottlenecks and capacity constraints identified from the literature and news article research include:

- Inadequate last-mile connectivity and infrastructure in urban areas, particularly in areas with outdated industrial buildings and narrow local roads that cannot accommodate modern truck dimensions.³
- Congestion at intermodal facilities, which causes delays in the transfer of goods between modes and impacts the overall efficiency of the freight network. Ongoing improvement efforts include the pop-up container yard demonstration at Hulsey Yard, aimed at addressing rail facility congestion.⁴

² These plans include the *Freight ATL: Northwest Atlanta Industrial Area Freight Study* (2023) by the City of Atlanta and the *Georgia State Rail Plan* (2015) by GDOT.

³ Small, J. (Summer 2022). *Last Mile: The Most Challenging Piece of the Logistics Puzzle*. NAIOP Commercial Real Estate Development Association. <https://www.naiop.org/Research-and-Publications/Magazine/2022/Summer-2022/Business-Trends/Last-Mile-The-Most-Challenging-Piece-of-the-Logistics-Puzzle>

⁴ Dortch, W., Keller, K., and Van Hattem, M. (2022, March 7). *Georgia Ports Authority Finds Congestion Solution with Intermodal Sites Hundreds of Miles from Shore*. HDR. <https://www.hdrinc.com/insights/delivering-supply-chain-relief-ports-through-pop-container-yards>

- Blocked grade crossings, which can result in delays for roadway vehicles and increased safety risks.⁵

Freight Safety

Highway safety is a critical issue for the region, with truck crash rates on many key Metro Atlanta freight corridors exceeding statewide averages for similar roadways. Portions of I-285, I-75, I-85, I-20, SR 92, SR 6, SR 140, SR 141, Fulton Industrial Boulevard, Jimmy Carter Boulevard, and Panola Rd are among the corridors of concern. Across the freight plans reviewed, rear-end and angle crashes were identified as the most prevalent truck crash types, indicating a need for targeted interventions and safety improvements at high-risk locations.

Rail safety, including incidents at at-grade rail crossings, is another significant concern for freight movement in the region. Several counties, including Fulton, Cobb, DeKalb, and Gwinnett counties reported rail trespasser fatalities or injuries in recent years. These incidents are often attributed to several factors, such as the proximity of residential areas to rail tracks, inadequate fencing, and insufficient public awareness about the dangers of trespassing. At-grade rail crossings also pose safety risks for trucks and motorists, particularly in areas with high traffic volumes or limited visibility. The *Georgia State Rail Plan* (2021) highlighted the concentration of multi-accident crossings along high-volume corridors in Atlanta. The plan also emphasizes that improving grade crossing safety through infrastructure upgrades and grade separations, and public awareness campaigns is crucial to reducing the likelihood of collisions between trains and roadway vehicles.

Other freight safety considerations noted in the plans include:

- The need for improved truck parking facilities and rest areas to reduce the incidence of trucks parking in unauthorized or unsafe locations, such as highway shoulders or ramps creating safety hazards.
- The importance of addressing geometric deficiencies on local roads and intersections that serve freight-intensive land uses, ensuring that these facilities can safely accommodate large trucks and their turning radius requirements.
- The potential safety benefits of implementing connected and autonomous vehicle technologies in the freight sector, which could help reduce human error and improve incident response times.
- The necessity of enhancing safety at intermodal facilities, where the interaction between multiple modes of transportation can create unique safety challenges and risks.

⁵ Defeo, T. (2023, July 13). *Atlanta City Council Wants Action on Blocked Grade Crossings*. Railfanning.org. <https://railfanning.org/2023/07/atlanta-city-council-wants-action-on-blocked-grade-crossings/>

- The role of public outreach and education in promoting safe coexistence between freight vehicles and other road users, particularly in urban areas with high pedestrian and bicycle activity.

Other Needs and Priorities

The plans emphasized the need to improve the condition and performance of roadways serving freight clusters in the region. Several FCPs noted that many of the freight facilities are aging and were not designed to accommodate the current volume and size of freight vehicles. Upgrading and maintaining these critical freight corridors is essential to reduce congestion, improve safety, and enhance the overall efficiency of goods movement. Intersection operations projects, such as adding turn lanes, can help reduce congestion and improve safety when applied at critical points in the network.

The need for truck parking is another critical issue, with a lack of parking supply throughout the region that is expected to worsen due to increasing truck volumes and parking demand. Developing new truck parking facilities and partnerships with private-sector stakeholders can help alleviate this shortage.

Freight resiliency is an increasingly important priority, as the region faces more frequent and extreme weather events, such as flooding, storms, and heat waves. Developing resiliency plans and strategies to minimize disruptions to freight movement during these events is crucial to maintaining the reliability and competitiveness of the region's supply chains.

The necessity for increased availability of inland intermodal/transload facilities is another key priority. Rail service at the Port of Savannah, for example, plays a vital role in relieving congestion on I-16 and I-75 by removing over 1.5 million truck trips per year that would otherwise travel between Savannah and Atlanta. Investing in inland ports and expanding intermodal connectivity can further reduce truck traffic on highways and improve the efficiency of freight movement.

Compatibility of local road geometry with truck activity is also a significant concern. Many local roads and intersections, particularly in older industrial areas, were not designed to accommodate modern truck dimensions and turning radius requirements. Improving these facilities and ensuring that new developments incorporate truck-friendly design standards can enhance safety and reduce conflicts between freight vehicles and other road users.

Other needs include:

- Improving air cargo infrastructure and facilities to accommodate the expected growth in air freight volumes and support the region's economic competitiveness.
- Fostering collaboration and partnerships between public- and private-sector stakeholders to develop innovative solutions and secure funding for critical freight projects.
- Integrating freight considerations into land use planning and development processes to ensure that future growth is compatible with efficient goods movement.

- Investing in workforce development programs to address the shortage of skilled labor in the freight and logistics sectors, including truck drivers, warehouse workers, and maintenance technicians.

Needs Identified from Stakeholder Outreach

Stakeholder Outreach Overview

The primary purpose of stakeholder engagement was to gather comprehensive insights and feedback on the current state and future needs of freight infrastructure in the region. This engagement aimed to ensure that the *2024 Atlanta Regional Freight Mobility Plan* update is grounded in the real-world experiences and needs of those directly involved in or affected by freight transportation, including businesses, local governments, and community organizations.

The stakeholder engagement process utilized a multifaceted approach to ensure broad and inclusive participation from various sectors of the freight transportation ecosystem. The methodology comprised the following key activities:

- **Advisory Committees:** Formation of specialized advisory committees focusing on critical areas such as ITS and technology in freight, alternative fuels and/or electric vehicles (EVs), and truck parking. These committees included experts and representatives from relevant sectors to discuss specific challenges and opportunities.
- **Local Jurisdiction Stakeholder Sessions:** Sessions with stakeholders from local jurisdictions to understand the unique freight infrastructure challenges and opportunities within different areas of the Atlanta region. These sessions provided localized insights that are essential for a region-wide plan.
- **Interviews:** One-on-one interviews with key stakeholders, including industry experts, freight operators, and industry support groups and organizations to delve deeper into specific issues or innovative solutions that could be applied to the Atlanta region.
- **Regional Roundtables:** Roundtable discussions with a broader group of stakeholders to facilitate open dialogue on overarching freight mobility challenges and potential cross-jurisdictional solutions. Topics such as land use and air cargo were given special focus due to their significant impact on freight mobility.
- **Survey and Mapping:** Surveys to gather quantitative data from a wide range of stakeholders and mapping exercises to visually represent freight hot spots, infrastructure deficiencies, and growth areas. This approach helped in identifying trends and prioritizing areas for intervention.

The key needs and priorities identified from the stakeholder outreach activities include:

Roadway Congestion, Highway Bottlenecks, and Infrastructure Challenges

Roadway congestion came up as the biggest challenge in the Atlanta region which caused inefficiency and loss of resources for freight carriers. Bottlenecks particularly surrounding all the connection points of I-285 with I-20, I-75, and I-85 came up in various discussions with stakeholders. During the stakeholder outreach, stakeholders also identified freight bottlenecks. A representative from the Georgia Department of Economic Development (GDEcD) highlighted I-75, a priority freight corridor, as a significant challenge for moving workforce and commuters.

A representative from a major retail company pointed out that the most heavily relied upon routes for their long-distance freight movement in the region include interstate highways. They also noted that the highway layout in the Atlanta region is inefficient. A representative from Coca-Cola identified I-75 as a major problem for connections to Chattanooga and Cleveland. A representative from The Home Depot identified I-20 and I-285 as bottleneck locations, noting frequent delays, especially when a crash occurs at or near these locations. A representative from the Georgia Division of Public Safety identified several bottlenecks, including I-285 at I-20 (West), I-285 at Camp Creek Parkway, I-285 at Peachtree Industrial Boulevard, the Downtown Connector, I-75 SB south of the I-675 interchange, and I-75 SB between I-675 and Exit 212 (all of McDonough). A representative from Genuine Parts, an auto parts company, identified a major problem with I-285, noting that it has become a corridor and a route in and of itself, no longer serving as a bypass. A representative from the Georgia Motor Trucking Association mentioned that key routes and corridors, particularly I-20 west during ice storms, are crucial for long-distance movements.

In addition to the congestion, infrastructure challenges in the region were discussed by stakeholders. Truck drivers in the region said they may encounter structures with limited height clearance, roadways with poor maintenance and inadequate lighting, and roadways with drainage problems after rain. These issues pose both safety concerns and create logistical routing challenges.

Truck Parking and Logistics Efficiency

Stakeholders consistently highlighted that Metro Atlanta faces a significant challenge with the scarcity of designated truck parking spaces, impacting both local and through freight movements. Stakeholders noted the acute shortage of safe, accessible parking as a critical issue, exacerbating driver fatigue and complicating logistics operations. This shortage has led to trucks parking in unauthorized or unsafe locations, including off-ramp shoulders and in commercial lots, raising safety concerns and contributing to congestion. Furthermore, stakeholders noted that the current distribution of parking facilities does not align with the most frequented freight corridors, exacerbating the mismatch between supply and demand.

Addressing the truck parking shortage requires a multifaceted approach, emphasizing the development of new parking facilities and the optimization of existing ones. There is a strong call for public-private partnerships (PPPs) to leverage private-sector resources and expertise in creating and operating truck parking facilities. Such collaborations could involve incentives for land developers to include truck parking

in their projects or for existing businesses to open up unused spaces for truck parking during off-hours. Moreover, zoning and regulatory reforms are necessary to facilitate the development of new parking facilities, addressing one of the primary barriers to expansion.

Additionally, stakeholders advocated for innovative solutions, including the use of technology to better manage and allocate parking resources. For example, real-time parking availability systems can significantly reduce the time drivers spend searching for parking, thereby improving overall logistics efficiency.

Improving truck parking availability is just one aspect of enhancing logistics efficiency in the Atlanta region. Stakeholders highlighted the need for broader strategic initiatives that address the systemic challenges within the region's freight infrastructure. This includes improving the integration of freight considerations into land use planning, advocating for policies that support the freight sector, and investing in infrastructure improvements that facilitate smoother freight movements. Additionally, fostering a culture of innovation within the logistics sector can lead to the adoption of advanced technologies and practices that further optimize freight operations.

Stakeholders also discussed the effectiveness of inland ports to increase the efficiency of supply chains and reduce truck miles driven. One Class I rail operator expressed interest in further exploring public-private partnerships and collaborations to establish additional inland ports.

Air Cargo and Airport Infrastructure

Stakeholders highlighted the diverse range of commodities handled by the airport and its capacity as a merchandise processing port for customs, facilitating seamless international trade. The airport's infrastructure, including its layout with parallel runways and expansive cargo facilities, has historically contributed to its operational efficiency. However, the growing demand for air cargo services, fueled by e-commerce and rapid delivery expectations, underscores the need for ongoing infrastructure enhancements and operational optimizations to maintain and improve its competitive edge.

One significant issue identified by stakeholders is the capacity constraints within existing air cargo facilities, including limitations in warehousing and processing areas. During peak times, these constraints have led to delays in cargo handling and increased wait times for cargo pick-up, impacting the overall efficiency of the supply chain. Additionally, stakeholders expressed concerns over the airport's ability to accommodate the growth of belly cargo, which has become increasingly important as the volume of goods transported in passenger aircraft rises. The limited number of dedicated cargo flights exacerbates these capacity issues, calling for a strategic expansion of freighter services and infrastructure improvements to support the anticipated growth in air cargo volumes. Stakeholders also raised concerns about the pressures on the Atlanta region's airports in handling both passenger and cargo traffic. They discussed the potential for relief airports or emerging airports in the area that are increasing their air cargo operations.

Intelligent Transportation Systems (ITS) and Technology Integration

Stakeholders highlighted the current use of technologies, such as Global Positioning System (GPS) and telematics, to track and optimize freight movements, but they also pointed to the need for more advanced systems that can provide real-time data on traffic conditions, vehicle performance, and cargo status. The deployment of connected vehicle solutions such as the use of roadside units and connected intersections can help improve freight movement within the region. However, these systems require robust management and security systems. Stakeholders identified barriers to the adoption of ITS/ technology in freight, including the need to integrate security systems ahead of time, ensuring data consistency, and avoiding data silos. Stakeholders also noted that the timeliness and accuracy of data are very important to instill confidence in the users for the usability of the systems. Additionally, continuity between different platforms is also important to avoid confusing drivers.

The use of big data analytics and machine learning algorithms can transform this data into actionable insights, helping operators and planners to make informed decisions that enhance efficiency and reduce congestion. Technological advancements offer significant opportunities to streamline enforcement and inspection processes, thereby reducing delays and improving compliance with safety regulations. Automated inspection stations, equipped with advanced scanning technologies, can rapidly assess vehicle and cargo compliance without requiring trucks to stop, minimizing disruptions to freight flows. Similarly, ITS solutions can revolutionize truck parking management by providing real-time information on parking availability, thus reducing the time drivers spend searching for suitable parking spots. This not only enhances driver convenience and safety but also contributes to reducing congestion and emissions from idling trucks. The rise of e-commerce has increased the demand for curb space, leading to challenges in managing this space. Innovative solutions such as reservation of parking spaces for delivery vehicles have been pilot-tested in other parts of the country.⁶

To fully harness the potential of technology and ITS to improve freight mobility, stakeholders highlighted that the Atlanta region needs to pursue a strategic, coordinated approach. This involves investing in the infrastructure required to support advanced technologies, such as high-speed communication networks and ‘internet of things’ devices along freight corridors. Collaboration between public agencies, private-sector stakeholders, and technology providers is crucial to ensure the seamless integration of these technologies into the existing transportation ecosystem. Initiatives such as pilot projects for autonomous freight vehicles, the use of innovative concepts such as the Physical Internet, blockchain for secure and efficient cargo tracking, and artificial intelligence-driven logistics management systems can serve as testbeds for innovation.

⁶ Holguín-Veras, J. et al. (2018). The New York city off-hour delivery program: a business and community-friendly sustainability program. *Interfaces* 48(1), 70-86. Retrieved from <https://www.jstor.org/stable/48747871>

Furthermore, capacity-building and knowledge-sharing among stakeholders are essential to accelerate technology adoption and ensure that the benefits are widely understood and embraced. Developing a regulatory and policy framework that supports innovation while ensuring safety and security is also critical.

Alternative Fuels and Sustainability

The shift toward alternative fuels and EVs in the freight sector is driven by the urgent need to reduce greenhouse gas emissions, decrease dependency on fossil fuels, and mitigate the environmental impact of freight operations. While stakeholders across the Atlanta region recognize the importance of alternative fuel vehicles and EVs in achieving these goals, adoption remains limited. A small number of companies in the region have begun exploring alternative fuels, with some limited use of compressed natural gas (CNG) and hybrid vehicles. For example, UPS has incorporated some hybrid and CNG trucks into their fleet, reflecting a growing commitment to sustainability. However, the overall adoption of alternative fuels in the region's freight sector is still in its early stages, representing a very small percentage of the total fleet. In addition, the adoption rate varies significantly across different segments of the freight industry, influenced by factors such as vehicle availability, fueling infrastructure, operational requirements, and economic considerations. There is also a debate about the viability of different fuels. While some advocate for EVs, others suggest using existing fueling infrastructure for diesel and switching to biodiesel or natural gas as a stopgap solution. However, concerns have been raised about the environmental impact of natural gas and the supply chain issues for biodiesel.

Despite the recognized benefits of alternative fuel vehicles and EVs, several barriers hinder their widespread adoption in the Atlanta region's freight sector. The key challenges identified are related to charging and fueling infrastructure. There are difficulties in getting chargers, wiring up utilities to receive sufficient power at facilities, and ensuring the physical accessibility of charging infrastructure to large trucks. Another important challenge includes the high upfront costs of alternative fuel vehicles, the limited availability of suitable models for heavy-duty freight applications, and concerns about the operational range of EVs and fuel availability.

A representative from CALSTART (a nonprofit organization to support the development of clean, efficient transportation solutions) stated that with unprecedented amounts of federal funding available, the public sector, including MPOs such as the ARC, needs to be willing to be the submitter, the applicant, and the prime recipient of the federal funding opportunities that focus on alternative fuel infrastructure. Stakeholders also pointed out the need for clearer regulatory incentives and supportive policies to encourage investment in alternative fuels. Stakeholders suggested looking for the low-hanging fruit, such as warehouses and manufacturing plants that run regular routes for the adoption of alternative-fuel or electric freight vehicles.

Access to Jobs

During the local jurisdiction sessions as well as the interviews with the industry representatives, several needs and barriers for employees emerged. Priority needs that were reoccurring throughout the engagement process were related to job access, job retention, and safety.

Numerous employers highlighted the challenges faced by workers reaching their places of employment, particularly when they lack a private motor vehicle. Jobs in freight often come with low wages and physically demanding tasks. Through our outreach, it was found that some employees in the freight cluster areas are grappling with a daily absenteeism rate of around 20 percent, leading to management difficulties and a lack of team cohesion.

Given that freight and warehouse districts are frequently located where land is more affordable, usually in areas that are less dense and less urbanized, public transportation options can be limited. Many employees work in shifts, often outside regular business hours, creating another challenge to using modes other than a private vehicle to access their place of work. With limited late-night transportation options, they face the pinch of higher commuting costs, often having no choice but to rely on carpooling or more expensive taxis and rideshare services. These job access issues result in employee retention challenges for freight businesses.

Stakeholders emphasized the need to balance freight movement with safety, particularly regarding first- and last-mile connections that can pose dangers to commuters. The integration of heavy trucks with smaller vehicles, as well as pedestrians and cyclists, was recognized as a widespread safety issue in areas dedicated to freight activities. Often, workers relying on public transit must cover a portion of their commute on foot to reach their workplaces, navigating through zones typically lacking adequate pedestrian or cycling infrastructure. This leads to difficult and often dangerous crossings of major roads. Moreover, those on night shifts face additional hazards, as visibility decreases after dark, making it harder for them to be seen, and less street activity can heighten concerns for personal security.

3. Existing and Future Conditions and Freight Needs

This chapter provides an in-depth analysis of the existing and projected conditions impacting the freight infrastructure network serving the Metro Atlanta area. This comprehensive overview encompasses inventories on highways, railways, at-grade rail crossings, air cargo facilities, intermodal connectors, truck parking facilities, and ports. This chapter also provides a granular look at Metro Atlanta-based commodity flows across different transportation modes, highlighting the key commodities that move through the region, alongside a thorough analysis of trading partners and traffic volume, giving insight into the economic interdependencies that shape regional freight patterns. This chapter also analyzes modal freight flows and expected growth.

Highway Infrastructure

Metro Atlanta is at the heart of Georgia's highway network, playing an instrumental role in moving goods across the state and to the rest of the country.

Table 2: ARC Highway Infrastructure Fast Facts

Interstate Miles	Primary Highway Freight System Miles	Strategic Highway Network and Connectors
359.3	325.7	353.9

Source: State Route mileage is based on GDOT's Road Inventory GIS layers. Mileages for interstates, PHFS, and the STRAHNET are calculated using FHWA HEPGIS's National Highway System GIS layer.⁷

Metro Atlanta is served by over 359.3 miles of interstates, including I-20, I-75, I-85, I-285, I-575, I-675, and I-985. The following interstate highways provide connections to neighboring states and major freight facilities within the state:

- I-20 traverses west to Birmingham, Alabama, and east to Columbia, South Carolina.
- I-75 travels north to Chattanooga, Tennessee—"the Silicon Valley of Trucking"—and south to the Hartsfield-Jackson Atlanta International Airport before connecting to Macon, Georgia, and I-16 toward the Port of Savannah.
- I-85 goes southwest to Montgomery, Alabama, and northeast to Greenville, South Carolina.
- I-285 encircles the City of Atlanta and connects the above-mentioned three Interstates.

⁷ GDOT. Road Inventory Data (Geodatabase). Retrieved from <https://www.dot.ga.gov/GDOT/Pages/RoadTrafficData.aspx>; FHWA HEPGIS (2024). National Highway System. <https://hepgis-usdot.hub.arcgis.com/datasets/usdot::national-highway-system-1/about>

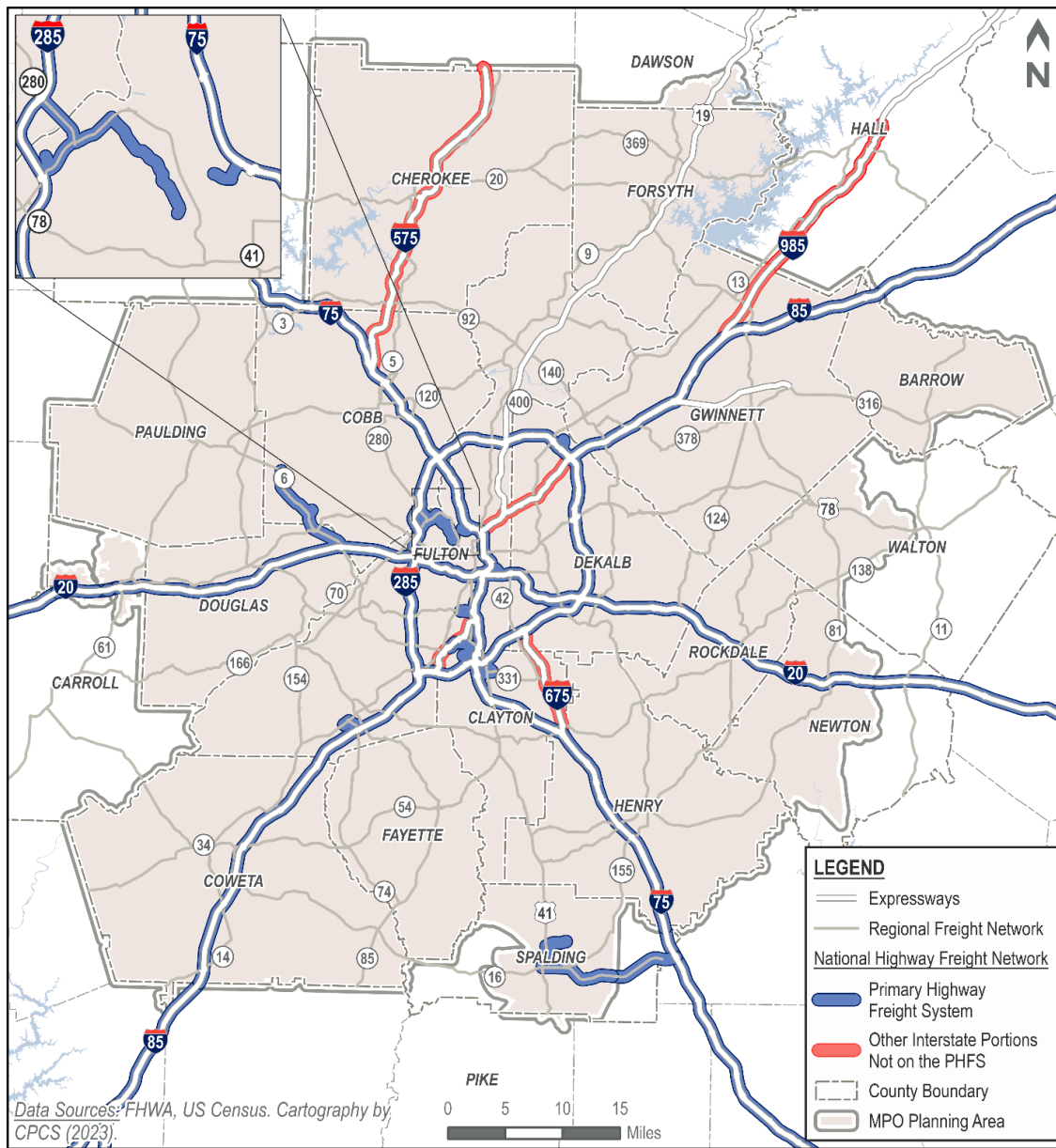
- I-575 is an auxiliary Interstate Highway that branches off I-75 in the City of Kennesaw in Cobb County.
- I-675 connects I-75 and I-285 just southeast of Atlanta.
- I-985 starts at an interchange with I-85 in Gwinnett County and then heads northeast to the City of Gainesville.

National Highway Freight Network

The Federal Highway Administration (FHWA) designated the National Highway Freight Network (NHFN) to strategically invest in the maintenance and improvements of the U.S. highway freight system.

The NHFN is comprised of four subsystems:

- **Primary Highway Freight System (PHFS):** This network is the most crucial portion of the nation's freight highway system and is designated using quantitative data. There are 325.7 miles of PHFS in the ARC region.
- **Other Interstate Portions Not on the PHFS:** This consists of the remaining portions of the interstates that are not a part of the PHFS. These roadways provide access to freight facilities and create a continuous highway freight system. There are 71.8 miles of non-PHFS interstates in the ARC region.
- **Critical Rural Freight Corridors (CRFCs):** These are public roads that connect freight facilities to the PHFS and the other Interstates in rural areas. The CRFCs do not apply to the ARC region.
- **Critical Urban Freight Corridors (CUFCs):** These are public roads that connect freight facilities to the PHFS and the other Interstates in urban areas. Currently, there are no designated CUFCs in the ARC region. However, the outcome of this plan will inform the CUFC designation. See Chapter 5 for additional information.

Figure 1: Regional Highway Infrastructure**Table 3: The National Freight Network in the ARC Region by Subsystem**

Subsystem	Length (Miles)
Primary Highway Freight System (PHFS)	325.7
Other Interstate not on the PHFS	71.8
Total	397.5

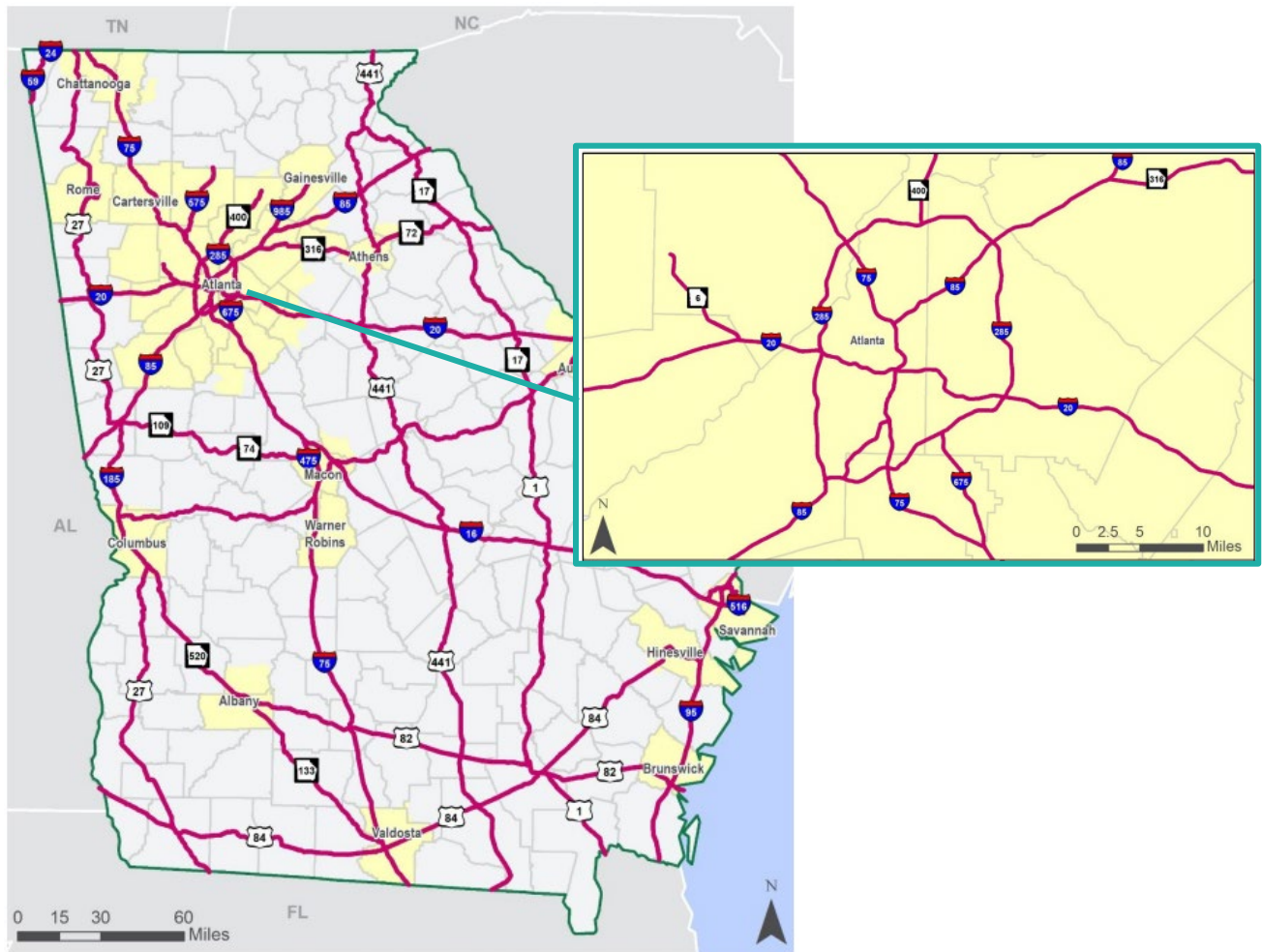
Source: FHWA HEPGIS (2024). National Highway System. Retrieved from <https://hepgis-usdot.hub.arcgis.com/datasets/usdot::national-highway-system-1/about>

In 2010, the ARC designated the *Atlanta Strategic Truck Route Master Plan*⁸ (ASTRoMaP), labeled as Regional Freight Network in Figure 1, through stakeholder outreach and a quantitative scoring approach. This network contains over 1,300 miles of roadways. The strategic route system is designed to optimize regional truck movements and inform future decision-making on freight investments.

Georgia’s Statewide Designated Freight Corridors

State and regional-level designation of freight networks helps local agencies identify corridors critical to freight flows and assists state departments of transportation (DOT) in allocating funding accordingly. GDOT adopted a statewide freight network in 2023 to help the state better prioritize capital investments that improve freight flows. The freight network consists of corridors serving as key freight connectors and major thoroughfares for freight movements, as shown in Figure 2.

⁸ ARC. *Atlanta Strategic Truck Route Master Plan (ASTRoMaP)*. <https://atlantaregional.org/what-we-do/transportation-planning/freight-transportation/atlanta-strategic-truck-route-master-plan-astromap/>

Figure 2: Georgia Statewide Designated Freight Corridors

Source: GDOT (2023). *Georgia Freight Plan*.

<https://www.dot.ga.gov/InvestSmart/Freight/GeorgiaFreight/GeorgiaFreightPlan.pdf>

National Highway System

The National Highway System Designation Act of 1995 designated the National Highway System (NHS), which consists of roadways important to the U.S.'s economy, defense, and mobility. The NHS includes the following five subsystems. Please note that routes can be parts of multiple subsystems.

- **Interstate Highway System:** This includes the entire Dwight D. Eisenhower National System of Interstate and Defense Highways.
- **Other Principal Arterials:** These are non-interstate highways that provide access to other arterials, major ports, airports, public transportation facilities, or other intermodal transportation facilities in both rural and urban areas.
- **Strategic Highway Network (STRAHNET):** This is a system of roadways deemed to be critical to the Department of Defense's domestic operations, such as transporting heavy armor, fuel,

ammunition, food, and other commodities essential to U.S. military operations. There are 349.6 miles of STRAHNET in the ARC region.

- **Major Strategic Highway Network Connectors (STRAHNET Connectors):** These are the first- and last-mile connectors that link major military installations to STRAHNET. There is only one STRAHNET Connector in the ARC region, totaling 4.3 miles.
- **Intermodal Connectors:** These connectors provide access between intermodal facilities and the other four National Highway Subsystems. Figure 3 demonstrates both passenger and freight intermodal connectors. Later in this section, more details are provided on the freight intermodal connectors in the region.

Table 4: National Highway System in the ARC Region by Subsystem

Subsystem	Mileage
Interstate Highway	359.3
STRAHNET	349.6
Intermodal Connectors*	26.6

Source: FHWA HEPGIS (2024). National Highway System. <https://hepgis-usdot.hub.arcgis.com/datasets/usdot::national-highway-system-1/about>. Note: the intermodal connectors include connectors serving passenger and freight facilities (i.e., airports, Amtrak stations, rail/truck terminals, intercity bus terminals, public transportation or multimodal passenger terminals, and pipeline terminals). 26.6 miles of connectors serve the freight facilities in the region. The lengths of the intermodal connectors are based on the National Highway System dataset and are slightly different from the values reported on the FHWA website.⁹

Freight Rail Infrastructure

The Atlanta MPO region has nearly 824 miles of railroad track. When accounting for sections with multiple parallel tracks, the total track mileage is approximately 923 track-miles (Table 5). Of this, almost 736 miles (or 89 percent) are active, with the remaining 88 or so miles abandoned or inactive. Nearly 37 of the 88 miles of abandoned track are now used as the Silver Comet Trail, extending west of Atlanta. Active rail lines generally extend out radially in most directions from Atlanta, with the exception of due north because of the Appalachian Mountain range (Figure 4).

Table 5: Atlanta Region Freight Rail Mileage and Ownership

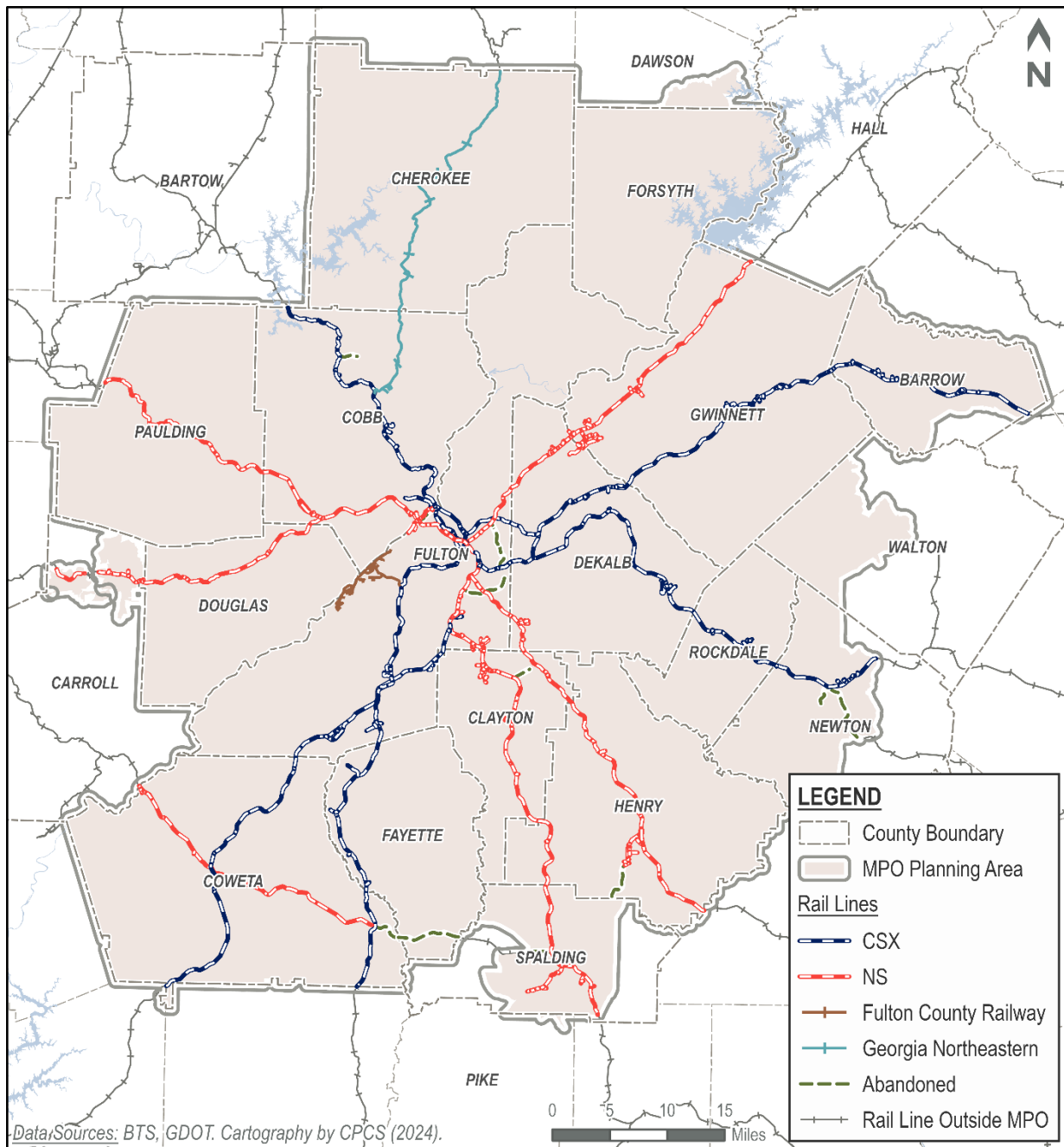
Railroad	Class	Active Track Mileage	Abandoned or Inactive Rail Mileage	Total Mileage	Total Adjusted Track Mileage*
Norfolk Southern (NS)	Class I	339.9	9.6	349.5	419.0
CSX	Class I	327.0	1.6	328.6	357.8
Georgia Northeastern Railroad	Shortline	40.9	0	40.9	40.9
Fulton County Railroad	Shortline	27.9	0	27.9	27.9
Great Walton Railroad	Shortline	0	16.7	16.7	16.7
United States Gypsum	Shortline	0	1.6	1.6	1.6
Other	N/A	0	58.6	58.6	58.6
Total		735.7	88.1	823.8	922.5

*Adjusted track mileage is calculated as the reported track mileage multiplied by the number of mainline tracks.

Sources: USDOT Bureau of Transportation Statistics North American Rail Network Lines data, 2023, retrieved from <https://geodata.bts.gov/datasets/usdot::north-american-rail-network-lines/about>; and 2021 *Georgia State Rail Plan Appendices* retrieved from <https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft%20Appendices.pdf>

⁹ FHWA (2017). Intermodal Connectors, Georgia.

https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

Figure 4: Atlanta Region Freight Rail Network

The region is served by two Class I railroads: CSX and Norfolk Southern (NS). CSX operates over 327 miles of active track. These CSX rail lines generally serve the areas southwest, northwest, and east of the region, which include Barrow, Cobb, Coweta, Dekalb, Fayette, Fulton, Gwinnett, Newton, and Rockdale Counties. NS operates almost 340 miles of active track. These NS rail lines generally serve the areas west, northeast, and southeast of the region, which includes Carroll, Clayton, Coweta, Dekalb, Fulton, Gwinnett, Henry, Paulding, and Spalding Counties.

Two shortline railroads serve the Atlanta MPO region as well. The Georgia Northeastern Railroad operates a 41-mile spur off CSX beginning in Marietta. The Fulton County Railroad operates a collection of 28 miles of track through an industrial park along Fulton Industrial Boulevard in western Atlanta. The Fulton County Railway offers service to CSX.

Rail Facilities

Rail facilities in the Atlanta region support efficient freight movement, which has benefits for industry and consumers (Figure 5). For example, intermodal terminals in the Atlanta region allow goods to be moved to and from the Port of Savannah, the largest maritime cargo gateway in the Southern Atlantic. A container arriving by ship can be quickly transloaded to rail, transported northwest to an Atlanta region intermodal facility, and then transloaded to trucks for regional delivery. In addition to being economical and time-efficient, this strategy reduces emissions and cuts back on congestion on I-16 and I-75. The Port of Savannah reports that it handles 38 trains per week,¹⁰ and rail travel time from Savannah to the Atlanta region via CSX takes just 2 days.¹¹ This rail connection between the Atlanta market and Savannah port is and will become increasingly important to support e-commerce operations in the Atlanta region.

There are three rail-served intermodal yards and nine rail-served bulk/transload facilities in the Atlanta MPO region (Table 6). While both intermodal and bulk/transload facilities involve the transshipment of freight, they differ slightly in their activities. Intermodal facilities generally move freight containers from one mode to another—that is, they deal primarily with containers and not smaller units of freight. Bulk/transload facilities, on the other hand, handle more basic units of freight. Transload facilities tend to move cargo between containers and often between modes. Bulk terminals tend to store and transload raw materials like grain, oil, and cement. Finally, the Atlanta MPO region has two rail-served automotive facilities which, as the name implies, handle the transshipment of vehicles.

A more detailed description of each rail-served facility can be found in Appendix A.

¹⁰ Georgia Ports. Rail extends GPA's reach. Accessed February 2023. <https://gaports.com/rail/>

¹¹ Maersk (2022, April 6). Savannah – Atlanta Rail Service. <https://www.maersk.com/news/articles/2022/04/06/savannah-atlanta-rail-service>

Figure 5: Atlanta Region Freight Rail-Served Facilities

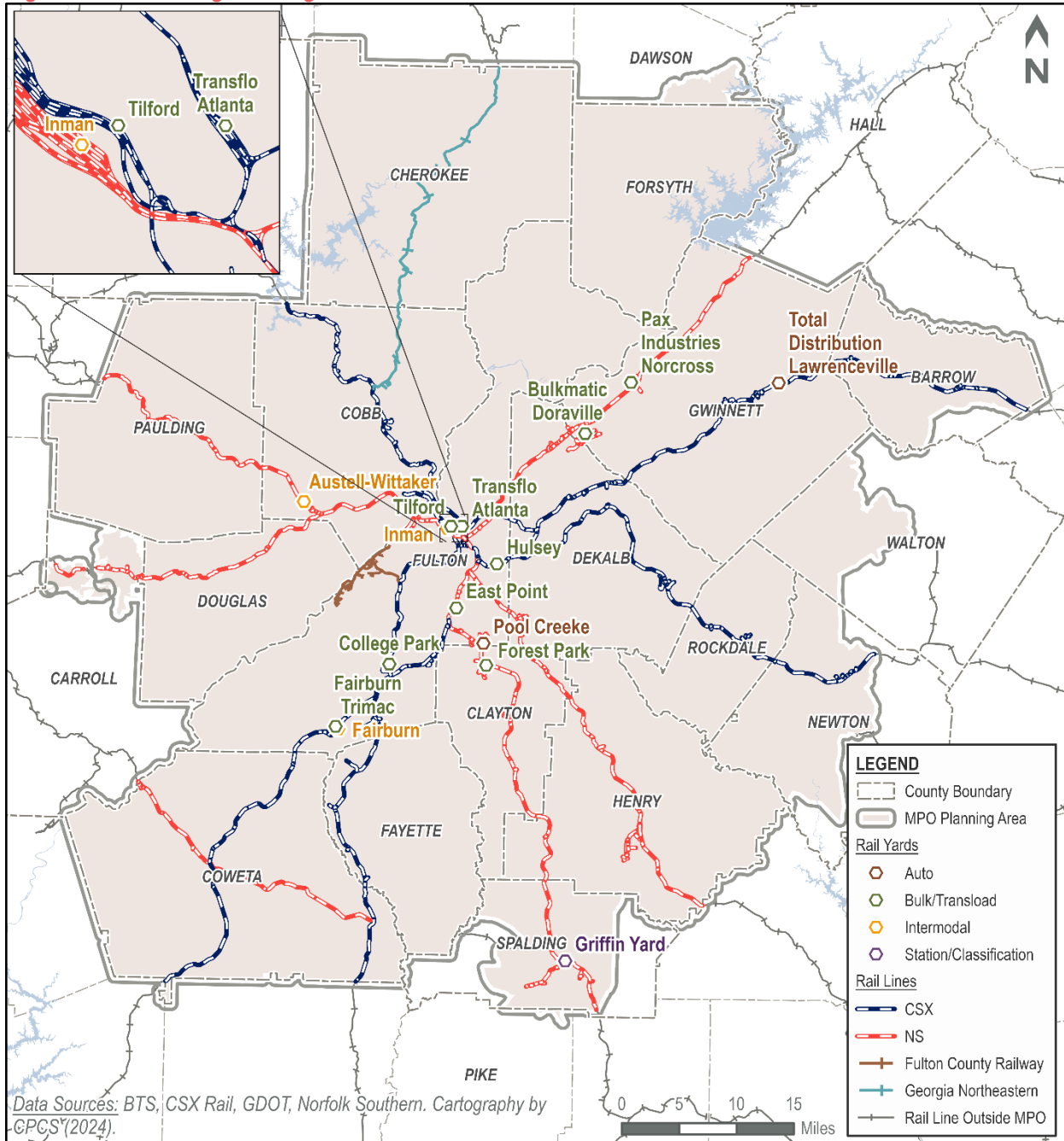


Table 6: Rail-served Facilities in the Atlanta Region

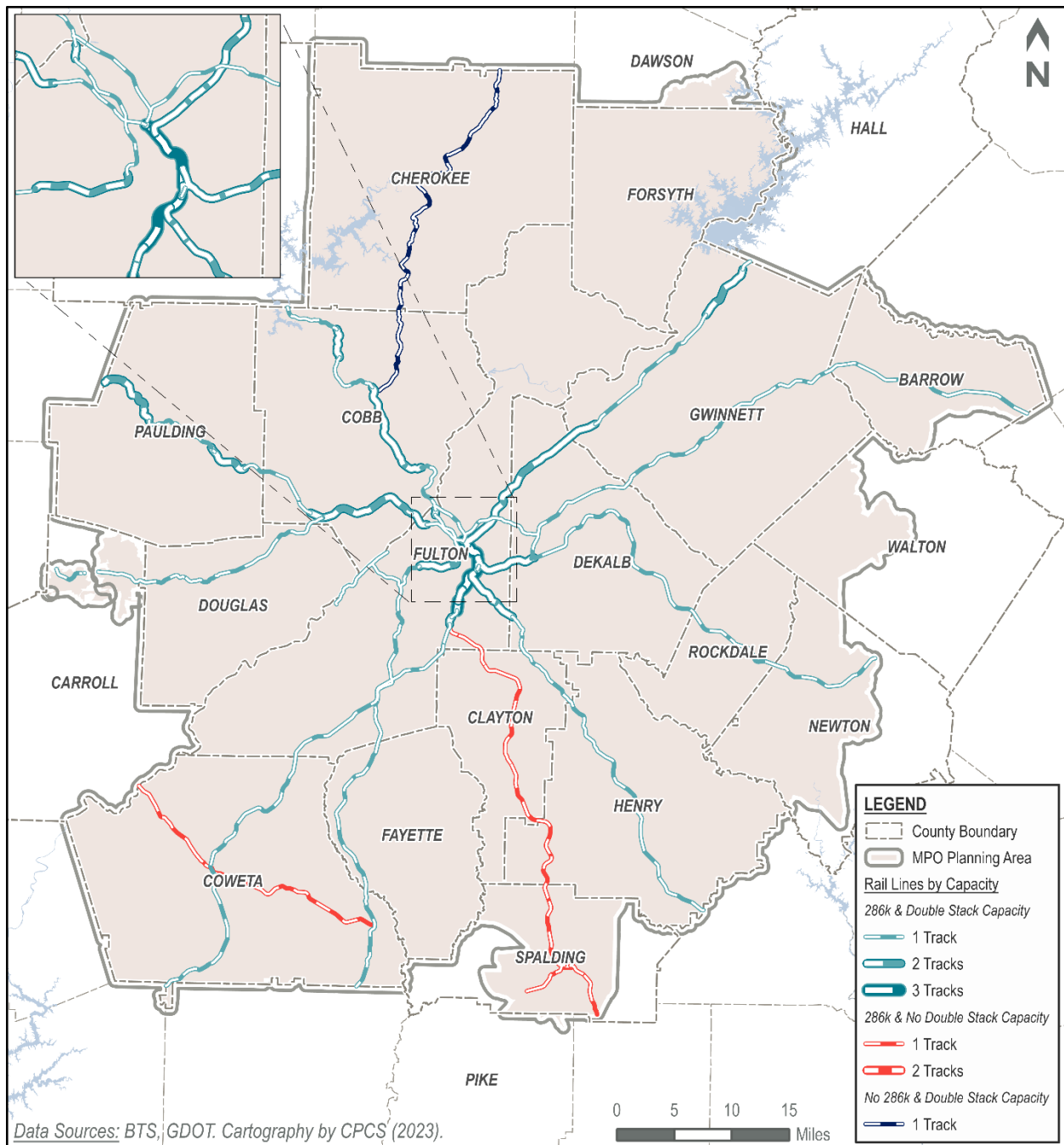
	Name	City	Railroad	Description
1	Whitaker Yard	Austell, GA	NS	Intermodal Yard
2	Fairburn	Fairburn, GA	CSX	Intermodal Yard
3	Inman Yard	Atlanta, GA	NS	Intermodal Yard
4	Industry Yard/East Point	East Point, GA	NS	Bulk Terminal/Transload
5	Griffin Yard	Griffin, GA	NS	Station/classification facility
6	Forest Park	Forest Park, GA	NS	Bulk Terminal/Transload
7	Hulsey Yard	Atlanta, GA	CSX	Bulk Terminal/Transload
8	CSX Transflo Tilford Yard ¹²	Atlanta, GA	CSX	Bulk Terminal/Transload
9	CSX Transflo Atlanta	Atlanta, GA	CSX	Bulk Terminal/Transload
10	SPTS Trimac Fairburn	Fairburn, GA	CSX	Bulk Terminal/Transload
11	Pax Industries Norcross	Duluth, GA	NS	Bulk Terminal/Transload
12	A&R Transport College Park	College Park, GA	CSX, NS	Bulk Terminal/Transload
13	Bulkmatic Transport Doraville	Doraville, GA	NS	Bulk Terminal/Transload
14	Poole Creek	Hapeville, GA	NS	Automotive
15	Total Distribution Lawrenceville	Lawrenceville, GA	CSX	Automotive

Sources: 2021 *Georgia State Rail Plan* and 2016 *Atlanta Regional Freight Mobility Plan Update*

Capacity Limitations

Figure 6 displays rail capacity on active tracks in the Atlanta metropolitan region. With the exception of some portions of NS tracks in the southern portion of the region (286k compatible but not double stack capable) and the Georgia Northeastern Railroad shortline (not 286k or double stack compatible), mainline tracks in the region are both 286k and double stack capable. “286k compatible” refers to tracks capable of handling railcars with a gross weight of 286,000 pounds, which is the current industry standard for heavy freight. “Double stack capable” means the tracks and associated infrastructure (like tunnels and bridges) can accommodate rail cars carrying two stacked shipping containers, maximizing cargo capacity per train.

¹² A significant portion of Tilford Yard was closed and sold in 2018, with part of the sold area now hosting an Amazon distribution center. However, a section of the yard remains operational. Following the partial closure, CSX shifted some operations to Howells Yard and noted freight movement challenges during stakeholder consultations.

Figure 6: Freight Rail Capacity

At-grade Rail Crossings

There are 824 at-grade rail crossings in the study area, of which 637 traverse public roads. These rail crossings are generally spread out along the entire region's rail network, although certain areas see higher relative density, particularly NS in Doraville.

Figure 7 below shows all public at-grade crossings. Those with more rail traffic are displayed using proportional circle symbols and the top 10 are numbered. The busiest at-grade crossings are on Class I railroads, especially near and west of Atlanta. Of the top busiest at-grade crossings, many are close to Atlanta's urban core. Table 7 offers more information on the top 10 busiest at-grade rail crossings.

Figure 7: Busiest At-grade Rail Crossings

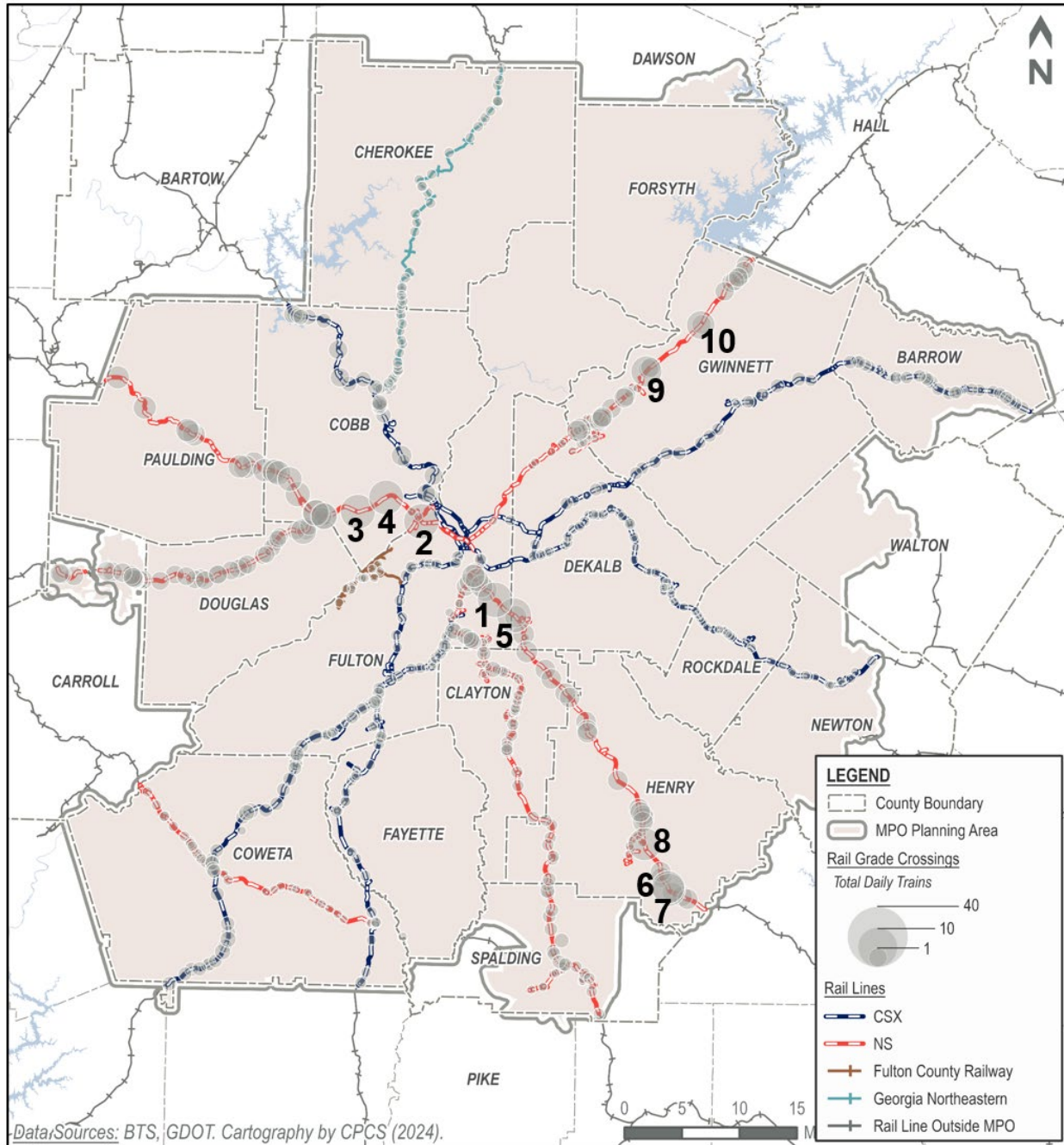


Table 7: Busiest Public At-grade Rail Crossings, 2019

Rank	Railroad	Street	Location	2019 Annual Average Daily Traffic (AADT)	Total Estimated Daily Trains
1	NS	Sawtell Ave	Atlanta, Fulton County	7,403	41
2	NS	Parrott Ave	Atlanta, Fulton County	2,355	41
3	NS	Church Street	Mableton, Cobb County	2,355	40
4	NS	Nickajack Road	Mableton, Cobb County	2,355	40
5	NS	Fayetteville Road	Constitution, Fulton County	1,036	40
6	NS	Peeksville Road	Locust Grove, Henry County	11,286	37
7	NS	N Jackson Street	Locust Grove, Henry County	1,682	37
8	NS	Kings Mill Road	McDonough, Henry County	1,682	37
9	NS	Main Street	Duluth, Gwinnett County	2,355	34
10	NS	Buford Dam Road	Suwanee, Gwinnett County	31,487	30

Source: BTS Rail Crossing Inventory, retrieved from <https://geodata.bts.gov/maps/usdot::railroad-grade-crossings/about>; 2019 Highway Performance Monitoring System data retrieved from USDOT server.

Air Cargo Facilities

In the ARC region, 12 airports provide air cargo services, two of which—the Hartsfield-Jackson Atlanta International Airport (ATL) and the Gwinnett County Airport (LZU)—regularly scheduled cargo flights in 2022 (Figure 8, Table 8).¹³ The following sections introduce the facilities and cargo service characteristics of ATL and LZU.

Table 8: Atlanta Region Air Cargo Facility Fast Facts

Number of Airports with Cargo Activities	Annual Air Cargo Tonnage at the ATL (2022)	Total Annual Cargo Tonnage Annual Average Growth Rate at ATL*
12	651,527	3.9%

Source: GDOT (2022). *Georgia Statewide Air Cargo Study Technical Report*, retrieved from https://www.dot.ga.gov/InvestSmart/Aviation/Documents/AirCargo/TechnicalReport_AirCargoStudy.pdf; *Hartsfield-Jackson Master Plan* (2015). Hartsfield-Jackson Atlanta International Airport Year-to-Date Freight Data; *The total annual cargo tonnage annual average growth rate is based on the difference between actual 2011 cargo tonnage and projected 2031 cargo tonnage.

¹³ Bureau of Transportation Statistics (2022). T-100 Market Data. <https://www.bts.gov/browse-statistical-products-and-data/bts-publications/data-bank-28ds-t-100-domestic-segment-data>

Hartsfield-Jackson Atlanta International Airport (ATL)

The Hartsfield-Jackson Atlanta International Airport (ATL) is the primary airport that serves the Atlanta region and is located approximately 10 miles south of downtown Atlanta. ATL is ranked as the 13th-busiest cargo airport in the U.S.¹⁴ and handles around 95.8 percent of all Georgia air cargo volume.¹⁵

The airport is served by three FHWA-designated intermodal connectors, as shown in Table 9. These intermodal connectors provide access between the airport and nearby interstates (i.e., I-85 and I-75). The airport currently has five parallel runways, all of which can accommodate take-offs and landings of wide-body aircraft. With the exception of 2020, ATL is consistently the world's busiest airport by passenger numbers.¹⁶

Table 9: Intermodal Connectors Serving ATL

	Description	Connector Length (Miles)
1	I-85 exit 18-A, NE 1.25 mi on Cr 2045 and 0.41 mi on CS 800111 to the N Cargo Building	1.66
2	I-75 exit 82, W 0.07 mi to Aviation Blvd (CR 1516), N 0.7 mi on CR 1568, and 0.68 mi on CS 800111 to N Cargo Building	1.45
3	I-75 exit 83, 0.41 mi on CR 2206 and 1.21 mi on CR 1516 to South Cargo Terminal	1.62

Source: FHWA National Highway System.

ATL supports various types of air cargo activities, including integrated express (e.g., FedEx, DHL, and UPS), belly cargo, regional air cargo carriers, all-cargo carriers, and specialty cargo carriers (e.g., Amazon Air). In 2022, ATL processed over 650,000 metric tons of freight and was the 38th busiest in the world by total cargo volume.¹⁷

According to the 2015 ATL Master Plan, the annual air cargo volume at ATL was forecast to reach 1.4 million tons in 2031, and the existing cargo facilities (Table 10)—North Cargo Complex, Midfield Cargo Complex, and South Cargo Complex—would no longer be sufficient to handle the growing air cargo

Amazon Air at ATL

Amazon Air launched its cargo service in ATL in 2019. The service added capacity for one-day and two-day Amazon package delivery to the region. As of August 2021, Amazon Air operates three daily flights in and out ATL.

Source: *The Atlanta Journal-Constitution* and CNBC.

¹⁴ Federal Aviation Administration (2022, August 30). Calendar Year 2021 All-Cargo Landed Weight, Rank Order. Accessed October 2023 on https://www.faa.gov/sites/faa.gov/files/2022-08/cy21-cargo-airports_0.pdf

¹⁵ Bureau of Transportation Statistics (2022). T-100 Market Data. Accessed October 2023 on https://www.transtats.bts.gov/DL_SelectFields.aspx?gnoyr_VO=FMF&OO_fu146_anzr=Nv4%20Pn44vr45

¹⁶ Hayward, J. (2022, May 16). Why Atlanta Is the World's Busiest Airport. *Simple Flying*. <https://simpleflying.com/atlanta-worlds-busiest-airport/>

¹⁷ Shiphub. *Top 50 Cargo Airports 2022*. <https://www.shiphub.co/top-50-cargo-airports-2022/>

demand. In response to the future cargo facility needs, ATL has been undergoing a series of expansions to add 1) a truck staging area, 2) cargo aircraft and vehicle parking spaces, and 3) up to 1 million square feet of warehouse space, of which the truck staging area was completed in 2021¹⁸⁻¹⁹ ATL is in the process of updating its Master Plan, which might include additional cargo facility upgrades and expansion plans for the future.

Table 10: ATL Cargo Facilities

Cargo Facility	Area (Square Feet)
Cargo Building	2,000,000
Aircraft Apron	1,800,000
Vehicle Parking	930,000
Truck Dock	665,000
Other	1,000,000

Source: GDOT (2022). *Georgia Statewide Air Cargo Study Technical Report*.

Several factors make Atlanta an air cargo hub. The airport handles a diverse range of commodities and serves as a merchandise processing port for customs. Its strategic location allows it to reach 80 percent of the U.S. market within a two-hour travel time. The airport's infrastructure, including its layout with five parallel runways, contributes to its operational efficiency. In terms of warehousing, there are South and North cargo facilities, with plans for expansion to create more capacity. In November 2019, a Cargo Community System was implemented in ATL, which includes the "TRUCKPASS" system. This system shortens dwelling time at truck docks and makes the cargo pick-up more effective and efficient by staging trucks at waiting areas until they are notified for their turns to proceed to designated cargo processing areas.

There is a relatively small number of all cargo aircraft operations at ATL, and most cargo travels as belly cargo, which is cargo transported in the holds of passenger aircraft.

Gwinnett County Airport (LZU)

Gwinnett County Airport, or Briscoe Field (LZU), is a general aviation airport located 2 miles northeast of Lawrenceville, Georgia, and approximately 15 miles northeast of Atlanta.²⁰ LZU is equipped with one 6,000-foot asphalt runway.²¹ The cargo service at the airport is primarily for medical and pharmaceutical products. Quest Diagnostics, a clinical laboratory company, maintains a base and operates flights

¹⁸ City of Atlanta, Department of Aviation (March 2015). *Hartsfield-Jackson Atlanta International Airport: Master Plan Executive Summary*. https://www.atl.com/wp-content/uploads/2016/12/ATL_ExecSumm_2015_101415_Spreads.pdf

¹⁹ King, L. (2017, February 22). Atlanta airport adding 1 million square feet of warehouse space. *Cargo Facts*. <https://cargofacts.com/allposts/capacity-demand/atlanta-airport-adding-1-million-square-feet-of-warehouse-space/>

²⁰ GDOT (2022). *Georgia Statewide Air Cargo Study Technical Report*. https://www.dot.ga.gov/InvestSmart/Aviation/Documents/AirCargo/TechnicalReport_AirCargoStudy.pdf

²¹ Federal Aviation Administration. The Airport Data and Information Portal. <https://adip.faa.gov/agis/public/#/public>

transporting time- and temperature-sensitive items, such as laboratory test samples, medical materials, and radiopharmaceuticals, at LZU.²²

Port Facilities

Coastal Ports

Port of Savannah

The Port of Savannah is the fastest-growing container port in America with plans to significantly expand its capacity in the next two to three years. The Port is comprised of two terminals and 14 berths in total (Table 11). In addition to serving the State of Georgia, the Port is connected to major markets along the east and southern coasts like Charlotte, Birmingham, and Orlando through multiple rail and road connections. NS and CSX provide switching services on both terminals, serve the Chatham Intermodal Facility, and provide on-dock rail service. Furthermore, both terminals within the Port are connected to I-95 in less than 10 miles, as well as I-16 and I-516, allowing for significant levels of daily truck traffic to enter and exit the port. The Port services upwards of 12,000 trucks per day and 5.8 million twenty-foot equivalent units²³ (TEU) annually, expected to grow with upcoming expansion projects.²⁴

Garden City is the largest of the two terminals, now the largest in the country, handling containers and serviced by both railroads and one transload facility. In 2021, the Georgia Ports Authority (GPA) approved a \$205 million expansion that would increase capacity at the terminal by 20 percent. The project included the renovation of Berth 1, increasing container capacity by a further 1 million TEUs. This has been supplemented in 2022 by efforts for the Savannah Harbor Expansion Project. The project dedicated \$706 million to dredging and terminal expansions to accommodate new Panamax ship sizes traveling through the expanded Panama Canal. The project included dredging the Savannah River to a standard 47-foot depth and enlarging the Kings Island Turning Basin at the Garden City Terminal.

²² Federal Aviation Administration. The Airport Data and Information Portal. <https://adip.faa.gov/agis/public/#/public>

²³ A TEU (twenty-foot equivalent unit) is a measure of volume in units of twenty-foot long containers.

²⁴ Georgia Ports Authority (2023, May). Port of Savannah, By the Numbers. Accessed December 2023 on <https://gaports.com/wp-content/uploads/2023/05/CY22-Annual-Container-Trade.pdf?1702395086>

Table 11: Port of Savannah Terminal Capabilities

Terminal	Number of Berths	Cargo Handled	Equipment, Services, and Storage	Road Connections
Garden City Terminal	9	Containers	34 container cranes, 44 forklifts up to 50,000 lbs., 1.1 million sq ft warehousing, 471 acres paved storage area	I-16, I-95
Ocean Terminal	4	Containers, breakbulk, Ro/Ro, heavy-lift, project cargo	99 acres paved open storage, gantry crane, container crane, barge crane, mobile harbor crane, 1.3 million sq ft warehousing, 22 forklifts up to 70,000 lbs.	I-516, I-95

Source: Georgia Ports Authority (2023, August 25). Port of Savannah receives four new electric ship-to-shore cranes. <https://gaports.com/press-releases/port-of-savannah-receives-four-new-electric-ship-to-shore-cranes/>; Georgia Ports Authority (n.d.). Port of Savannah: Garden City Terminal. <https://gaports.com/facilities/port-of-savannah/garden-city-terminal/#container-cranes>; Georgia Ports Authority (n.d.). Port of Savannah: Ocean Terminal. <https://gaports.com/facilities/port-of-savannah/ocean-terminal/>

In addition to the now complete Harbor Expansion Project, GPA made \$1.9 billion available for the Mason Mega Rail Terminal Project that increased the number of working tracks from eight to 18. The 120,000 feet of track added in April 2023 doubled the Port's rail lift capacity and allows the terminal to serve customers across the South and Midwest. The Mason Mega Rail Terminal is now the largest on-terminal intermodal facility in North America.²⁵

Port of Brunswick

The Port of Brunswick along the Turtle and East Rivers is comprised of three-vessel terminals with six berths total (Table 12). The Port is primarily used for automotive trade and processing, with the Colonel Island Terminal ranking among the nation's largest auto processing facilities, with three auto processing companies on-site. More broadly, the Port of Brunswick is the country's second busiest in terms of import and export Ro/Ro cargo. Ro/Ro cargo refers to roll-on/roll-off cargo that is non-containerized and requires a ramp and wheels to be loaded onto a vessel. This service is only offered at the Colonel's Island Terminal. All three terminals are served by I-95 and two Class I rail lines: CSX and NS. The Port's specialized services have made it a crucial point of entry for foreign auto imports, particularly those from Mexico. Between 2022 and 2023, Ro/Ro cargo has increased by 19 percent at the Port, handling 52,000 units of Ro/Ro cargo within the year.²⁶ To accommodate growing volumes in all cargo types, the Port of Brunswick is undergoing improvements totaling \$262 million that is dedicated to increased auto and machinery processing space and warehousing.²⁷

²⁵ Georgia Ports Authority (2023, April 10). Growing Big - Mason Mega Rail. Accessed December 2023 on <https://gaports.com/blog/growing-big-mason-mega-rail/>

²⁶ Marsh, J. (2023, March 14). February still busy for Georgia Ports despite year over year sequential dips. *FreightWaves*. <https://www.freightwaves.com/news/february-still-busy-for-georgia-ports-despite-year-over-year-sequential-dips>

²⁷ Georgia Ports Authority (n.d.). Port of Brunswick. Accessed December 2023 on <https://gaports.com/facilities/port-of-brunswick/>

Table 12: Port of Brunswick Terminal Capabilities

Terminal	Number of Berths	Cargo Handled	Equipment, Services, and Storage	Road Connections
Colonel's Island	3	Automotive, Ro/Ro, project cargo	Auto processing paved open storage	I-95, US 17, I-10
Mayor's Point	1	Breakbulk	350,000 sq ft shed storage, paved open storage, forklifts up to 15,000 lbs.	I-95
East River	2	Dry bulk, liquid bulk	688,000 sq ft warehouse storage, paved open storage	US 17, I-95

Source: Georgia Ports Authority (n.d.). Port of Brunswick.

Inland

Appalachian Regional Port

The Appalachian Regional Port is located in Murray County and acts as an inland rail terminal to service CSX lines and Appalachian markets connected to Northwest Georgia. Through the CSX connection and proximity to I-75, the port services trucks and rail moving through the Port of Savannah's Garden City Terminal. The 42-acre terminal has three working rail tracks with rail service every other day. The facility includes storage for 2,635 daily TEU import and export capacity, allowing for 75,000 containers to be transported through the facility annually. The addition of the facility resulted in the offsetting of 710 truck miles per round-trip container moved through the port.²⁸

Northeast Georgia Inland Port

In 2018 GPA announced plans to develop an inland port in Hall County in Northeast Georgia. The port will be located along SR 365 and a direct rail route through NS lines to the Garden City Terminal at the Port of Savannah. The Northeast Georgia Inland Port will allow containers to be moved to the coast with greater cost and time efficiency, particularly empty containers that currently travel the 600-mile trip by truck. The terminal will cover 104 acres and be a distribution hub for the region, which has strong manufacturing and food production sectors. The terminal will also be supported by a distribution and fulfillment center operated by Auto Metal Direct, bringing 40 extra jobs to the facility.²⁹ The facility and associated distribution centers are expected to open by 2026.

Truck Parking Facilities

The truck parking facilities in Metro Atlanta can be categorized into the following types:

- **Public Truck Parking Facilities** include facilities under the GDOT's control, such as rest areas, weigh stations, and state welcome centers (see Appendix G for the inventory).

²⁸ Georgia Ports Authority (n.d.). Appalachian Regional Port. Accessed December 2023 on <https://gaports.com/facilities/inland-ports/appalachian-regional-port/?1702351723>

²⁹ Georgia Ports Authority (2018, December). Georgia announces new inland terminal location. Accessed December 2023 on <https://gaports.com/press-releases/georgia-announces-new-inland-terminal-location/>

- **Privately Owned Truck Parking Facilities** encompass major private facilities with amenities, including truck stops and commercial transport services used for short truck driver rests or single-night truck parking. The three major privately owned truck stop companies are Pilot/Flying J's, Love's, and TA TravelCenters/Petro (see Appendix H for the inventory).
- **Industrial Outdoor Storage Sites** include sites with their primary use being multiday storage of tractors, trailers, RVs, boats, and assorted types of industrial equipment (see Appendix I for the inventory).

Table 13 provides a high-level summary of the facilities in and around Metro Atlanta.

Table 13: Truck Parking Facilities Fast Facts

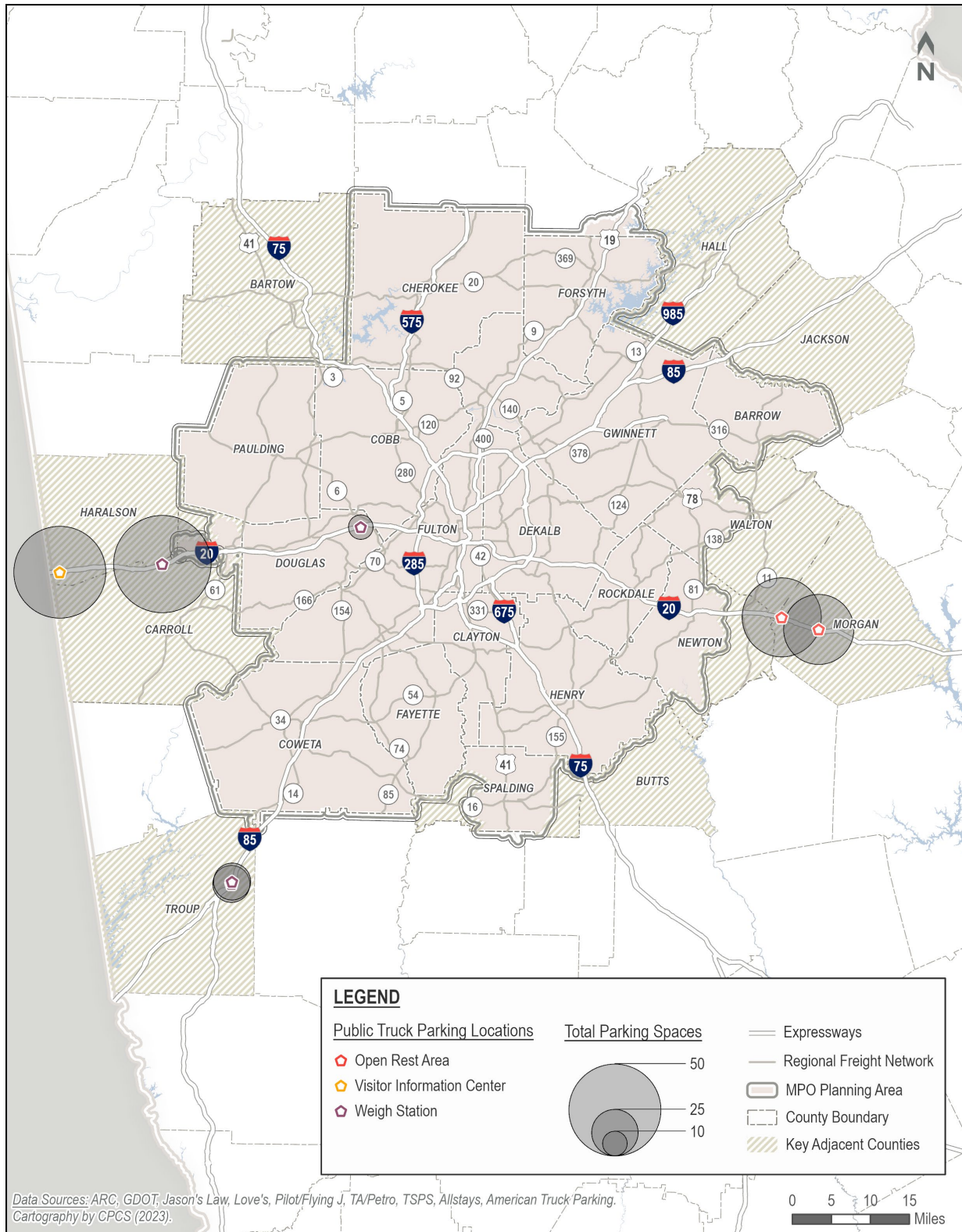
Area	Number of Sites		Number of Spaces	
	MPO Area	Adjacent Counties	MPO Area	Adjacent Counties
Public Truck Parking Facilities	1	6	13	224
Privately Owned Truck Parking Facilities	17	31	1,365	2,367
Industrial Outdoor Storage Sites	35	4	3,588*	261*

Source: ARC, GDOT, Store My Truck (as of 7/13/2023), Allstays, American Truck Parking, Google Maps, Google Streetview. *The number of spaces for the industrial outdoor storage sites is estimated based on the square footage of the space available.

Public Truck Parking Facilities

There is one public truck parking site within the ARC boundary. The site is located on I-20 in Douglas County (GDOT Weigh Station Region 3 East) and provides 13 parking spaces. Additionally, there are six public truck parking sites in the adjacent counties providing 224 parking spaces, including the Georgia Visitor Information Center in Haralson County, GDOT Open Rest Area 52 and 53 in Morgan County, GDOT weigh station in Carroll County (Region 3 West), as well as two GDOT weigh stations in Troup County (Region 5 North and South). Figure 9 shows the public truck parking facilities in the region, with two facilities in Troup County, GA Weigh Station Region 5 South and North, closely located with each other.

Figure 9: Public Truck Parking Facilities in the Region, 2023



Privately Owned Truck Parking Facilities

Metro Atlanta is served by 17 privately owned truck parking facilities, totaling 1,365 truck parking spaces. Another 31 privately owned truck parking facilities are offering 2,367 truck parking spaces in the adjacent counties (Figure 10). Most of the truck parking spaces are on the west and south sides of the region.

According to the American Transportation Research Institute (ATRI), insufficient truck parking ranks as a major concern for truck drivers.³⁰ ARC estimates that the region saw a surge of approximately 156,000 jobs between 2018 and 2023, marking a 4.2 percent increase from 2018.³¹ Strikingly, truck parking availability in the Atlanta region has diminished since 2018, even though neighboring counties have seen a slight uptick in the number of truck parking spaces. With projections indicating the potential addition of nearly 889,000 total jobs by 2050, a 23 percent increase from 2023 figures, the truck parking scarcity may exacerbate further. Table 14 and Figure 11 show changes in privately owned truck parking facilities since 2018.

³⁰ ATRI. Critical Issues in the Trucking Industry, 2022. Accessed July 2023 on <https://truckingresearch.org/wp-content/uploads/2022/10/ATRI-Top-Industry-Issues-2022.pdf>

³¹ ARC. Population and Employment Forecasts. Accessed July 2023 on <https://atlantaregional.org/atlanta-region/population-employment-forecasts/>; 2015-2023 employment was extrapolated based on 2015 and future year projections.

Table 14: Changes in Privately Owned Truck Parking Facilities, 2018-2023

Name	Location	County	Status since 2018	Change in Spaces in the Database since 2018
Love's	1500 Monticello Road, Madison, GA	Morgan	Opened in 2021.	+108
JP Travel Center	2781 GA-16, Jackson, GA	Butts	Opened in 2020.	+90
Circle K	1810 Dry Pond Road, Jefferson, GA	Jackson	Opened in 2021.	+28
RaceTrac	1211 Thornton Rd, Lithia Springs, GA	Douglas	Purchased/renovated in 2018.	+24
TA Express Travel Center	I-85 Exit 6, 300 Kia Blvd, Lithia Springs, GA	Troup	Opened in 2020.	+23
Chevron	2964 Moreland Ave, Atlanta, GA	Fulton	Did not allow truck parking/did not have trucks parked there until 2018.	+13
QuikTrip	3522 White Sulphur Rd, Gainesville, GA	Hall	Opened in 2021.	+10
Capital Fuels	2338 Sullivan Rd, College Park, GA	Fulton	The location has been here since 2013 but was not included in the 2018 inventory.	+3
Chevron	3850 Flat Shoals Road, Union City, GA	Fulton	Does not have truck parking spaces.	-2
Citgo	3097 Moreland Avenue, Conley, GA	Clayton	Does not have truck parking spaces.	-4
BP	5198 Hwy 85, Forest Park, GA	Clayton	Does not have truck parking spaces.	-5
Sunoco	3845 Browns Bridge Road, Cumming, GA	Forsyth	Closed and demolished.	-5
Circle K	5646 Highway 20 SE, Cartersville, GA	Bartow	Parking converted to McDonald's.	-6
Marathon	7512 Lee Rd, Lithia Springs, GA	Douglas	Renovated in 2018 and removed parking.	-20
Citgo	4590 Fulton Industrial Blvd, Atlanta, GA	Fulton	Does not have truck parking spaces. The area where trucks could park is fenced off.	-25
All American Truck Stop	7740 GA 140, Adairsville, GA	Bartow	Out of business	-70

Source: ARC, GDOT, Jason's Law, Love's Pilot Flying J, TA/Petro, TSPS, Allstays, American Truck Parking.

Figure 10: Privately Owned Truck Parking Facilities in the Region, 2023

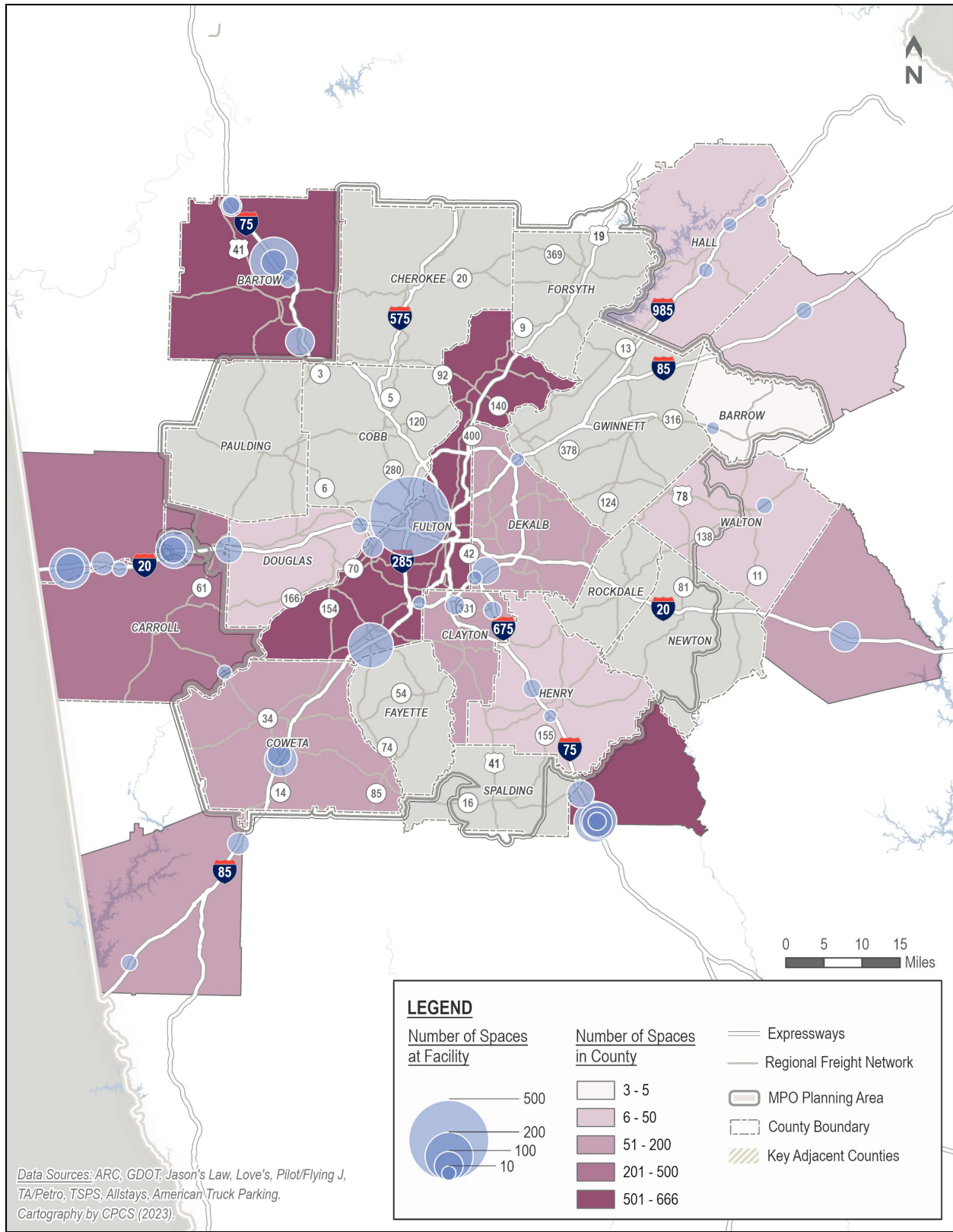
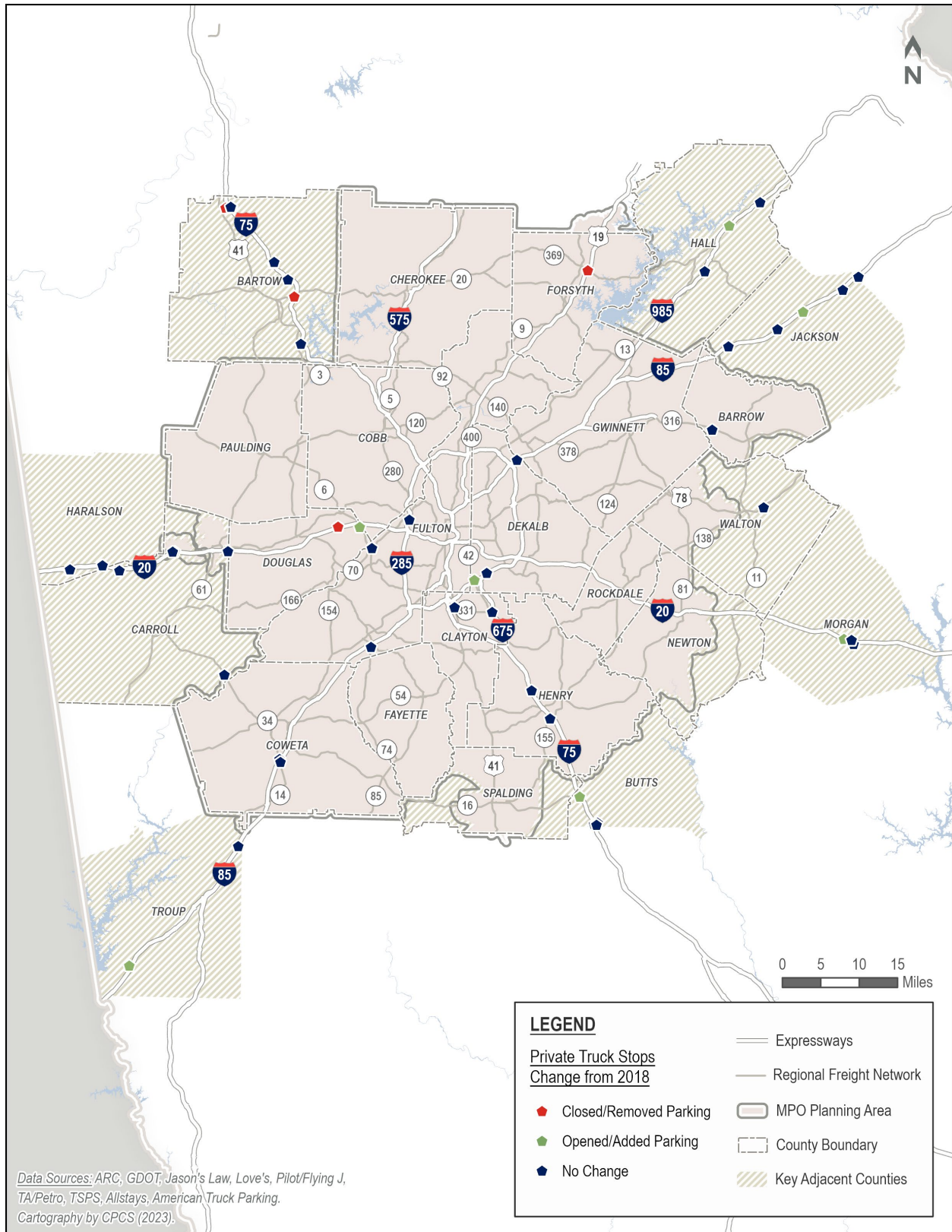


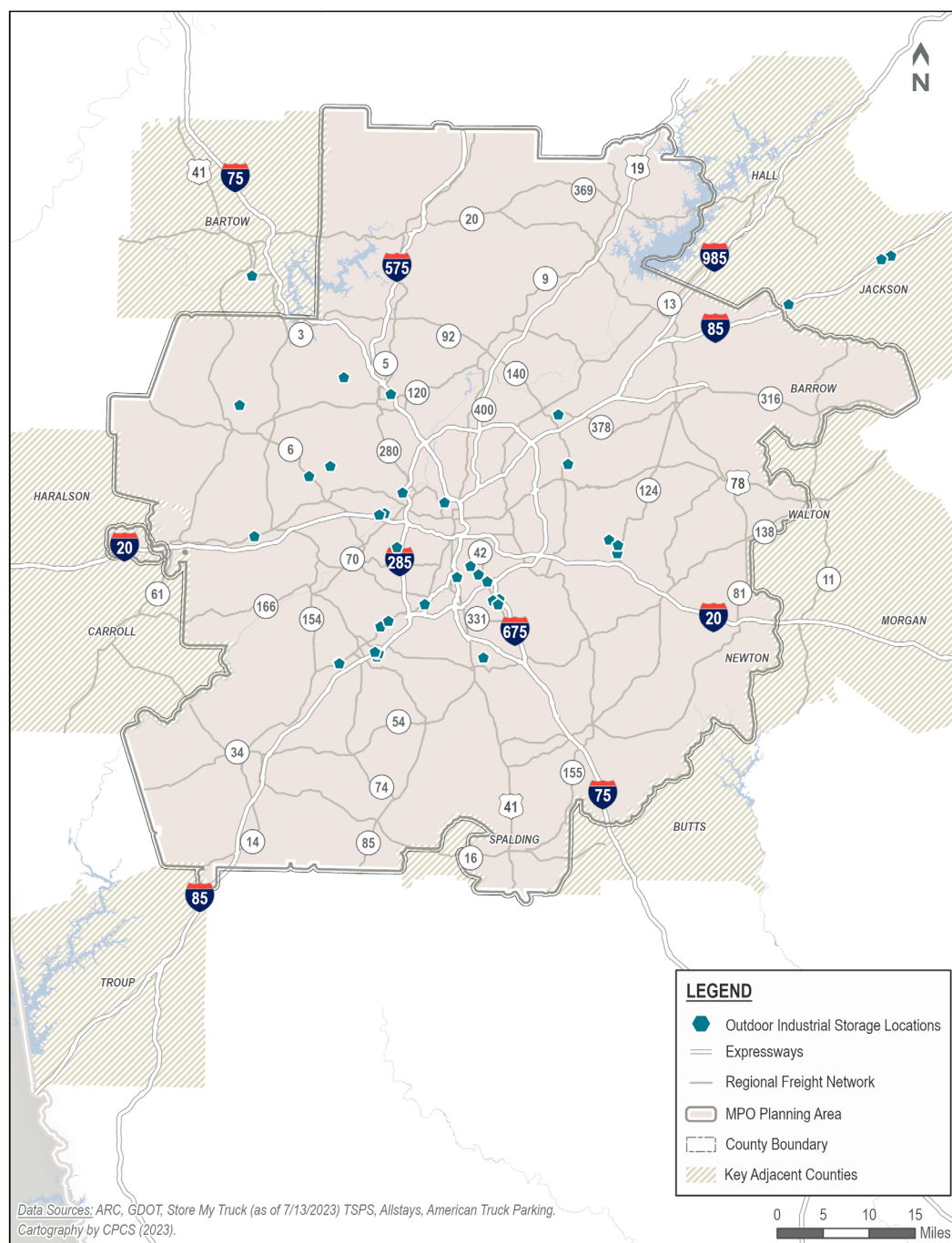
Figure 11: Changes in Privately Owned Truck Parking Facilities, 2018-2023



Industrial Outdoor Storage Sites

There are 35 industrial outdoor storage sites and four in adjacent counties, as shown in Figure 12. This information represents the most complete data available at the time this report was written and is not meant to be a comprehensive list of all industrial outdoor storage sites in the region. These locations are typically smaller than a conventional truck stop and may be independently owned, making it challenging to develop a comprehensive inventory.

Figure 12: Industrial Outdoor Storage Sites in the Region, 2023



Truck Parking Utilization

The 2021 GDOT Georgia Statewide Truck Parking Research Project analyzed the utilization rates at 28 public truck parking sites in September 2020. The analysis did not include the one site in the MPO region. Additionally, the utilization data was collected over a period of 48 hours in September 2020 and therefore has limitations in reflecting the utilization rates during other times of the year. It is important to note that the data collection occurred during the COVID-19 pandemic, which may have impacted truck parking patterns and utilization rates, potentially affecting the representativeness of the analysis results. Table 15 lists the truck parking utilization rates at three public parking sites in the key adjacent counties. The utilization rates exceeded the capacities of all three parking facilities (182 percent, 135 percent, and 132 percent) at their busiest. The average utilization rate remained under 100 percent at the two GDOT Open Rest Areas but reached 129 percent at the Georgia Visitor Information Center in Tallapoosa, signaling severe overutilization.

Table 15: Public Truck Parking Site Utilization Rates—ARC and Adjacent Counties (2020)

Site Name	Total Truck Parking Spaces	Highest Utilization Rate for Truck Parking	Average Utilization Rate for Truck Parking	Percentage of Time Interval when Truck in-Use Exceeds Max Truck Parking Spaces
Georgia Visitor Information Center - Tallapoosa	50	182%	129%	61%
GDOT Open Rest Area 52	43	135%	56%	17%
GDOT Open Rest Area 53	38	132%	66%	25%

Source: GDOT, Georgia Statewide Truck Parking Research Project, Technical Report Rest Area and Visitor Center Traffic Counts and Parking Occupancy Analysis February 2021.

Potential Solutions for Alleviating Truck Parking Needs in the Atlanta Region

The region faces a difficult challenge in solving the truck parking problem, as there are few available spaces and little interest in allowing truck parking facilities to be constructed, as well as many stakeholders involved. A multifaceted approach might help to tackle the problem, and some possible solutions to improve the situation are described in the following paragraphs:

- Mapping of Potential Underused Land Areas:** Further analysis could be done to map out public-owned underused land that could be potentially utilized for truck parking facilities. Publicly owned land that is suited for truck parking in the right areas—for example, adjacent to current truck stops or not adjacent to residential land—could be attractive to truck stop operators. Truck stop owners could be given incentives to develop such land into truck parking.
- Information Sharing and Best Practices:** ARC could compile and disseminate best practices for truck parking infrastructure, including pavement standards and truck parking information systems. As part of this project, ARC will be developing a model truck parking ordinance that can be used by local governments to create their own ordinances.

- **Community Engagement and Zoning:** Engaging with communities and updating zoning codes are essential steps in aligning trucking interests with the needs of different jurisdictions. Many communities have recognized the need to update their codes, presenting an opportunity to advocate for assistance with truck parking. ARC could collaborate with county and state economic development agencies, as well as organizations like Georgia Department of Economic Development, to facilitate PPPs for truck parking initiatives. Cities, such as the City of Weed, CA, Moreno Valley, CA, and Elmira, NY, were able to successfully use the land that was zoned for industrial land use for truck parking lots.
- **Addressing Regulatory Challenges:** ARC could facilitate addressing challenges that arise from regulations, such as the number of permits for fuel and truck parking facilities, as well as restrictive zoning laws that limit the locations of these facilities, to encourage more public and private entities to develop more truck parking.

Intermodal Connectors

Intermodal connectors are designated public roads serving as key linkages between major intermodal terminals and other parts of the NHS. Although intermodal connectors only make up less than one percent of the NHS, they are crucial to the first- and last-mile goods movements. Table 16 lists the details of the freight-serving intermodal connectors in the ARC region. Figure 13 maps the intermodal connectors and the facilities they serve.

Table 16: Intermodal Connectors in the ARC Region

Rank	Facility	Type	Connector Description	Length (Miles)*
1	Colonial Pipeline, Griffin	Truck/Pipeline Terminal	From SR-3/US 19: E 0.4 mi on East McIntosh Rd, N 0.4 mi on Old Atlanta Rd, E 1.3 mi on McIntosh Rd	2.1
2	Griffin Norfolk Southern Rail Yard	Truck/Rail Facility	From SR-3/US 19 and 41 in Spalding Co. east on SR-16 to Griffin CS-069605 to the railyard, then along SR-16 to I-75 exit 205 in Butts Co.	12.98
3	Fairfax CSX Industry Yard, Fairburn	Truck/Rail Facility	From I-85, NW 1.12 mi on SR-74).10 mi on CS 406809, and SW 1.24 on CR-633 (McLarin Rd) to the Fairburn CSX Industry Yard	1.81
4	Norfolk Southern Rail Forest Park	Truck/Rail Facility	From I-75 take the Forest Pkwy., exit to the Rail Yard at Kennedy Rd	1.73
5	Atlanta Hartsfield International Airport	Airport	1. I-85 exit 18-A, NE 1.25 mi on Cr 2045; and 0.41 mi on CS 800111 to the N Cargo Building 2. I-75 exit 82, W 0.07 mi to Aviation Blvd (CR 1516), N 0.7 mi on CR 1568, and 0.68 mi on CS 800111 to N Cargo Building 3. I-75 exit 83, 0.41 mi on CR 2206 and 1.21 mi on CR 1516 to South Cargo Terminal	4.73
6	Norfolk Southern Industry Yard, East Point	Truck/Rail Facility	From Lakewood Freeway (SR 166), S 0.1 mi on Sylvan Rd (CS 235303), and W 0.34 mi on Lakewood Ave (CS 126303) to the terminal gates	0.4
7	Atlanta Hulsey Rail Yard	Truck/Rail Facility	From I-20(ex 26): north 0.5 miles on Boulevard to the entrance of the truck/rail facility	0.5
8	Howell CSX Rail Yard	Truck/Rail Facility	From I-75 exit 252B take the Howell Mill Rd to the CSX Rail Yard at Chattahoochee Ave	0.69
9	Atlanta Inman Rail Yard	Truck/Rail Facility	From I-285: S 1.3 mi on S. Cobb Dr and SR 280, NE 1.0 mi on Bolton Rd, SE 2.3 mi on Marietta Rd	4.53
10	Chattahoochee Colonial Pipeline, Atlanta	Truck/Pipeline Terminal	From S. Cobb Dr and SR 280: S 0.9 mi on Bolton Rd, N 0.2 mi on Parrot Avenue	1.1
11	Norfolk Southern Whitaker Intermodal Facility	Truck/Rail Facility	From I-20 take the North Thornton Rd (SR-6) exit to Westside Dr (SR-6 Spur) to the entrance to the rail yard.	0.45
12	Doraville Colonial & Plantation Pipeline	Truck/Pipeline Terminal	From I-285, Exit 25 N on Buford Highway (SR 13) 0.3 mi to Longmire Way, left 0.2 mi to Winters Chapel/Flowers Rd, left and right to rail, truck, and pipeline gates	1.03

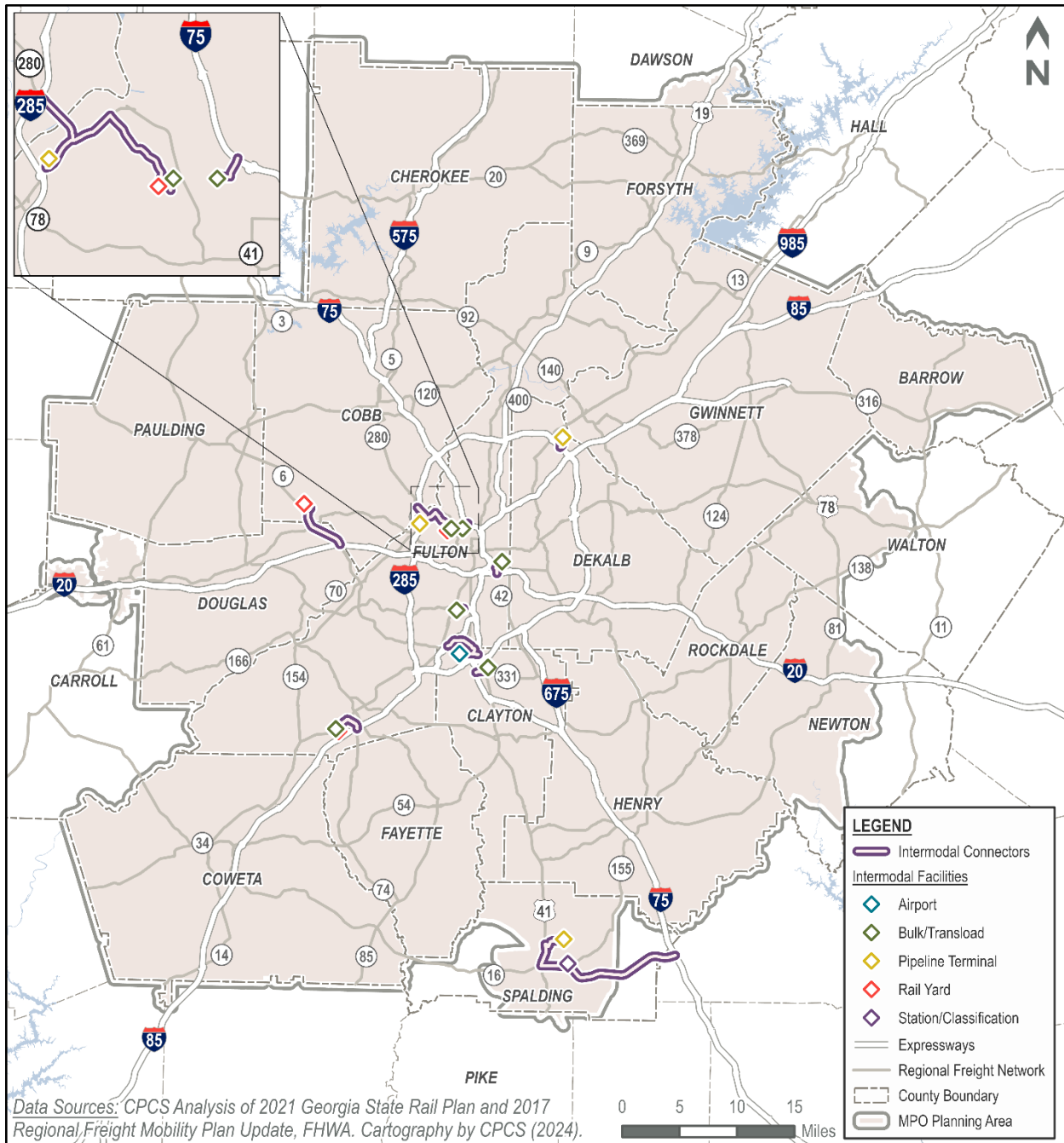
Source: FHWA National Highway System.

Note: The lengths of the intermodal connectors are based on the National Highway System dataset and are slightly different from the values reported on the FHWA website.³²

³² FHWA National Highway System. Intermodal Connectors: Georgia.

https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

Figure 13: Intermodal Connectors and Facilities



Freight Flows

Metro Atlanta-Based Commodity Flows

The commodity flow analysis utilizes two datasets: S&P Global's (formerly IHS Markit) Transearch and the FHWA Freight Analysis Framework (FAF) version 5. These two datasets cover the volume and value of commodities moved to, from, and within the ARC region during the 2019 baseline year and the 2050 forecast year. Data for rail traffic is derived from the federal Surface Transportation Board Carload Waybill Sample for 2019, aggregated and integrated into Transearch. While both Transearch and FAF5 datasets depict the domestic and international commodity flows by mode, commodity type, and direction, there are a few differences between the two in terms of the data sources, commodity codes, and trade types included. The two datasets complement each other and allow for a comprehensive look at the ARC region's freight flows. Appendix B details the differences between the Transearch and FAF5 commodity flow datasets.

Overview

Nearly 231 million tons of freight worth over \$398.5 billion moved into, out of, or within the ARC region in 2019, as shown in Table 17 and Table 18. The vast majority of this freight is moved by truck. In 2019, 83.8 percent of freight by weight was transported by a motor vehicle on roads, with the remaining 15.9 percent carried by rail, and 0.3 percent by air. Trucks also moved slightly over 60 percent of all freight by value, followed by 22.6 percent by rail and 17.3 percent by air.

Table 17: Tonnage of Freight Flows (Tons) in the Atlanta Region, 2019

Direction	Inbound		Outbound	Within	Total	Percent of Total
Truck ³³	85,876,878		44,529,072	63,099,989	193,505,939	83.8%
Rail	27,932,120		8,564,936	306,128	36,803,184	15.9%
Air ³⁴	351,503		333,130	0.0	684,633	0.3%
Total	114,160,501		53,247,138	63,406,117	230,993,756	100.0%
Percent of Total	49.4%		23.1%	27.4%	100.0%	-

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019; FHWA FAF5, 2019. The total percentages may not add to 100 percent due to rounding.

³³ The domestic and international commodity flow data for truck and rail, and the domestic commodity flow data for air, is based on S&P Global's Transearch data for the 20-county Metro Atlanta region in 2019. The international flow for truck and rail mainly refers to flows to/from other NAFTA countries, i.e., Canada and Mexico.

³⁴ The international air commodity flow data is based on FHWA's FAF5 database for the Atlanta-Athens-Clarke County-Sandy Springs, GA Commodity Flow Survey (CFS) Area, which is larger than the 20-county Metro Atlanta region used in the Transearch queries.

Table 18: Value of Freight Flows (Billions of USD) in the Atlanta Region, 2019

Direction	Inbound	Outbound	Within	Total	Percent of Total
Truck ³⁵	86.2	67.2	86.3	239.7	60.1%
Rail	55.6	33.2	1.3	90.1	22.6%
Air ³⁶	34.6	34.2	0.0	68.8	17.3%
Total	176.3	134.6	87.6	398.5	100.0%
Percent of Total	44.2%	33.8%	22.0%	100.0%	-

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019; FHWA FAF5, 2019. Total percentages may not add to 100 percent due to rounding.

Top Commodities Overview

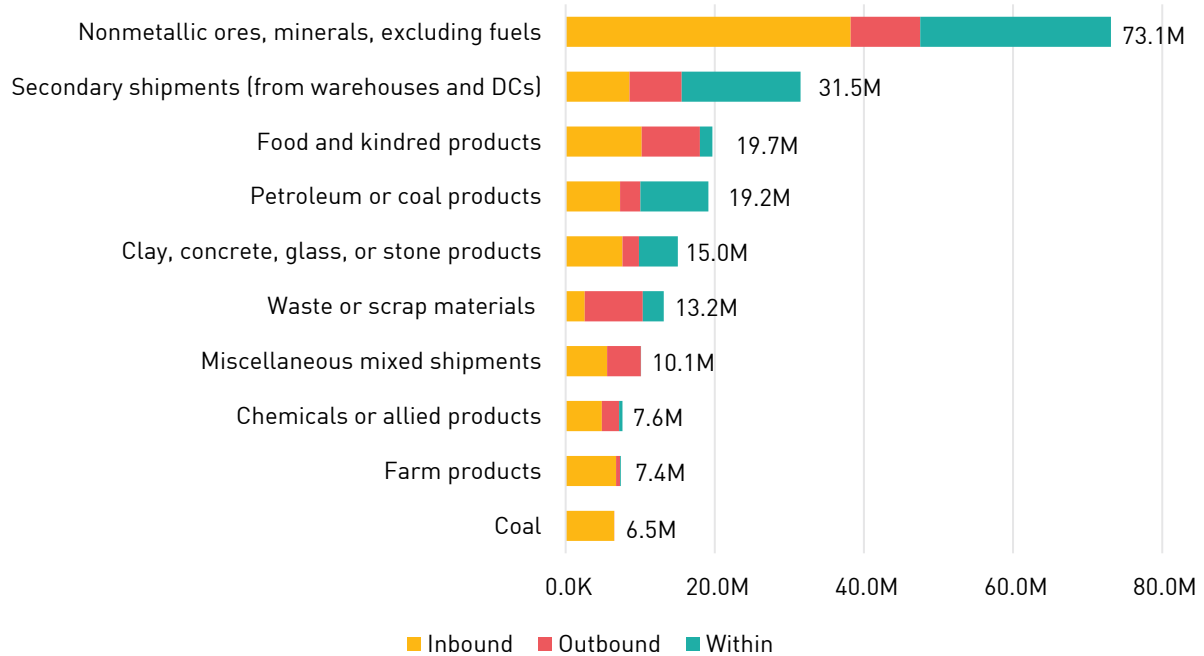
Of the 231 million tons of freight moving into, out of, or within the region, over 88 percent constituted just 10 commodity types, shown in Figure 14. The movement of nonmetallic ores and minerals alone made up nearly 32 percent of all freight travel by tonnage. Secondary shipments, including deliveries from warehouses and distribution centers and drayage moves, made up another 13.6 percent.

Figure 14 also highlights the direction in which top commodities are moving:

- Farm products and coal are mostly moved inbound.
- Large quantities of nonmetallic ores and minerals, petroleum or coal products, and clay, concrete, glass, or stone products travel inbound and within the ARC region.
- The top outbound commodities include nonmetallic ores and minerals, secondary shipments, food and kindred products, and waste or scrap materials.

³⁵ The domestic and international commodity flow data for truck and rail, and the domestic commodity flow data for air, is based on S&P Global's Transearch data for the 20-County Metro Atlanta region in 2019. The international flow for truck and rail mainly refers to flows to/from other NAFTA countries, i.e., Canada and Mexico.

³⁶ The international air commodity flow data is based on FHWA's FAF5 database for the Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area, which is larger than the 20-county Metro Atlanta region used in the Transearch queries.

Figure 14: Top 10 Commodities Moving into, out of, or within Metro Atlanta, 2019 (Tons)

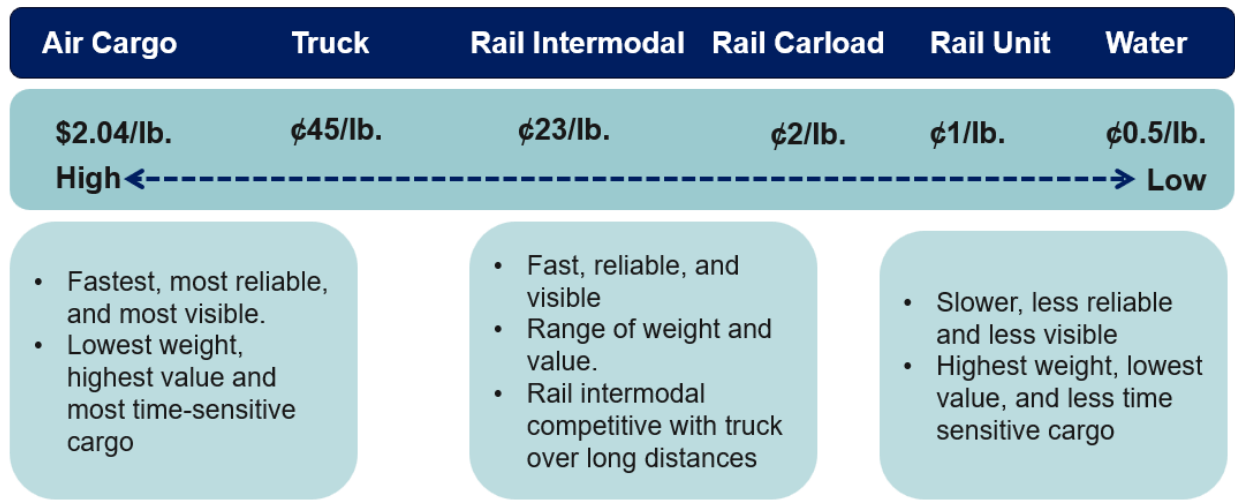
Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019; FHWA FAF5, 2019.

Note: Waste or scrap materials refers to those scrap materials not identified by the production industry. "DC" refers to distribution centers.

Factors Influencing Freight Industry Mode Choices

Cargo value and weight significantly influence transportation mode choices in the freight industry, as companies balance cost, capacity, and service level. While air cargo serves high-value, time-sensitive shipments at premium prices, and maritime transport offers low-cost, high-capacity options for bulk goods, rail and trucking occupy the middle ground (Figure 15).

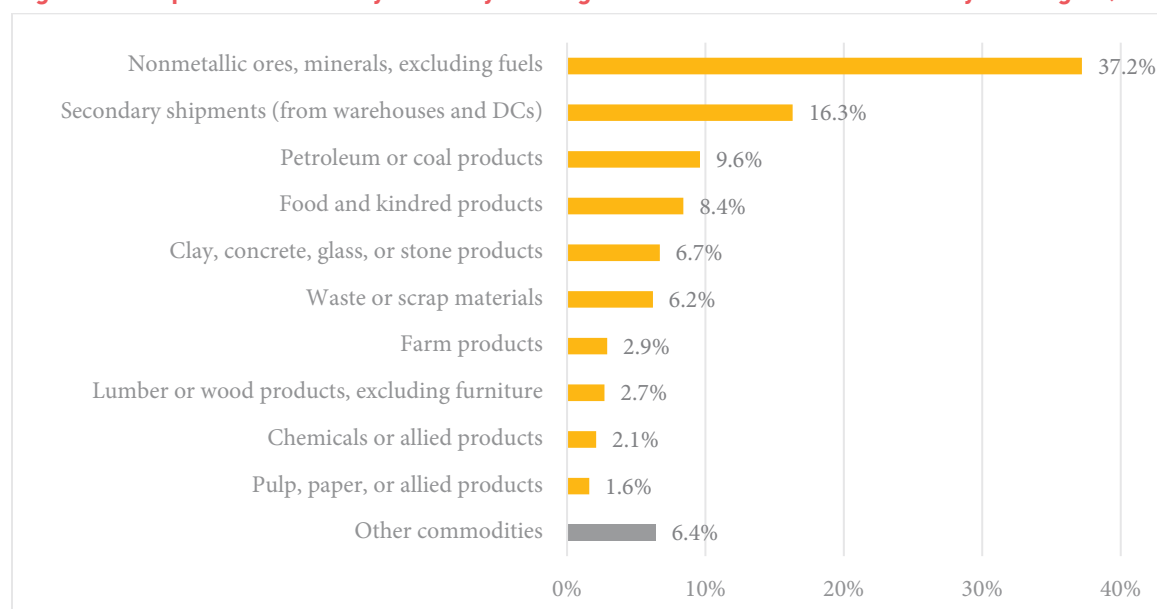
The decision between truck and rail transport depends on various factors. Rail is often more cost-effective for long-distance, high-volume shipments, but it lacks the flexibility and door-to-door service that trucks provide. Importantly, even when rail is used, trucks are typically needed for last-mile connectivity to reach final destinations like retail stores or distribution centers. This intermodal transfer adds costs and complexity. For shorter distances or when direct rail access is unavailable, trucking becomes more competitive. When evaluating a switch from truck to rail, businesses carefully consider multiple factors in their logistics chain. These include comparing overall transportation costs, assessing shipment volumes and frequencies, analyzing delivery time requirements, and accounting for the additional truck transport often needed to connect rail terminals with final destinations.

Figure 15: Freight Transportation Service Spectrum

Source: Adapted from The Geography of Transport Systems figure: Freight Transportation Service Spectrum.
<https://transportgeography.org/contents/chapter3/transport-costs/freight-transport-service-spectrum/>

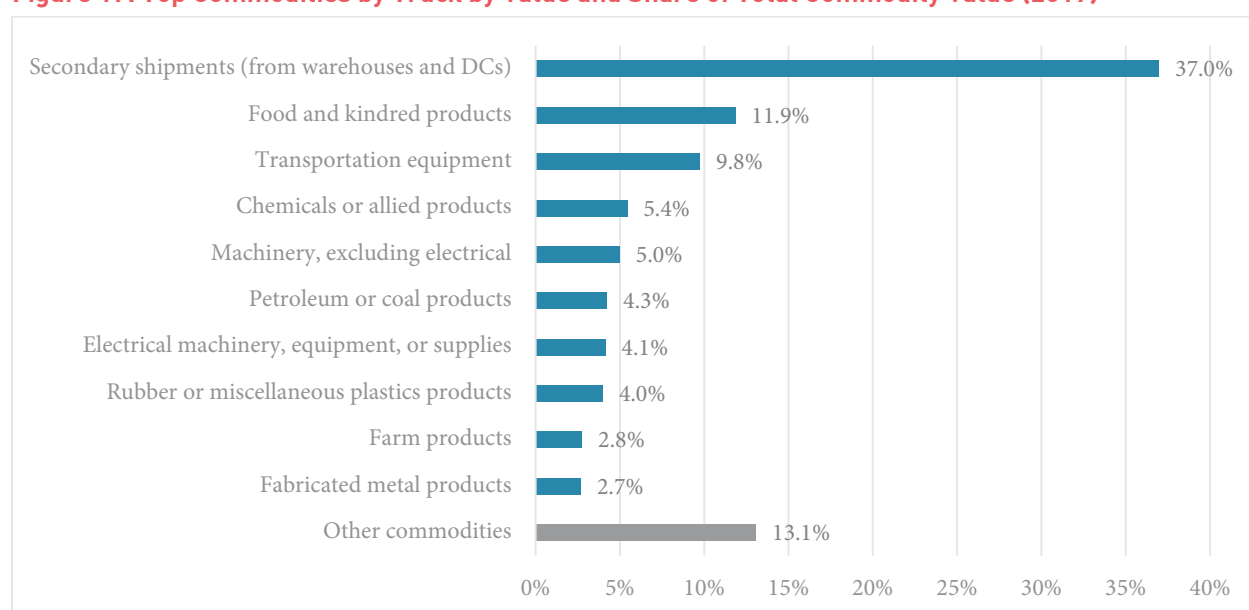
Top Commodities by Truck

Trucks primarily move nonmetallic ores, minerals (excluding fuel), secondary shipments, and petroleum or coal. More than 37 percent of the truck volume was used for transporting nonmetallic ores, and minerals (excluding fuels), totaling nearly 72 million tons. The top 10 commodities moved by truck amount to 93.7 percent of the total truck volume. Figure 16 shows the top commodities by truck by tonnage.

Figure 16: Top Commodities by Truck by Tonnage and Share of Total Commodity Tonnages (2019)

Source: S&P Global Transearch Data, 2019. Note: Waste or scrap materials refers to those scrap materials not identified by the production industry. "DC" refers to distribution centers.

By value, the top 10 commodities account for almost 87 percent of the total commodities moved by truck. Over 37 percent of the value of commodities moved by trucks is from secondary shipments, followed by food and kindred products (11.9 percent), and transportation equipment (9.8 percent). Figure 17 shows the top commodities by truck by value.

Figure 17: Top Commodities by Truck by Value and Share of Total Commodity Value (2019)

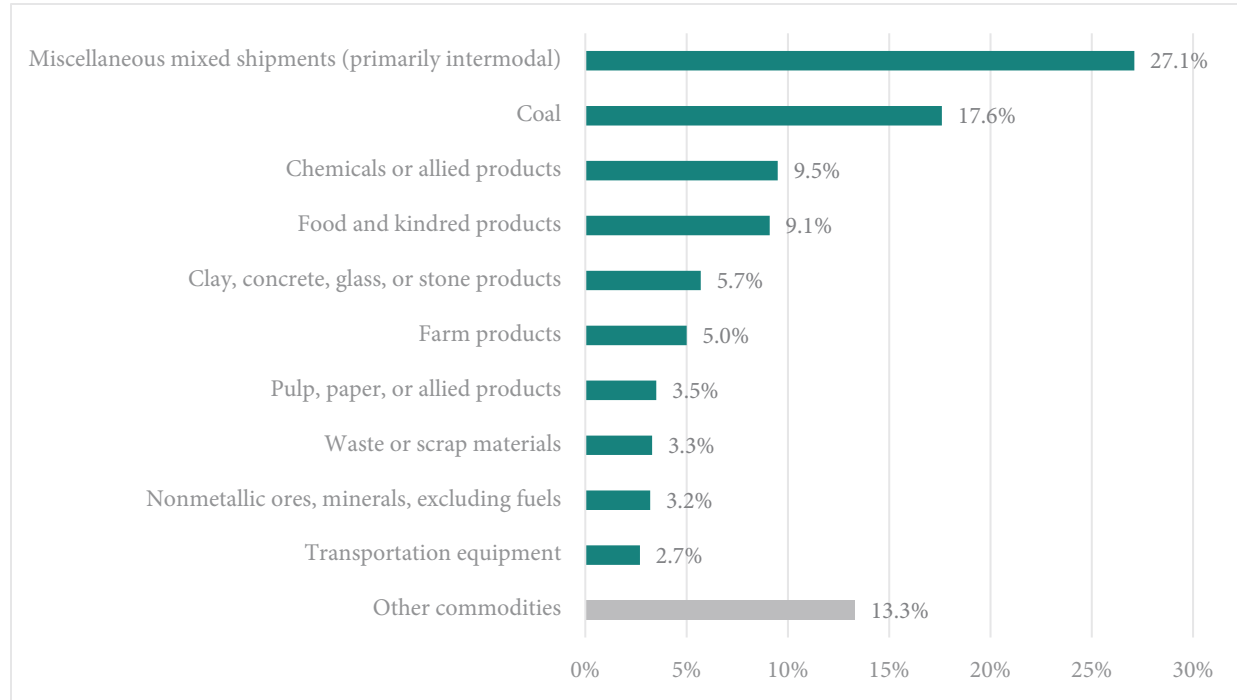
Source: S&P Global Transearch Data, 2019. Note: "DC" refers to distribution centers.

Top Commodities by Rail

The top 10 commodities moved by rail comprise 86.7 percent of the total rail volume, with miscellaneous mixed shipments, coal, and chemicals or allied products being the top three commodities by volume.

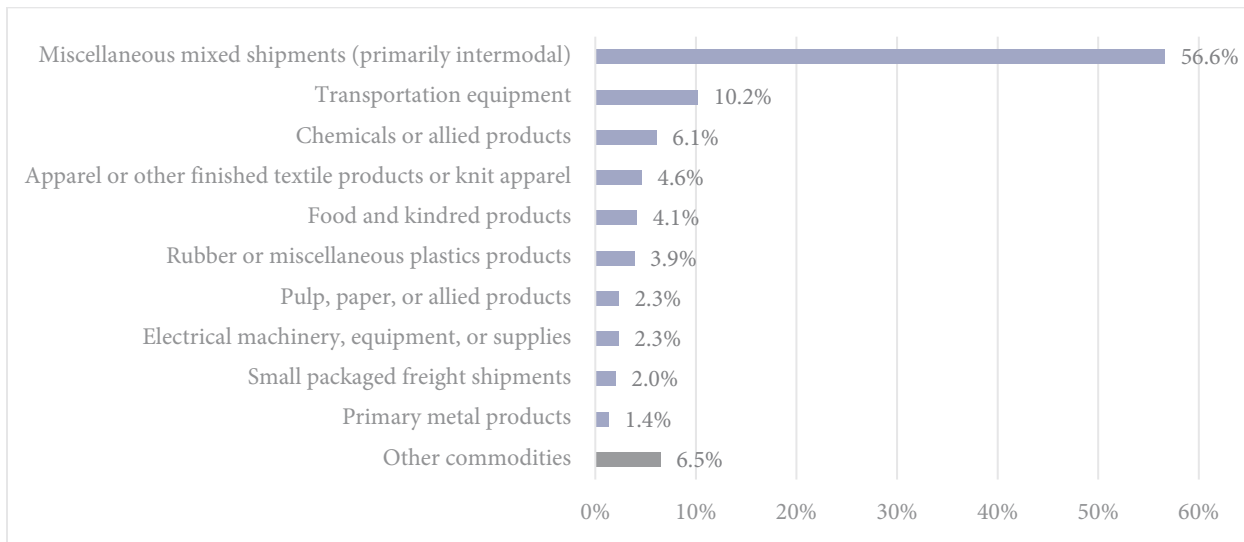
Figure 18 shows the top commodities by rail by tonnage.

Figure 18: Top Commodities by Rail by Tonnage and Share of Total Commodity Tonnages (2019)



Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data.

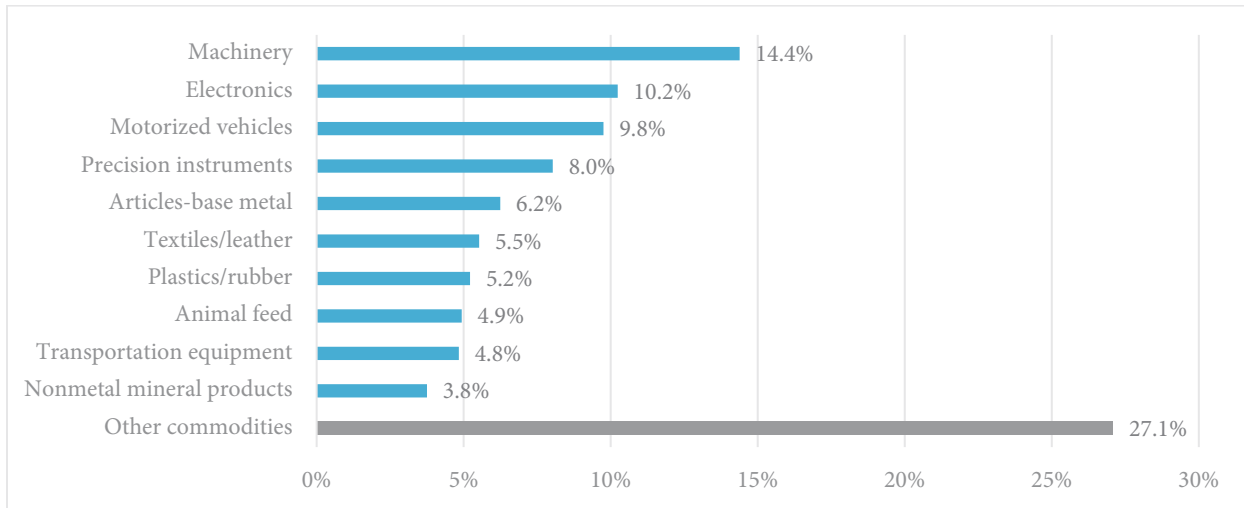
By value, the top 10 commodities account for 93.5 percent of the total commodities moved by rail. Over 56 percent of the value of commodities moved by rail is from miscellaneous mixed shipments, followed by transportation equipment at 10.2 percent. Figure 19 shows the top commodities by rail by value.

Figure 19: Top Commodities by Rail by Value and Share of Total Value (2019)

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data.

Top Commodities by Air

Air cargo moves mostly high-value and low-volume goods. The top 10 commodities moved by air comprise 73.9 percent of the total air volume, with machinery, electronics, and motorized vehicle parts being the top three commodities by volume. Figure 20 shows the top commodities by air by tonnage.

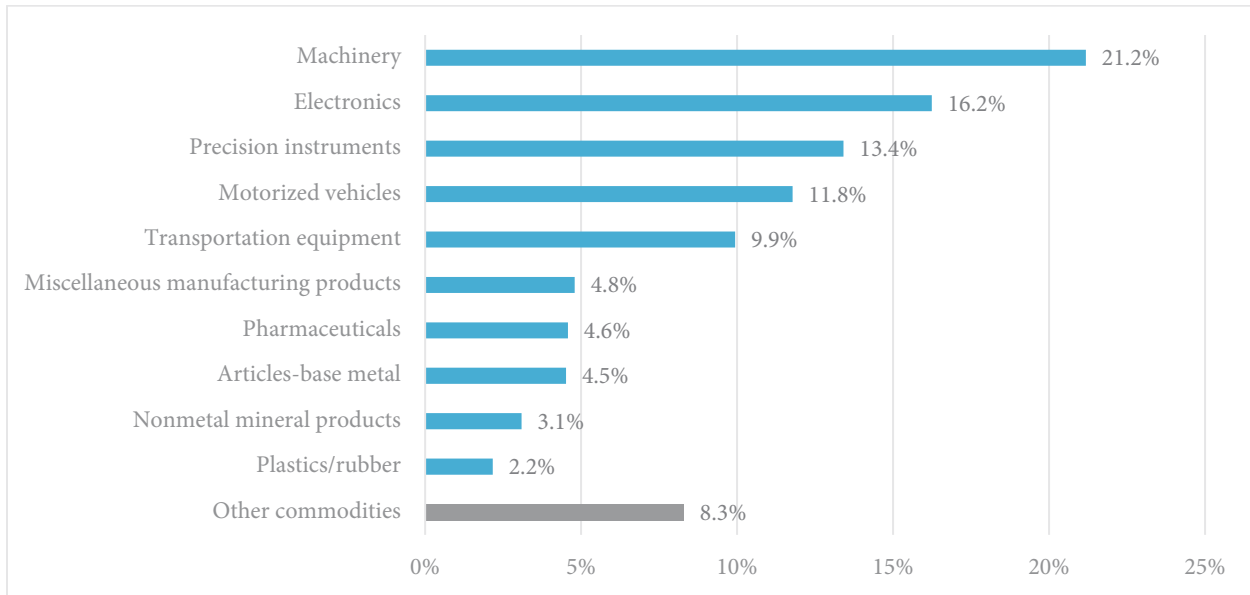
Figure 20: Top Commodities by Air by Tonnage and Share of Total Commodity Tonnages (2019)

Source: FHWA FAF5.5.1, 2019.³⁷

³⁷ The air commodity flow data is based on FHWA's FAF5.5.1 database (released July 28, 2023), for the Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area, which is larger than the 20-county Metro Atlanta region used in the Transearch queries for the other modes. The FAF database uses SCTG commodity types. The Transearch data does not have international air cargo flow data and uses STCC commodity types. By value, the top 10 commodities account for 93.5 percent of total commodities moved by rail.

The top commodities by value transported by air in the region include machinery (21.2 percent), electronics (16.2 percent), precision instruments (13.4 percent), motorized vehicle parts (11.8 percent), and transportation equipment (9.9 percent, Figure 21). The disproportional volume and value shares are primarily due to the commodities transported by air cargo being mostly high-value yet low-volume.

Figure 21: Top Commodities by Air by Value and Share of Total Commodity Value (2019)



Source: FHWA FAF5.5.1, 2019.³⁸

Top Trading Partners Overview

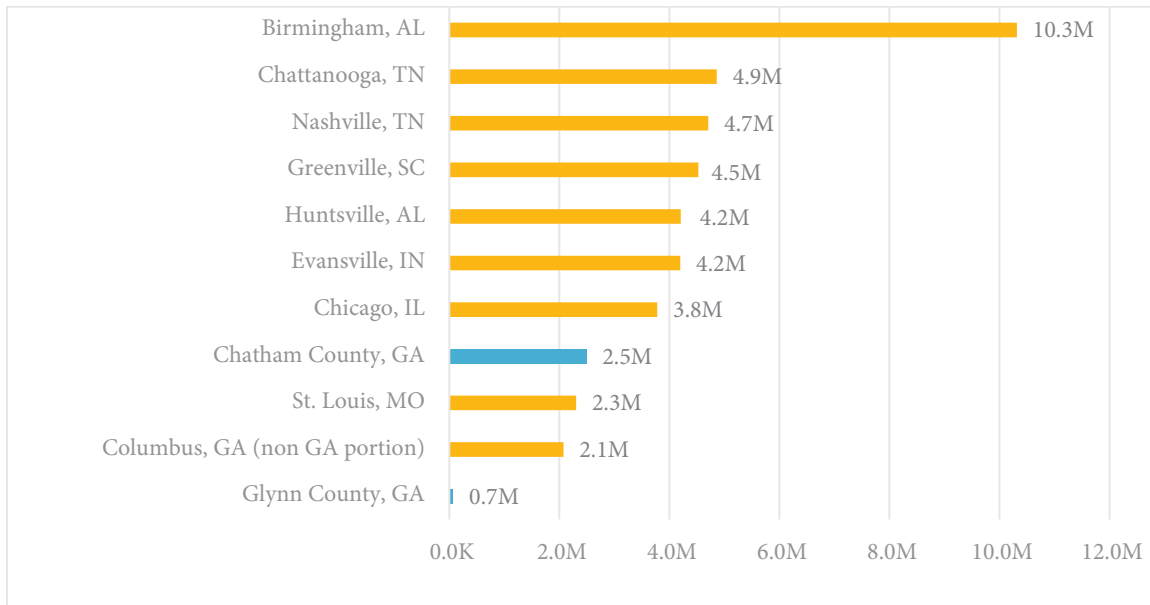
The top inbound trading partners (Figure 22) are located in neighboring states (including Alabama, Tennessee, and South Carolina) to the State of Georgia or commodity flow hubs in the Midwest.

- Birmingham, AL appears as Metro Atlanta's dominant trading partner, transporting over 10.3 million tons of cargo to the region. This is likely due to Birmingham's function as an intermodal transfer point rather than its own industrial or shipping capacities. The Norfolk Southern Birmingham Regional Intermodal Facility, a major hub on the Crescent Corridor, is located near Birmingham and serves as an eastern endpoint for goods transported via rail from the western United States, including ports such as Los Angeles/Long Beach. This facility connects goods from western rail networks, like Union Pacific or BNSF, to eastern carriers, primarily Norfolk Southern and CSX, or to trucking routes for the final leg to Atlanta. The Transearch commodity flow data used for the analysis likely captures these as direct trips from Birmingham due to the change in transportation mode at this intermodal hub, which may not reflect the full journey.

³⁸ The air commodity flow data is based on FHWA's FAF5.5.1 database (released July 28, 2023), for the Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area, which is larger than the 20-county Metro Atlanta region used in the Transearch queries for the other modes. The FAF database uses SCTG commodity types. The Transearch data does not have international air cargo flow data and uses STCC commodity types.

- Major freight centers in Tennessee, namely Chattanooga and Nashville, rank second and third by inbound freight volume, moving 4.9 and 4.7 million tons of goods into the ARC region respectively.
- The Evansville Metropolitan Area transported 4.2 million tons of goods to Metro Atlanta. This area covers four counties in southwest Indiana and two counties in Kentucky, including Louisville. Louisville's prominence in this list is largely due to it being the primary air cargo hub for UPS (United Parcel Service), which significantly contributes to the region's freight volume.
- The Chicago Metropolitan Area transported 3.8 million tons of goods to Metro Atlanta. This area spans 14 counties across northeast Illinois, northwest Indiana, and southeast Wisconsin. Chicago's high ranking is attributable to its status as a major national rail hub, serving as a crucial interchange point for several major railroads and facilitating extensive freight movement across the country.
- Notably, Chatham County, where the Port of Savannah is located is also among the region's major inbound trading partners.
- About 71,296 tons of freight originated in Glynn County and traveled to Metro Atlanta in 2019.

Figure 22: Top Trading Partners—Inbound to Metro Atlanta (Tons)

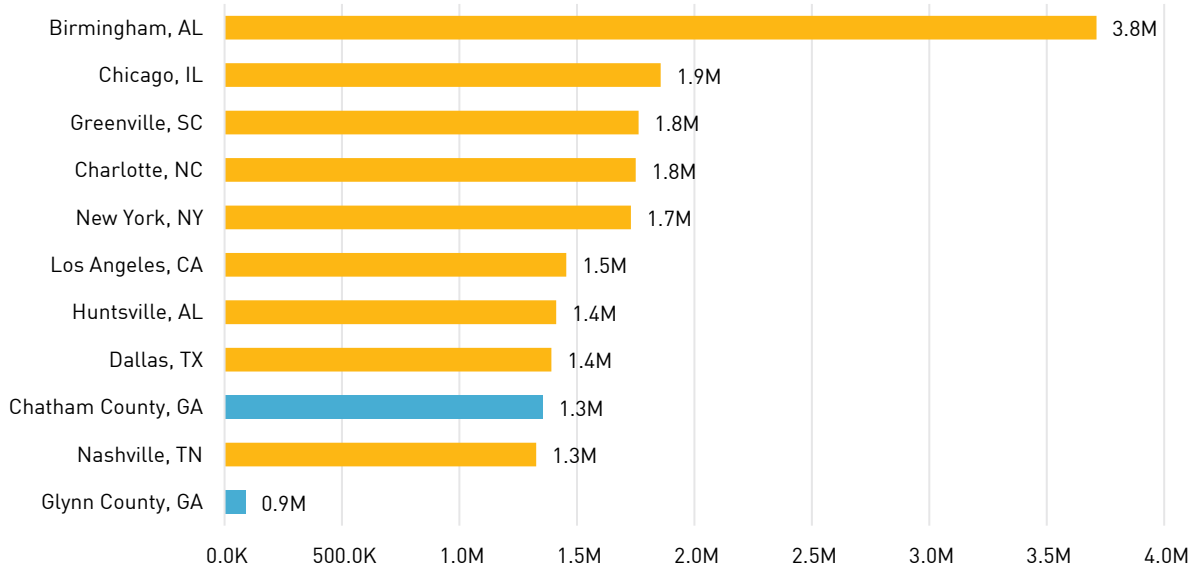


Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019. Note that for regions within GA, the data is reported at the county level. For regions outside of GA, the data is reported at the metropolitan area level.

The major trading partners for outbound freight movements from Metro Atlanta are not limited to regions in the states that neighbor Georgia (Figure 23). While the top inbound trading regions in the neighboring states also receive high volumes of goods from Metro Atlanta, regions in other parts of the U.S., including

New York, NY, Los Angeles, CA, and Dallas, TX, are also among the top destinations for goods from Metro Atlanta, receiving 1.7 million, 1.5 million, and 1.4 million tons of goods, respectively.

Figure 23: Top Trading Partners—Outbound from Metro Atlanta (Tons)



Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019. Note that for regions within GA, the data is reported at the county level. For regions outside of GA, the data is reported at the metropolitan area level.

Table 19 lists commodity flow volume with select metropolitan areas in and out of Georgia.

Table 19: Total Commodity Flow Volume (Tons) to/from Select Metropolitan Areas

Metropolitan Area	Inbound to the Atlanta Region	Outbound from the Atlanta Region	Total
Athens, GA ³⁹	2,113,479	599,260	2,712,739
Augusta, GA ⁴⁰	2,152,764	1,231,198	3,383,963
Columbus, GA ⁴¹	3,865,848	1,034,264	4,900,112
Macon, GA ⁴²	3,274,762	736,461	4,011,223
Rome, GA ⁴³	804,936	257,402	1,062,339
Savannah, GA ⁴⁴	2,547,114	1,388,593	3,935,707
Birmingham, AL	10,317,129	3,712,095	14,029,224
Charleston, SC	648,975	804,002	1,452,977
Charlotte, NC	1,929,609	1,750,078	3,679,687
Chattanooga, TN	4,862,218	1,189,328	6,051,546
Greenville, SC	4,525,553	1,762,348	6,287,901
Jacksonville, FL	590,861	508,254	1,099,116
Miami, FL	454,369	570,874	1,025,243
Mobile, AL	1,035,637	345,109	1,380,746
Montgomery, AL	1,324,543	446,367	1,770,910
New Orleans, LA	1,934,893	482,743	2,417,636
Tampa, FL	265,439	229,672	495,111

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019. This includes all modes (truck, rail, and air). Note that for GA metros, the data represents the county totals that are fully or partly within the metro areas. For non-GA metros, the data represent the totals for the BEA region as defined in the Transearch database.

Around 2.55 million tons of goods shipped into Metro Atlanta in 2019 originated in the Savannah region according to the Transearch database, as shown in Table 20.

- The largest share of total inbound tonnage from the Savannah region was transported by Intermodal rail (55.8 percent). Trucks carried 41.8 percent of goods inbound to Metro Atlanta from the Savannah Region.
- Outbound shipments from Metro Atlanta to the Savannah Region show slightly different modal shares with 54.0 percent for trucks and 44.3 percent for intermodal rail.

³⁹ Clarke, Madison, Oconee, Oglethorpe Counties in GA

⁴⁰ Richmond, Columbia, Burke, McDuffie, Lincoln Counties in GA and non-GA portions of the metro in SC

⁴¹ Chattahoochee, Harris, Marion, and Muscogee Counties in GA and non-GA portions of the metro in AL

⁴² Bibb, Crawford, Jones, Monroe, and Twiggs Counties in GA

⁴³ Floyd County, GA

⁴⁴ Bryan, Chatham, and Effingham Counties in GA

- The fact that intermodal rail has such a high share of total tonnage in both directions when compared to the rail share for all trading partners (15.9 percent for inbound and 22.6 percent for outbound) highlights its importance for facilitating trade between Metro Atlanta and the Savannah Region.

Table 20: Metro Atlanta–Savannah Region Commodity Flow by Mode

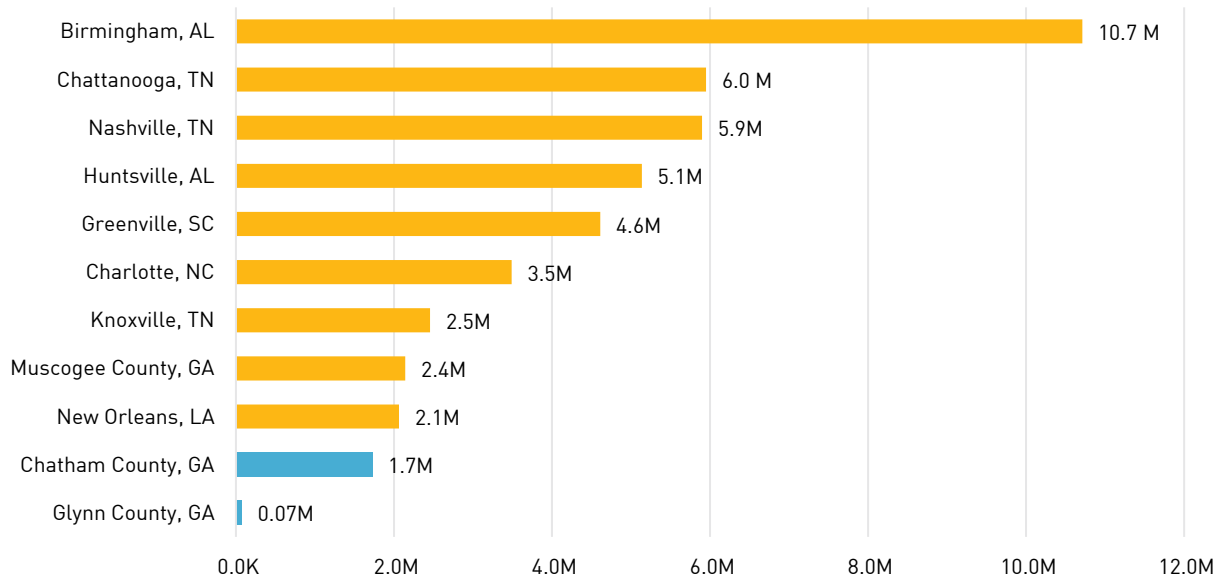
Mode	Savannah Region to Metro Atlanta		Metro Atlanta to Savannah	
	Tons	Percent of Total	Tons	Percent of Total
Truck	1,064,282	41.8%	750,454	54.0%
Intermodal Rail	1,420,160	55.8%	614,800	44.3%
Carload Rail	62,560	2.5%	23,208	1.7%
Air	112	0.0%	131	0.0%
Total	2,547,114	100.0%	1,388,593	100.0%

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019. The Savannah metro region includes the Bryan, Chatham, and Effingham Counties in GA.

Top Trading Partners by Truck

Figure 24 shows Metro Atlanta's top trading partners by truck.

- Birmingham, AL is Metro Atlanta's dominant trading partner by truck, trading over 10.7 million tons of cargo with Metro Atlanta.
- Major freight centers in Tennessee, namely Chattanooga, Nashville, and Knoxville, rank second, third, and seventh by freight volume, trading 6.0, 5.9, and 2.5 million tons of goods with Metro Atlanta, respectively.
- Huntsville, Alabama, Greenville, South Carolina, and Charlotte, North Carolina are also Metro Atlanta's top trading partners.
- Over 1.7 million tons of freight moved between Metro Atlanta and Chatham County.

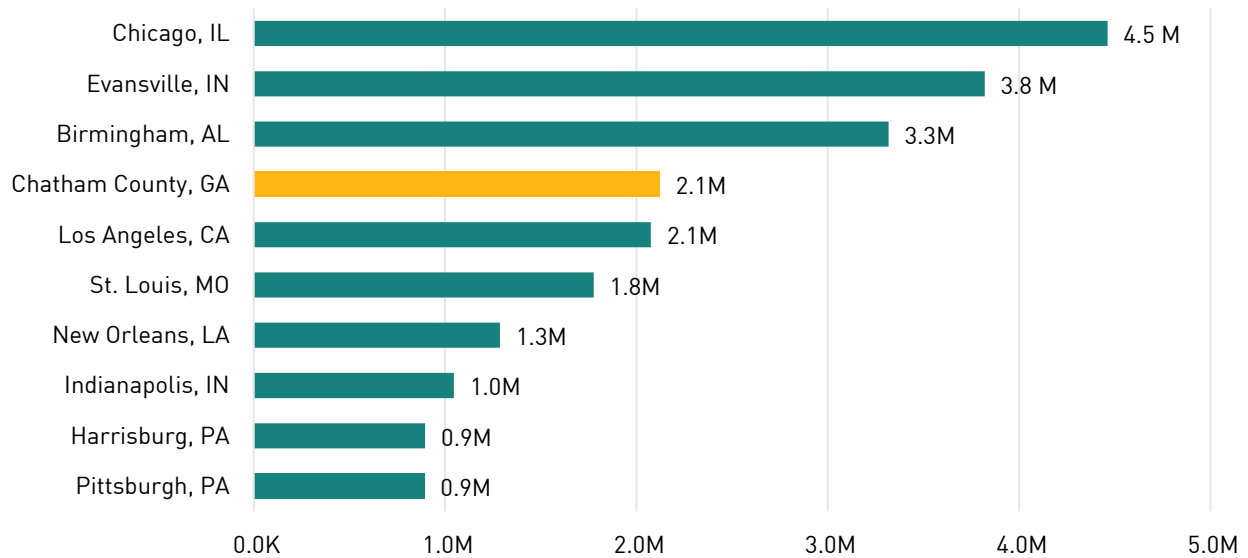
Figure 24: Top Trading Partners by Truck (Tons)

Source: S&P Global Transearch Data, 2019. Note that these are not cities, but metro areas. Note that for regions within GA, the data is reported at the county level. For regions outside of GA, the data is reported at the metropolitan area level.

Top Trading Partners by Rail

Figure 25 shows Metro Atlanta's top trading partners by rail.

- The Chicago Metropolitan Area is Metro Atlanta's dominant trading partner by rail, trading close to 4.5 million tons of cargo with Metro Atlanta, followed by the Evansville Metropolitan Area at 3.8 million tons and Birmingham, Alabama at 3.3 million tons.
- Rail commodity flows between Metro Atlanta and Chatham County, Georgia are also significant, on par with rail commodity flows between Metro Atlanta and the Los Angeles region, at 2.1 million tons.

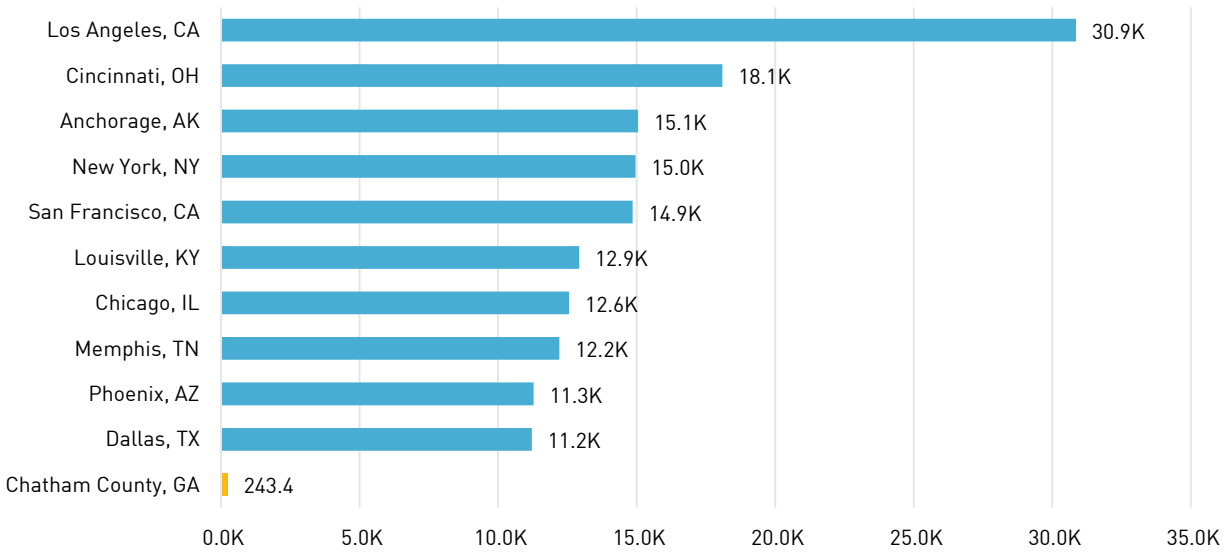
Figure 25: Top Trading Partners by Rail (Tons)

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019. Note that for regions within GA, the data is reported at the county level. For regions outside of GA, the data is reported at the metropolitan area level.

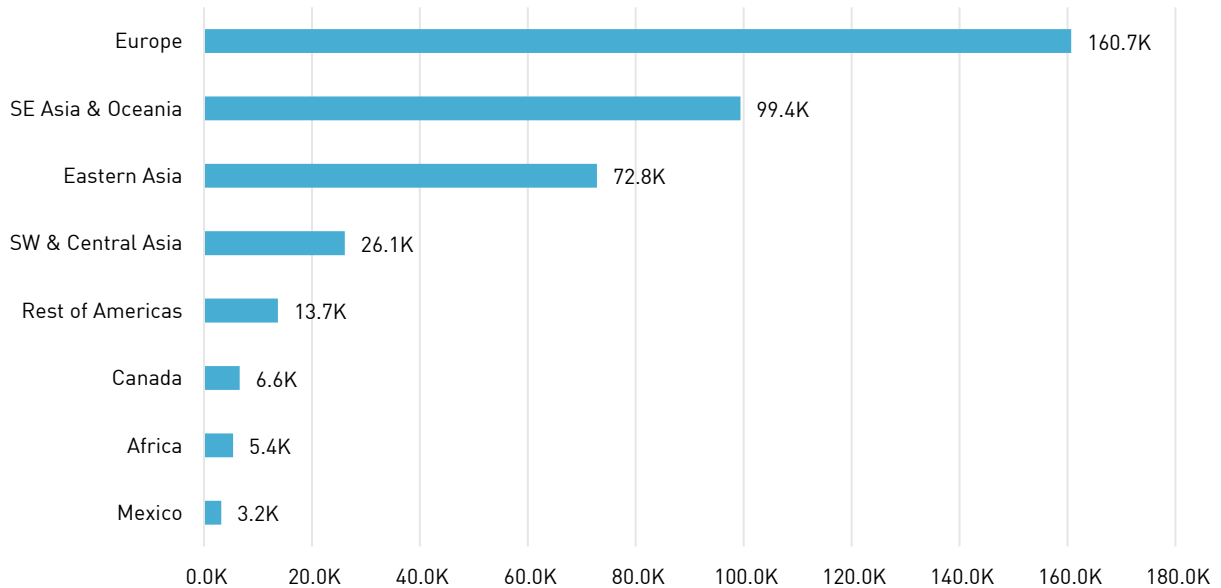
Top Trading Partners by Air

Figure 26 and Figure 27 show Metro Atlanta's top domestic and international trading partners by air in 2019.

- The largest domestic air cargo trading partners in tonnage are the Los Angeles, Cincinnati, Anchorage, New York, and San Francisco regions.
- Europe is the region's largest international air cargo trading partner in tonnage, followed by Southeast Asia and Oceania regions and East Asia regions.

Figure 26: Top Trading Partners by Air (Domestic, Tons)

Source: S&P Global Transearch Data, 2019. Note that with the exception of Chatham County, these are not cities, they are metro areas.

Figure 27: Top Trading Partners by Air (International, Tons)

Source: FHWA FAF5.5.1, 2019.⁴⁵

⁴⁵ The international air commodity flow data is based on FHWA's FAF5.5.1 database (released July 28, 2023) for the Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area, which is larger than the 20-county Metro Atlanta region used in the Transearch queries for the other modes.

2050 Projections

Two scenarios are developed to project commodity flow growth in the region:

- The Low Growth Scenario is based on the projection from the FAF data, downloaded from the FHWA website for the Atlanta-Athens-Clarke County-Sandy Springs, GA, combined statistical area.
- The High Growth Scenario is based on the projection from S&P Global's Transearch projection for the metro Atlanta region between 2019 and 2050. The international air cargo growth projection is based on FAF5 projections, as the Transearch data does not have international air commodity flow projections.

Appendix B details the difference in the projection methodologies used in the two datasets.

Overall, the commodity flows in the ARC region are forecasted to grow at least 69 percent and at most 118 percent between 2019 and 2050:

- Truck volume is expected to grow between 72 percent and 122 percent from 2020 to 2050, transporting between 332.3 million and 429.4 million tons of goods annually in 2050.
- Rail is estimated to transport 52 percent to 96 percent more cargo from 2020 to 2050, totaling 55.9 million and 72.2 million tons of goods in 2050.
- The forecast indicates that air cargo volume will grow 70 percent to 74 percent between 2020 and 2050, with the volume in 2050 projected to be around 1.2 million tons.

Table 21 and Table 22 show the projected commodity flow tonnage and growth rates by mode, respectively.

Table 21: Projected Commodity Flows (Tons), 2050

Mode	2019 Base Year	Total Tonnage, Low Growth Scenario	Total Tonnage, High Growth Scenario
Truck	193,505,939	332,306,170	429,387,527
Rail	36,803,184	55,940,325	72,170,247
Air ⁴⁶	684,633	1,164,143	1,191,396
Total	230,993,756	389,410,638	502,749,170

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019; FAF 5.4., 2019, 2022.

⁴⁶ The 2019 base year air cargo data is the total of the domestic air cargo data sourced from S&P Global's Transearch database for the 20-county Atlanta region and international air cargo data sourced from FHWA's FAF5 database for the Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area, which is larger than the 20-county Metro Atlanta region used in the Transearch queries.

Table 22: Projected Percent Growth and Compound Annual Growth Rate (CAGR) of Commodity Flows, 2019-2050

Mode	Low Scenario (CAGR)	High Scenario (CAGR)	Low Scenario Percent Growth	High Scenario Percent Growth
Truck	1.8%	2.6%	72%	122%
Rail	1.4%	2.2%	52%	96%
Air ⁴⁷	1.8%	1.7%	70%	74%
Total	1.7%	2.5%	69%	118%

Source: S&P Global Transearch Data, 2019; Surface Transportation Board Carload Waybill Data, 2019; FAF 5.4., 2022.

Truck Flows

Truck Traffic Volume

The interstate system is the workhorse of the region for moving goods by truck (Figure 28). The top truck segments on the region's Interstate Highway System include:

- I-75 outside the I-285 perimeter: I-75 south of I-285 provides a crucial connection to Georgia's ports, facilitating the movement of goods to and from these vital trade gateways. I-75 north of I-285 serves as a key link to the Midwest, supporting freight traffic between Atlanta and major industrial and commercial centers in that region.
- I-285 on the "western wall" (between I-75 and I-85 on the west side of the region): This segment experiences high truck volumes not only because it connects I-75 and I-85, but also due to truck routing regulations. Trucks are prohibited from traveling through Atlanta on I-75 or I-85 unless they have a local origin or destination inside I-285, leading many to use this segment of I-285 instead.
- I-85 in the northern part of the Atlanta region just outside of I-285: This segment serves as a critical link connecting the region to the East Coast states.

This network facilitates the movement of goods to and from Metro Atlanta businesses and the transit of long-haul trucks navigating through the Atlanta region en route to other destinations.

⁴⁷ The air cargo data contains the domestic air cargo data sourced from S&P Global's Transearch database for the 20-county Atlanta region and international air cargo data sourced from FHWA's FAF5 database for the Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area, which is larger than the 20-county Metro Atlanta region used in the Transearch queries.

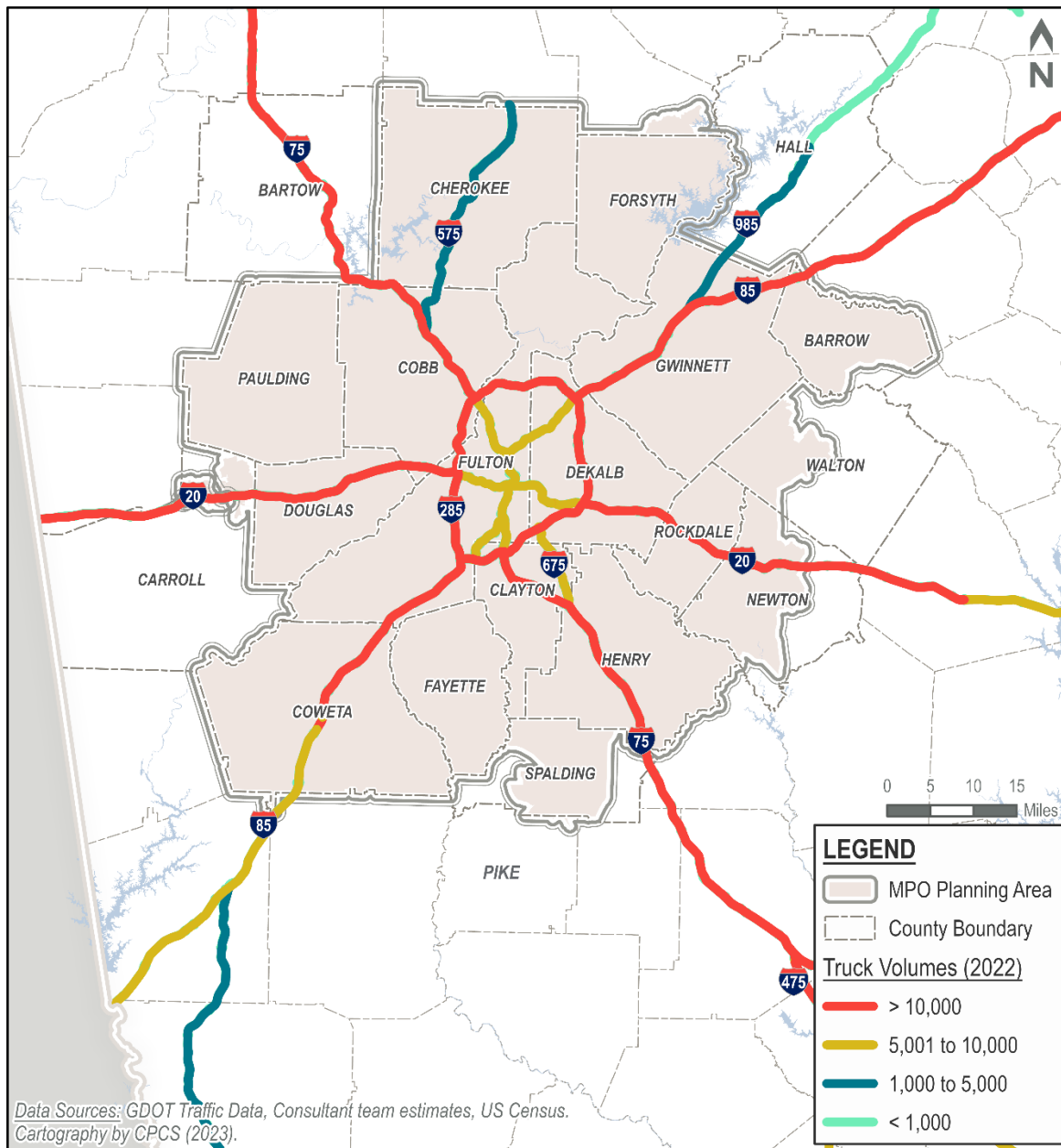
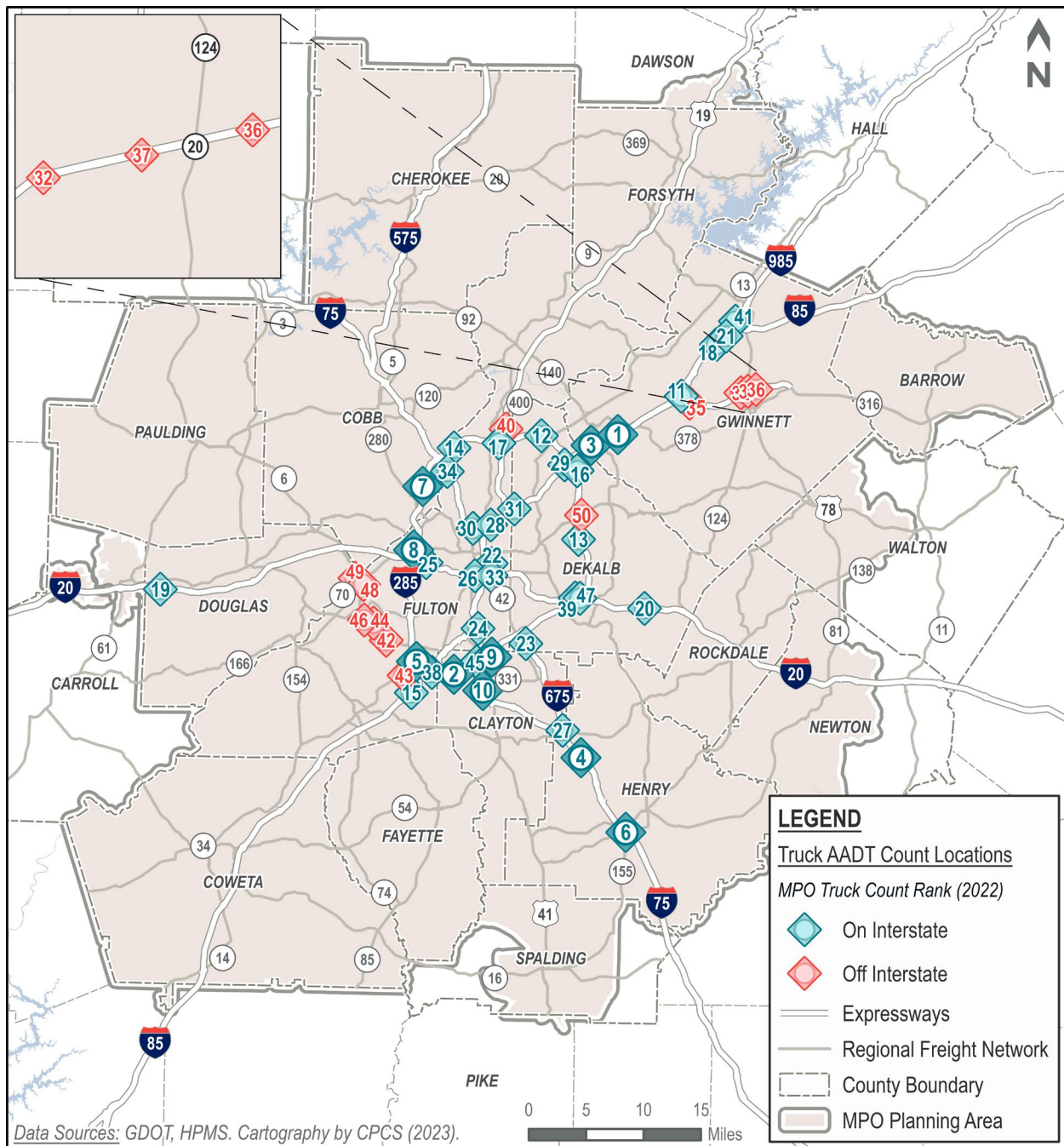
Figure 28: Daily Truck Volumes, 2022

Figure 29 presents the high truck-count locations in the region:

- I-75 in Cobb County outside of the perimeter is typically the highest truck-count location, but no data was taken on this corridor in 2022. Other high truck-count locations include the following:
- I-85 in Gwinnett County,
- I-285 along the Western Wall,
- I-285 near the Hartsfield-Jackson Atlanta International Airport,
- I-75 in Henry County.

Figure 29: High Truck-count Locations, 2022

High-volume truck-volume locations off of the Interstate system include:

- SR 316,
- Fulton Industrial Boulevard,
- GA 400.

Table 23 and Table 24 present the top 10 interstate and non-interstate truck count locations in the region.

Table 23: Top 10 Interstate Truck-count Locations, 2022

Rank	Roadway, County	Location	Truck Count	Truck % of Traffic
1	I-85, Gwinnett	Near Jimmy Carter Blvd	31,906	10.6%
2	I-285, Clayton	South of Hartsfield Jackson Atlanta International Airport	31,842	10.6%
3	I-85, Gwinnett	Near Jimmy Carter Blvd	31,565	10.5%
4	I-75, Henry	Near Hudson Bridge Rd	28,417	9.4%
5	I-285, Fulton	South of Washington Rd	27,482	9.1%
6	I-75, Henry	Near McDonough Rd	25,800	8.6%
7	I-285, Cobb	Near Paces Ferry Rd	24,675	8.2%
8	I-285, Fulton	North of I-20 interchange	24,450	8.1%
9	I-285, Clayton	Southeast of Hartsfield Jackson Atlanta International Airport	24,327	8.1%
10	I-75, Clayton	Near Forest Pkwy	23,084	7.7%

Source: GDOT Traffic Analysis and Data Application (TADA), 2022.

Table 24: Top 10 Non-Interstate Truck-count Locations, 2022

Rank	Roadway	Location	Truck Count	Truck % of Traffic
1	SR 316	Collins Hill Rd	7,806	13.6%
2	SR 316	Huntington Rd	7,344	6.8%
3	SR 316	East of SR 20	7,326	11.0%
4	SR 316	West of SR 20	7,215	11.6%
5	SR 400	North of I-285	6,432	3.2%
6	Camp Creek Pkwy	Northwest of Old Fairburn Rd SW	6,309	15.5%
7	South Fulton Pkwy	East of SR 29	6,238	10.7%
8	Camp Creek Pkwy	East of Enon Rd SW	6,175	17.2%
9	Camp Creek Pkwy	West of Enon Rd SW	6,055	17.3%
10	Fulton Industrial Blvd	Camp Creek Pkwy	5,974	14.5%

Source: GDOT Traffic Analysis and Data Application (TADA), 2022.

Analysis of the outputs from the ARC's activity-based model—a type of travel demand model—for the base year of 2020 and the future 2050 scenario as defined in the 2024 *Atlanta Metropolitan Transportation Plan*⁴⁸ sheds some light on the existing and projected changes in the roadway congestion levels. The roadway congestion level is defined as levels of service (LOS) for the afternoon peak period calculated by the volume-to-capacity ratio generated by the ARC activity-based model for major roadways in the region⁴⁹. LOS measures a driver's experience on the road and at intersections, based on the speed and

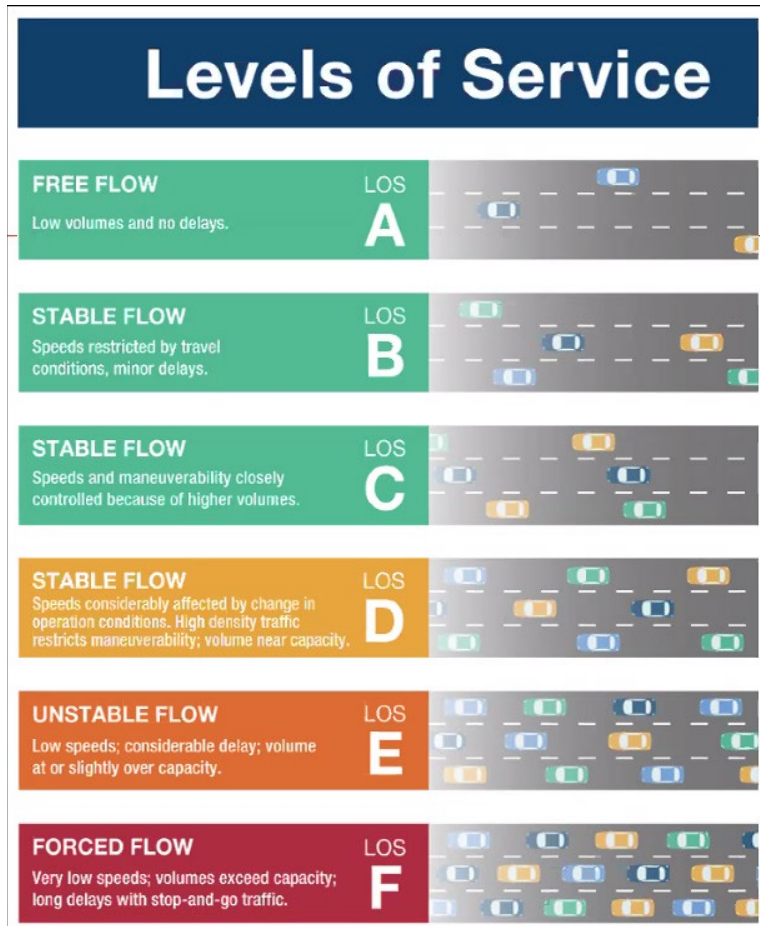
⁴⁸ The model run results were accessed from ARC's Data Download Portal for the activity-based model.

<https://abmfiles.atlantaregional.com/>, Full Model Run – MTP24 – 2020 and Full Model Run – MTP24 – 2050 files.

⁴⁹ These include interstates, expressways, principal arterials, and minor arterials as defined in the ARC activity-based model network.

number of cars using the road. The LOS of a road is designated by a letter grade of A (free flow) to F (near gridlock). A designation of A, B, or C represents free-flowing conditions. F is stop-and-go traffic (Figure 30). These scores are based on the highest congestion level on that roadway during the afternoon peak period.

Figure 30: Levels of Service Definition

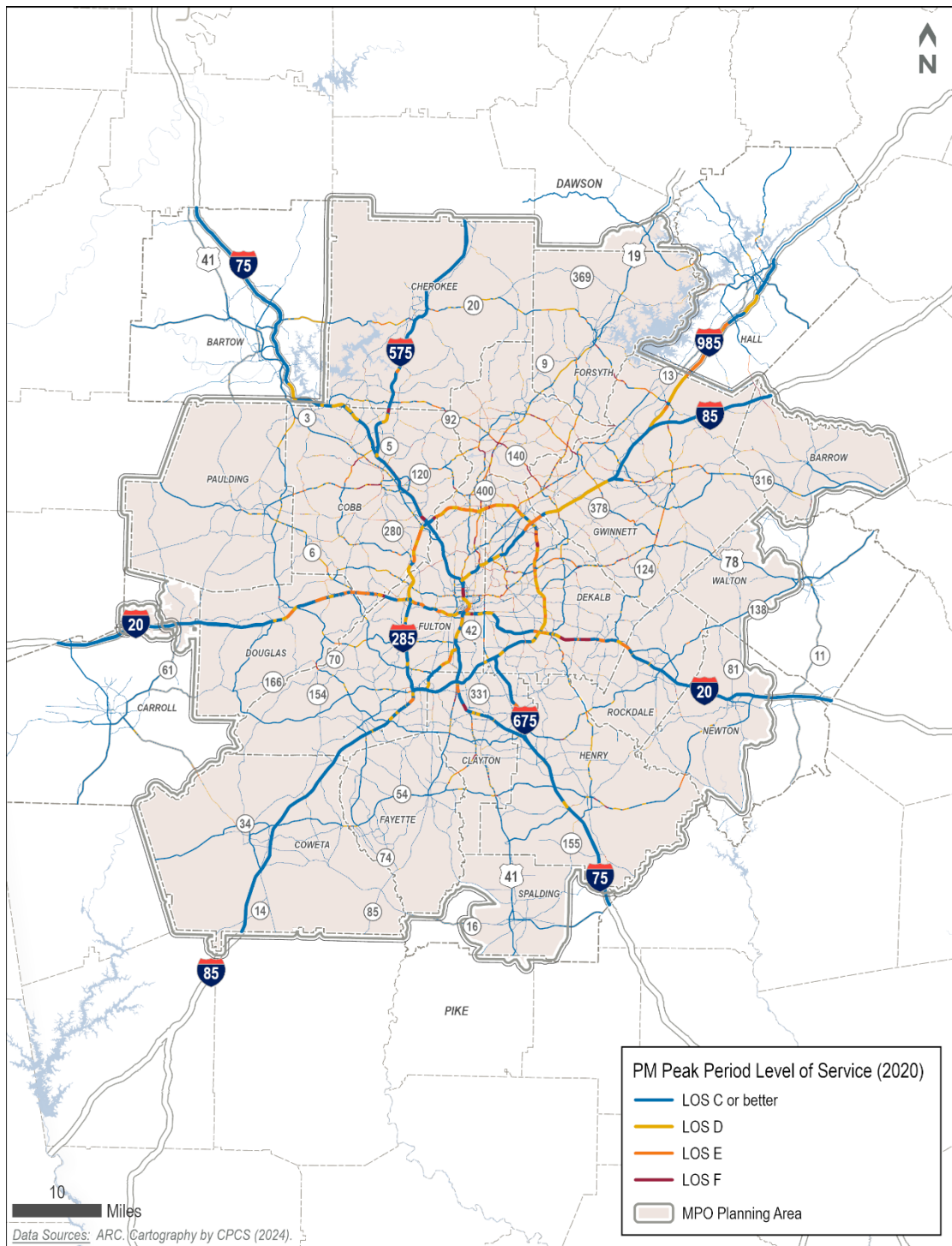


Source: Transportation for America.⁵⁰

Figure 31 shows the ARC activity-based model results in the base year (2020). Without implementing the infrastructure investments and policy initiatives proposed in the ARC's *Metropolitan Transportation Plan* (MTP)⁵¹, the region's roadways will likely experience worsened congestion levels (Figure 32). The MTP 2050 vision will alleviate congestion in many critical corridors in the region while some segments of the network will still be impacted by congestion (Figure 33).

⁵⁰ Transportation for America. Level of Service. [https://t4america.org/community-connectors/what-they-mean/level-of-service/#:~:text=Level%20of%20service%20\(LOS\)%20measures,stop%2Dand%2Dgo%20traffic](https://t4america.org/community-connectors/what-they-mean/level-of-service/#:~:text=Level%20of%20service%20(LOS)%20measures,stop%2Dand%2Dgo%20traffic)

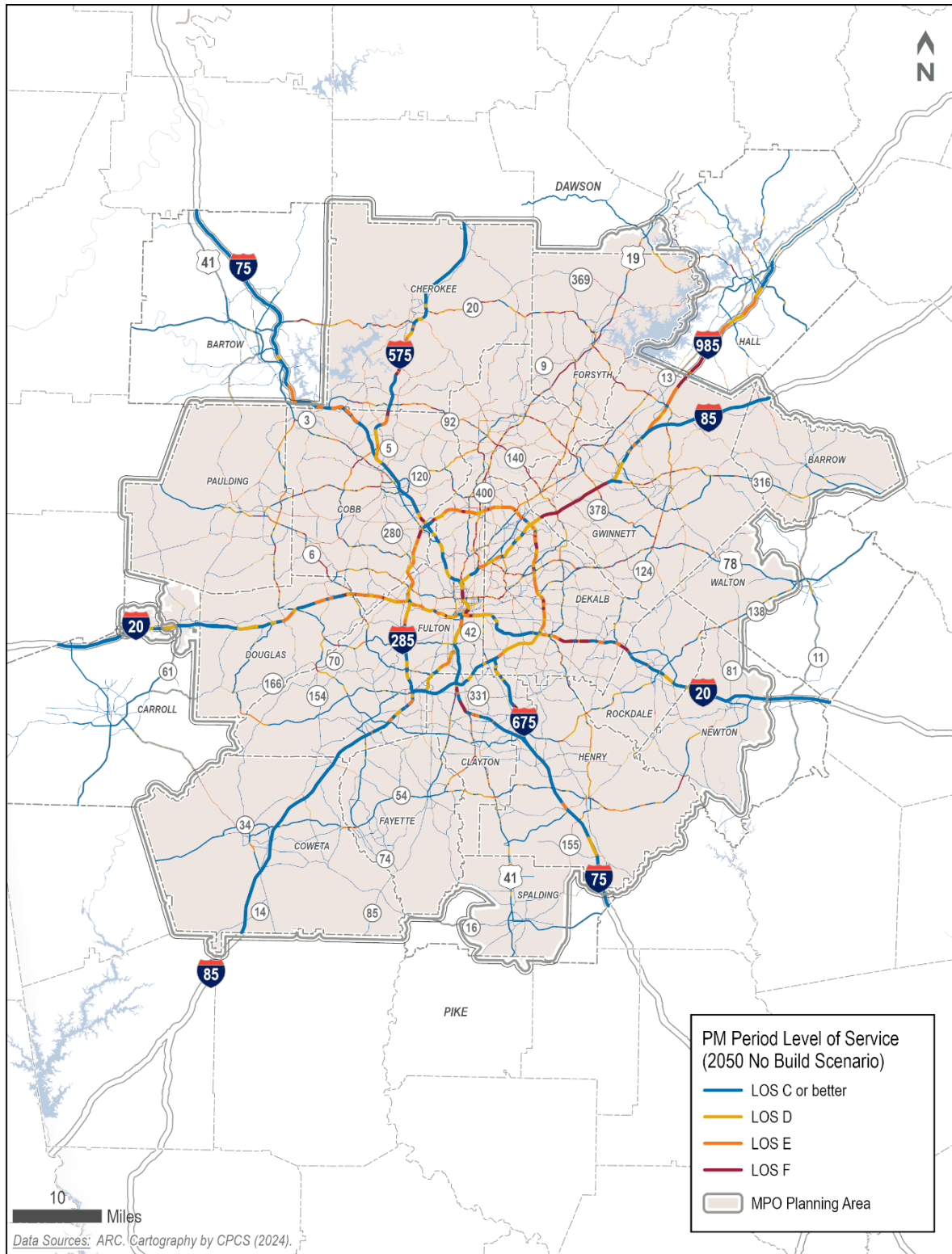
⁵¹ ARC. *Metropolitan Transportation Plan*, 2024. <https://atlantaregional.org/what-we-do/transportation-planning/metropolitan-transportation-plan/>

Figure 31: Base Year PM Peak Period Level of Service (2020)

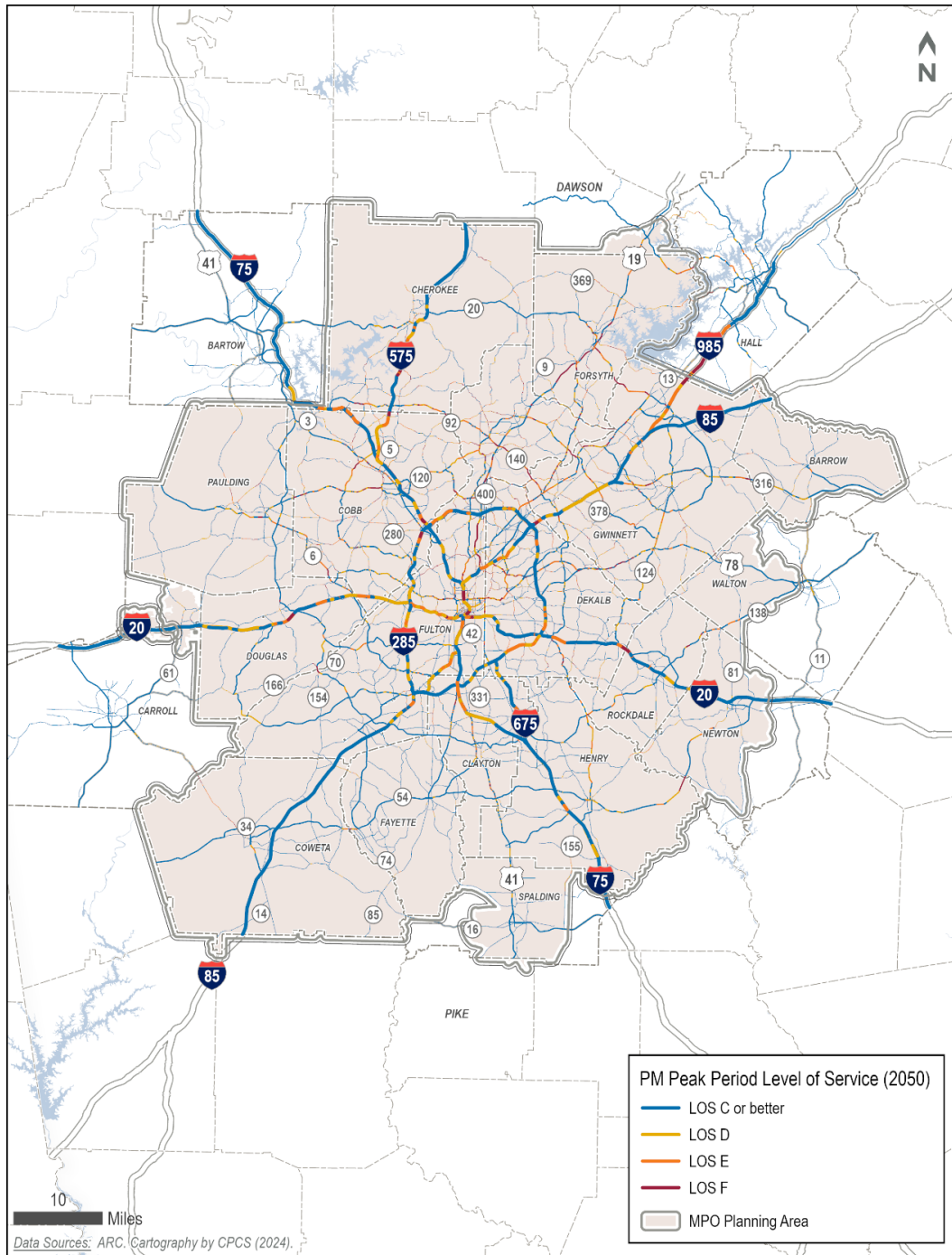
Source: ARC'S Activity-based Model results.⁵²

⁵² LOS C or better implies a volume to capacity ratio of 0.7 and less; LOS D implies a volume to capacity ratio between 0.7 and 0.84; LOS E implies a volume to capacity ratio between 0.84 and 1; and LOS F implies a volume to capacity ratio higher than 1.

Figure 32: Future Year No Build Scenario PM Peak Period Level of Service (2050 No Build Scenario)



Source: ARC'S Activity-based Model results⁵³

Figure 33: Future Year PM Peak Period Level of Service (2024 MTP 2050 Scenario)

Source: ARC'S Activity-based Model results⁵⁴

⁵³ LOS C or better implies a volume to capacity ratio of 0.7 and less; LOS D implies a volume to capacity ratio between 0.7 and 0.84; LOS E implies a volume to capacity ratio between 0.84 and 1; LOS F implies a volume to capacity ratio higher than 1.

⁵⁴ LOS C or better implies a volume to capacity ratio of 0.7 and less; LOS D implies a volume to capacity ratio between 0.7 and 0.84; LOS E implies a volume to capacity ratio between 0.84 and 1; LOS F implies a volume to capacity ratio higher than 1.

Through Truck Trips

Metro Atlanta's strategic position in the southeastern United States, coupled with its extensive freight roadway network, establishes the area as a pivotal access point for the transit of commodities. In 2019, approximately 82.8 million tons of goods, valued at \$160.8 billion, traversed through Metro Atlanta by truck (as indicated in Table 25).⁵⁵ When considering all truck commodity flows, including pass-through flows and commodity flows originating from, destined to, and traveling within Metro Atlanta, pass-through commodity flows account for 30 percent of the total tonnage (Table 26). This volume translates to an estimated 4.64 million truck trips annually, averaging about 15,700 trips on a typical weekday.⁵⁶ By tonnage, the tonnage of commodities that pass-through Metro Atlanta by truck is around 43 percent of the total Metro-Atlanta-based truck commodity flow tonnage⁵⁷. This statistic underscores the dual role of Metro Atlanta's roadways: they are essential not only for the residents and freight-dependent businesses but also for the broader regional freight movement.

Table 25: Pass-through Truck Commodity Flows, 2019

	Tonnage	Value (Billions of USD)	Truck Units
Pass-through truck commodity flow	82,789,995.6	\$160.8	4,644,995

Source: S&P Global Transearch Data, 2019.

Table 26: Truck Commodity Flows by Direction, 2019

Direction	Inbound	Outbound	Within	Pass-through	Total
Tonnage	85,876,878	44,529,072	63,099,989	82,789,996	276,295,935
Share	31%	16%	23%	30%	100%

Source: S&P Global Transearch Data, 2019.

Table 27 details the top commodities of pass-through truck traffic for tonnage for Metro Atlanta. Table 28 details the primary commodities transported by trucks passing through Metro Atlanta, categorized by both tonnage and monetary value (in million USD). These commodities represent approximately 35 percent of the total tonnage and value of all pass-through truck traffic flows.

⁵⁵ The routing file provided in the Transearch database was used to filter for trips that didn't originate or end in the MPO area but used a segment of the roadway network in the MPO area.

⁵⁶ To convert this annual truck trips to weekday trips, FHWA's Traffic Monitoring Guide (Figure 1-4) was referenced to determine a weekend to weekday daily trip ratio of 0.39 for typical trucks. FHWA, Traffic Monitoring Guide, 2013. Accessed December 2023 on https://www.fhwa.dot.gov/policyinformation/tmguidetmg_2013/traffic-monitoring-theory.cfm.

⁵⁷ Metro-Atlanta-based commodity flows are flows that either originated from, were destined to, or traveled within the MPO area. In 2019, the Metro-Atlanta-based commodity flows by truck totaled over 193.5 million in tonnage and 86.3 in billion dollars, as discussed in Table 17.

Table 27: Top Commodities of Pass-through Truck Flows by Tonnage

Commodity	Tonnage
Warehouse & Distribution Center	6,542,580
Broken Stone or Riprap	3,476,976
Misc Waste or Scrap	3,417,183
Misc. Field Crops	3,116,403
Primary Forest Materials	2,851,888
Prepared or Canned Feed	2,452,747
Fiber, Paper or Pulpboard	2,122,169
Plastic Mater or Synth Fibers	2,028,272
Concrete Products	1,702,303
Live Poultry	1,666,568

Source: S&P Global Transearch Data, 2019.

Table 28: Top Commodities of Pass-through Truck Flows by Tonnage

Commodity	Value
Motor Vehicle Parts or Accessories	\$11,041
Motor Vehicles	\$10,216
Warehouse & Distribution Center	\$8,066
Misc Plastic Products	\$6,141
Plastic Mater or Synth Fibers	\$4,793
Live Poultry	\$3,794
Drugs (biological or botanical products, medicinal chemicals or pharmaceutical preparations products)	\$3,636
Dressed Poultry, Frozen	\$2,890
Processed Poultry or Eggs	\$2,738
Dressed Poultry, Fresh	\$2,468

Source: S&P Global Transearch Data, 2019.

Figure 34 illustrates the annual truck traffic that passed through Metro Atlanta in 2019. In addition to the interstates, routes with the heaviest pass-through traffic are:

- GA-6/Camp Creek Parkway between I-285 and GA 154/Campbellton Road SW in Fulton County and Douglas County,
- GA 154/Campbellton Road SW between GA-6/Camp Creek Parkway and I-20 in Douglas County.

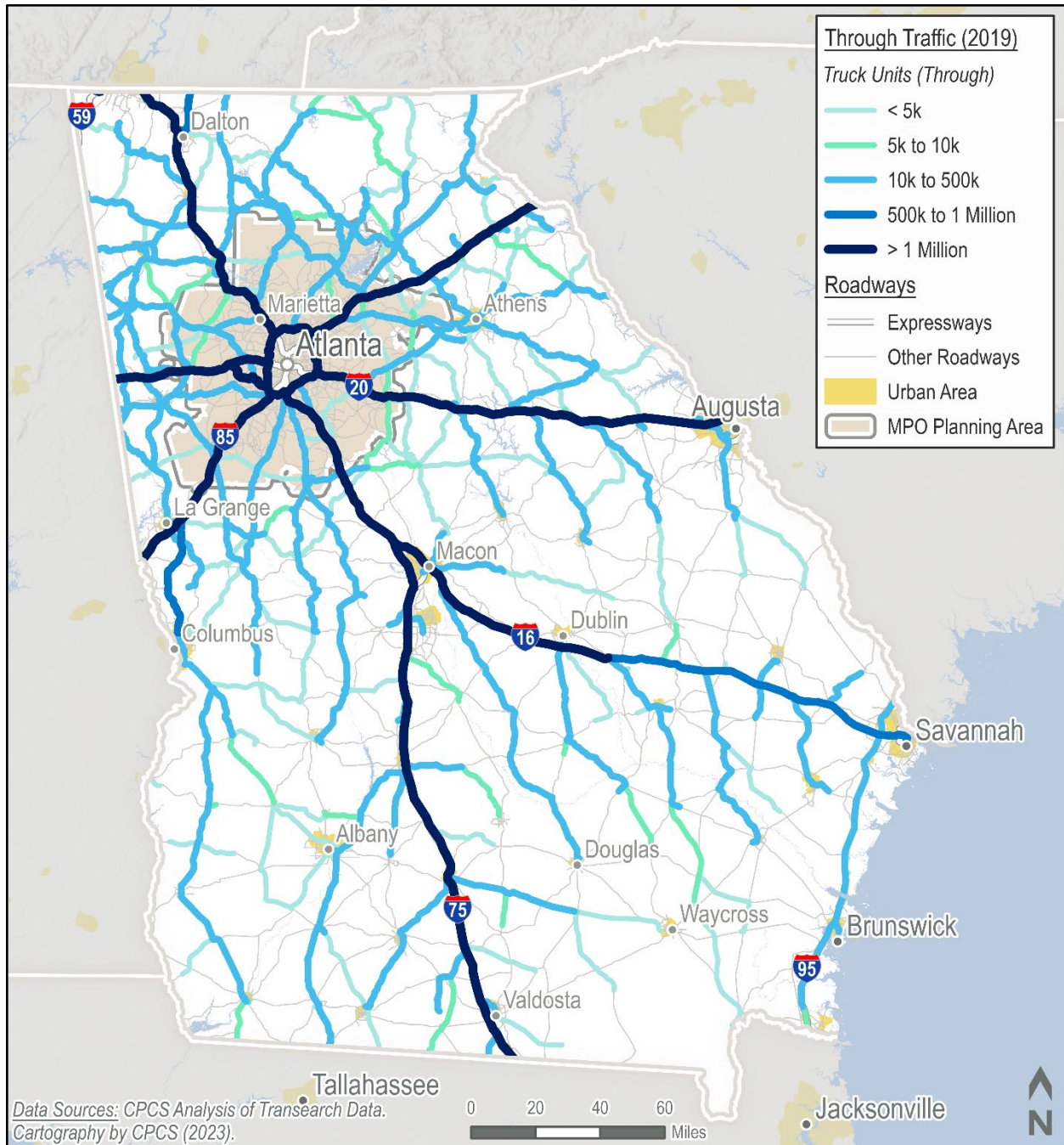
Figure 34: Through Traffic by Truck Units (2019 Annual Volume)

Table 29 and Table 30 focus on the top origin-destination pairs for trucks passing through Metro Atlanta, by tonnage and value (in million USD). The most significant routes by tonnage predominantly involve intra-Georgia movements or connections to neighboring states. In contrast, the top pairs by value highlight the role of Metro Atlanta's freight network in facilitating longer-distance goods movements, including significant routes to and from areas like Houston and Dallas in Texas. It is important to note that these results are based on Transearch data, which captures individual legs of freight trips rather than end-

to-end movements. As such, what appears as “pass-through” traffic may actually represent movements with an intermediate stop in Atlanta for transfers or processing. For example, the high volume of goods movements between Birmingham, Alabama, and Haralson County, Georgia, via the Atlanta region likely represents transfer legs rather than direct shipments. Atlanta is probably serving as a significant intermodal or distribution hub in this freight corridor. The goods may be changing modes (e.g., rail to truck) or being processed/sorted in Atlanta before continuing their journey.

Table 29: Top Origin-Destination Pairs for Pass-through Truck Flows by Tonnage

Origin-Destination Pairs	Tons
Birmingham, AL BEA–Haralson County, GA	481,027
Alabama Portion of Huntsville BEA–South Carolina Portion of Greenville BEA	340,189
Tennessee Portion of Chattanooga BEA–Chatham County, GA	279,289
Birmingham, AL BEA–South Carolina Portion of Greenville BEA	275,065
North Carolina Portion of Greensboro BEA–Houston, TX BEA	264,836
Alabama Portion of Huntsville BEA–Chatham County, GA	261,538
Columbia, SC BEA–Muscogee County, GA	230,654
Birmingham, AL BEA–North Carolina Portion of Charlotte BEA	227,129
South Carolina Portion of Greenville BEA–Texas Portion of Dallas BEA	218,283
Alabama Portion of Huntsville BEA–Columbia, SC BEA	202,115

Source: S&P Global Transearch Data, 2019.

Table 30: Pass-through Flows Top Origin-Destination Pairs by Value (Million USD)

Origin-Destination Pairs	Value (Million USD)
North Carolina Portion of Greensboro BEA–Houston, TX BEA	\$1,698.8
North Carolina Portion of Greensboro BEA–Texas Portion of Dallas BEA	\$1,488.8
Charleston, SC BEA–Texas Portion of Dallas BEA	\$ 933.6
Chatham County, GA–Texas Portion of Dallas BEA	\$850.5
South Carolina Portion of Greenville BEA–Texas Portion of Dallas BEA	\$839.6
South Carolina Portion of Greenville BEA–Houston, TX BEA	\$780.1
Alabama Portion of Huntsville BEA–South Carolina Portion of Greenville BEA	\$84.0
Alabama Portion of Huntsville BEA–Chatham County, GA	\$673.6
Tennessee Portion of Chattanooga BEA–Chatham County, GA	\$600.9
Tennessee Portion of Nashville BEA–Chatham County, GA	\$580.8

Source: S&P Global Transearch Data, 2019.

Commodities passing through Metro Atlanta are projected to increase dramatically—by 140 percent in terms of tonnage by 2050. This is a faster growth projected than the flows going inbound/outbound/within the region. This surge will result in over 198.7 million tons of goods, with an estimated value of about \$381 billion. This indicates that Metro Atlanta’s roadway system will become increasingly vital in supporting commodity flows that extend beyond the immediate region. By 2050, pass-through truck commodity

flows are expected to be between 46.3 percent and 59.8 percent of the total truck-based commodity flow tonnage in Metro Atlanta.

Roadways Serving Major E-Commerce Facilities

Metro Atlanta's proximity to major freight routes and its extensive warehousing stock make it a top market for online retailers and e-commerce distributors. As e-commerce sales continue to grow, Metro Atlanta's roadway network will increasingly become essential in supporting the efficient movement of e-commerce packages. This section examines the truck trip patterns serving the major e-commerce facilities in Metro Atlanta, highlighting the important roadway infrastructure most heavily utilized by e-commerce package carriers. The facilities serving e-commerce purposes (including fulfillment, sortation, and distribution) were identified for major package carriers including Amazon, FedEx, UPS, and the United States Postal Service (USPS), using CoStar business establishment data, and Google Maps API, among other sources.⁵⁸

Data Source

This analysis uses detailed INRIX origin-destination data sourced from the Regional Integrated Transportation Information System (RITIS).⁵⁹ The data, covering February, August, and October 2022, spans light-, medium-, and heavy-duty vehicles, providing insights into freight activities across different seasons.⁶⁰ RITIS snapped the raw INRIX data to a grid to maintain data anonymity (Figure 35).

Vehicle Classification

Differentiating between vehicle types was a crucial part of this analysis. INRIX data categorizes vehicles into three main groups: heavy-duty trucks (RITIS vehicle class category 3), medium-duty trucks (RITIS vehicle class category 2), and a combined group of light-duty trucks and passenger cars (RITIS vehicle class category 1). To isolate e-commerce-related truck trips, polygons that included e-commerce facility buildings and designated truck parking areas were developed. The RITIS origin-destination (OD) data points were filtered for trips starting or ending within these polygons. Although each polygon was manually adjusted to capture the appropriate INRIX data points to be included in further analysis, the accuracy is constrained by the grid network used in the raw data. This method, however, effectively captures all freight activities relevant to the facilities. This is particularly critical for adequately differentiating light-duty freight vehicles from the light-duty passenger cars that are originally grouped

⁵⁸ See additional details in Task 4.2 memo.

Amazon: All Amazon facilities except for lockers are included in the inventory.

FedEx: Facilities that are drop boxes, print centers, or ship sites are not included in the inventory.

UPS: Facilities that are customer access points, drop centers, or UPS stores are not included in the inventory.

USPS: Only major warehouses are included; local post offices are not included in the inventory.

It is important to note that this is not a comprehensive list of all e-commerce facilities in the region. This list only includes facilities that are operated directly by the major carriers.

⁵⁹ Note that the data does not reflect trips that are chained. Similarly, the data only captures the begin and end of the trips, not any potential delivery stops in-between.

⁶⁰ Light-duty vehicles: 0-14,000 lb.; medium-duty vehicles: 14,001-26,000 lb.; heavy-duty vehicles: >27,000 lbs.

under one vehicle class. To do so, it was inferred that those starting or ending their trips within the truck parking area polygons were predominantly light-duty trucks.

Figure 35: Raw INRIX Data Grids and Custom Polygons Used for Queries



 Raw INRIX O-D data grids
  Custom freight activity polygon

Source: INRIX OD data from INRIX.

Routing Analysis

After the raw INRIX data was filtered by the OD pairs serving the major e-commerce facilities by vehicle class, the OpenStreetMap network was utilized to route the ODs. The OpenStreetMap network was selected due to the limitations of the FAF network, which lacks local road coverage, and ARC's travel demand model network, which lacks both statewide and local road coverage. A thorough comparison of routing results between the travel demand modeling and OpenStreetMap networks was conducted to ensure accuracy. The shortest path algorithm, which prioritizes travel time, was employed for trip assignment between OD pairs, providing a realistic representation of the likely routes taken by the freight vehicles serving the e-commerce facilities. It is important to note that this analysis may not reflect the

actual routes the vehicles took, or all the in-between stops the commercial vehicles made. The remainder of this section discusses the key findings from this analysis.

Key Findings: Average Vehicle Travel Distance

Table 31 shows the average trip distance of heavy-duty, medium-duty, and light-duty trucks serving the major e-commerce carrier facilities in Metro Atlanta. Key takeaways include:

- Across all carriers, the average trip distance for heavy-duty trucks was found to be 27.0 miles. For medium-duty trucks, the average was slightly lower at 16.1 miles, and light-duty trucks had the shortest average trip distance at 15.6 miles. The average trip length of the light-duty trucks reflected by the INRIX OD data, representing one-way trip lengths, aligns with existing literature on e-commerce delivery vehicle patterns.⁶¹
- Trips serving USPS facilities tend to travel longer distances than other carriers while trips serving FedEx facilities tend to travel shorter distances, across all vehicle classes. This discrepancy is attributed to USPS's decentralized distribution model and their mixed transport of e-commerce and traditional mail.
- Amazon and FedEx show similar patterns for light-duty and medium-duty trucks, but Amazon's heavy-duty trucks tend to travel longer distances on average.
- UPS's trip distances are more consistent with the overall averages, suggesting a balanced distribution of trip lengths across all vehicle classes.

Table 31: Average Trip Distance by Vehicle Classes and Major E-Commerce Carriers

Carrier	Heavy-duty Truck Average Trip Distance (Miles)	Medium-duty Truck Average Trip Distance (Miles)	Light-duty Truck Average Trip Distance (Miles)
Amazon	28.5	17.5	15.9
FedEx	24.2	14.4	15.8
UPS	25.9	14.9	14.5
USPS	35.4	19.2	17.1
Average	27.0	16.1	15.6

Source: RITIS trip data.

Key Findings: Major Roads Serving E-Commerce Facilities

To identify major roads serving e-commerce truck traffic, trip counts were aggregated for each roadway segment for each vehicle class using the routing analysis results.

⁶¹ Jaller, M., Leticia P., and Hanjiro A. (2018). *Evaluating the use of zero-emission vehicles in last mile deliveries*. Institute of Transportation Studies, University of California Davis. This research noted that most light-duty delivery truck tour lengths range between 20 to 60 miles.

The figures below highlight the key roadways serving the major e-commerce facilities for all trucks combined (Figure 36), heavy- and medium-duty trucks (Figure 37), and light-duty trucks (Figure 38). Note the trip counts on the maps reflect the data sampled in the source INRIX raw data during the three months of 2022 but may not represent the actual observed trip counts. Key takeaways include the following:

- Major interstates play a significant role in supporting truck traffic for e-commerce facilities. I-75 through and outside of I-285, I-285 on the “southern wall” (between I-85 and I-75 on the south side of the region), and I-85 north of I-285 on the top end perimeter were all heavily utilized by truck traffic serving the major e-commerce facilities in the region (Figure 36).
- For medium- and heavy-duty trucks, in addition to the interstates, Figure 37 highlighted the following roads:
 - GA-6/Camp Creek Parkway between I-20 and I-85 on the southwest side of the region in Fulton County
 - GA-14 and South Fulton Parkway west of I-285 in Fulton County
 - Earnest W Barret Parkway NW west of I-75 on the northwest side of the region in Cobb County
 - GA-10/Memorial Drive east of I-285 in DeKalb County
 - US-78/Stone Mountain Freeway east of GA-10/Memorial Drive on the east side of the region in DeKalb County
- Light-duty trucks are more dispersed in the roads they use as many local roads with less volume are highlighted in Figure 38. Nonetheless, the interstates and several non-interstates routes particularly GA-6/Camp Creek Parkway between I-20 and I-85 in Fulton County continue to play a critical role for this vehicle class.

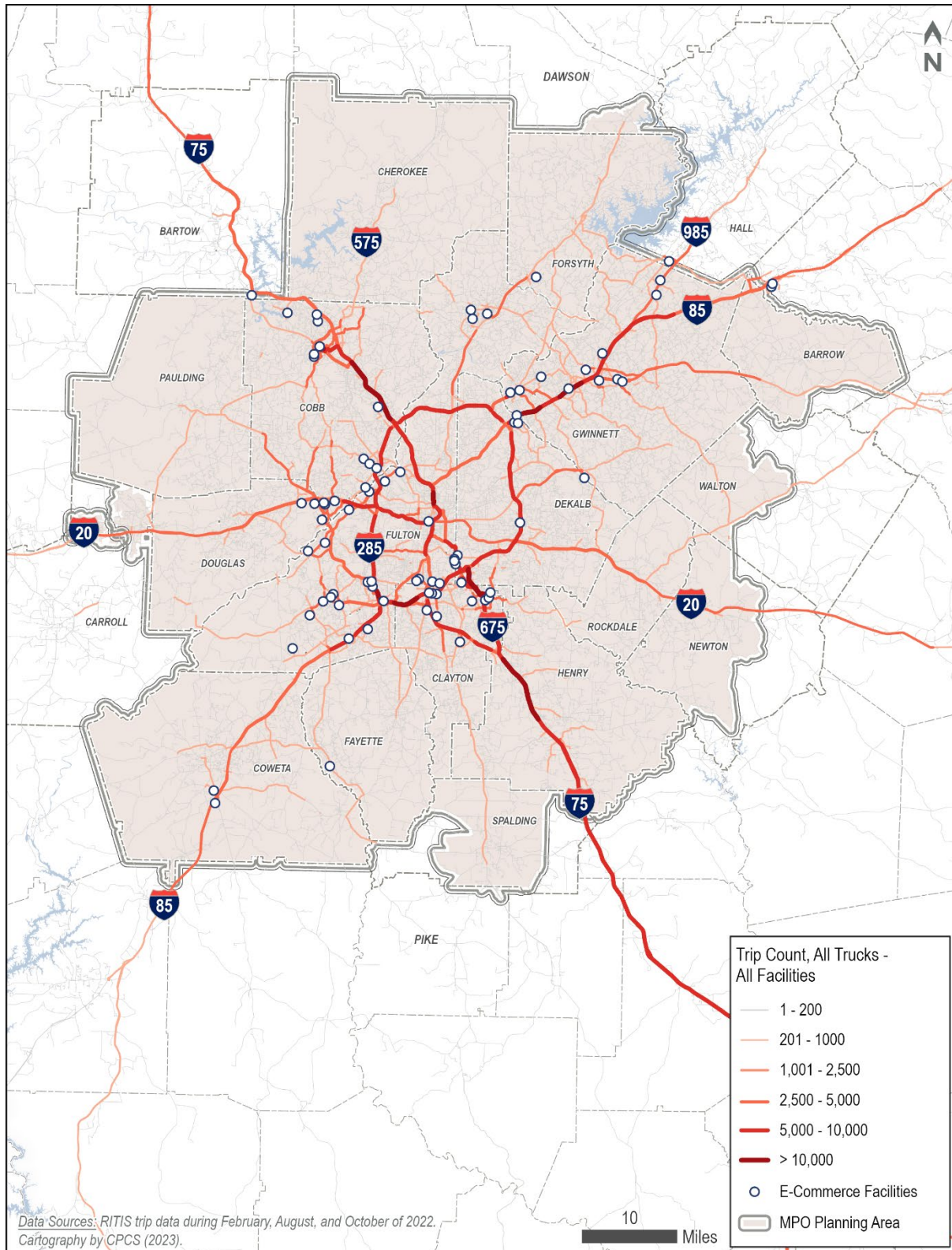
Figure 36: Major Roadways Serving E-commerce Facilities—All Truck Vehicle Classes

Figure 37: Major Roadways Serving E-commerce Facilities—Heavy- and Medium-Duty Trucks

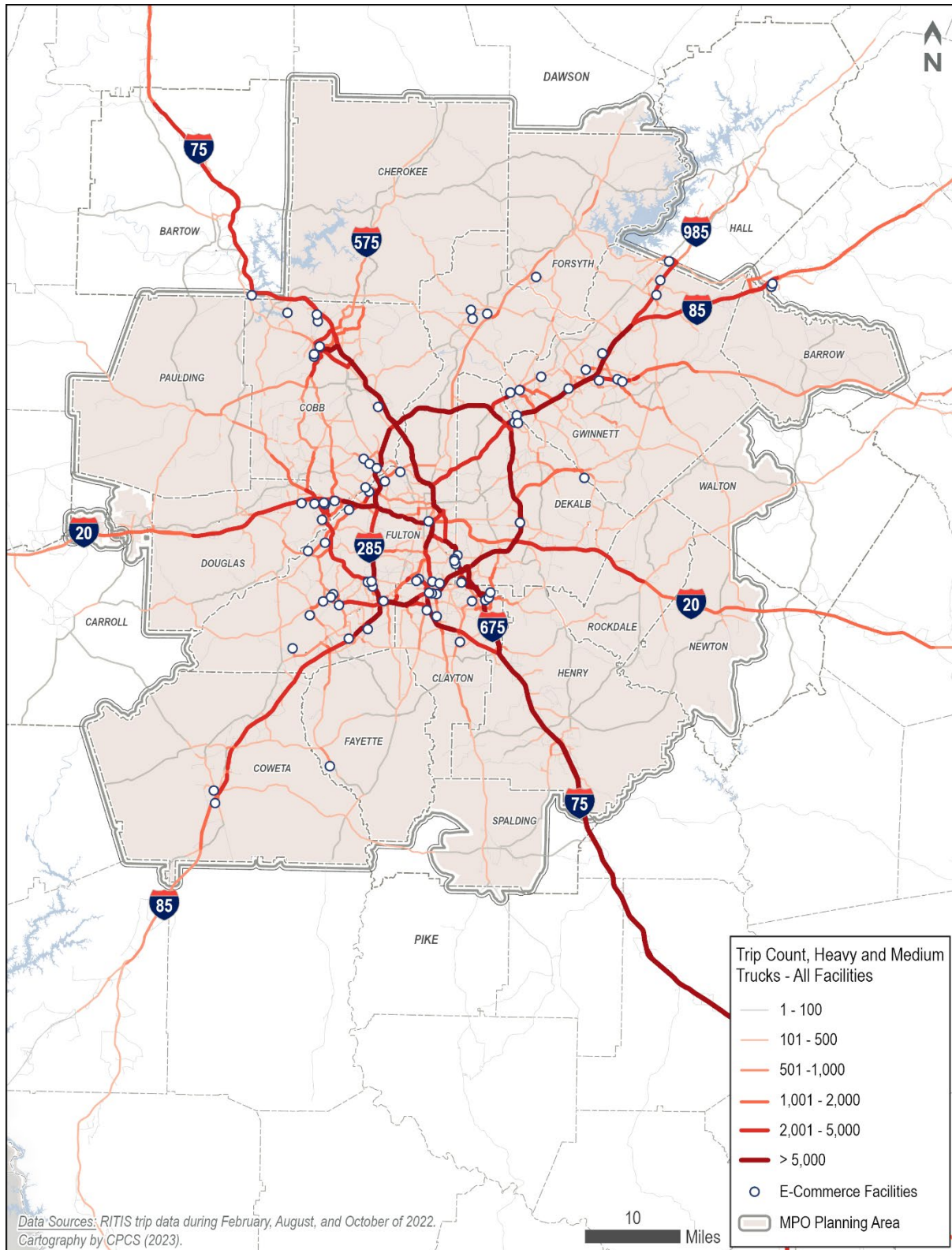
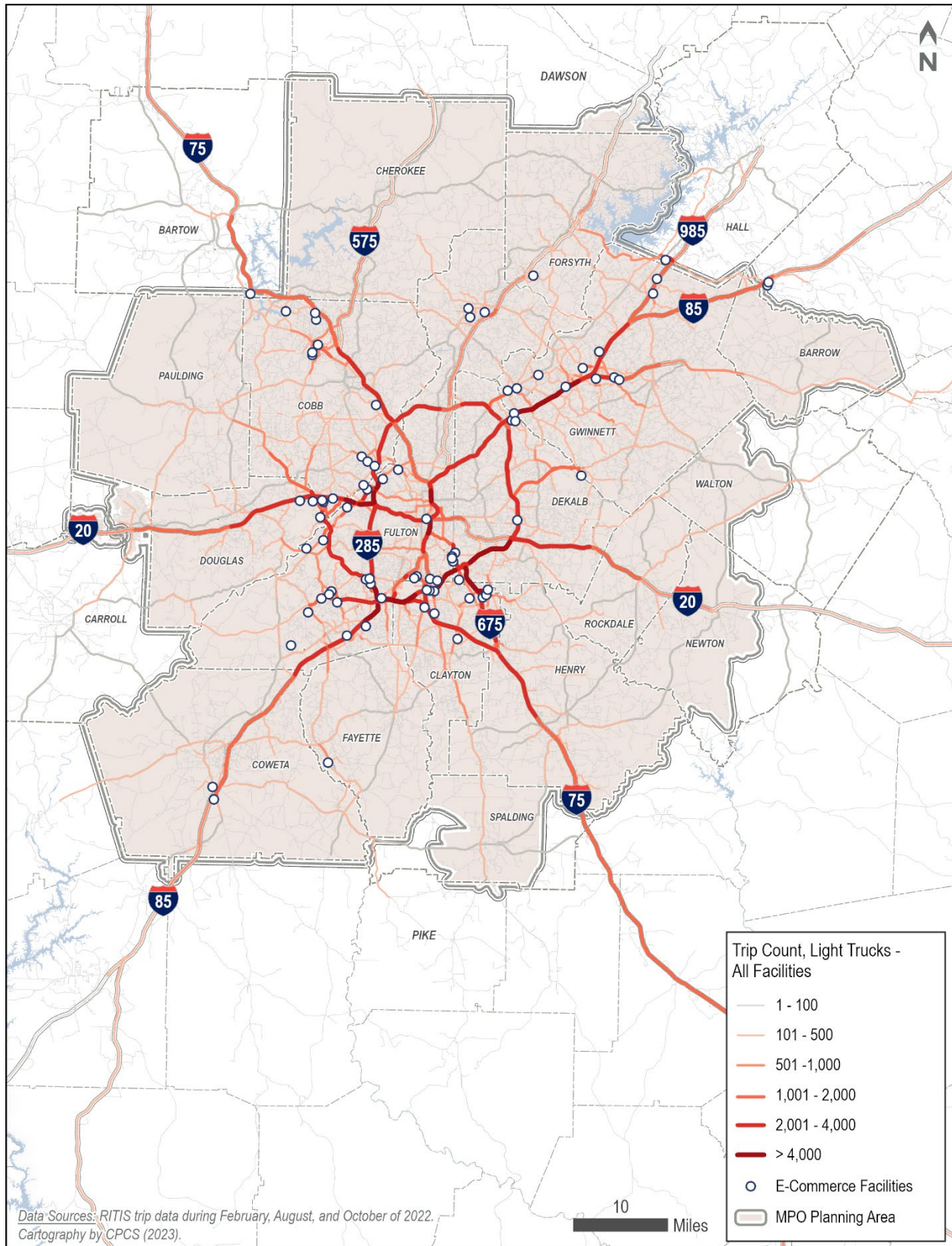


Figure 38: Major Roadways Serving E-commerce Facilities—Light-Duty Trucks

Key Findings: Local Roads Serving E-commerce Facilities

To identify critical local connectors serving the major e-commerce facilities, trip counts were aggregated for each roadway segment for each vehicle class within a 3-mile radius of each major e-commerce facility.

Figure 39 shows the local roads providing the e-commerce facilities critical access to the interstate and U.S. highways. Whereas Figure 36 through Figure 38 in the previous section highlighted the major roadways serving the e-commerce facilities, Figure 39 intentionally omits truck-volume data on interstates and U.S. highways. This exclusion is to ensure that the traffic volume on local connectors is more prominently displayed. Figure 40 through Figure 42 offer detailed views of the top five key local connectors essential for facilitating truck traffic to e-commerce facilities. These zoomed-in maps include the volumes on interstates and U.S. highways, providing a comprehensive overview of traffic patterns on roads adjacent to the e-commerce facilities. The key observations from these figures are as follows:

- South Park Boulevard, Anvil Block Road, Grant Road, and Macon Highway are important connectors serving several e-commerce facilities located in Clayton County, including the FedEx Ground facility located on South Park Boulevard, Amazon DGE7, and the FedEx Freight Facility on Thurman Road. These roads also provide e-commerce facilities with critical access to I-675 and I-285 (Figure 40).
- Figure 41 shows the roadways serving the cluster of e-commerce facilities near the Hartsfield-Jackson Atlanta International Airport. In addition to Perry J Hudon Parkway on the north side of the airport connecting the UPS and FedEx airport cargo facilities with I-85 and I-75, Conley Road and Southside Industrial Parkway to the east of the airport provide important connection for several e-commerce facilities with I-75, I-285, and US 41. Moreover, GA-85 and GA-139/Riverland Road provide important connections to the south, and Forest Parkway provides a critical east-west connection and access to I-285 and I-85. Further to the west of the airport, Commerce Drive provides important access to several Amazon and FedEx facilities.
- GA-70/Fulton Industrial Boulevard west of I-285 in Fulton County, GA-6/Thornton Road north and south of I-20 in Douglas County, and Riverside Parkway between GA-6 and I-20 provide important access for the cluster of e-commerce facilities in Douglas County and Cobb County (Figure 42-1).
- Near the Cobb County International Airport, the critical roads connecting the e-commerce facilities to I-75, I-575, and US-41/Cobb Parkway North include Ernest W Barrett Parkway NW, Barret Parkway Drive, Roberts Boulevard, and McCollum Parkway NW, and Chastain Road, among others (see the right-side portion of Figure 42 identified as “Area 5”).
- Figure 43 and Figure 44 show the key connectors most heavily utilized by medium-duty trucks and light-duty trucks within a 3-mile radius of major e-commerce facilities.

Figure 39: Local Roads Serving E-commerce Facilities—All Truck Vehicle Classes

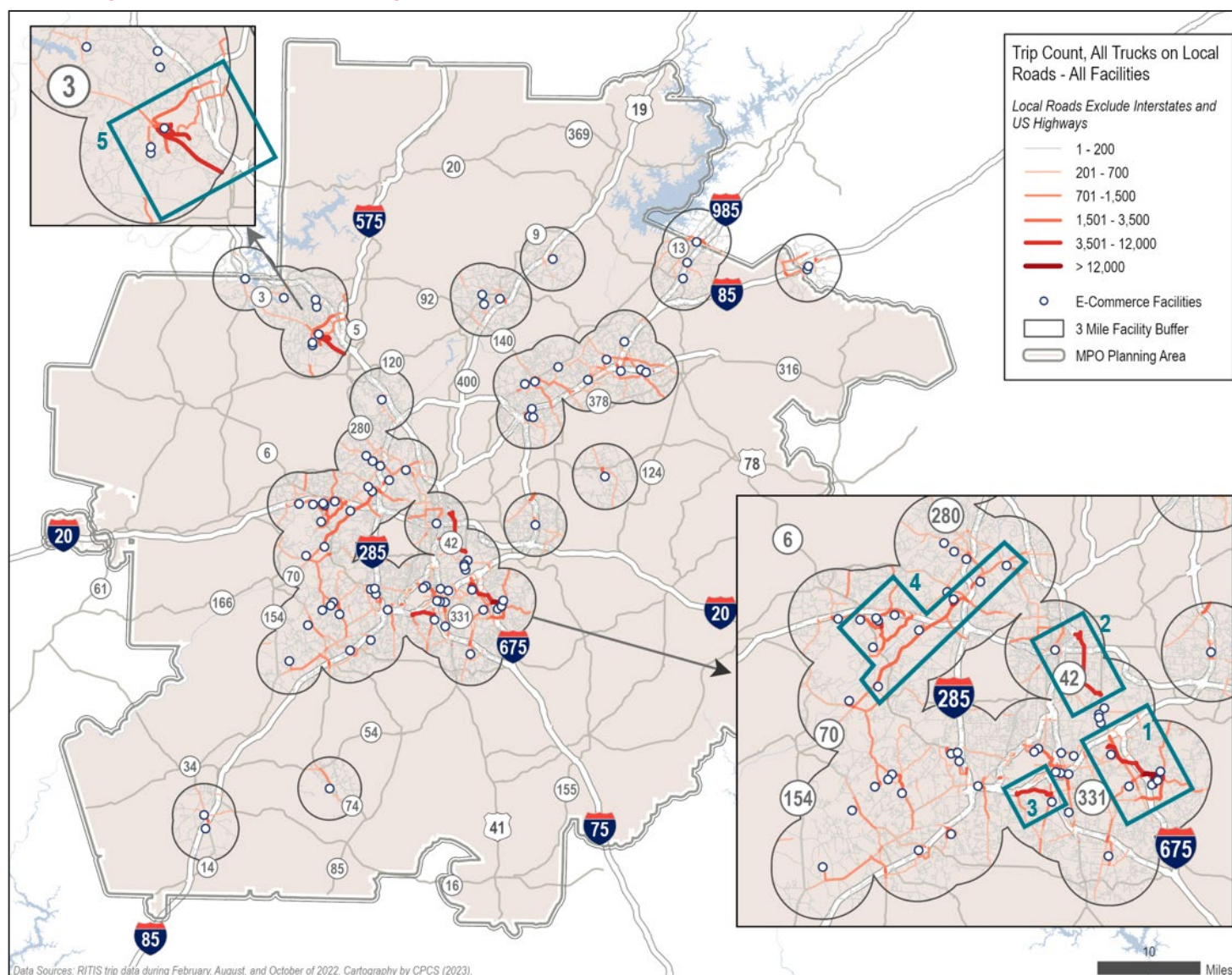
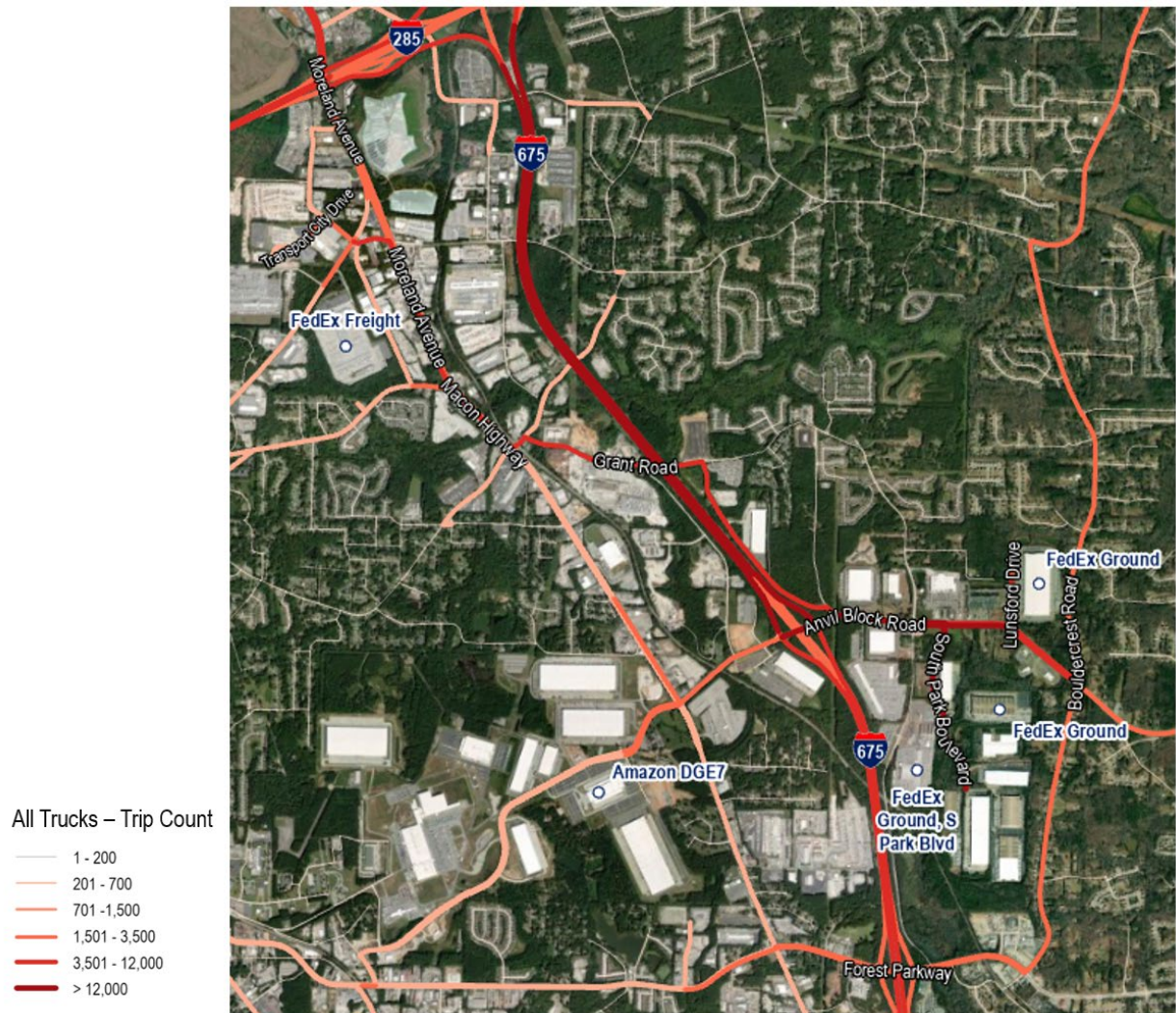
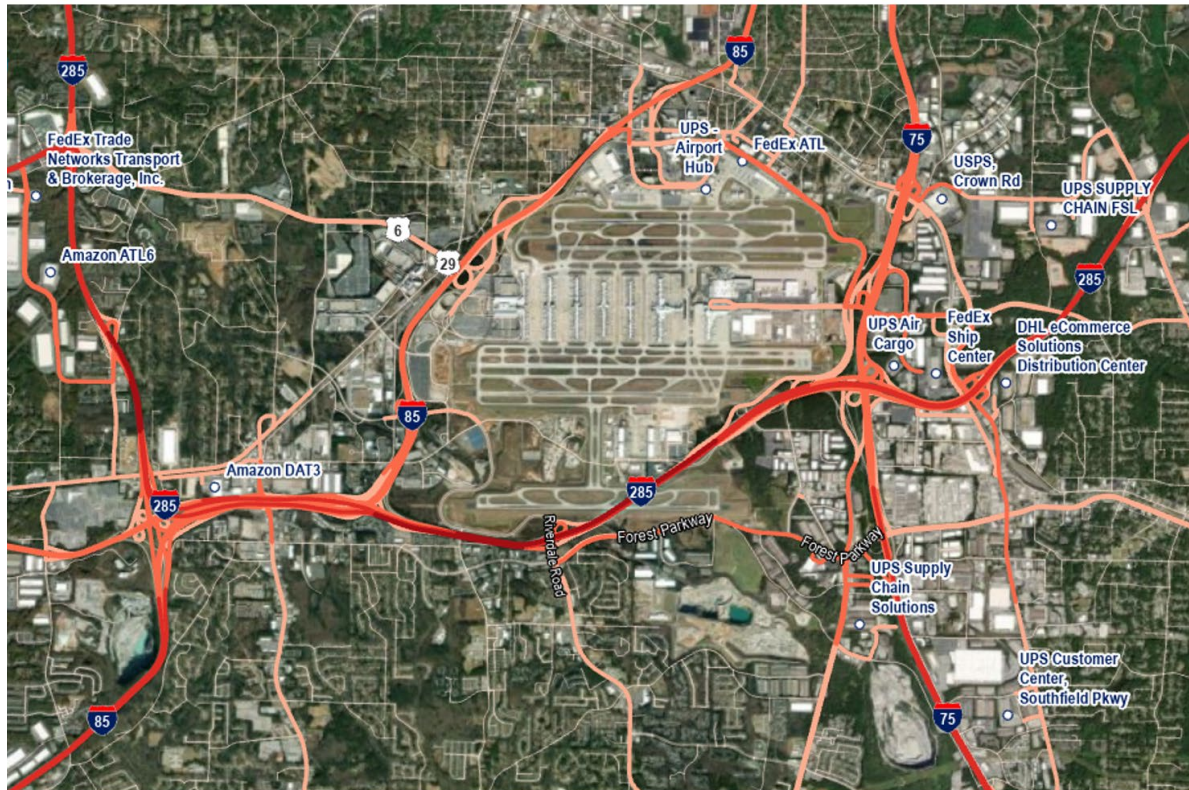


Figure 40: Local Roads Serving E-commerce Facilities—Zoom in Area 1



Source: RITIS trip data.

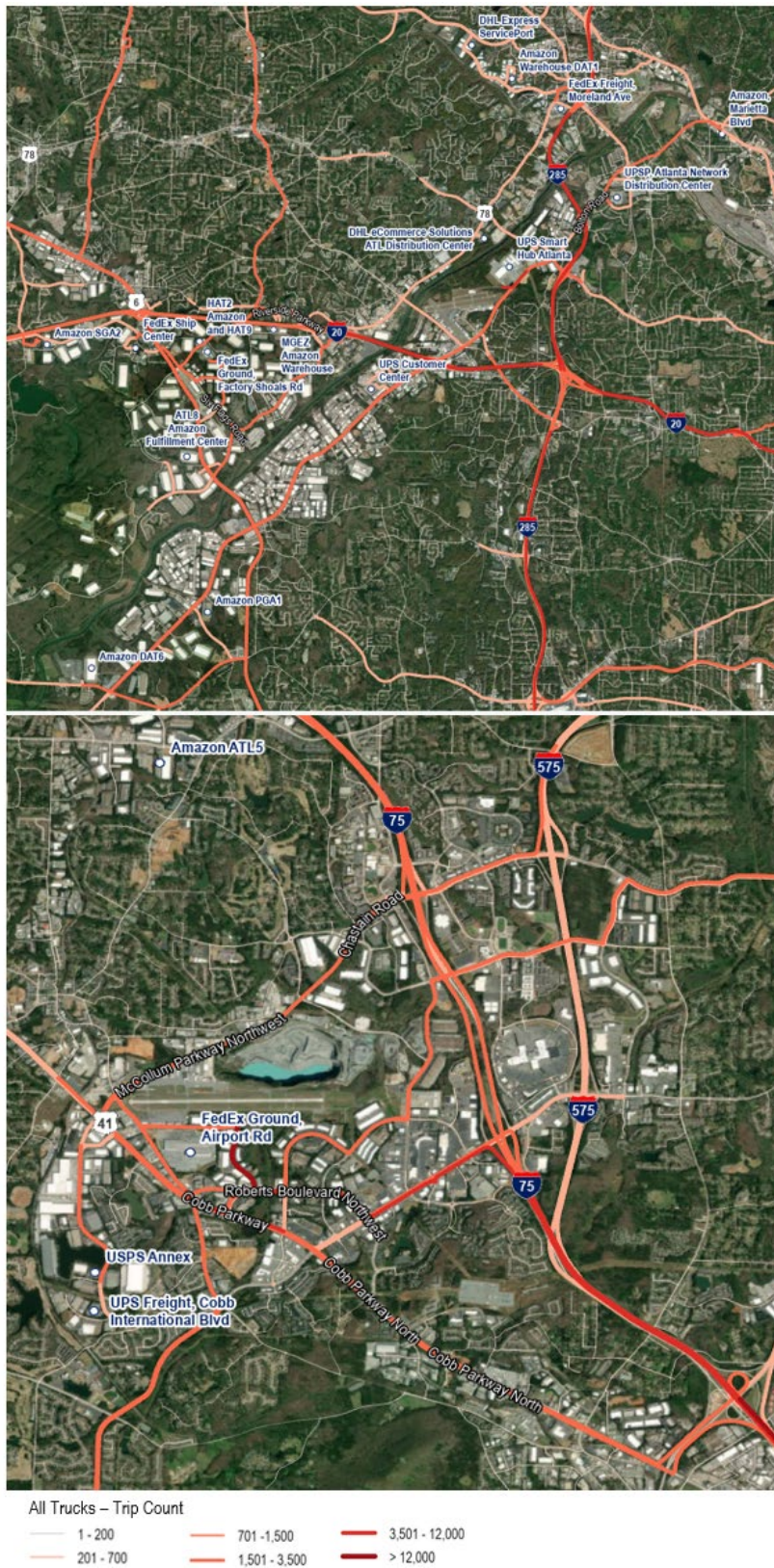
Figure 41: Local Roads Serving E-commerce Facilities—Zoom in Area 2



All Trucks – Trip Count	1 - 200	701 - 1,500	3,501 - 12,000
	201 - 700	1,501 - 3,500	> 12,000

Source: RITIS trip data.

Figure 42: Local Roads Serving E-commerce Facilities—Zoom in Area 3 and Area 4



Source: RITIS trip data.

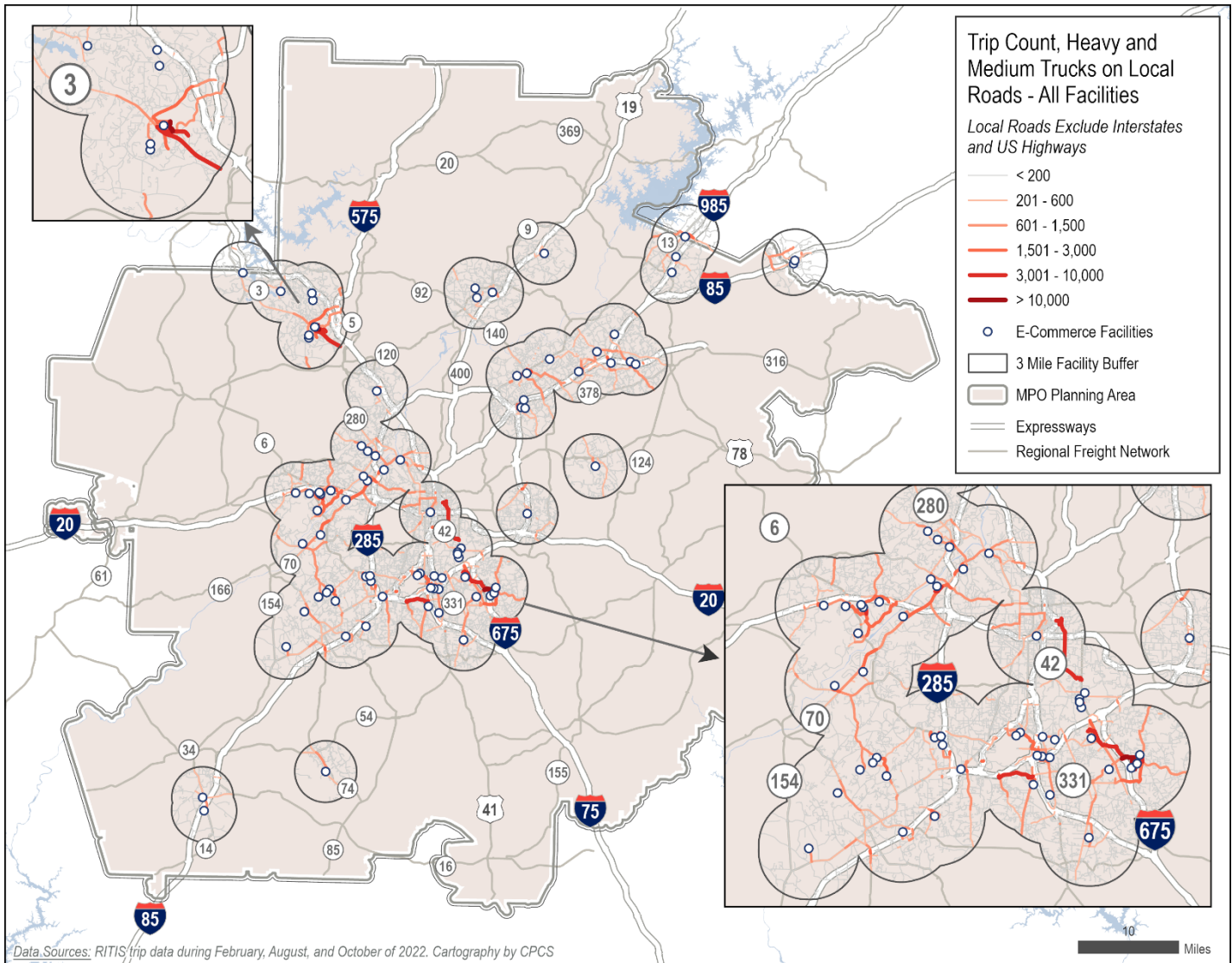
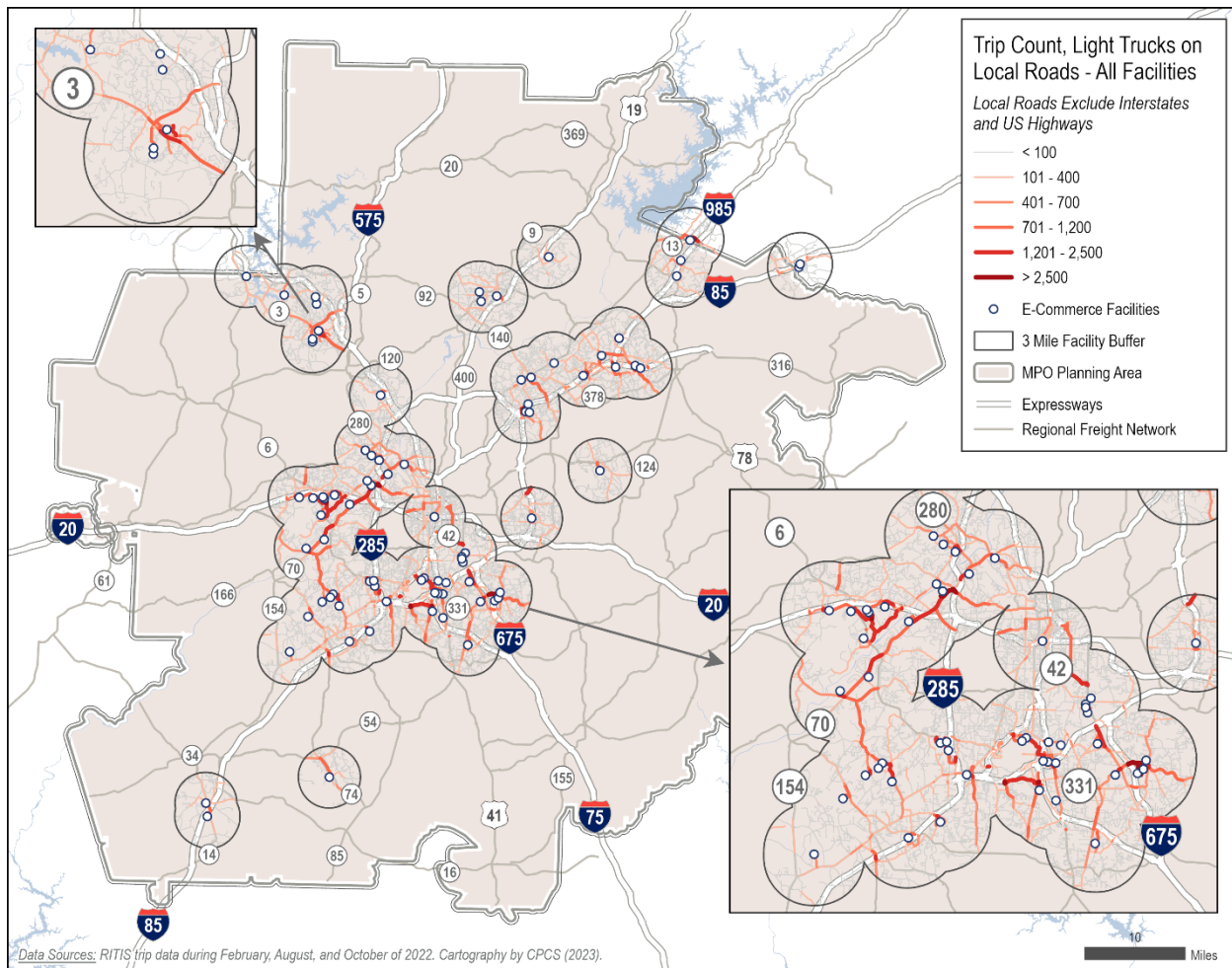
Figure 43: Local Roads Serving E-commerce Facilities—Heavy- and Medium-Duty Trucks

Figure 44: Local Roads Serving E-commerce Facilities—Light-Duty Trucks

Freight Clusters Validation

To assist in updating the freight cluster boundaries, RITIS truck GPS data was processed to illustrate the truck trip generation and attractions in the proposed freight cluster areas. The analysis leverages RITIS truck medium and heavy-duty truck GPS data spanning from 2019 to 2022, encapsulating an extensive dataset that includes a total of 88 million records within the Metro Atlanta area. This dataset offers a comprehensive temporal scope, covering different periods across the years: February, August, and October for 2019 and 2020; an expansion in 2021 to include December alongside the previously mentioned months; and a broadened capture in 2022 covering from January through November. The data encompasses both weekdays and weekends, ensuring a robust representation of truck movements throughout various times and conditions. Recorded 24/7, the dataset provides a detailed temporal analysis window across all hours of the day. Key attributes featured in the dataset include the origin and destination latitude and longitude, trip begin and end date and time, and vehicle type. As shown in Figure 45 and Figure 46, the proposed freight cluster areas capture the areas with high truck trip origins and destinations effectively.

Figure 45: RITIS Medium- and Heavy-Duty Truck Trip Origins

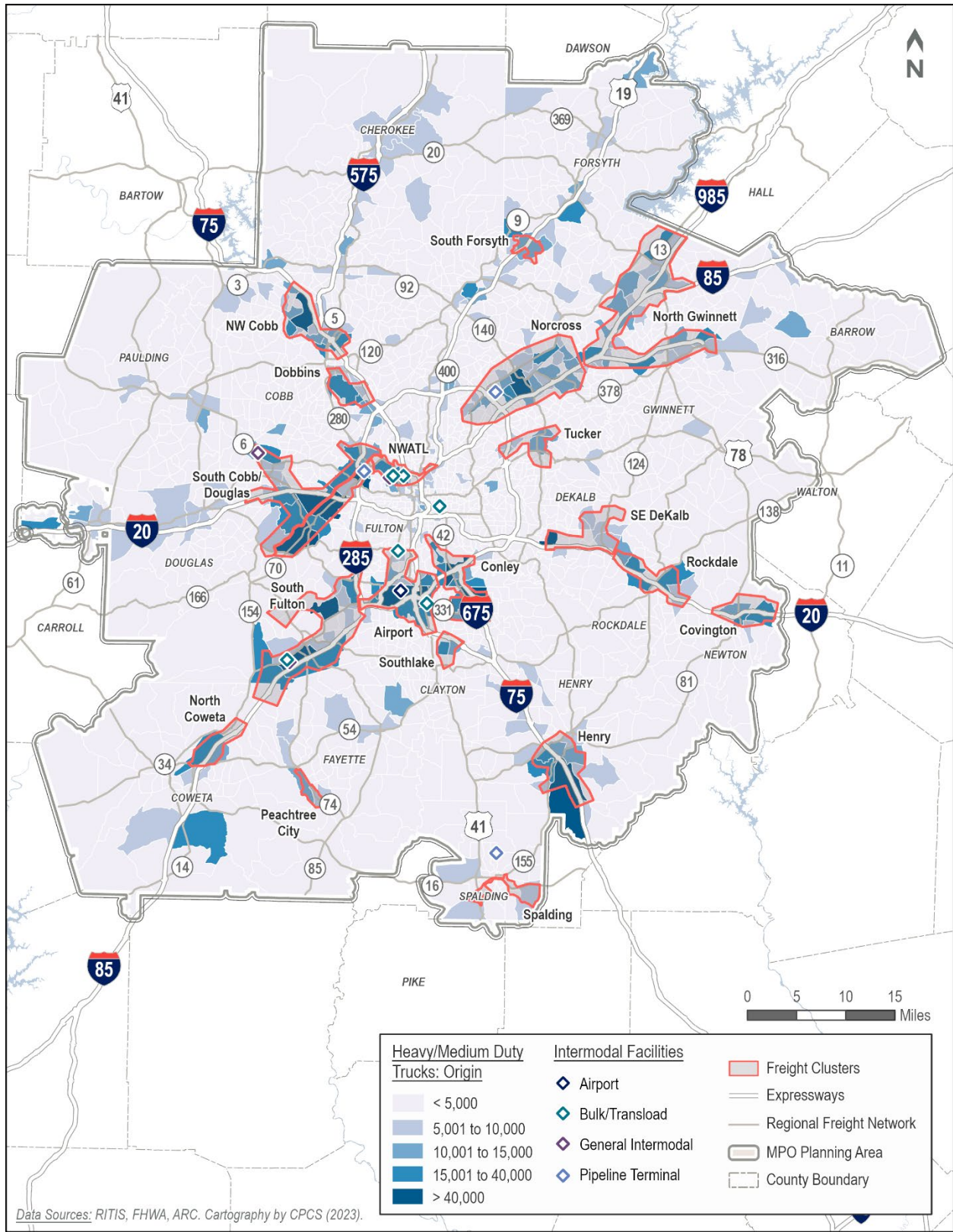
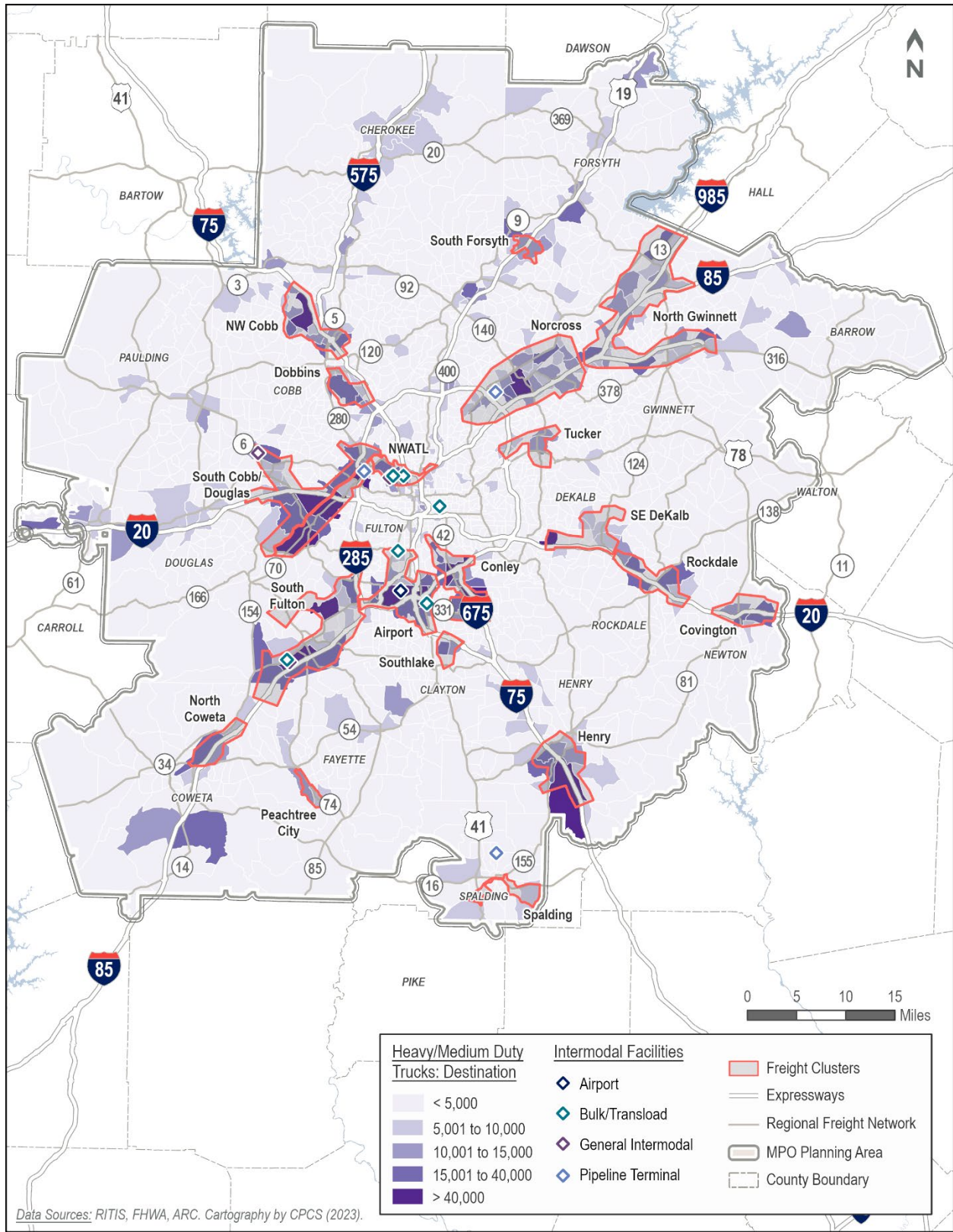


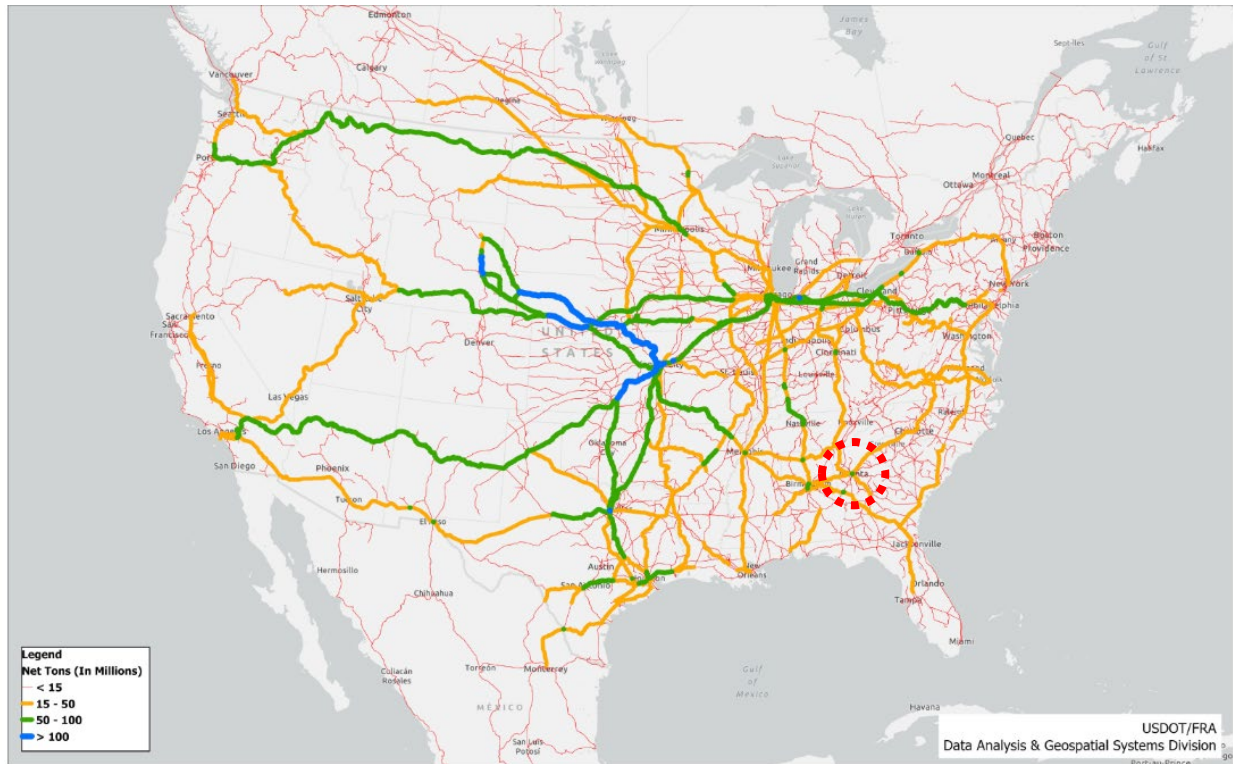
Figure 46: RITIS Medium- and Heavy-Duty Truck Trip Destinations



Train Flows

Figure 47 shows the national rail tonnages over the railroad network in 2022, with the Atlanta region roughly indicated with a dotted red circle. The region's major Class I railroads largely fall into the 15-50 million tons per year range with the intersection of the railroads at the center of the region carrying 50-100 million tons per year.

Figure 47: STB Waybill Sample 2022 – All Commodities



The Waybill is a stratified sample of carload waybills for all U.S. rail traffic submitted by those rail carriers terminating 4,500 or more revenue carloads annually. Image created by the Federal Railroad Administration, Office of Research, Data, and Innovation, based on the Surface Transportation Board's 2022 Carload Waybill Sample.

Source: FHWA, Freight Rail Overview, The Freight Rail Network, June 2024. <https://railroads.dot.gov/rail-network-development/freight-rail-overview>

Figure 7 in an earlier section of this report shows the busiest at-grade crossings with a high number of train cars and truck traffic counts. Table 7 lists the top 10 busiest at-grade rail crossings.

According to the *Georgia State Rail Plan* (2021), over the last decade, rail traffic growth in Georgia by the carloads/units measure was driven by intermodal traffic. The Atlanta metropolitan region stands as Georgia's principal hub for rail intermodal freight, dominating the state's market by handling more than 75 percent of its incoming intermodal traffic and over 66 percent of its outgoing intermodal traffic. A significant portion of the state's remaining intermodal movements either start or conclude in Savannah. Metro Atlanta is the primary recipient of rail deliveries from the Port of Savannah, playing a critical role as

a source for shipments heading to the port as well. The rail facilities at the Port of Savannah are crucial for reducing congestion on Interstates 16 and 75, as they divert over 1.5 million truck trips annually that would otherwise traverse the route between Savannah and Atlanta.

Increases in intermodal traffic may increase rail traffic congestion. However, because intermodal traffic weighs less than other rail commodities such as coal, railroads may meet increased demand by using longer trains since they have less weight limitations on the infrastructure.⁶²

CSX and NS credit the implementation of the principles of precision-schedule railroading, a shift in operating strategy from managing the movement of trains to managing the movement of individual rail cars, as the mechanism that facilitated improved overall efficiency across its system. Before the adoption of precision railroading, cars would wait in yards until large-sized trains could be built.

⁶² GDOT (2021). *Georgia State Rail Plan*.

<https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft.pdf>

Major Railroads Perspective

Key takeaways from the interviews with Norfolk Southern and CSX highlight both the existing conditions and future challenges of train flow in the Atlanta region, as well as potential strategies for improvement:

- **Growth Potential and Imports:** Both Norfolk Southern and CSX recognize significant near-term growth potential, particularly with the boom in e-commerce and manufacturing. This is driving an increased desire for businesses to locate manufacturing along rail lines for better access to imports, notably through Savannah, which continues to see growth in imports.
- **Bottlenecks and Operational Challenges:** Howell Junction remains a bottleneck despite improvements, with 80 trains moving through daily. The closure of Tilford Yard has led to operational adjustments for CSX but has not fully alleviated the congestion challenges. Both Norfolk Southern and CSX face challenges with truck access, parking, and infrastructure limitations around their facilities, with specific mention of Inman and Whitaker Yards by Norfolk Southern and Howells Yard by CSX.
- **Infrastructure and Capacity Expansion:** Norfolk Southern is focused on infrastructure improvements and is excited about the opening of the Northeast Georgia Inland Port in Hall County, anticipated by the end of 2026. This development is expected to significantly benefit the region's freight movement capabilities. CSX emphasizes the strategic importance of Atlanta as a rail gateway and is open to expanding partnerships with inland ports to enhance efficiency.
- **Technology and Workforce Development:** Both companies are investing in technology and workforce development to address current challenges and prepare for future demand. Norfolk Southern has introduced electric cranes for intermodal freight at Austell, while CSX is deploying innovative technologies like inspection portals and remote-operating cranes. Workforce development, including training and incentives, is a focus for CSX to address the industry's labor shortages.
- **Transportation System Improvements:** To improve the movement of freight, there is a consensus on the need for innovative technologies and infrastructure investments. This includes leveraging inspection portals, remote-operating cranes, and partnerships with inland ports to enhance efficiency and reduce environmental impact. Addressing infrastructure challenges, such as low bridge clearances, is also seen as crucial.

In summary, the Atlanta region is at a pivotal point with its freight transportation system, facing challenges such as bottlenecks, infrastructure limitations, and workforce shortages. However, there are clear opportunities for growth and improvement through strategic investments in technology, infrastructure, and human resources. Collaboration between rail companies, governmental agencies, and other stakeholders is essential to realize these opportunities and ensure the region's freight transportation system can meet future demands.

Air Cargo Flows

Figure 48 illustrates the cargo volume trend at ATL between 2018 and 2022. Due to the recovery of the global air cargo market from the pandemic air restrictions, ATL's total cargo volume grew 24.1 percent in 2021 but decreased by 6.2 percent (over 43,100 tons) in 2022 as the demand softened. As shown in Figure 49, ATL generally processes more international than domestic cargo. In 2022, ATL handled nearly 395,000 tons of international cargo and 257,000 tons of domestic cargo.

Figure 48: ATL Cargo Volume—Inbound vs. Outbound (2018–2022) (1,000 Metric Tons)

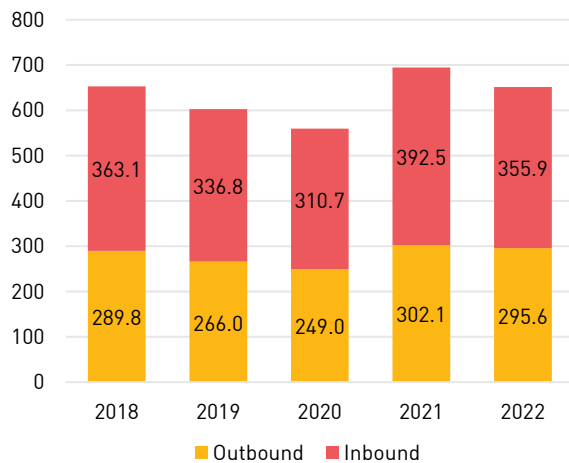
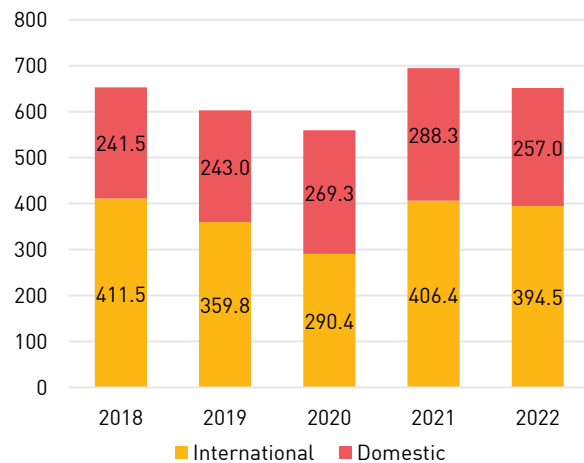


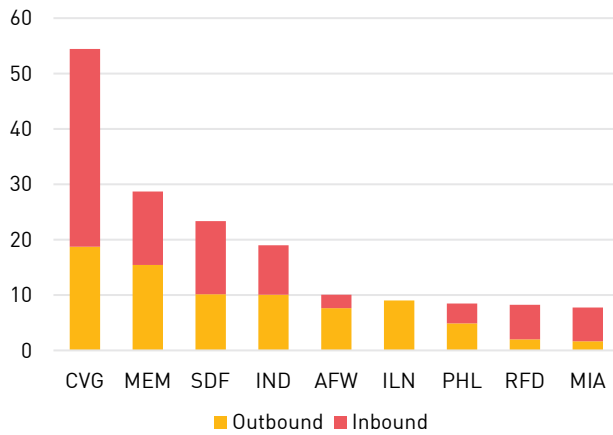
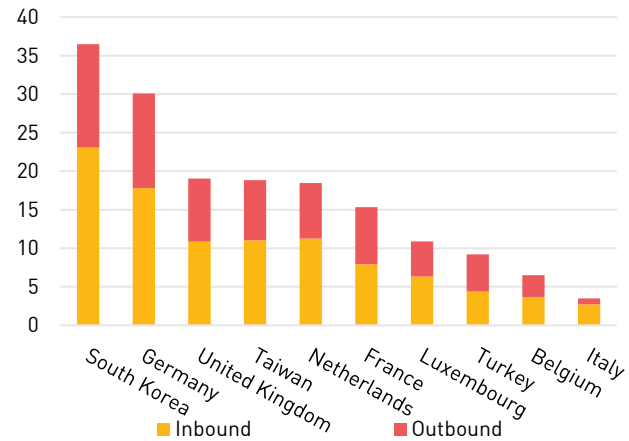
Figure 49: ATL Cargo Volume—Domestic vs. International (2018–2022) (1,000 Metric Tons)



Source: Hartsfield-Jackson Atlanta International Airport Year-To-Date Freight Data.

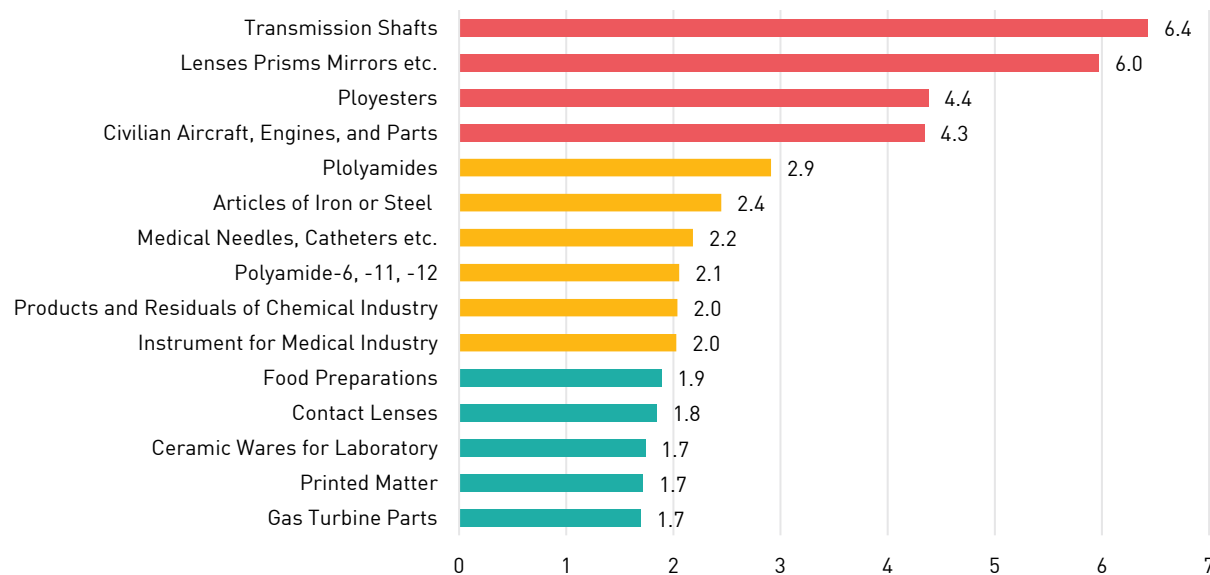
Figure 50 and Figure 51 show ATL's top domestic and international trade partners by volume, respectively. ATL usually serves as the spoke for major cargo airports in the Midwest, such as Cincinnati/Northern Kentucky International Airport (CVG), Memphis International Airport (MEM), Louisville International Airport (SDF), Indianapolis International Airport (IND), and Wilmington Air Park (ILN). For instance, ATL only had outbound cargo movements to ILN, an Amazon Air hub, in 2021. ATL's other key domestic trade partners include Alliance Airport (AFW), Philadelphia International Airport (PHL), Chicago Rockford International Airport (RFD), and Miami International Airport (MIA). In 2022, ATL processed the most cargo to and from Cincinnati/Northern Kentucky International Airport (CVG), totaling 54,400 tons.

ATL's top international trade partners are located in East Asia (e.g., Korea and Taiwan) and Europe (e.g., Germany, United Kingdom, Netherlands). In 2021, ATL handled the most cargo to and from South Korea, amounting to 36,500,000 tons.

Figure 50: ATL's Top Domestic Trade Partners by Volume (2022) (1,000 Metric Tons)**Figure 51: ATL's Top International Trade Partners by Volume (2022) (1,000 Metric Tons)**

Source: BTS T-100 Market Data, 2022.

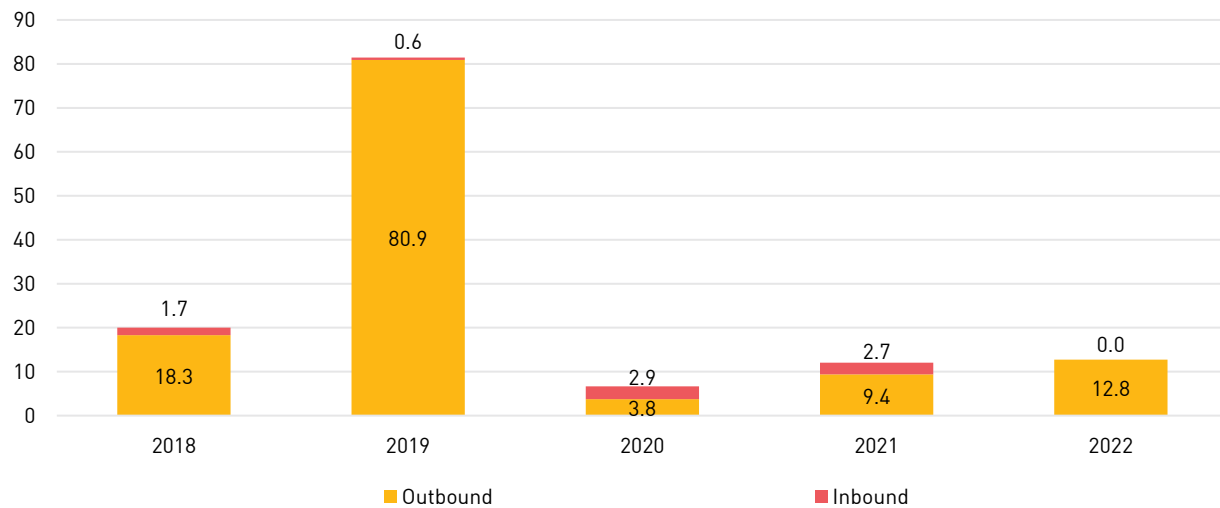
Air cargo usually transports goods that are high-value and/or time-sensitive. As demonstrated in Figure 52, the top international export commodities handled by ATL include mechanical parts (e.g., transmission shaft, civilian aircraft parts, and gas turbine parts), optical components (e.g., lenses, prisms, and mirrors), synthetic fabrics (e.g., polyesters and polyamide), medical supplies (e.g., medical needles, catheters, and instruments), steel and iron, foodstuff, printed matters, and laboratory equipment. In 2021, the top three commodities by volume were transmission shafts (6,400 tons), optical components (6,000 tons), and polyesters (4,400 tons).

Figure 52: Top International Export Commodities at ATL by Volume (2021) (1,000 Metric Tons)

Source: WiserTrade.

Outbound movements dominated the cargo activities at Gwinnett County Airport (LZU) between 2018 and 2022 (shown in Figure 53). After peaking at 81.5 tons in 2019, the air cargo volume handled at LZU dropped significantly in 2020 (6.7 tons) and has been slowly recovering since then. In 2022, LZU processed only outbound cargo, totaling 12.8 tons. The spike in 2019 was likely due to a unique contract or event, such as relief shipments, increased corporate jet activity, or a one-off cargo operation.

Figure 53: LZU Air Cargo Volume – Inbound vs. Outbound (2018-2022) (Metric Tons)



Source: BTS T-100 Market Data.

Summary of Key Findings

The analysis of existing and projected conditions for the Metro Atlanta area's freight infrastructure network in this chapter uncovers several key findings that are critical for understanding the current state and future challenges of freight movement in the region. This analysis, grounded in comprehensive data on highways, railways, air cargo facilities, intermodal connectors, truck parking facilities, and ports, offers a deep dive into the dynamics of Metro Atlanta's freight system.

- Highway Infrastructure:** Metro Atlanta's position at the heart of Georgia's highway network is instrumental in facilitating goods movement across the region and beyond. The strategic significance of these highways underscores the critical role of road infrastructure in supporting the regional economy and ensuring efficient freight flows.
- Rail Infrastructure:** With over 824 miles of railroad tracks, Metro Atlanta benefits from robust rail infrastructure, primarily served by Class I railroads CSX and NS and supported by shortline railroads, intermodal yards, and bulk/transload facilities.
- Air Cargo Facilities:** The Hartsfield-Jackson Atlanta International Airport (ATL)'s ranking among the busiest cargo airports in the U.S. and the provision of regularly scheduled cargo flights underlines the airport's vital role in the regional and national air cargo network.

- **Intermodal Connectors:** These designated public roads are essential linkages between major intermodal terminals and the broader NHS, highlighting the interconnected nature of the region's freight infrastructure. The analysis of these connectors sheds light on the critical first- and last-mile segments that ensure the seamless movement of goods across different transportation modes.
- **Truck Parking:** Truck parking is a critical issue in the Metro Atlanta area, reflecting the broader challenge of accommodating the region's significant freight volumes. With the trucking industry serving as the backbone of freight movement, adequate and accessible truck parking facilities are vital for ensuring truck driver safety and security, safety of other motorists, security of goods, compliance with regulations, and the efficient operation of supply chains. The current truck parking capacity struggles to meet demand, underscoring the need for strategic investments to expand and improve parking infrastructure, particularly in light of the expected growth in truck volumes.
- **Freight Flows:** The analysis of commodity flows within the Metro Atlanta area reveals a significant volume of freight moving into, out of, and within the region, primarily by truck. This is complemented by rail and air cargo movements, highlighting a diversified modal mix. The examination of top commodities and trading partners, coupled with growth projections, indicates increasing freight volumes and evolving infrastructure needs. The future of freight in Metro Atlanta will require addressing current bottlenecks, enhancing modal connectivity, and strategically planning for capacity expansions to accommodate growing demand, ensuring the sustainability and efficiency of the freight system.

In summary, the key findings from this analysis highlight the complex interplay between different modes of transportation, the critical role of infrastructure in supporting freight movement, and the evolving needs of the Metro Atlanta area's freight system. Addressing capacity limitations, enhancing intermodal connectivity, and preparing for future growth are imperative to ensuring the efficiency and sustainability of freight operations in the region.

4. Regional Freight Needs

Freight Bottlenecks

The demand for freight transportation in the Atlanta region has been increasing at a faster pace than the capacity of its highway and rail networks over the past decades. Freight bottlenecks occur when the demand exceeds the network's capacity, leading to physical congestion at specific locations. These bottlenecks significantly disrupt the smooth flow of freight, resulting in longer travel times, higher shipping costs, and reduced reliability for deliveries. Ultimately, this impacts the economic growth of the Atlanta region. Freight bottlenecks can arise due to capacity limitations, inadequate infrastructure, or inefficiencies within the system. In the Atlanta region, these bottlenecks are prevalent on highway networks. Proactive planning and investment in freight infrastructure are needed to address these bottlenecks to support economic development and competitiveness.

Highway Freight Bottlenecks

Locations on the highway network that carry higher truck volumes and are subject to recurring congestion are referred to as highway freight bottlenecks. There are various ways to identify freight bottlenecks. Highway bottlenecks can be identified based on the level of traffic congestion, deficient infrastructure, or policies that impose restrictions on truck movements. Highway freight bottlenecks can be identified on congested highway corridors or at highway interchanges. Additionally, various data sources can be used to identify highway bottlenecks.

Georgia Freight Plan

In the 2023 update to the *Georgia Freight Plan*, the Georgia Department of Transportation (GDOT) identified highway bottlenecks statewide based on the cost of delay due to congestion. The GDOT freight plan identified bottlenecks separately for the Urban Atlanta Region, Urban Other, and Rural categories to prevent the Atlanta region from dominating the list of bottlenecks. The bottlenecks were identified individually for these three groups based on the cost of delay due to congestion (measured using user cost per mile). The top 5 percent of the roadway segments with the highest cost of delay within the three groups were identified as bottlenecks. Out of the 546 bottlenecks (239 miles) identified throughout Georgia, 219 bottlenecks (111 miles) were in the Atlanta Metro region.

The top 20 bottleneck clusters in the Atlanta region identified in the GDOT freight plan are listed in Table 32.

Table 32: Top 20 Bottlenecks in the Atlanta Region Identified in the Georgia Freight Plan

Rank	Bottleneck Name	Total Miles	Average Daily Truck Volume	Congestion Costs in 2019 (\$/day)
1	I-75 NB from Bill Gardner Pkwy to I-675	18.8	18,132	747,825
2	I-75 SB from Mt Zion Blvd to Hudson Bridge Rd	10.5	17,595	431,064
3	I-285 Top End	8.5	21,570	283,500
4	I-285 from Memorial Dr and I-20 East Interchange	7.7	20,861	233,927
5	I-75 SB from Roswell Rd to the I-285 North interchange	7.6	13,261	215,306
6	I-85 SB from GA-316 to Beaver Run Rd	6.8	13,415	202,133
7	I-285 from Church St to Lavista Rd	6.5	19,658	196,274
8	I-75/I-85 NB from I-75/I-85 South Split to John Lewis Freedom Pkwy	4.6	16,401	184,704
9	I-285 from I-85 to Peachtree Industrial Blvd	3.8	19,378	143,384
10	I-75 NB from Tara Blvd to I-285 South Interchange	2.7	18,786	128,096
11	I-20 WB from Evans Mill Rd to Panola Rd	3.8	12,863	125,801
12	I-20 EB from Thornton Rd to Fulton Industrial Blvd	4.5	11,494	115,695
13	I-285 CCW at I-75 North Interchange	3.6	22,206	103,790
14	I-285 CCW from S Cobb Dr to I-20 West Interchange	4.1	12,256	98,666
15	I-285 at Riverdale Rd	2.4	37,667	83,451
16	I-285 CW from Atlanta Rd to Paces Ferry Rd	2.2	23,161	70,113
17	I-75 SB from I-75/I-85 North Split to Howell Mill Rd	1.4	10,492	45,382
18	GA-74 from I-85 to Roosevelt Hwy	1.4	4,196	39,191
19	Dr Luke Glenn Garrett Jr Memorial Hwy	0.8	3,954	32,925
20	I-85 SB at I-75/I-85 South Split	0.4	16,615	20,511
TOTALS		104.8	3,501,737	

Source: *Georgia Freight Plan*.⁶³**FHWA Freight Bottleneck Dashboard**

FHWA identifies a nationally ranked list of major freight highway bottlenecks and congested corridors using the Freight Mobility Trends tool and the travel time data available from the National Performance Management Research Data Set (NPMRDS). The bottlenecks are ranked based on ‘annual truck hours of delay per mile.’ The ‘annual truck hours of delay’ metric is calculated by determining the difference between the actual travel time and the reference travel time (also known as “free flow” travel time),

⁶³ GDOT (2023). *Georgia Freight Plan*. <https://www.dot.ga.gov/InvestSmart/Freight/GeorgiaFreight/GeorgiaFreightPlan.pdf>

multiplied by the truck volumes for the segment with the greatest delay. The ‘annual truck hours of delay’ metric is then divided by the segment length to provide the ‘delay per mile.’

As per the FHWA Freight Bottleneck Dashboard,⁶⁴ in 2022, nine locations from the top 100 bottleneck locations are within the Atlanta metropolitan region. Table 33 shows the ranking of the top 10 bottlenecks in the Atlanta Metro region with their national ranking based on ‘delay per mile’ in 2022.

Table 33: Top 10 Bottlenecks in the Atlanta Metro Region as per the FHWA Freight Bottleneck Dashboard, 2022

Rank	National Rank	Highway	Direction	Length (Miles)	2022 Annual Delay Per Mile (Hours /Mile)	2022 Annual Average Daily Truck Traffic (AADTT)**	2022 Annual Delay* (Hours)
1	21	I-85/I-75	Northbound	0.68	77,171	7,355	52,653
2	43	I-285	Southbound	1.62	58,084	11,855	94,373
3	46	I-85/I-75	Northbound	1.73	56,567	7,355	97,881
4	48	I-85/I-75	Southbound	1.33	55,831	7,355	74,192
5	64	I-285	Westbound	4.39	48,377	9,544	212,141
6	71	I-285	Westbound	0.90	46,630	10,297	41,865
7	74	I-75	Northbound	1.24	45,938	8,402	56,896
8	77	I-285	Southbound	3.02	44,833	11,855	135,587
9	93	I-85/I-75	Northbound	3.41	41,504	7,355	141,636
10	124	I-285	Westbound	1.30	36,737	10,297	47,651

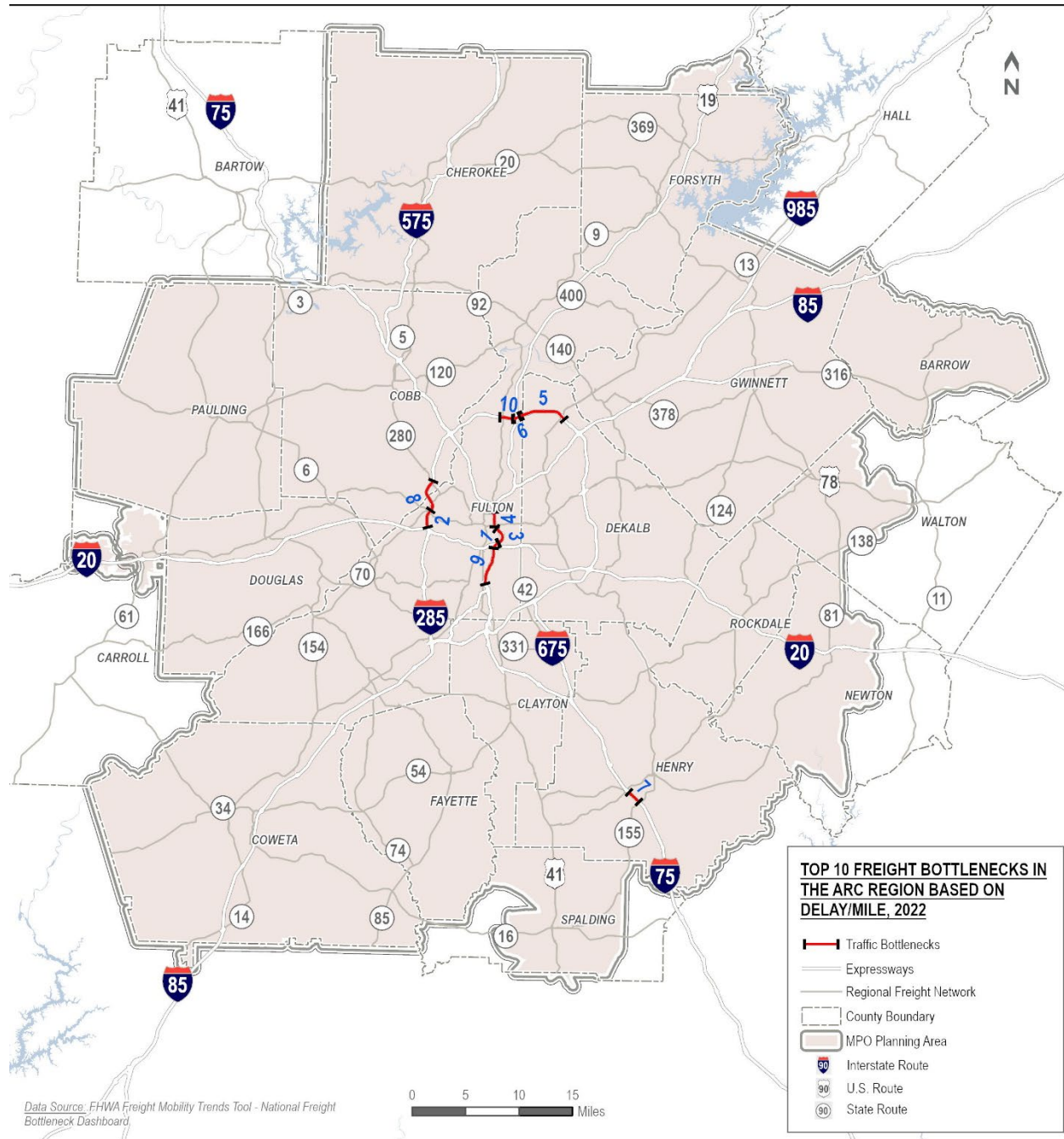
*For larger bottlenecks that span multiple roadway segments, delay is provided for the most congested segment and direction of the bottleneck, not for the full corridor.

** AADTT is bidirectional.

Figure 54 shows a map of the top 10 bottlenecks in the ARC region based on delay per mile in 2022 as per the FHWA Freight Bottleneck Dashboard.

⁶⁴ FHWA. Freight Bottleneck Dashboard.

<https://explore.dot.gov/views/FHWAFFMMBottlenecks/NationalBottlenecks?%3Aembed=y&%3Aiid=1&%3AisGuestRedirectFromVizportal=y>

Figure 54: Top 10 Bottlenecks in the ARC Region Based on Delay per Mile, 2022

ARC Bottleneck Analysis

The ARC identified bottlenecks in the Atlanta region using traffic volume and speed data for medium- and heavy-duty trucks to supplement bottleneck analysis done at other geospatial levels and by other organizations. This section describes the ARC's bottleneck analysis and provides results.

Data Sources

The primary data source is Geotab ITS, covering medium- and heavy-duty trucks for calendar year 2023. Geotab ITS collects data on truck locations and speeds from devices that are onboard a moderate share of commercial trucks, and it processes and provides access to the data through its Altitude portal.⁶⁵ The ARC extracted data only for medium- and heavy-duty trucks as classified by gross vehicle weight ratings (GVWR), where medium-duty trucks weigh between 10,001 lbs and 26,000 lbs and heavy-duty trucks weigh more than 26,000 lbs.

Key aspects of the data that the ARC extracted from the Altitude portal include are as follows:—

- Data covers weekdays only and is split into morning and afternoon peak period, where the morning peak runs from 6:00 AM to 10:00 AM, and afternoon peak runs from 3:00 PM to 7:00 PM.
- The average spot speed of medium- and heavy-duty trucks for morning and afternoon peak periods were downloaded.
- Annual average daily truck traffic (AADTT) is derived from observed counts of medium- and heavy-duty trucks.
- Data was downloaded for all road segments in the Atlanta region for which it is available using the application programming interface (API).

Data Analysis

The ARC processed the data to develop a spot speed index and AADTT values, which were used to identify and rank bottlenecks.

Spot Speed Index: The spot speed index shows trucks' average speed compared to the speed limit, with lower values for the index indicating a potential bottleneck. The spot speed index for each segment was calculated by dividing the segment-level average morning peak period speed and the average afternoon peak period speed by the speed limit.

The ARC used the spot speed index for this analysis, as it closely mirrors the principles of the traditional travel time index (TTI). Both metrics assess congestion by comparing actual speeds to a baseline—free-flow speed in the case of TTI and the speed limit in the case of spot speed index. Spot speed was selected due to the availability of data that included speed limits rather than free-flow speeds and due to its relatively intuitiveness.

AADTT: Using truck volume to identify bottlenecks ensures that congestion is affecting a moderate to large number of trucks. AADTT was calculated by multiplying observed counts for medium- and heavy-

⁶⁵ Geotab ITS (2024). *Altitude*. Accessed September 23, 2024, on <https://altitudeportal.geotab.com/>

duty vehicles by county-level expansion factors provided by Geotab ITS, summing the products, and dividing by the number of weekdays in 2023 (261). The ARC validated AADTT by comparing against Replica⁶⁶ AADTT for single- and combination-unit trucks, and against GDOT-calculated AADTT at select count locations.⁶⁷ In general, Geotab ITS-derived AADTT was high at the sample location compared with both other data sets. Nonetheless, the relative relationship between different roads held approximately constant among the data sets, meaning for instance that roads that had a high AADTT in one data set also had a relatively high AADTT in the other datasets, and vice versa.

Identifying Segments on Potential Bottlenecks

The ARC used two criteria to identify potential bottlenecks. The first criterion is spot speed index. To qualify as a potential bottleneck, road segments had to be at least as slow on average during the peak period as the spot speed index thresholds shown in Table 34. The thresholds were set at a level that produced a reasonable number of bottlenecks. Thus, they are stricter for the freeway afternoon peak period than the freeway morning peak period since freeways in the Atlanta region generally have slower speeds in the afternoon than in the morning. The thresholds are also stricter for non-freeways than for freeways since traffic flow on non-freeways is more often interrupted even without congestion for driveway access, stop signs, and traffic signals.

Table 34: Spot Speed Index Thresholds

	Morning Peak Period	Afternoon Peak Period
Freeway	75%	60%
Non-Freeway	50%	50%

In addition to the criterion for spot speed index, potential bottleneck segments also had to meet or exceed AADTT thresholds shown in Table 35. These ensure that the road carries enough medium- and heavy-duty vehicle traffic to qualify as a truck bottleneck rather than as a bottleneck more generally. These thresholds were set by examining Geotab ITS-derived AADTT for medium- and heavy-duty trucks, which as previously mentioned appears to trend high compared with count-derived AADTT from the GDOT, although the measures are not perfectly analogous since the GDOT classifies trucks differently from how this analysis classified trucks based on GVWR.

⁶⁶ Replica provides modeled transportation data, including traffic volumes. Additional details are available on Replica's website at <https://www.replicahq.com/>.

⁶⁷ GDOT (2024). Traffic Analysis and Data Application (TADA). Accessed September 26, 2024, on <https://gdottrafficdata.drakewell.com/publicmultinodemap.asp>

Table 35: AADTT Thresholds

	Morning and Afternoon Peak Periods
Freeway	8,000
Non-Freeway	2,000

Subsequently, the ARC reviewed these potential bottleneck segments manually to refine them. This involved eliminating extremely short segments, such as those that appear to be capturing only delay at a traffic signal, condensing long bottlenecks to better represent where congestion is most present, and combining discontinuous but nearby and closely related segments into a single bottleneck. Using this manual analysis combined with automated grouping of segments by road name and census tract, the ARC grouped remaining potential bottleneck segments into corridors. The ARC then reviewed these corridors for their congested mileage and retained the 10 corridors with the greatest congested mileage as a proxy for queue length or time to clear the bottleneck.

The ARC prioritized the remaining bottlenecks separately for morning and afternoon peak periods for freeways and non-freeways using the minimum spot speed index across any of the segments in the corridor. Using the minimum spot speed index results in ranking corridors with the worst slowdowns near the top. The ARC also calculated length-weighted average AADTT for each bottleneck, which is provided in the results tables to help describe each bottleneck.

Results

The following maps and tables show the bottlenecks for freeways and non-freeways for morning and afternoon peak periods.

Table 36 and Figure 55 show the morning peak period freeway bottlenecks, where the labels in the figure correspond with the ranks in the table.

Table 36: Morning Peak Period Freeway Bottlenecks

Rank	Highway	Direction	Location	County	Spot Speed Index (Minimum)
1	I-85	SB	I-285 interchange (north)	DeKalb and Gwinnett	42%
2	I-85	SB	GA 400 interchange	Fulton	52%
3	I-285	CCW	GA 400 interchange*	DeKalb	59%
4	Downtown Connector (I-75 / I-85)	NB	I-20 interchange and 'Grady Curve'	Fulton	59%
5	I-20	WB	I-285 interchange (east)	DeKalb	59%
6	I-285	CW	I-75 interchange	Cobb and Fulton	61%
7	I-20	EB	I-285 interchange (west)	Fulton	61%
8	I-285	CCW	US 78 (Stone Mountain Fwy) interchange	DeKalb	62%
9	GA 400	SB	I-285 interchange	Fulton	63%
10	I-75	SB	I-285 interchange (north)	Cobb	68%

NB: northbound; EB: eastbound; SB: southbound; WB: westbound; CW: clockwise; CCW: counterclockwise.

*During calendar year 2023, there was extensive construction at the interchange of I-285 and GA 400, which may have resulted in slower speeds than after the project was completed.

Figure 55: Morning Peak Period Freeway Bottlenecks

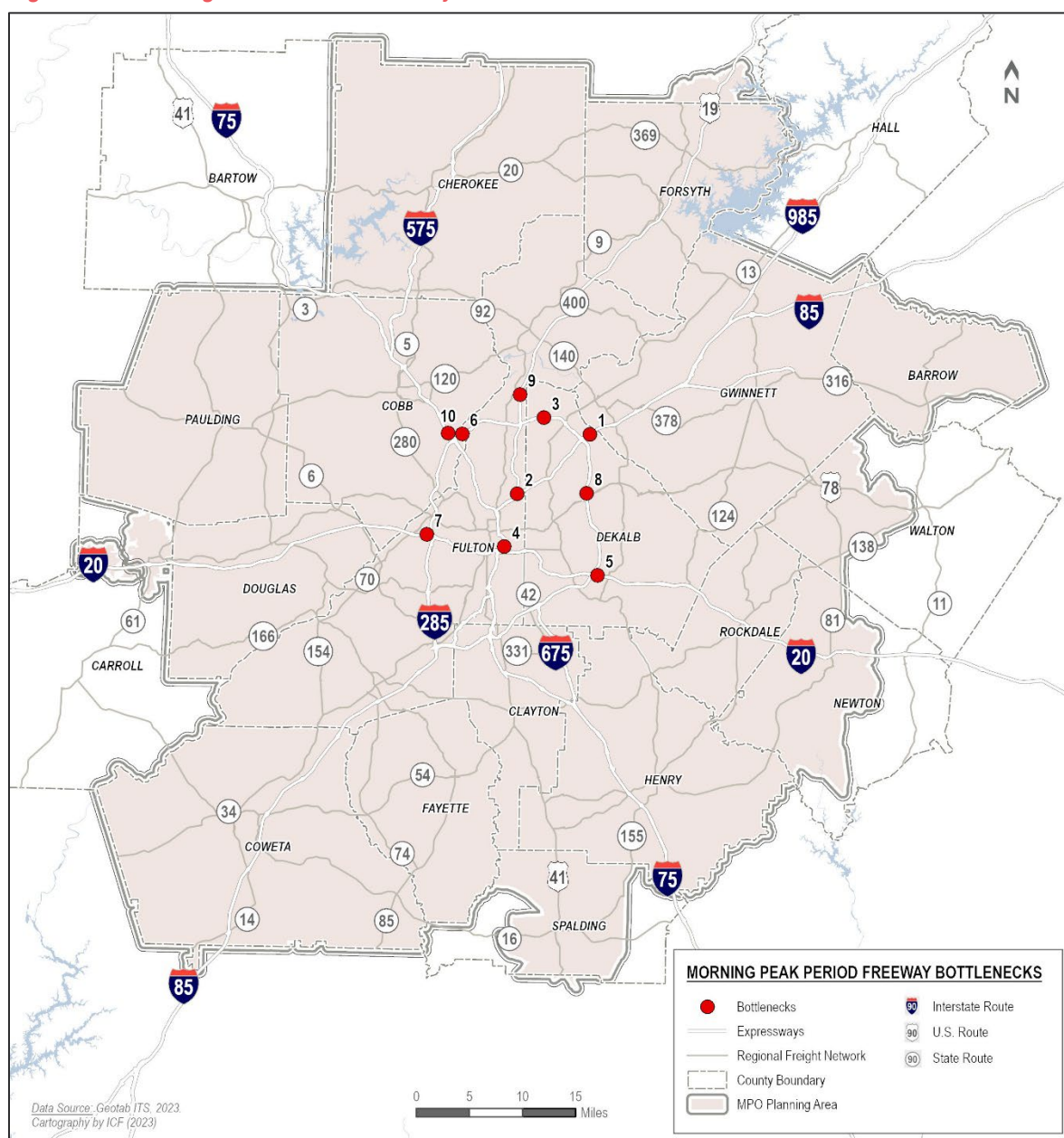


Table 37 and Figure 56 show the afternoon peak period freeway bottlenecks, where the labels in the figure correspond with the ranks in the table.

Table 37: Afternoon Peak Period Freeway Bottlenecks

Rank	Highway	Direction	Location	County	Spot Speed Index (Minimum)
1	I-85	SB	I-75 merger	Fulton	28%
2	Downtown connector (I-75 / I-85)	SB	I-20 interchange and 'Grady Curve'	Fulton	29%
3	I-285	CW	US 78 (Stone Mountain Fwy) interchange	DeKalb	35%
4	Downtown connector (I-75 / I-85)	NB	I-20 interchange and 'Grady Curve'	Fulton	36%
5	I-285	CCW	GA 400 interchange*	DeKalb and Fulton	44%
6	I-75	SB	I-285 interchange (south)	Clayton	44%
7	I-85	NB	North of I-285 interchange (north)	DeKalb	45%
8	I-285	CCW	I-20 interchange (west)	Cobb and Fulton	47%
9	I-285	CW	I-75 interchange (north)	Cobb	51%
10	I-75	NB	At SR 155 (McDonough Rd)	Henry	53%

NB: northbound; EB: eastbound; SB: southbound; WB: westbound; CW: clockwise; CCW: counterclockwise.

*During calendar year 2023, there was extensive construction at the interchange of I-285 and GA 400, which may have resulted in slower speeds than after the project was completed.

Figure 56: Afternoon Peak Period Freeway Bottlenecks

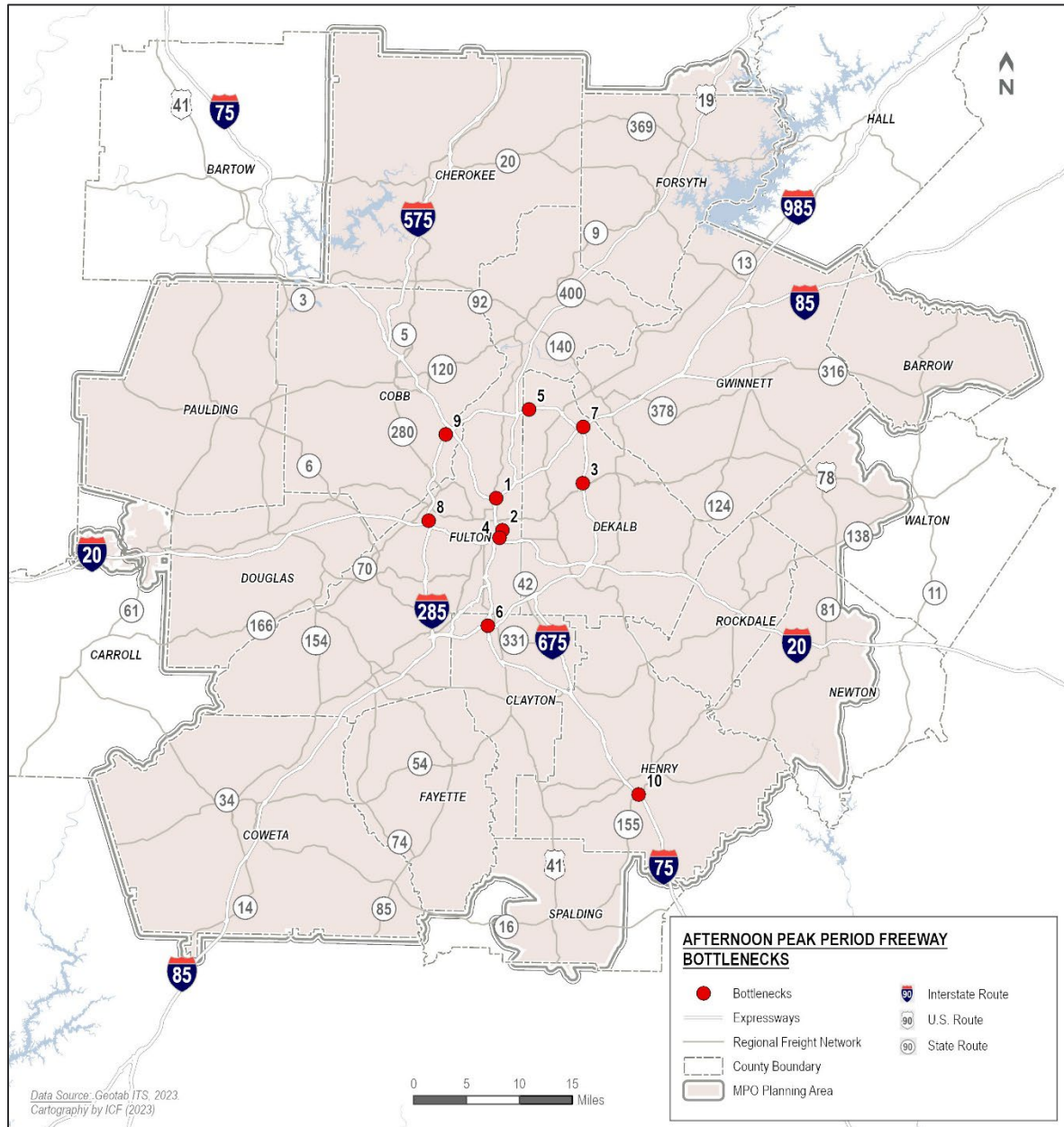


Table 38 and Figure 57 show the morning peak period non- freeway bottlenecks, where the labels in the figure correspond with the ranks in the table.

Table 38: Morning Peak Period Non-Freeway Bottlenecks

Rank	Road	At	County	Spot Speed Index (Minimum)
1	SR 279 (Old National Hwy)	I-285	Fulton	29%
2	SR 19 (Old Dixie Hwy)	I-285	Clayton	33%
3	SR 140 (Jimmy Carter Blvd)	I-85	Gwinnett	34%
4	SR 34 (Bullsboro Dr)	I-85	Coweta	37%
5	SR 155 (McDonough Rd)	I-75	Henry	38%
6	SR 78 (Donald Lee Hollowell Pkwy)	I-285	Fulton	39%
7	SR 6 (Camp Creek Pkwy)	Fulton Industrial Blvd	Fulton	41%
8	SR 20 (Buford Dr)	I-985	Gwinnett	42%
9	SR 278 (Covington Hwy)	S Hairston Rd	DeKalb	42%
10	SR 74 (Senoia Rd)	I-85	Fulton	42%

Figure 57: Morning Peak Period Non-Freeway Bottlenecks

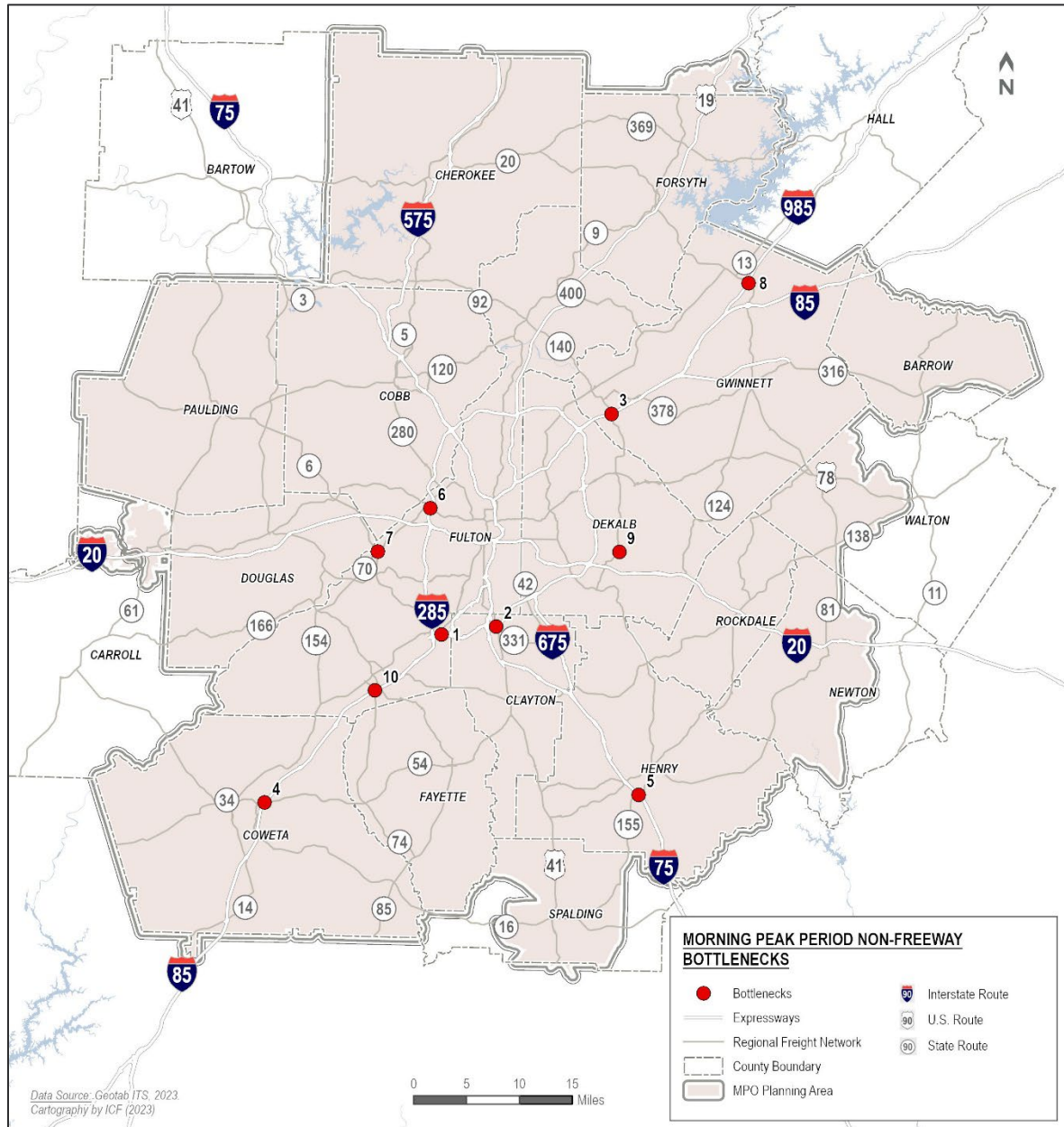
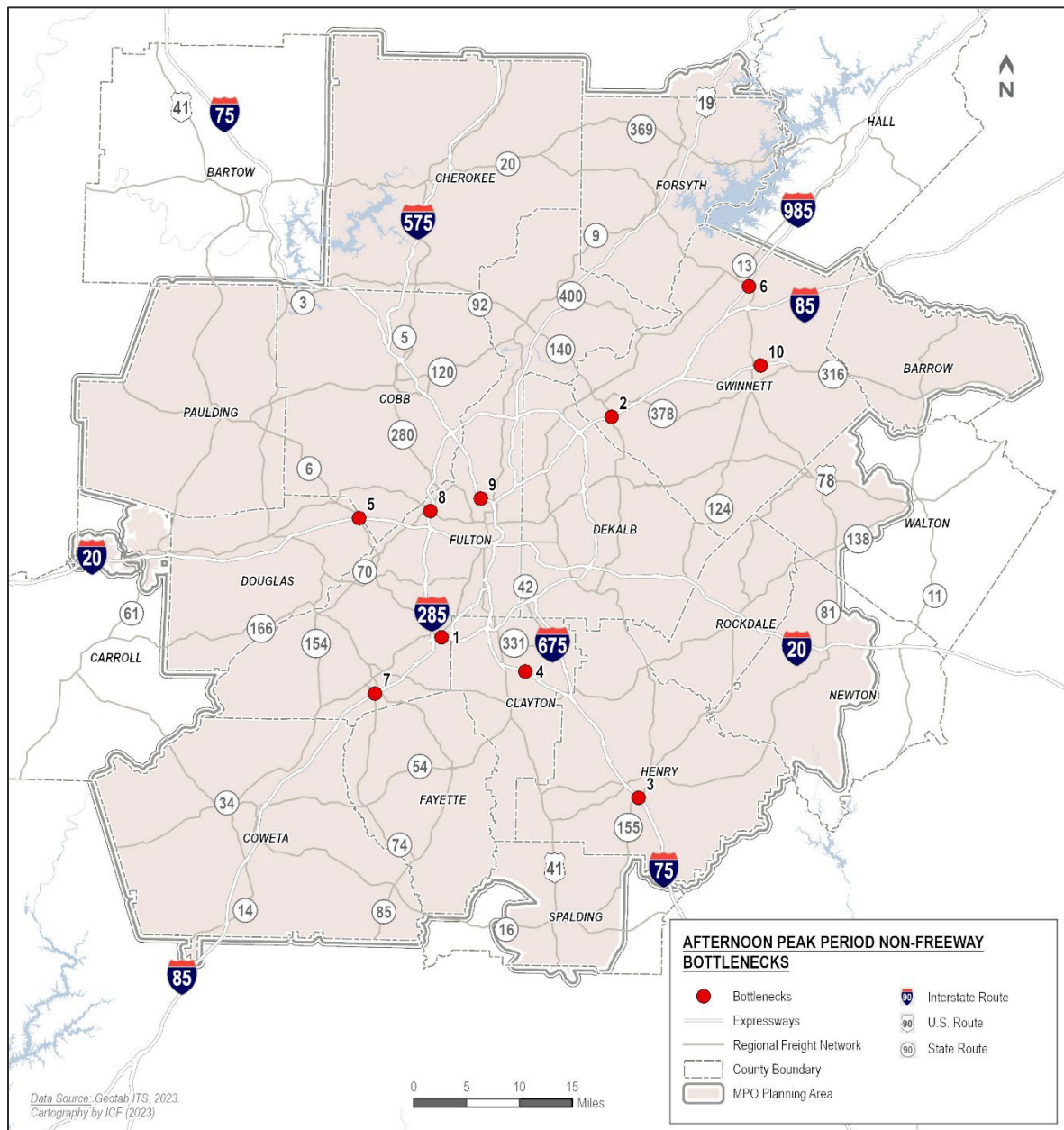


Table 39 and Figure 58 show the afternoon peak period non-freeway bottlenecks, where the labels in the figure correspond with the ranks in the table.

Table 39: Afternoon Peak Period Non-Freeway Bottlenecks

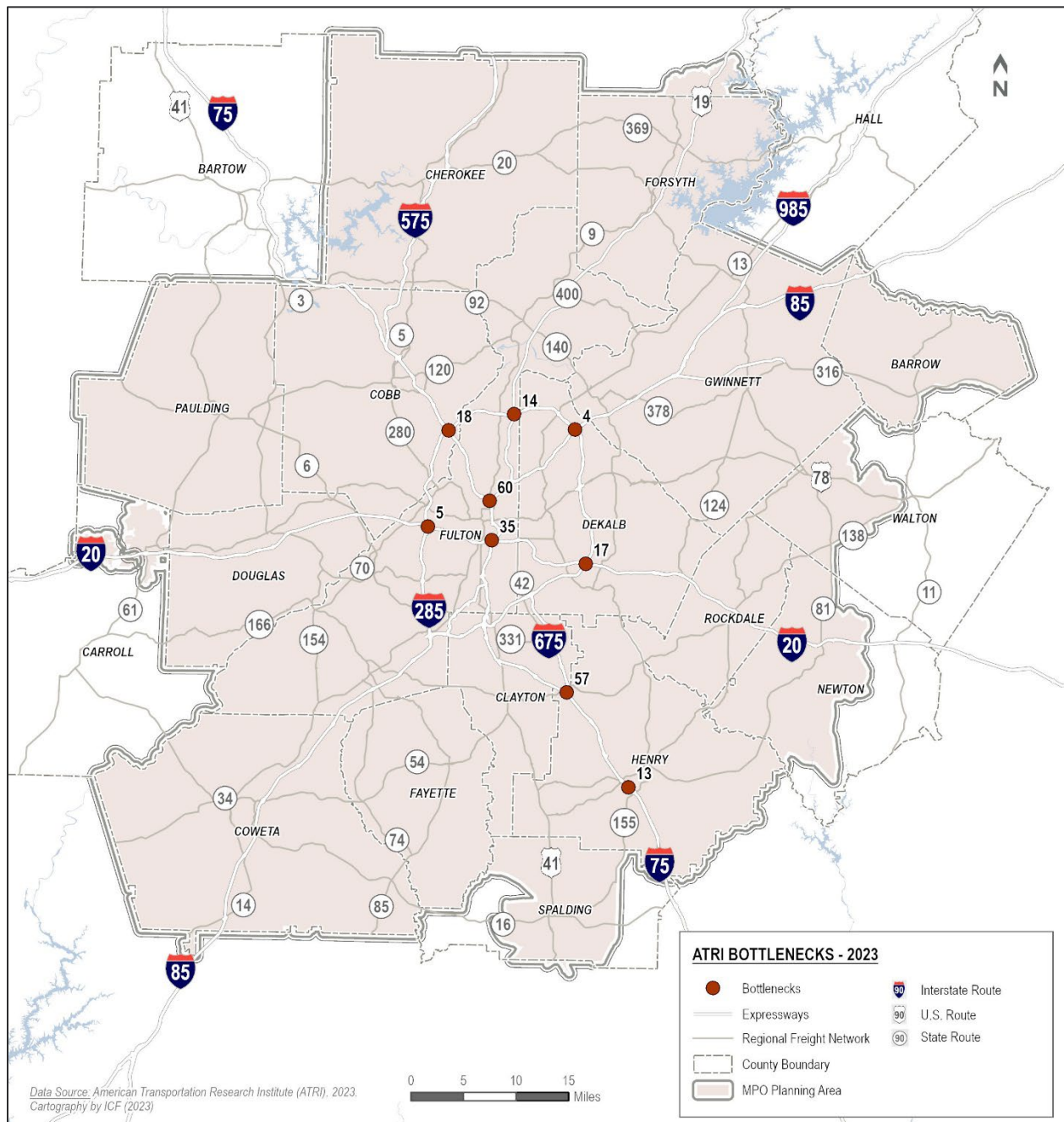
Rank	Road	At	County	Spot Speed Index (Minimum)
1	SR 279 (Old National Hwy)	I-285	Fulton	26%
2	SR 140 (Jimmy Carter Blvd)	I-85	Gwinnett	30%
3	SR 155 (McDonough Rd)	I-75	Henry	30%
4	SR 54 (Jonesboro Rd)	I-75	Clayton	34%
5	SR 6 (Thornton Rd)	I-20	Douglas	34%
6	SR 20 (Buford Dr)	I-985	Gwinnett	37%
7	SR 74 (Senoia Rd)	I-85	Fulton	37%
8	SR 78 (Donald Lee Hollowell Pkwy)	I-285	Fulton	41%
9	Howell Mill Rd	I-75	Fulton	42%
10	SR 316 (University Pkwy)	Hi Hope Rd	Gwinnett	45%

Figure 58: Afternoon Peak Period Non-Freeway Bottlenecks**American Transportation Research Institute (ATRI)**

ATRI annually publishes a list of the top 100 truck bottlenecks across the United States. ATRI annually monitors and analyzes congestion in over 300 locations using truck position and speed data. ATRI ranks the bottlenecks based on “total freight congestion value,” which measures the impact of congestion on average commercial truck speeds at these identified locations. As per ATRI, out of the top 100 bottleneck locations across the U.S., nine locations are in the Atlanta metropolitan region with two locations in the

top 10. The following is the list of the 2023 ATRI bottlenecks identified in the Atlanta region with their ranking:

- 4. I-285 at I-85 (North),
- 5. I-20 at I-285 (West),
- 13. I-75 in McDonough
- 14. I-285 at SR 400,
- 17. I-20 at I-285 (East),
- 18. I-75 at I-285 (North),
- 35. I-20 at I-75/I-85,
- 57. I-75 at I-675,
- 60. I-75 at I-85.

Figure 59: ATRI Bottlenecks, 2023

Other Highway Bottlenecks

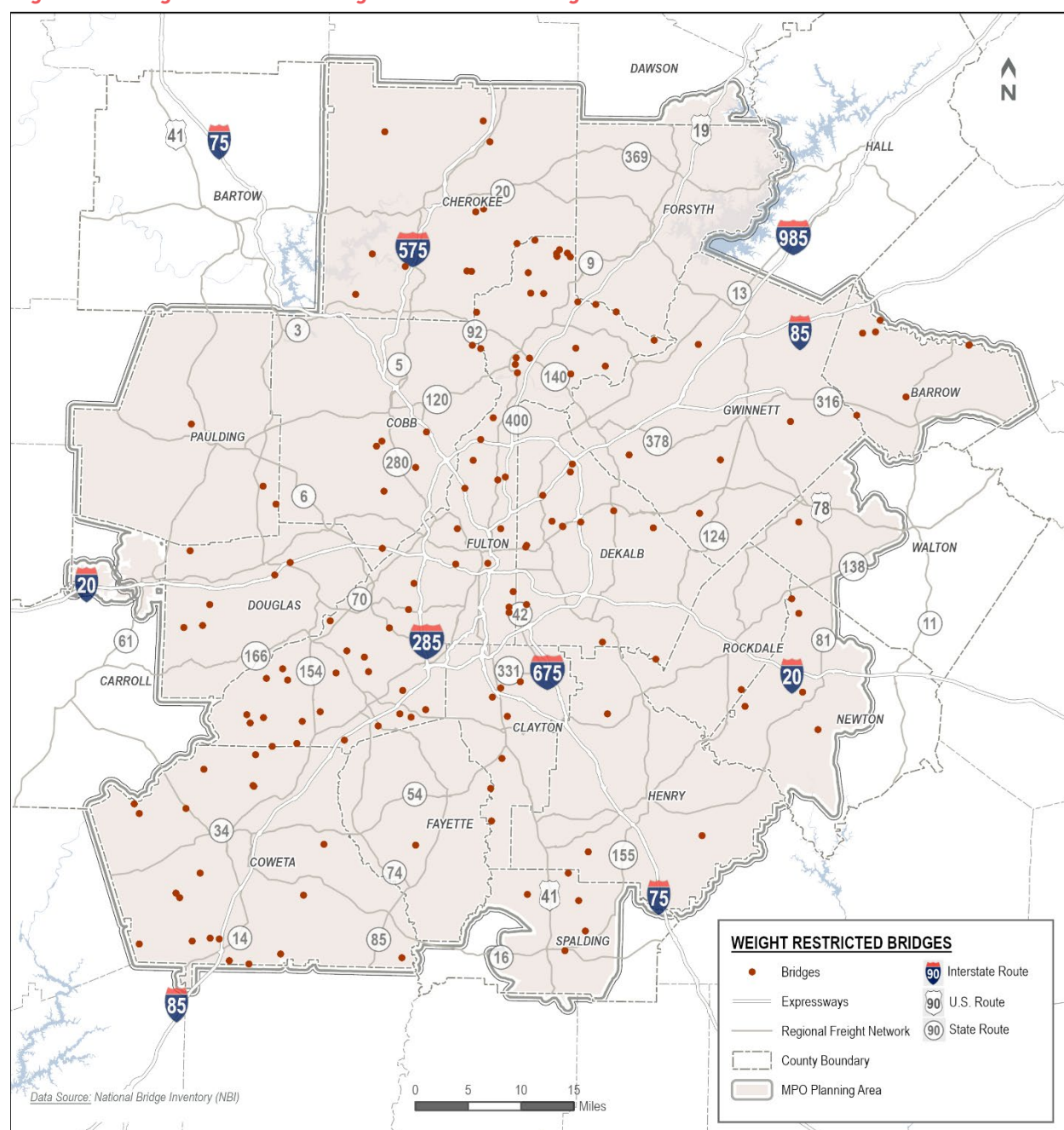
Highway freight bottlenecks may occur due to restrictions on the free movement of trucks. These restrictions can be due to height, oversized dimensions, overweight loads, hazardous material restrictions, or outright truck prohibitions.

Posted and Restricted Bridges

GDOT has identified bridges⁶⁸ in the state with weight limits for trucks and has posted these limits on the bridges. These weight limits for different types of trucks are clearly indicated on road signs at appropriate locations before the bridges. Furthermore, according to the 2020 executive order from Governor Kemp, trucks that have obtained weight permits under this order are prohibited from crossing bridges with posted restrictions. Figure 60 shows the weight-restricted bridges across the region that may become bottlenecks for free movement of trucks.

⁶⁸ GDOT. Posted and Restricted Bridges. <https://www.dot.ga.gov/GDOT/Pages/postedBridges.aspx>

Figure 60: Weight-restricted Bridges in the Atlanta Region



Hazardous Material Restrictions

The State of Georgia requires⁶⁹ trucks carrying hazardous materials (except smaller quantities) to obtain a permit from GDOT. In addition, there are restrictions for the transportation of all hazardous material over identified routes in the state. The state has identified one route in the Atlanta region in the Federal Motor

⁶⁹ Office of Georgia Secretary of State. Rules and Regulations of the State of Georgia: Chapter 672-10 Transportation of Hazardous Materials. <https://rules.sos.ga.gov/gac/672-10>

Carrier Safety Administration's National Hazardous Materials Route Registry,⁷⁰ which is restricted for transporting all hazardous materials that require placarding. The section of GA 400 between its origin at I-85 and Lenox Road (Exit 2) is identified as a restricted hazardous materials route due to the tunnel that goes below the Atlanta Financial Center building.

Rail Bottlenecks

The Atlanta region has long been a significant rail hub in the Southeast. The rail connectivity that the Atlanta region provides offers a competitive advantage for conducting business compared to other cities in the Southeast. Rail freight is a cost-effective mode of transportation in the region, serving as an alternative to truck freight, especially for bulky commodities transported over long distances. The rail connections between the Port of Savannah and intermodal yards in the region have facilitated import and export trade. These rail connections are crucial for ensuring the efficiency of supply chains for businesses in the Atlanta region.

However, bottlenecks can occur in rail networks for various reasons, negatively impacting efficiency. Common causes of bottlenecks include limited capacity in high-demand sections, poor track conditions, substandard bridges, and the presence of junctions, intersections, and grade crossings. The rail bottlenecks in the region were identified based on a literature review of previous plans and studies, as well as through stakeholder engagement. Several types of rail bottlenecks have been identified in the Atlanta region, including:

- **Rail Junctions:** Rail junctions are intersections where two or more rail lines converge. These junctions are used for switch operations to route trains onto different tracks, a process that requires the trains to slow down. Howell Junction, located in West Midtown, Atlanta, is a significant rail junction that caters to both freight and passenger rail. This junction serves as an intersection point for rail lines owned by NS and CSX. A large number of freight trains and two passenger trains pass through this junction daily, often leading to delays during peak periods. The partial closure of Tilford yard has somewhat alleviated the bottleneck. However, it remains a challenge as approximately 80 trains pass through the junction daily, with only one entity dispatching them.
- **At-grade Rail Crossings:** At-grade rail crossings can become bottlenecks for both freight and passenger transportation, particularly in areas with heavy rail and vehicular traffic. These crossings necessitate reduced speeds or stops for freight trains to traverse these intersections safely. They also cause delays to road traffic, which must wait for the freight trains to pass through. Grade crossings also pose safety concerns and risk crashes involving trains with vehicles or pedestrians. When crashes occur, they not only cause damage to life and property but also disrupt rail freight

⁷⁰ Federal Motor Carrier Safety Administration. National Hazardous Materials Route Registry – Georgia.

<https://www.fmcsa.dot.gov/regulations/hazardous-materials/national-hazardous-materials-route-registry-%E2%80%93-georgia>

operations. Several at-grade crossings in the region (discussed in the section on Freight Rail Infrastructure of this report starting on page 22), have been identified as safety concerns.

Other Constraints: With the anticipated growth in EVs, robotics, life sciences, and manufacturing, the region will likely see an increased demand for moving freight on rail. In an interview, a CSX⁷¹ representative expressed that with the anticipated growth in the region, there will likely be an increased need for efficient train traffic. To address this, investing in innovative technologies could significantly enhance freight movement. Initiatives such as inspection portals and remotely operated cranes have shown promise in enhancing efficiency and reducing operational bottlenecks. These advancements not only enhance operational productivity but also contribute to improved safety and reliability.

System Gaps

System gaps in the freight network reduce access to freight facilities both for freight trucks as well as the workforce at these facilities. These system gaps hinder the efficient movement of freight through the system as well as reduce access to freight facilities and the market. System gaps are not only visible in physical infrastructure but could also occur due to policy deficiencies. Some system gaps in the region identified by stakeholder outreach and the literature review are as follows:

- **Infrastructure Deficiencies:** Infrastructure deficiencies including congested roadways, bottlenecks, and inadequate infrastructure in poor condition led to unreliability in freight mobility. These deficiencies manifest as a system gap in freight movement. Some stakeholders noted that many roads and bridges in the region are not designed or maintained to handle heavy loads, and that frequent truck trips accelerate infrastructure deterioration.
- **Regional Planning:** Some issues in regional planning have not been adequately addressed by local and regional plans. Stakeholders pointed out that past local and regional plans have not dealt with problems such as truck traffic in residential areas, incompatible land use and zoning, and parking for long-haul drivers resting in the region.
- **Enforcement and Compliance:** Ordinances and codes have been developed in the region to restrict the use of roadways by trucks; however, enforcement of these is a continuing challenge. Some stakeholders highlighted issues with delivery vehicles taking unauthorized routes and causing damage despite signage and regulations being in place. Law enforcement officials also have discussed challenges related to the enforcement of truck size and weight restrictions.
- **Last-Mile Delivery:** The lack of specific policies or zoning regulations for deliveries in new developments, especially in downtown areas, is also a concern. There is a need for better curbside

⁷¹ A representative of CSX expressed this view during the interview conducted on July 24, 2024, as part of the 2024 *Atlanta Regional Freight Mobility Plan*.

management to accommodate various competing needs, such as parking, transit, taxis/rideshares, bicyclists, and pedestrians while ensuring safe and efficient freight deliveries. Some stakeholders discussed the importance of planning for future land use and development to accommodate increasing delivery operations due to factors like online shopping and home deliveries. Some stakeholders note that urban areas suffer from inadequate last-mile connectivity and infrastructure, narrow local roads that cannot accommodate modern truck dimensions.

- **Local Freight Data:** There is a gap in terms of availability and knowledge of data and tools to understand the freight patterns, trends, and ways to measure the performance and benefits of freight improvement project issues on a local level. There is a clear need for more local, county, and regional data on how much freight movement is happening in each local jurisdiction, truck counts on local and state roadways, and what types of commodities are moving through each locality for planning freight policy and transportation improvements on the local jurisdiction level. Some stakeholders emphasized that identifying specific locations experiencing truck parking challenges was crucial for implementing effective strategies. This information would help in developing targeted plans, such as designating appropriate areas for truck parking and addressing code enforcement and land use issues.
- **Insufficient Workforce Development and Training Programs for the Freight Sector:** Some stakeholders emphasized the importance of developing and retaining a skilled and diverse freight workforce that can meet the current and future needs of the industry. A representative of NS expressed that the growing demand for freight services, coupled with the ongoing challenges in recruiting and retaining workers, is a major challenge.⁷²

These gaps highlight the need for a comprehensive and collaborative approach to address the freight challenges and opportunities in the Atlanta region. This plan aims to provide such an approach by developing a shared vision, goals, and strategies for enhancing freight mobility and economic competitiveness in the region.

- **Policy Issues:** Public-private partnership (PPP) has been used in freight rail to develop intermodal facilities and rail capacity expansions. Some examples of PPP projects in the U.S. are the Florida East Coast Railway Expansion and the National Gateway Initiative projects. However, there have not been any rail freight-related PPP projects in the Atlanta region. One railroad stakeholder expressed that Georgia has a lot of regulations around PPPs as compared to some other states, which led to railroad PPP projects being developed in other parts of the country. The regulations around PPP projects serve as a policy constraint for capacity expansion for freight rail in the region.

⁷² A representative of Norfolk Southern Corporation expressed this view during the interview conducted on September 5, 2023, as part of the 2024 Atlanta Regional Freight Mobility Plan.

Freight Crash Analysis

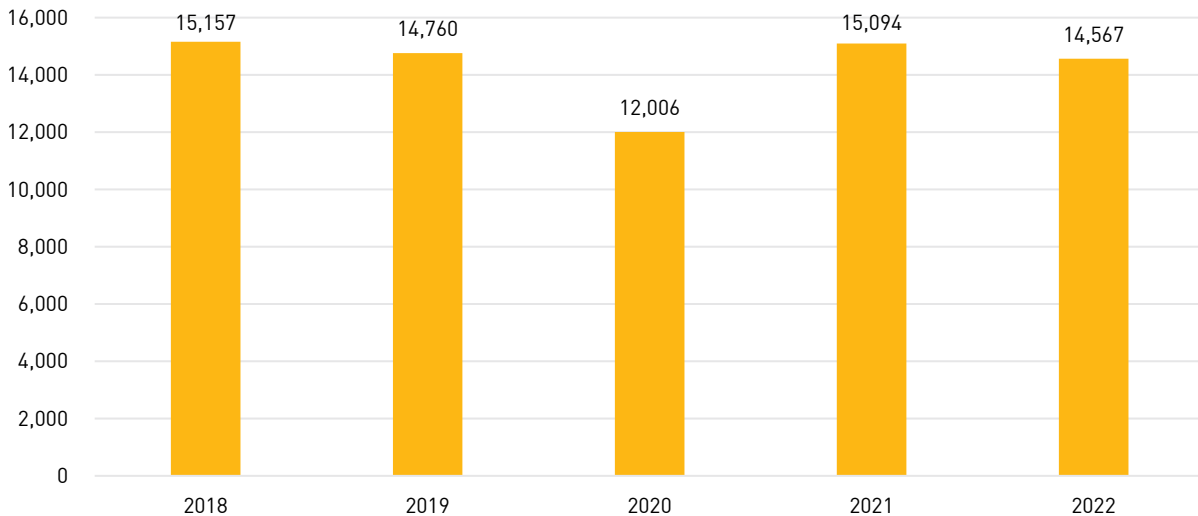
Crashes involving freight can have a significant negative impact on society. The negative impacts can lead to fatalities, injuries, economic costs, traffic disruptions, and supply chain disruptions. For the *2024 Atlanta Regional Freight Mobility Plan*, a crash analysis was performed on crashes related to trucks and on crashes at at-grade rail crossings.

Truck Crash Analysis

Truck crashes were analyzed in the Atlanta region for a five-year period (2018-2022) to understand the trends and patterns of the crashes and to identify hot spots for these crashes. The crash data was obtained from the Georgia Electronic Accident Reporting System (GEARS) using the Numetric crash query system.

In the Atlanta region, there were nearly 71,600 truck-involved crashes in the 2018 to 2022 period. Among these crashes, 291 crashes involved fatalities (323 fatalities) and 950 crashes involved serious injuries (1,150 serious injuries). Figure 61 shows the number of truck-related crashes by year. The highest number of truck-related crashes happened in 2018 (over 15,100), and the lowest number of crashes happened in 2020 (approximately 12,000). The reduction in truck crashes in 2020 could be because of the reduction in roadway traffic during the COVID-19 pandemic.

Figure 61: Truck-involved Crashes (2018-2022) in the Atlanta Region



Source: Georgia Electronic Accident Reporting System (GEARS) accessed using Numetric Crash Query System.

The contributing factors for these include roadway factors such as traffic congestion, roadway surface conditions, construction, secondary crashes, and standing water, as well as driver factors such as improper lane change, following too closely, failure to yield, misjudging clearance, and improper backing.

Figure 62 shows the distribution of truck-involved crashes by type of roadways between 2018 and 2022. The roadways were classified based on the FHWA's functional classification system.⁷³ Most truck-involved crashes in the region occurred on Interstates, comprising 41.9 percent of the total truck crashes, followed by Minor Arterials at 18.3 percent and Principal Arterial–Others at 14.9 percent. These three categories collectively represent nearly 85 percent of fatal crashes and just over 80 percent of serious injury crashes.

Figure 62: Truck-involved Crashes by Functional Classification of Roadways (2018–2022) in the Atlanta Region

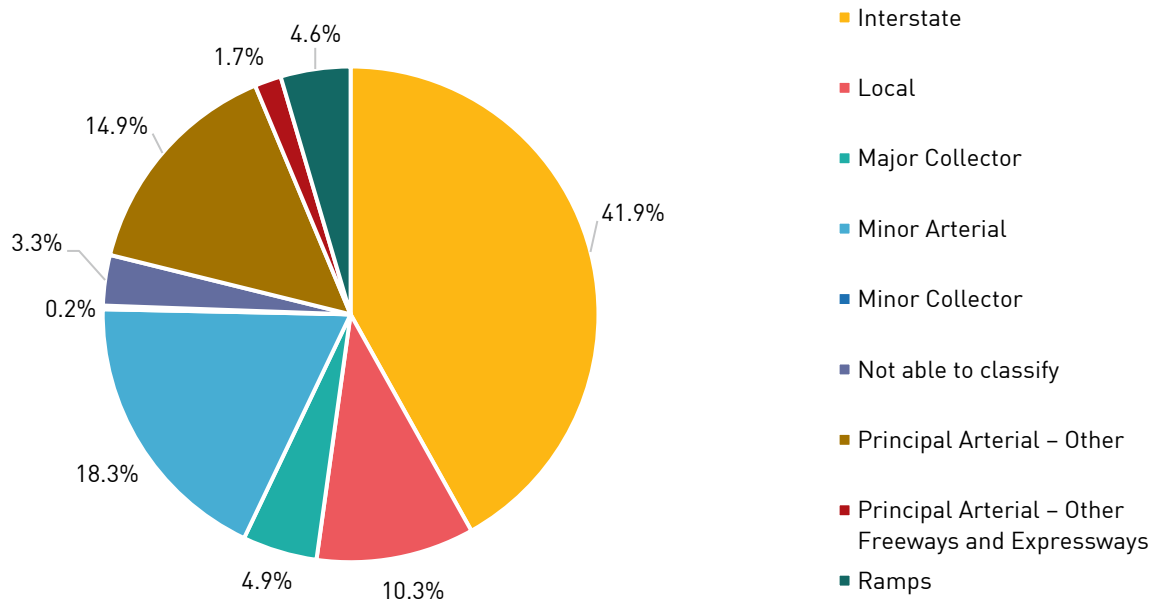


Table 40 outlines the truck-involved crashes across roadway functional classes based on crash severity. The interstate highways have the highest incidence of fatal and serious injury crashes across all roadways. The higher number of fatal and serious injury crashes on interstates could be linked to higher speeds and traffic volumes on the interstates, which increases the likelihood of severe crashes. The likelihood of fatal crashes is greater on non-access controlled principal arterials (Principal Arterials–Other) compared to all crashes on the same type of road. Non-access controlled principal arterials experience a higher occurrence of fatal crashes, likely due to higher travel speeds compared to other roadway types (except access-controlled roadways). Additionally, unlike these access-controlled roadways, Principal Arterials- Other are not built to the same specifications. They feature signalized intersections instead of interchanges, unsignalized side streets, driveways, and may lack medians. Additionally, they permit bike and pedestrian travel, which is prohibited on access-controlled roadways. These factors may contribute to higher occurrences of fatal crashes on these facilities.

⁷³ FHWA (2023). Highway Functional Classification Concepts, Criteria and Procedures.

<https://www.fhwa.dot.gov/planning/processes/statewide/related/hwy-functional-classification-2023.pdf>

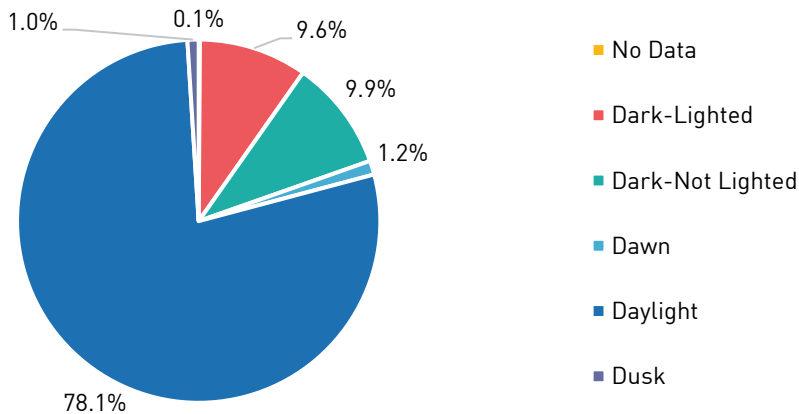
Table 40: Truck-involved Crashes by Functional Classification of Roadways and Crash Severity Type (2018-2022) in the Atlanta Region

Roadway Functional Class	All Crashes (%)**	Fatal Crashes (%)**	Serious Injury Crashes (%)**
1. Interstate	29,992 (41.9%)	130 (44.7%)	410 (43.2%)
2. Principal Arterial–Other Freeways and Expressways	1,243 (1.7%)	1 (0.3%)	17 (1.8%)
3. Principal Arterial – Other	10,632 (14.9%)	60 (20.6%)	156 (16.4%)
4. Minor Arterial	13,069 (18.3%)	57 (19.6%)	196 (20.6%)
5. Major Collector	3,486 (4.9%)	14 (4.8%)	56 (5.9%)
6. Minor Collector	171 (0.2%)	1 (0.3%)	5 (0.5%)
7. Local	7376 (10.3%)	21 (7.2%)	81 (8.5%)
Ramps*	3,261 (4.6%)	6 (2.1%)	24 (2.5%)
Not able to classify	2,354 (3.3%)	1 (0.3%)	5 (0.5%)

*Ramps are not considered a separate roadway classification under the FHWA functional classification system. However, they are reported as functional class in the GDOT GEARS Data.

**Percentage of crashes denotes the proportion of crashes within the severity type.

Figure 63 shows the light conditions for truck-involved crashes in the Atlanta region. A total of 78.1 percent of truck crashes occurred in the daylight compared to 19.5 percent during both dark conditions. There is higher truck volume during daylight, combined with higher roadway traffic, which leads to higher interactions of trucks with other vehicles during daylight.

Figure 63: Light Conditions for All Truck Crashes 2018–2022

Distribution of Crashes by Crash Type

Figure 64 shows the proportions of crashes by manner of collision for all truck-involved crashes in the Atlanta region 2018–2022. Sideswipe-Same Direction (37 percent) and Rear End (29 percent) cover the majority of the manner for crashes.

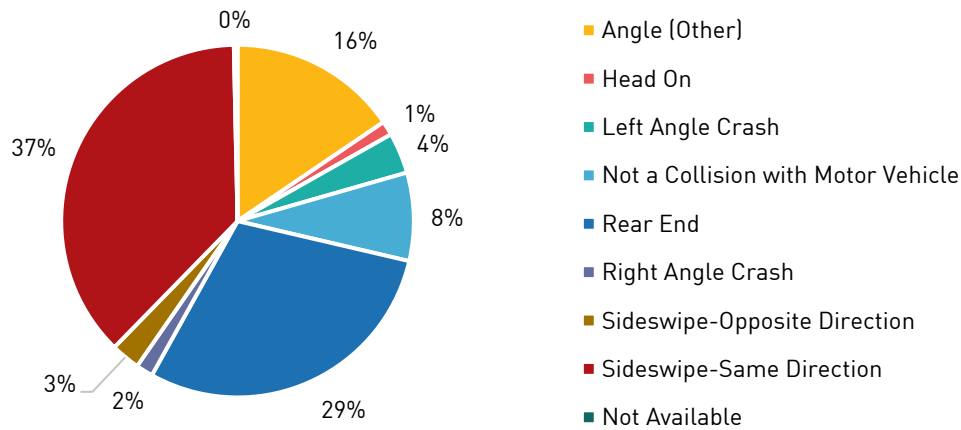
Figure 64: Crash Type for All Truck-involved Crashes 2018-2022

Table 41 shows the manner of collision for truck crashes based on crash severity in the Atlanta region between 2018-2022. Head-on crashes result in a higher proportion of fatal crashes (10 percent) and serious injuries (6 percent) as compared to all crashes (1 percent). This can be attributed to the nature of head-on collisions due to substantially higher forces and impact forces involved.⁷⁴ Sideswipes in the same direction result in a smaller proportion of fatal or serious crashes.

Table 41: Truck-involved Crashes by Manner of Collision of Roadways and Crash Severity Type (2018–2022) in the Atlanta Region

Manner of Collision	All Crashes (%)	Fatal Crashes (%)	Serious Injury Crashes (%)
Angle [Other]	11,109 [16%]	74 [23%]	189 [20%]
Head On	928 [1%]	33 [10%]	60 [6%]
Left Angle Crash	2,680 [4%]	30 [9%]	95 [10%]
Not a Collision with a Motor Vehicle	5,788 [8%]	47 [15%]	111 [12%]
Rear End	21,067 [29%]	112 [35%]	323 [34%]
Right Angle Crash	1,121 [2%]	6 [2%]	15 [2%]
Sideswipe—Opposite Direction	1,912 [3%]	4 [1%]	27 [3%]
Sideswipe—Same Direction	26,740 [37%]	17 [5%]	126 [13%]
Not available	239 [0%]	0 [0%]	4 [0%]

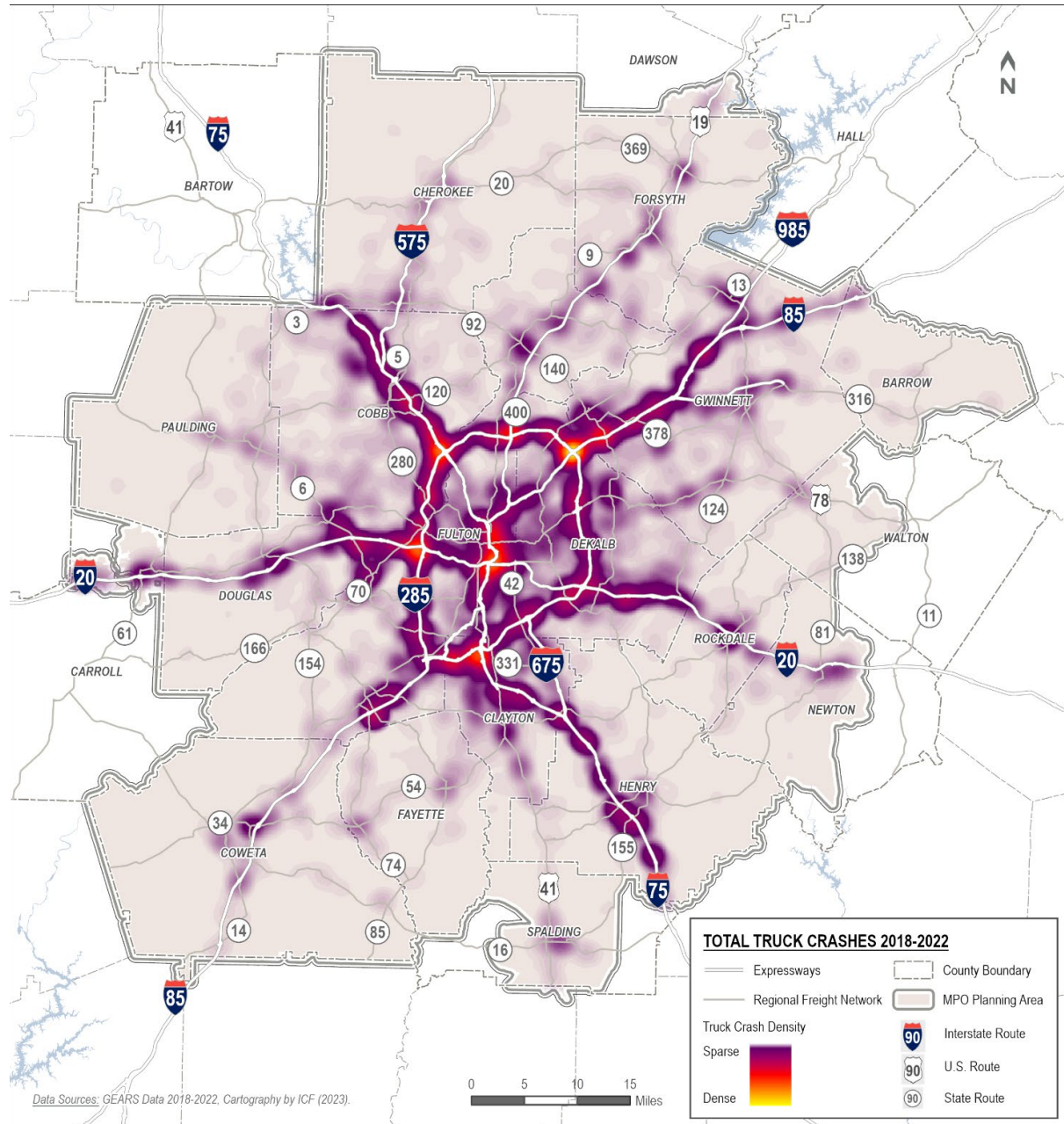
Locations of Truck Crashes

Figure 65 displays a heat map for locations of all truck crashes in the Atlanta region between 2018 and 2022. The heat map helps in analyzing the hot spot locations on the transportation network with higher incidence of truck crashes. The maps show higher incidence of truck crashes on interstates and in downtown Atlanta. The highway corridors with the highest truck crashes are I-285, I-75, I-85, and I-20.

⁷⁴ The Rothenberg Law Firm LLP (2024, February 24). Why Are Head-On Collisions So Dangerous? <https://injurylawyer.com/blog/why-are-head-on-collisions-so-dangerous/>

The truck crash hot spots are closer to the major interchanges; for example, I-285 at I-20 on the east and west sides, I-285 at I-75 on the north and south sides, I-285 at I-85 on the north and south sides, I-20 at I-75/I-85, and I-285 at GA-400. At highway interchanges, complex highway geometry and more merging and diverging vehicles raise the incidence of crashes.

Figure 65: Heat Map of All Truck-involved Crashes 2018-2022

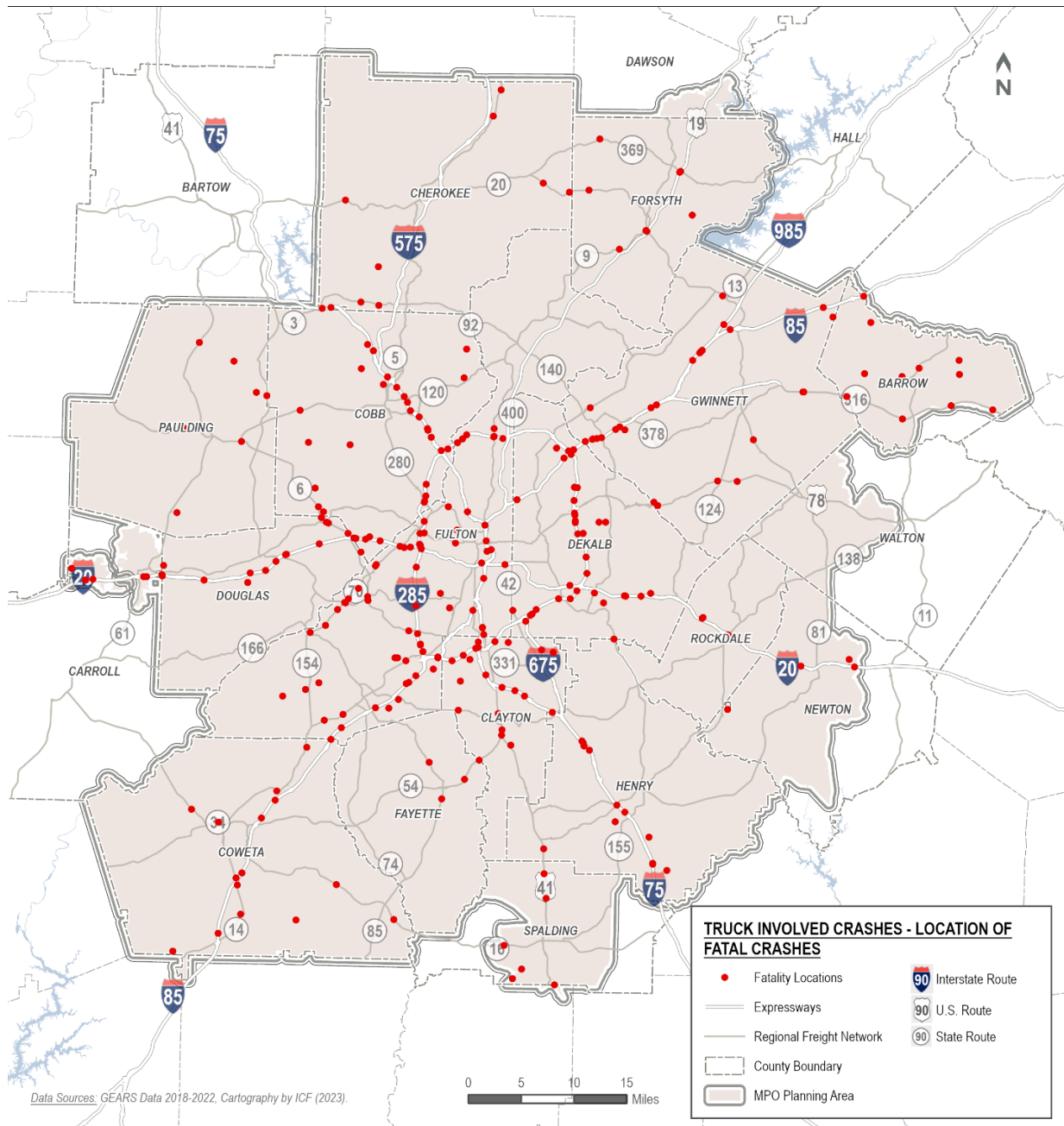


Location of Fatal Truck Crashes

Figure 66 shows the geographic distribution of fatal truck crashes within the Atlanta region between 2018 and 2022. The data reveals that the majority of these fatal incidents occurred on roadways outside of

intersections, constituting 59 percent of all fatalities. This is followed by crashes at roadway intersections, which comprise 22 percent of all fatalities.

Figure 66: Location of Fatal Truck-involved Crashes 2018-2022



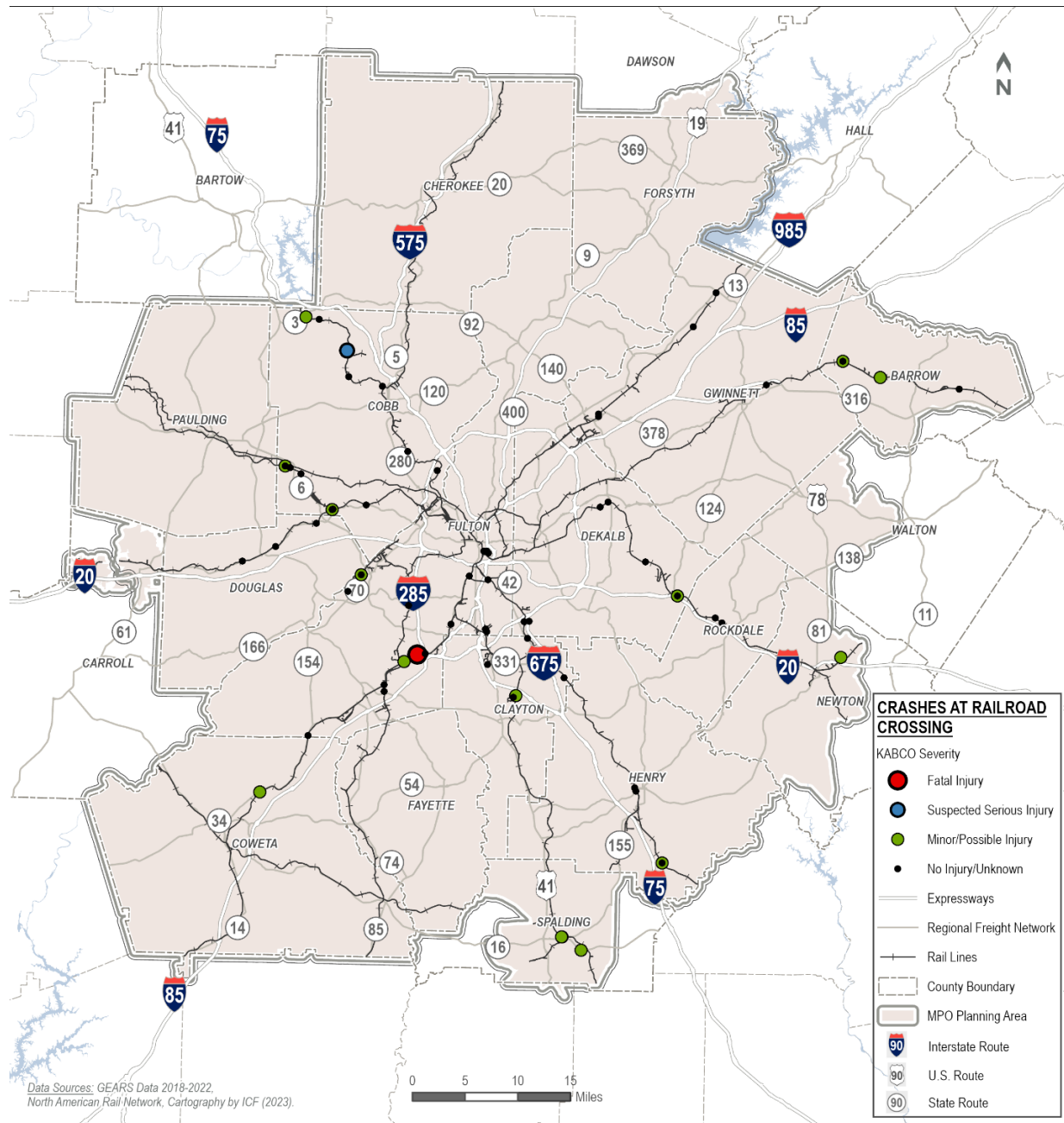
At-grade Railroad Crossing Crashes

Crashes at at-grade railroad crossings with trains were analyzed within the Atlanta region from 2018 to 2022. The crash data was obtained from the GEARS using the Numetric crash query system.

Even though the majority of the at-grade crashes did not result in injuries or fatalities, the at-grade railroad crashes with trains can have significant disruptions in supply chain and traffic movement in addition to their dangers for vehicle and train occupants. Between 2018 to 2022, 79 crashes were reported at at-grade rail crossings which involved a train as one of the vehicles.

As shown in Figure 67, one fatal crash was reported in 2018 at the at-grade crossing near Roosevelt Highway and Buffington Road in the City of South Fulton in Fulton County.⁷⁵ Also, one serious injury crash was reported in 2019 at the at-grade crossing near South Main Street and Cherokee Street in the City of Kennesaw in Cobb County.

⁷⁵ Prince, C. (2018, July 31). 'The Engine Flew': Witness describes South Fulton train crash that killed woman, 2 teens. *The Atlanta Journal-Constitution*. <https://www.ajc.com/news/breaking-news/the-engine-flew-witness-describes-train-crash-that-killed-woman-teens/jm08vrQIP33nNHd70FmaLI/>

Figure 67: All Crashes at Railroad Crossings 2018-2022

Truck crashes at railroad grade crossings were analyzed in the Atlanta region for five years (2018-2022) to understand the impact of railroad operations on the safety of motor vehicles, specifically on trucks.

In the Atlanta region, 28 truck crashes were reported at railroad crossings between 2018–2022. Among these crashes, 22 crashes involved no injuries and six crashes involved possible injuries. There are no records of fatal truck crashes at railroad crossings between 2018-2022. Figure 68 shows the KABCO severity of truck crashes at railroad crossings. The KABCO severity scale is a system used by law

enforcement to classify the severity of injuries resulting from traffic crashes where each letter in the acronym represents a different level of injury severity. Where K corresponds to fatal injury, A corresponds to suspected serious injury, B corresponds to suspected minor injury, C corresponds to possible injury and O corresponds to no apparent injury.⁷⁶ More recently, in 2023, a tractor-trailer was involved in a crash in Acworth with the train after getting stuck on the train track.⁷⁷ In Union City in 2023, a train collided with a transfer truck that was stuck on the railroad tracks.⁷⁸

In recent years there has been a focus on the railroad industry to increase the efficiency of use of railroad equipment and to reduce operations cost. One of the strategies implemented by rail operators is to implement Precision Scheduled Railroading, which is the use of precise planning and fine-tuning of processes related to the movement of rail cars.⁷⁹ The length of the freight trains has been increasing in order to maximize utilization of assets such as rolling stock and locomotives. Technological advancements such as distributed power allow the railroads to operate longer trains.⁸⁰ These longer trains take longer to clear crossings, which causes delays to vehicular traffic at the crossings. Additionally, when stopped, longer trains can block multiple adjacent rail crossings. Older sidings designed for shorter trains do not work with the longer trains and reduce their use to allow the passing of other trains.

In the Atlanta region, the closure of the Tilford Hump Yard and the subsequent challenges posed by the transition to Howells Yard have prompted operational adjustments to railroads, including the management of larger trains with distributed power. However, these changes have brought about mobility concerns and raised public issues, leading to discussions about rail crossing blockages and blockages from loading/unloading longer trains at warehouses not designed for their size. Additionally, trains blocking crossings hinders the movement of emergency response vehicles from one side to the other.

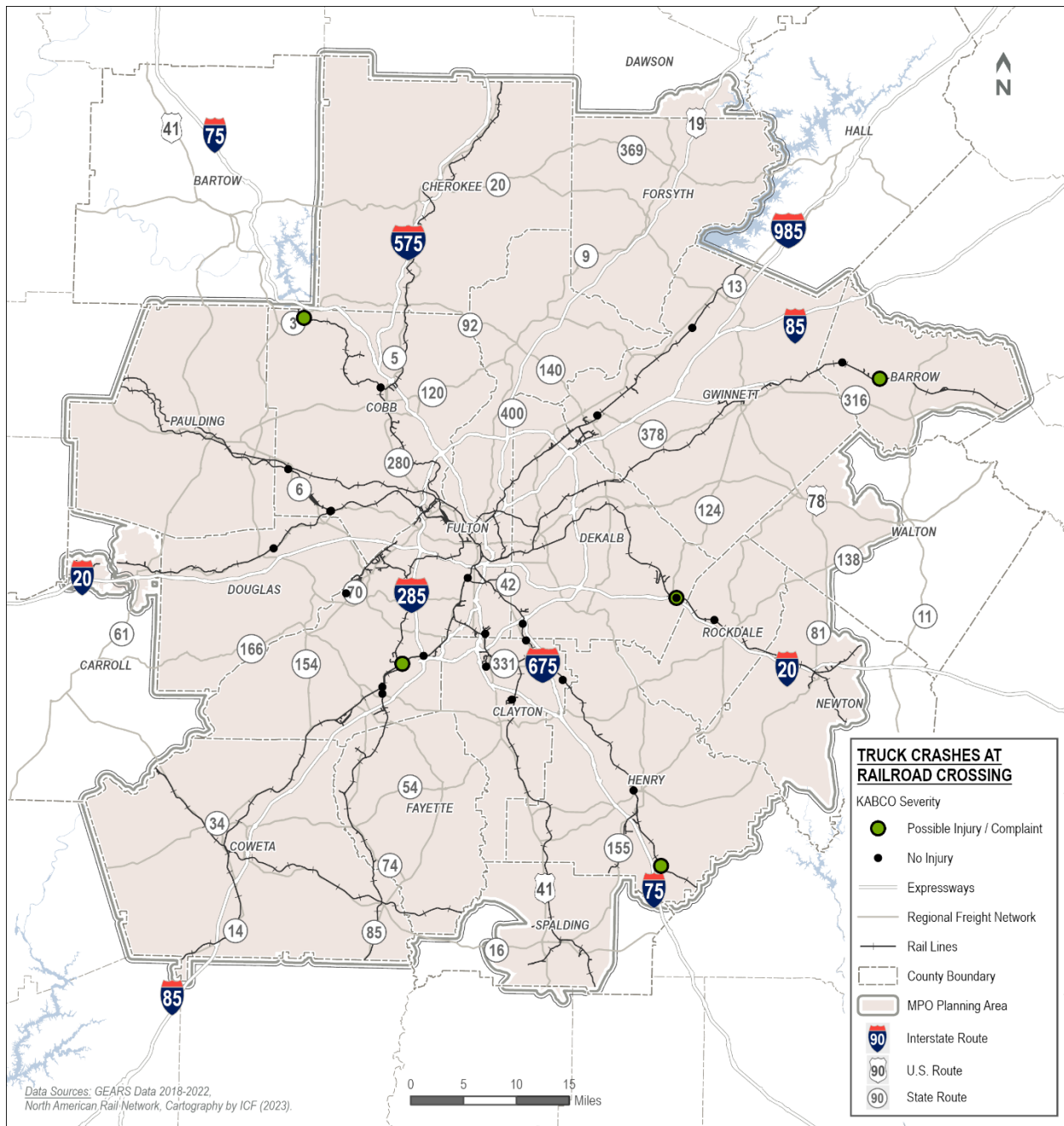
⁷⁶ FHWA. Model Minimum Uniform Crash Criteria (MMUCC), 4th Edition Definitions, Injury Status. <https://highways.dot.gov/media/20151>

⁷⁷ Dillon, D. (2023, April 24). *Acworth officials to permanently shut down crossing known for train, tractor-trailer accidents*. Fox 5 Atlanta. <https://www.fox5atlanta.com/news/acworth-school-street-tractor-trailer-train-tracks-collision>

⁷⁸ WSBTV.com News Staff (2023, June 5). *Wild video shows train plow into transfer truck stuck on the tracks in Union City*. WSB-TV Channel 2 – Atlanta. <https://www.wsbtv.com/news/local/fulton-county/wild-video-shows-train-plow-into-transfer-truck-stuck-tracks-union-city/VKWSWJKECBD53KP7AGEZJLGESI/>

⁷⁹ Van Dyke, C. (2020, March). The Operational Nuts and Bolts of Precision Scheduled Railroading [FHWA webinar]. https://www.fhwa.dot.gov/Planning/freight_planning/talking_freight/march_2020/talkingfreight3_18_20cvd.pdf

⁸⁰ Guss, C. (2023, April 18). Where does distributed power go? *Trains*. <https://www.trains.com/trn/train-basics/abcs-of-railroading/where-does-distributed-power-go>

Figure 68: Truck Crashes at Railroad Crossings

At-grade Railroad Crossings Identified Through Stakeholder Engagement That Need Improvements

In addition to the top 10 at-grade railroad crossings identified in Chapter 3, several at-grade crossings where the trains block the crossings or truck stalls cause delays and crashes were identified through stakeholder engagement efforts.

The at-grade crossings where stakeholders reported that trucks have become stuck on the railroad tracks, which could lead to collision with a train, include the following locations:

- Barrow County:
 - Crossing on Horton Street, north of the intersection of W May Street and Horton Street in the City of Winder. A county stakeholder reported that incidents of trucks being struck by trains at this crossing have led to significant traffic congestion in downtown Winder. When traffic backs up at the two adjacent intersections, trucks halt on the tracks, resulting in collisions with trains.
- Clayton County:
 - Crossings in the City of Lovejoy . A county stakeholder discussed issues with trucks getting stuck at at-grade crossings in the City of Lovejoy. However, the exact location of the crossing wasn't mentioned.
- Cobb County:
 - Crossing on Cherokee Street, east of the intersection of N Main Street with Cherokee Street NW in the City of Kennesaw. A county stakeholder noted issues with truck stalling at this railroad crossing.
 - Crossing on Spring Street, north of the intersection of Veterans Memorial Highway (US 78) and Spring Street NW in the City of Austell. A county stakeholder noted issues with truck stalling at this railroad crossing.
 - Crossing in the City of Acworth. A county stakeholder discussed issues with trucks getting stuck at at-grade crossings in the City of Acworth . However, the exact location of the crossing was not mentioned.
- DeKalb County:
 - Crossing on Turner Hill Road (SR 124), north of the intersection of Covington Highway (US 278) with Turner Hill Road (SR 124) in the City of Lithonia. A county stakeholder recounted at least one incident in the preceding month of the interview to have truck stuck at the crossing.
 - Crossing on Main Street, west of the intersection of Center Street and Main Street in the City of Lithonia. A county stakeholder recounted at least one incident in the month preceding the interview of a truck becoming stuck at the crossing.

- Fulton County:
 - Crossings on Watson Street, east of the intersection of Roosevelt Highway and Watson Street in Union City. A county stakeholder noted that trucks frequently get stuck on railroad tracks at this crossing, leading to crashes and spills of their contents.
 - Crossings on Jonesboro Road, east of the intersection of Watson Street with Jonesboro Road in Union City. A county stakeholder noted that trucks frequently get stuck on railroad tracks at this crossing, leading to crashes and spills of their contents.
- Rockdale County:
 - Crossing at a six-legged intersection on Almand Street, north of the intersection of Green Street NW and Almand Street in the City of Conyers. A county stakeholder noted that there are signs posted at the crossing warning trucks not to cross. However, about once a year, a truck disregards these warnings and becomes stuck on the tracks due to the steep grade being unsuitable for trucks.
- Spalding County:
 - Crossing on Arthur K Bolton Parkway (SR 16), west of the intersection of Gate Ridge Road with Arthur K Bolton Parkway (SR 16), in the City of Griffin. A county stakeholder noted that this crossing is on a spur and having grade issues at the crossing causing concerns.
 - Crossing on Arthur K Bolton Parkway (SR 16), west of the intersection of Green Valley Road with Arthur K Bolton Parkway (SR 16), in the City of Griffin. A county stakeholder noted that this crossing is on the main line and having grade issues at the crossing causing concerns. Spalding stakeholders further expressed frustration about the ongoing dispute between GDOT and Norfolk Southern regarding responsibility for rail approaches and the lack of ownership in resolving the dangerous crossings in downtown Griffin.

The at-grade crossings where trains block the crossings include the following:

- Clayton County:
 - Crossings in the City of Jonesboro. A county stakeholder reported that trains frequently block crossings in various locations throughout the county, particularly in Jonesboro. However, the specific location of the crossings was not mentioned.
 - Crossings in the City of Forest Park. A county stakeholder reported that trains stop at a grade crossing in Forest Park blocking the Main Street between Forest Park and Lake City, However, the exact location of the crossing was not mentioned.

- Dekalb County:
 - Crossings in the City of Lithonia. A county stakeholder reported challenges with stopped trains at at-grade crossings. However, the specific location of the crossings was not mentioned. They mentioned that blocked at-grade crossings cause significant delays for affected trucks causing the truck drivers to hit their hours-of-service limits.
- Fulton County:
 - Crossing in the City of Fairburn. A county stakeholder reported challenges with stopped trains at an at-grade crossing. However, the specific location of the crossings was not mentioned.
- Henry County:
 - Crossings throughout Henry County. A county stakeholder reported that trains frequently block crossings in various locations throughout the county. They also noted that Norfolk Southern currently causes blockage of some intersections that are major truck freight routes. However, the specific location of the crossings was not mentioned.
- Spalding County:
 - Crossing on N Hill Street, South of the intersection of E Broadway Street and N Hill Street, in Downton Griffin. A county stakeholder mentioned the staging area just east of State Route 155, where Norfolk Southern stages railcars and built trains. This staging area often causes road blockages for hours, leading to significant congestion and inconvenience.

Need for Grade Separation

Grade separation at railroad crossings eliminates conflicts between trains and roadway traffic. Grade separation is useful when the roadway traffic or rail traffic is high, there are lengthy delays at railroad crossings due to stopped trains, or when vehicles or trucks frequently become stuck on the tracks. Grade separations between the roadway and the railway may require substantial capital investment. However, grant programs such as the Railroad Crossing Elimination Grant Program⁸¹ from the Federal Railroad Administration are available for projects that support improving the safety and mobility of people and goods. Railroads recognize the opportunities presented by grant applications for grade separations and often work collaboratively with cities and counties for the applications.^{82,83} Other options for funding are the Nationally Significant Multimodal Freight and Highway Projects (INFRA) program and the National

⁸¹ Federal Railroad Administration. Railroad Crossing Elimination Grant Program. <https://railroads.dot.gov/grants-loans/railroad-crossing-elimination-grant-program>

⁸² Norfolk Southern. Grade crossing improvements coming to NS served communities. <https://norfolksouthern.mediaroom.com/Grade-crossing-improvements-coming-to-NS-served-communities>

⁸³ Ruch, J. (2023, June 8). Three Georgia counties receive more than \$3.2M for railroad crossing fixes. *SaportaReport*. <https://saportareport.com/three-georgia-counties-receive-more-than-3-2m-for-railroad-crossing-fixes/sections/reports/johnruch/>

Infrastructure Project Assistance Program (Mega). The following set of locations that could benefit from grade separation were identified from the review of regional and local plans as well as in stakeholder outreach.

- Cherokee County:
 - Crossing in the Mill area in the City of Canton: A county stakeholder noted that the crossing near the Mill area in the City of Canton where the pedestrians have to cross at an at-grade crossing to get to the downtown area is a challenge and could benefit from grade separation.
- Coweta County:
 - Crossing on Newnan Bypass (GA 34), west of the intersection of Temple Avenue (US 27) and Newnan Bypass (GA 34) in the City of Newnan.
 - Crossing on Weldon Road, west of the intersection of US 29 with Weldon Road in the unincorporated part of Coweta County.
- Carroll County:
 - Crossing on Industrial Boulevard (SR 101), south of the intersection of Industrial Court and Industrial Boulevard (SR 101), in the City of Villa Rica.
- DeKalb County:
 - Crossing on Turner Hill Road (SR 124), north of the intersection of Covington Highway (US 278) with Turner Hill Road (SR 124) in the City of Lithonia.
 - Crossing on Main Street, west of the intersection of Center Street and Main Street in the City of Lithonia.
 - Crossing on Montreal Road, north of the intersection of Montreal Circle with Montreal Road in the City of Tucker.
 - Crossing on Constitution Road SE, west of the intersection of Old Constitution Road SE and Constitution Road SE in the unincorporated part of DeKalb County.
- Gwinnett County:
 - Crossing on Oak Road, east of the intersection of Huff Drive SW and Oak Road in the unincorporated part of Gwinnett County.
 - Crossing on Jones Mill Road, north of the intersection of Buford Highway and Jones Mill Road on the edge of the City of Peachtree Corners. This crossing is on the spur of the NS line.
- Rockdale County:
 - Crossing at a six-legged intersection on Almand Street, North of the Intersection of Green Street NW and Almand Street in the City of Conyers

- Crossing on Sigman Road SW, East of the intersection of Old Covington Highway with Sigman Road SW in the unincorporated part of Rockdale County

Resiliency

Freight system resiliency refers to how well the freight system can adapt to disruptive incidents and events, and how the system can recover from these disruptions. Since people and businesses depend on freight, freight systems need to continue functioning in spite of these events, or otherwise to bounce back as quickly as possible. Even short disruptions in the freight system can cause ripple effects that cause shortages of essential goods as well as goods used as raw materials and components to produce other items. Disruptions are not only due to extreme weather events and natural disasters but can be caused due to other events such as labor strikes, cyberattacks, pandemics, and other incidents. Some recent events include the COVID-19 global pandemic, the war in Ukraine, and the Francis Scott Key Bridge collapse in Maryland.

Identification of Infrastructure That May Not Meet Freight Movement Needs

Weather events can pose a serious threat to the efficient movement of freight and can cripple the supply chains with extreme events. Extreme weather events can affect freight transportation in different ways, including through roadway and bridge closures, reduced capacities, or closures of maritime routes, rail lines, ports, and intermodal facilities. Events such as the 2021 Texas freeze, 2023 California heavy rains, and droughts in Panama are recent examples where extreme weather events had significant long-lasting negative impacts.⁸⁴

Structurally Deficient Bridges

Bridges are particularly vulnerable to extreme weather events because they can be impacted by heavy precipitation, temperature changes, and high winds. Bridges that are structurally deficient or are in poor condition have a higher risk of being affected by extreme weather events. When a bridge has to be closed, it causes major disruption for traffic including freight which results in increased costs for freight transportation due to detours. One such recent example is the Cedar Grove Road Bridge in Conley⁸⁵, Georgia has been closed since March 27, 2020, to allow for its replacement after its end of useful life. The bridge closure caused major disruptions in the Metro South CID district.

⁸⁴ De Muynck, B. (2024, March 15). Supply chains face weather's wrath in 2024. *FreightWaves*.

<https://www.freightwaves.com/news/supply-chains-face-weather-wrath-in-2024#:~:text=Floods%2C%20snowstorms%20and%20hurricanes%20can,raw%20materials%20and%20finished%20goods>

⁸⁵ Metro South Community Improvement District. Transportation.

<https://www.metroouthcid.org/projects/transportation/#:~:text=The%20Cedar%20Grove%20bridge%20over,end%20of%20its%20useful%20life>

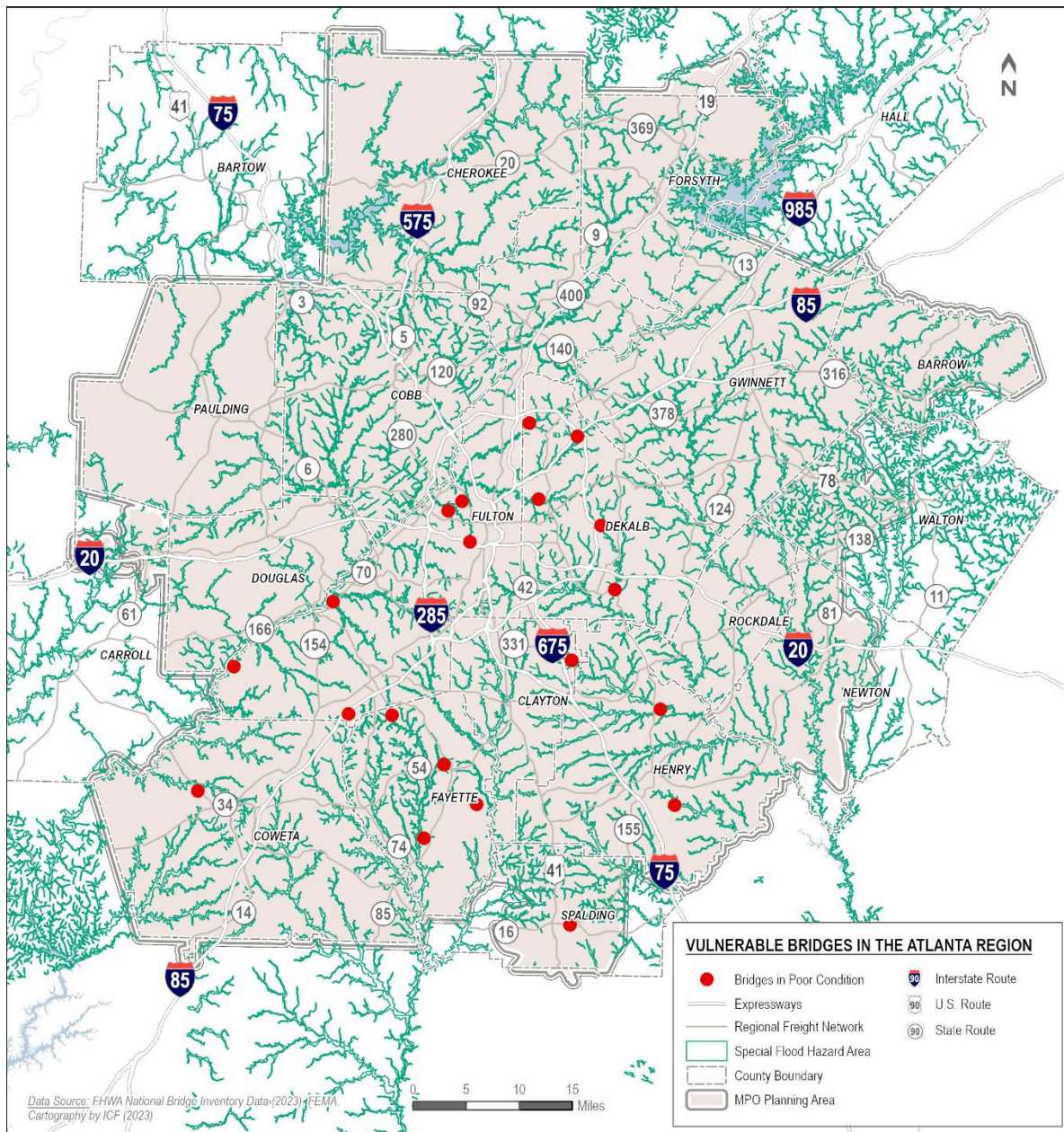
The FHWA compiles the National Bridge Inventory database, which includes information about the condition of bridges. The condition data is collected by state DOTs and submitted to FHWA on an annual basis. The database includes all bridges that are longer than 20 feet used for vehicular traffic.

In the Atlanta region, there are 21 bridges with poor bridge ratings according to the National Bridge Inventory dataset. None of these bridges are on interstates, freeways, or expressways. Fifteen bridges are on local roadways while the rest are on collectors or arterials. Some of the following structurally deficient bridges could have a significant impact on the movement of freight if the bridge were to be closed.

- The bridge on Snapfinger Road (SR 155) near the intersection with Flat Shoals Parkway (SR 155) and near the western boundary of the City of Stonecrest is part of a freight route identified in the ASTRoMaP network. This bridge also lies in a Special Flood Hazard Area⁸⁶ identified by the Federal Emergency Management Agency.
- The bridge on Marietta Road NW over CSX rail lines, adjacent to Tilford Yard, which is on the truck route identified by the City of Atlanta.
- The bridge on Poplar Street in the City of Griffin and the bridge on Main Street in the City of Newnan that are both over NS rail lines.

Figure 69 shows the locations of these poor condition bridges in the Atlanta region.

⁸⁶ Federal Emergency Management Agency. Special Flood Hazard Area (SFHA). <https://www.fema.gov/about/glossary/special-flood-hazard-area-sfha>

Figure 69: Poor Condition Bridges in the Atlanta Region in Special Flood Hazard Areas

Bridges with Low Vertical Clearance

The minimum vertical clearance for the bridges on the interstate system is 16 feet.⁸⁷ However, bridges on local and collector roads can have lower vertical clearance. Bridges with low clearance pose a particular challenge for trucks since they have to divert around the bridge. Often rail underpass bridges that are constructed to avoid or replace at-grade rail crossings have geometrical constraints, which limit the

⁸⁷ FHWA (2014). Mitigation Strategies for Design Exceptions: Vertical Clearance.

https://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_verticalclearance.cfm#:~:text=On%20Interstates%2C%20the%20clear%20height,at%20least%20a%20single%20routing

available vertical clearance for the roadway below. Trucks that are taller than the available vertical clearance can collide with the structure, immobilizing the truck and risking damage to the bridge structure and the rail infrastructure that it carries. The following bridges with low vertical clearance were identified based on a document review and stakeholder engagement:

- The Bolton Road bridge near Marietta Road in the City of Atlanta that is a rail underpass carrying the CSX railroad.
- The Defoors Ferry Road bridge near Marieta Boulevard in the City of Atlanta that is a rail underpass carrying the CSX railroad.
- The SR 92 bridge near E Broad Street in the City of Fairburn⁸⁸ that is a rail underpass bridge carrying the CSX freight line
- The bridge on James B. Rivers Memorial Drive in Stone Mountain⁸⁹ is a rail underpass bridge carrying the CSX freight line

Considerations for Improving Freight System Resiliency

Planning for resilience is required to maintain the efficient operations of the freight systems during and after disruptions. Some important considerations for improving freight system resiliency are mentioned in the following paragraphs.

Contingency Planning

Contingency planning is key to ensuring that the effects of disruptions are minimized by ensuring there is adequate redundancy in the system. Contingency planning includes a good understanding of the capacity constraints of various modes and infrastructure on the freight system as well as considerations for the availability of alternative routes and modes. In the Atlanta region, many of the key players in the logistics and warehousing industry operate from centralized hubs with massive distribution centers, which makes the freight network vulnerable. Instead of relying on a single large distribution center, smaller regional facilities spread around the region can help reduce the impact of events and improve the resilience of the freight network. It is also essential to identify alternative routes to key freight corridors in the region, which can keep freight flowing in times of emergencies. The Tucker Summit FCP identified Mountain Industrial Boulevard and Jimmy Carter Boulevard as alternative routes to I-285 during peak hours and emergency situations. Any improvements that are made to improve traffic flow can help improve resiliency.

⁸⁸ Fox 5 Atlanta (2017, October 23). *Low clearance: Truck gets stuck at Fairburn train overpass.*

<https://www.fox5atlanta.com/news/low-clearance-truck-gets-stuck-at-fairburn-train-overpass>

⁸⁹ Capelouto, J.D. (2019, March 25). *Low blows: This bridge takes repeated beatings.* *The Atlanta Journal-Constitution.*

<https://www.ajc.com/news/local/this-low-bridge-stone-mountain-keeps-getting-hit-tall-trucks/xCKiTRoYOIwB1cSNe6yTmI/>

Identify and Prioritize Investment Based on a Risk Management Approach.

In 2018, ARC developed a vulnerability and resiliency framework for the Atlanta region⁹⁰ that recommended identifying critical assets and infrastructure in the region, especially the ones that would become even more important in an emergency. The framework recommends a criterion for identifying these assets which considers usage, economic importance, lifeline importance, and the availability of detour routes.

While identifying the vulnerable infrastructure, a risk management approach could be adopted. The risk management approach involves identifying potential threats and vulnerabilities and then prioritizing and mitigating them.⁹¹ The risk assessment should take into account the type and magnitude of threats, the likelihood of the threats, and the consequences of the threats. While identifying the vulnerable infrastructure, the condition of the infrastructure should be taken into account. For example, a bridge in fair condition may not pose a challenge during normal conditions. However, it may be inadequate in case of flooding, heavy wind, or a seismic event. Once the vulnerable infrastructure is identified, the investments should be prioritized to keep the infrastructure in a state that would be able to withstand and quickly recover from hazardous events.

Adopting Technological Innovations

In recent years, innovations in technology have supported the development of automated processes and tools that have supported streamlining operations, optimizing routing, real-time tracking, and general efficiency of the supply chains.^{92,93} Adopting technological advancements can offer significant advantages to enhancing the resilience of the freight system.

One such transformative technology is the Physical Internet,⁹⁴ introduced by Professor Benoit Montreuil of Georgia Tech in 2006. This concept aims to create a hyperconnected, efficient, and open-access freight transportation system. It emphasizes reducing empty travel, maximizing vehicle space, avoiding delays due to consolidation, and implementing relay transport through multiple tiers of hubs. The initiative also promotes leveraging existing facilities and encouraging open consolidation and resource pooling. The Physical Internet can help supply chains and transportation networks withstand and recover from

⁹⁰ ARC (2018, January 20). *Vulnerability and Resiliency Framework for the Atlanta Region*. <https://cdn.atlantaregional.org/wp-content/uploads/arc-vulnerability-and-resiliency-framework.pdf>

⁹¹ U.S. Department of Homeland Security, Cybersecurity and Infrastructure Security Agency. NIPP Supplemental Tool: *Executing a Critical Infrastructure Risk Management Approach*. <https://www.cisa.gov/sites/default/files/publications/NIPP-2013-Supplement-Executing-a-CI-Risk-Mgmt-Approach-508.pdf>

⁹² PYMNTS (2024, March 26). *How Digital Solutions Are Giving Freight Industry a Modern Lift*. <https://www.pymnts.com/shipping/2024/how-digital-solutions-are-giving-freight-industry-a-modern-lift/>

⁹³ Zhou, A. (2023, May 23). *Freight Resilience in the Post-Pandemic Era: Strategies for Q3 and Q4 2023*. GoFreight. <https://www.gofreight.com/blog/industry-insights/freight-transportation-resilience.html>

⁹⁴ Georgia Institute of Technology, Physical Internet Center. Physical Internet. <https://www.picenter.gatech.edu/physical-internet>

unexpected events by providing a less vulnerable, pooled, integrated system with numerous small, connected hubs.

Collaboration between the Public and Private Sectors

Collaboration between the public sector and the private industry is essential to improve resilience in freight systems. A public-sector role is to coordinate planning so that funding is allocated to continually maintain and improve the condition of freight assets. This public-sector focus is on developing a vision for the region and arranging systematic rather than piecemeal improvements. Conversely, the private sector supports the resilience of the freight system by improving the visibility of supply chains by sharing data with the public sector. One such recent successful example is the Freight Logistics Optimization Works (FLOW), which is a public-private partnership to build an integrated view of the supply chain in the U.S. The initiative was launched in March 2022 in response to post-COVID supply chain disruptions. The FLOW initiative helps participants forecast how current capacity and throughput will fare against future demand.

Intelligent Transportation Systems (ITS) and Technology in Freight Transportation

Existing Freight-Oriented ITS Infrastructure and Pilot Projects in the Atlanta Region

The Atlanta region has invested in robust ITS infrastructure since the early 1990s, when it began its ITS investment to prepare for the 1996 Centennial Olympics Games. The ITS deployment in the region began with the NaviGator advanced transportation management system. While ARC does not own or operate the ITS infrastructure in the region, ARC has a key role in facilitating the regional deployment of ITS technology to improve mobility for people and freight within the region. The GDOT owns the majority of the ITS infrastructure in the Atlanta region. Some of these existing and planned ITS deployments support the efficient movement of freight in the region. Several key examples are described below:

- Foundational ITS Infrastructure:** The Atlanta metro transportation network is supported by a robust communications network operated and maintained by GDOT, counties, and local jurisdictions. This network supports freeway and arterial systems such as cameras, detection, dynamic message signs, traffic signal controller connectivity, traveler information, connected vehicle deployments, and more. The systems are managed from GDOT's statewide transportation management center (TMC) as well as local county and municipal TMCs throughout the region through the shared NaviGator advanced transportation management system or local platforms. These systems give operators the ability to optimize the transportation network through active traffic management supporting enhanced freight mobility, reliability, and safety.
- Connected Vehicle Deployments:** The Atlanta region has been a leader in the deployment and application of connected vehicle technologies, having been an early adopter of the Dedicated Short-Range Communications (DSRC) infrastructure and continuing that investment through the

continued evolution of the technology. In 2019, ARC and GDOT initiated a program to partner with interested local agencies to install over 1,000 Cellular Vehicle-to-Everything (C-V2X) devices across the Atlanta region under the CV-1K initiative. GDOT currently has more than 700 intersections and interstate installations ready to deploy C-V2X technology in addition to the over 1,200 signalized intersections already deployed with connected vehicle (CV) technology. GDOT's V2X Roadmap outlines a 10-year regional and statewide funding program to equip all signalized intersections on the state route system, which aligns with GDOT's expectations to deploy over 2,600 roadside units in the coming years. Further supporting this investment, GDOT recently obtained a waiver granted by the Federal Communications Commission allowing GDOT to integrate C-V2X technology across the state.⁹⁵ Gwinnett County, in partnership with ARC and GDOT, has invested significantly in CV technologies. Guided by the *Gwinnett County Connected Vehicle Technology Master Plan*,⁹⁶ Gwinnett County installed C-V2X on board units in emergency and county transit vehicles under a multi-year CV deployment project. The county and traveling public will benefit from construction and maintenance vehicle alerts as well as transit signal priority. In addition, the county is piloting rail intersection blocked alerts,⁹⁷ and most notably for the 2024 *Atlanta Regional Freight Mobility Plan*, Gwinnett County intends to pilot freight signal priority.

- **Freight-Specific Connected Vehicle**

Deployments: In 2022, GDOT piloted the deployment of real-time traffic alerts for commercial vehicle drivers through the Drivewyze Smart Roadways.⁹⁸ In 2023, GDOT expanded the deployment to cover 1,400 miles of interstates and state highways across Georgia, providing truck drivers access to heavy congestion and slowdown traffic alerts. Drivewyze also provides in-cab safety alerts and advisories for potentially risky areas that affect traffic. Figure 70 shows an illustration of the in-cab safety alerts from Drivewyze.

Figure 70: In-Cab Driver Safety Alert from Drivewyze



Source: Drivewyze Inc.

⁹⁵ GDOT (2023, August 28). *Georgia DOT Celebrates Connected Vehicle Technology Integration* [Press Release]. <https://mailchi.mp/dot.ga.gov/secretary-of-state-transportation-board-of-georgia-6664396>

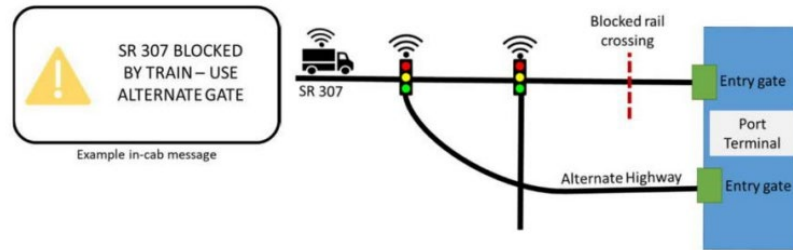
⁹⁶ Gwinnett County Department of Transportation (2019, October). *Gwinnett County Connected Vehicle Technology Master Plan*. <https://www.gwinnettcounty.com/static/departments/transportation/pdf/CVTechnologyMasterPlan2019.pdf>

⁹⁷ Klaer, M. (2022, August 9). *Gwinnett County and 360ns Install First CV Technology in Emergency and Transit*. 360 Network Solutions, LLC. <https://360ns.net/2022/08/gwinnett-county-360ns-install-first-cv-technology-in-emergency-and-transit/>

⁹⁸ Drivewyze. Drivewyze Infrastructure Services. <https://drivewyze.com/drivewyze-infrastructure-services/>

GDOT has deployed pilot projects that benefit freight movement near the Port of Savannah. GDOT, in partnership with the Georgia Ports Authority, is providing in-cab alerts to inform drivers of blocked rail crossings along the

Figure 71: GPA Freight Signal Priority Pilot



Source: GDOT SigOps Program.

port's ingress and egress routes such as SR 307.⁹⁹ Figure 71 shows a schematic diagram for the freight signal priority pilot. The system broadcasts a message to the neighborhood or roadside units when the railroad crossing gates lower to alert vehicles to find alternate routes into the Port. The system also works with private freight carriers to provide freight signal priority along these routes. This program has shown some substantial environmental benefits due to a reduction in the stopping and idling of trucks at traffic signals and at-grade crossings. Freight signal priority could also be considered for implementation in appropriate locations in the Atlanta region.

- Commercial Vehicle Lanes:** GDOT is leading the development of a first-of-its-kind 41-mile commercial vehicle lanes project along I-75 in central/north Georgia. GDOT is planning to construct two barrier-separated truck-only lanes from the Macon area traveling northbound to the McDonough area in Henry County. These lanes will be equipped with connected vehicle technology and will serve as an opportunity to test freight-specific technologies that can be expanded further in the Atlanta region once proven.

The significant investment in technology deployments throughout the state, and the Atlanta region has the potential to be further leveraged or expanded to enhance the mobility, reliability, and safety of freight movement.

Potential Technology Solutions Beneficial for Freight

The Atlanta region has identified potential strategies and technology solutions to support efficient freight movement and management in the region. The ARC has identified and considered potential freight

⁹⁹ GDOT, SigOps Office of Traffic Operations (2021, September). *Freight and V2X* [PowerPoint presentation]. <https://www.itsga.org/wp-content/uploads/2021/09/3-gdot-itsga-freight-v2x-John-HIbbard.pdf>

technology strategies through several initiatives, including the *Atlanta Regional Transportation Systems Management and Operations (TSMO) Strategic Plan*¹⁰⁰. Potential strategies include the following:

- **Freight Signal Management Applications:** Applications such as freight signal priority, dilemma-zone detection systems, and at-grade rail-crossing information dissemination systems can allow an approaching truck to proceed through the intersection. Freight signal priority involves adjusting traffic signals to favor vehicles carrying freight to reduce delay, thereby reducing the overall delay and congestion as trucks take longer to accelerate during the next signal cycle. This approach also increases safety by reducing the likelihood of rear-end crashes, trucks running red lights, or having to come to a hard stop along a high-speed facility. These applications can be installed using enhanced detection equipment which determines the type of approaching vehicle and modifies the signal timing as defined by the algorithm parameters.
- **Truck Parking Applications:** These applications collect real-time truck parking inventory and disseminate it through mobile applications, dynamic message signs, and other technologies to enhance efficiency. Pilot applications have been deployed with the support of the Mid-America Freight Coalition, as well as solutions developed by the private sector. The emergence of new technologies, combined with the support from the public sector and lot owners, can help truck parking detection and dissemination systems become more widespread.
- **Curbside Management:** This strategy focuses on the safe and efficient delivery of goods in urban areas while managing limited curb space for all users. An example of a technology-based solution includes the installation of sensors to enable a parking reservation system. Such an approach has the potential to reduce congestion by making more efficient use of the curb space, reducing unnecessary waiting or circling, avoiding unsafe staging, or shortening loading times.
- **Connected Vehicle Technologies:** These technologies can serve as a foundational approach to many of the strategies named above. This type of deployment uses roadside units inside of signal cabinets that receive a signal from an on board unit located inside the participating freight vehicle. In-vehicle traveler information for parking, road and weather condition status, and traffic conditions can enhance safety and mobility for all roadway users. In addition, there are several connected vehicle applications that, although not specifically developed for freight, can be beneficial to freight operations, such as advanced warning systems for high winds, end-of-queue warnings, and relevant alerts for curves, bridge height, or other obstructions.
- **Autonomous Driving Technology:** This technology for commercial vehicles aims to enable vehicles, particularly trucks, to operate safely and efficiently without human intervention. Autonomous trucks can operate safely and efficiently without human intervention within specific

¹⁰⁰ ARC (2020). *Atlanta Regional Transportation Systems Management and Operations (TSMO) Strategic Plan*. <https://cdn.atlantaregional.org/wp-content/uploads/arc-tsmo-strategic-plan-final-2020.pdf>

geographic areas or under certain conditions. The initial focus of such technologies is on terminal-to-terminal operations for commercial trucks. This involves enabling autonomous driving capabilities for trucks operating between specific terminals, such as distribution centers or hubs.

- **Physical Internet:**¹⁰¹ This technology enables streamlined operations that lead to cost savings, reduced environmental impact, and improved overall efficiency by minimizing redundancy and optimizing routes.
- **Other Emerging Technologies:** These technologies include the application of artificial intelligence to enhance route planning, demand forecasting, and safety, 3D printing to enable on-demand production of spare parts reducing the lead time, and the use of drones for last-mile deliveries.

Potential Pilot Projects and Funding Sources for the Atlanta Region

Various local jurisdictions and community improvement districts (CIDs) in the region have developed a set of comprehensive FCPs in the region. Potential pilot projects have been identified in the region that would benefit from ITS/ technology solutions. Table 42 lists selected freight ITS improvements highlighted in the FCPs.

Table 42: Potential Pilot Projects Identified in FCPs

ITS Improvement	Project Description	Proposed Locations	Source FCP
Dynamic Message Signs (DMS) for At-Grade Rail Crossing	DMS for at-grade rail crossings to alert drivers that trains are blocking the rail crossing and direct them to take alternate routes.	- Parrot Ave - J.E. Boone Blvd - Mayson Turner Rd	Northwest Atlanta FCP
DMS for Traffic Information	Deploy DMS to alert motorists of travel conditions on SR 140 and divert them to alternate routes.	- Graves Road - Harbins Road	Gateway85 Gwinnett CID FCP
Smart Work Zone	Deploy smart/connected technologies on major roadway projects in the region, including regular maintenance operations.	Donald L. Hollowell Parkway and I-20/I-285 West interchange projects.	Fulton Industrial Boulevard FCP
CV Technology	Use CV technologies to prioritize freight access, which could be leveraged to enable other CV solutions such as emergency vehicle priority and transit signal priority.	Donald Lee Hollowell Parkway (US 278/US 78/SR 8) James Jackson Parkway (SR 280)	Northwest Atlanta FCP

¹⁰¹ Georgia Institute of Technology, Physical Internet Center. Physical Internet. <https://www.picenter.gatech.edu/physical-internet>

ITS Improvement	Project Description	Proposed Locations	Source FCP
	CV technology infrastructure to enhance safety and operational efficiency through Freight Signal Priority.	- Critical urban freight corridors: - Fulton Industrial Blvd/ SR 70 - Camp Creek Parkway / SR 6 - Campbellton Road / SR 54 / SR 166 - Martin Luther King Jr. Drive / SR 139 - Donald L Hollowell Parkway / SR8 / US 78 / US 278	Fulton Industrial Boulevard FCP
	This project proposes leveraging the connected signal technology being deployed through the CV-1K initiative to provide signal priority, emergency preemption, and other CV applications that relate to freight.	Loop Road, Riverdale Rd (SR 139), Main St/Roosevelt Hwy (US 29 / SR 14), Camp Creek Pkwy (SR 6), and Virginia Ave	Aerotropolis Atlanta FCP
	Deploy CV technologies at signalized intersections, including DSRC and C-V2X equipment, allowing for future CV applications such as freight signal priority.	Mountain Industrial Blvd from E. Ponce de Leon Ave to N. Royal Atlanta Dr.	Tucker Summit CID FCP
Truck Parking Technologies	Improve utilization and efficiency of truck parking by providing real-time information on the location and quantity of available parking.	- Petro Stopping Center - QuikTrip Truck Parking - Other lots where owners are willing to cooperate	Fulton Industrial Boulevard FCP
		Available truck parking sites	Metro South CID FCP, Spalding County FCP, Tucker Summit CID FCP, and Aerotropolis Atlanta FCP

ITS Improvement	Project Description	Proposed Locations	Source FCP
Closed Circuit Television (CCTV) Cameras	Add CCTV cameras at the intersections of Singleton Road / S. Norcross Tucker Road.	- Intersections of Singleton Road / S. Norcross Tucker Road with: - Graves Road - SR 140 / Jimmy Carter Blvd. - Harbins Road - Indian Trail-Lilburn Road	Gateway85 Gwinnett CID FCP
Dilemma-Zone Detection system	The system utilizes cameras that detect approaching vehicles, distinguishing between trucks and other vehicles, and can extend the yellow signal phase so that heavier vehicles have time to stop before they inadvertently travel through the red light or cause a rear-end crash in an attempt to stop.	Moreland Avenue	Metro South CID FCP
		Martin Luther King Jr. Parkway (US19/41) in both directions	Spalding County FCP
		Camp Creek Parkway, from Butner Road to I-285 as the pilot project. If successful, extend to key truck routes such as Old Dixie Rd (US 19/41 and SR 3), Roosevelt Hwy (US 29 / SR 14), and Forest Pkwy (SR 331).	Aerotropolis Atlanta FCP
Signal Optimization System and Message Signs	A message system to warn motorists when a train is blocking the intersection and to suggest alternate routes if motorists want to avoid the blocked intersection.	- The intersection of Arthur K Bolton Parkway (SR 16) and Green Valley Road - Rehoboth Road at the east and Wilson Road to the west	Spalding County FCP
Supplemental Signals	Install supplemental near-side signal heads at intersections along key truck corridors so they are more visible to drivers in smaller vehicles positioned behind trucks.	Camp Creek Parkway (SR 6), Old Dixie Rd (US 19/41 and SR 3), Roosevelt Hwy (US 29 / SR 14), and Forest Pkwy (SR 331).	Aerotropolis Atlanta FCP

Potential Funding Sources

There is a range of federal and state sources available to fund potential ITS freight projects. Even some funding sources without obvious ITS or freight components still allow for related eligible projects. The list below provides potential funding sources available to the Atlanta region.

Infrastructure Investment and Jobs Act (IIJA)

- Existing Formula Programs

- Highway Safety Improvement Program (HSIP)
 - Railway-Highway Crossing Program (RHCP)
 - Motor Carrier Safety Assistance Program (MCSAP)
 - National Highway Freight Program (NHFP)
- New Formula Programs
 - Carbon Reduction Program (CRP)¹⁰²
- Discretionary Grant Programs
 - Advanced Transportation Technologies and Innovative Mobility Deployment (ATTIMD), also known as the Advanced Transportation Technology and Innovation (ATTAIN)
 - Consolidated Rail Infrastructure and Safety Improvement (CRISI)
 - National Infrastructure Project Assistance Program
 - Railroad Crossing Elimination Program¹⁰³
 - Strengthening Mobility and Revolutionizing Transportation (SMART)
 - Safe Streets and Roads for All (SS4A)

State Programs

- Freight Operations Lump Sum Program

Local Sources:

- Community Improvement Districts (CIDs)
- Tax Allocation Districts (TAD)

Public-Private Partnerships

Noteworthy ITS and Technology Projects in the Country

There are many examples of ITS solutions for freight across the country, with existing and planned projects looking to tackle issues related to freight traveler information, truck parking, port traffic, and freight priority, among others. ARC can learn from these noteworthy deployments to avoid pitfalls and identify

¹⁰² Eligible projects for the CRP include “a project for the deployment of infrastructure-based intelligent transportation systems capital improvements and the installation of vehicle-to-infrastructure communications equipment, including retrofitting dedicated short-range communications (DSRC) technology deployed as part of an existing pilot program to cellular vehicle-to-everything (C-V2X) technology” (source: 23 USC 175).

¹⁰³ The Railroad Crossing Elimination Program includes as eligible projects “the improvement or installation of protective devices, signals, signs, or other measures the improve safety” and “other means to improve the safety and mobility of people and goods at highway-rail grade crossings (including technological solutions)” (source: 89 FR 56788, Retrieved from <https://www.govinfo.gov/app/details/FR-2024-07-10/2024-15061>).

strategies that have been successful. The future of freight movement will rely on technologies such as connected vehicles and emerging data solutions. By strategically planning for long-term maintenance and avoiding short-term obsolescence, ARC can facilitate the building of a resilient freight system that will benefit all travelers throughout the region.

Connected Vehicle Deployment Projects and Lessons Learned

The Wyoming CV Pilot Deployment Program is a seminal project within the United States, in which the Wyoming DOT deployed CV technologies to improve safety and mobility along 402 miles of I-80 in southern Wyoming, especially during severe winter weather and high wind events and with a specific focus on commercial trucks. The Wyoming DOT retrofitted approximately 320 heavy-duty commercial trucks, highway patrol vehicles, and snowplows with DSRC on board units that allowed vehicles to receive and broadcast CV messages, such as inclement weather warnings and advisories, recommended speeds, road closure notifications, parking/services information for trucks, vehicle restrictions, and other important information. The CV messages also enabled vehicle-to-vehicle communication, providing warnings for vehicles on shoulders and potential forward collision alerts.

Similarly, Texas' Connected Freight Corridors project is deploying CV technologies to more than 1,000 commercial vehicles to improve traveler information, asset condition management, and system performance. The project covers the 865-mile Texas Triangle of I-35, including an extension to Laredo, I-45, and I-10 linking Austin, Dallas-Fort Worth, Houston, and San Antonio, along which it is enabling CV applications (e.g., work zone warning, queue warning, wrong way warning, traveler information, and freight signal priority).

California's Freight Advanced Traveler Information System (FRATIS) is implementing a large-scale deployment around the Los Angeles area to provide substantial improvements in truck congestion reduction and fuel usage through applications integrated with the FRATIS in-vehicle equipment and communications with traffic signals to make acceleration and braking more efficient.

The Florida DOT is leveraging CV technology to improve freight mobility within the state. As part of a series of pilot projects, the Florida DOT is deploying a combination of vehicle-to-infrastructure and vehicle-to-vehicle components to enable freight signal priority at strategic locations along the project routes and traffic signals on SR 710. The project routes consist of a combination of rural and urban segments between SR 706 (Indiantown Rd) and the Port of Palm Beach in Palm Beach County. The Florida DOT is piloting a project to deploy CV and autonomous vehicle technologies to measure, prioritize, and automate portions of the floral delivery supply chain in Miami-Dade County. The Florida DOT expects that travel time reliability will improve within the region surrounding the Miami International Airport

(MIA) by utilizing the CV devices to connect the freight vehicles to traffic signals through the back-end systems at the Miami-Dade County Traffic Management Center.¹⁰⁴

Several of the CV deployment projects mentioned above cited challenges related to the timeliness and quality of data. Challenges encountered included false alarms, causing frustration for the users and loss of confidence in the alerts. It is important that data provided on dynamic message signs (DMS) and in-cab alerts remains timely and consistent. This applies to weather alerts, work zones, end-of-queue warnings, and variable speed limits. By integrating all these elements seamlessly, the system can build confidence in the users for its reliability and accuracy.

It is also crucial to use industry standards while developing interfaces and data exchanges to support the delivery of travel information to external centers and information service providers. Wyoming DOT used the Traffic Management Data Dictionary standard. The Traffic Management Data Dictionary is a standardized data dictionary developed by the American Association of State Highway and Transportation Officials (AASHTO). It provides a common language and structure for exchanging transportation-related data among different systems and jurisdictions.

When implementing connected vehicle technology in freight, it is important to customize the solutions to account for freight-specific requirements. As an example, in the case of Class 8 vehicles, typical shark fin antennas affixed to the roof used for connected vehicles face limitations. The typical shark fin antenna often proves ineffective for Class 8 trucks due to limited line of sight. In the Wyoming CV pilot project, significant testing indicated that two antennas were needed with an optimal placement of one on each rearview mirror.

¹⁰⁴ U.S. Department of Transportation (2022, June 30). *Interactive Connected Vehicle Deployment Map* [Map]. <https://www.transportation.gov/research-and-technology/interactive-connected-vehicle-deployment-map>

Autonomous Vehicle Deployment

In 2023, Aurora (an autonomous and self-driving technology company) launched a commercial autonomous freight route between Dallas and Houston.¹⁰⁵ Aurora operates 75 autonomous runs with a safety driver between their terminals. At present, Aurora vehicles operate between terminals owned by Aurora itself. Aurora holds a license as a carrier in Texas. It is anticipated that the current model will shift to vehicles owned and operated by external companies, such as FedEx. In this scenario, Aurora would provide comprehensive software and hardware support, including a 24-hour monitoring center. The technology necessitates terminals at both ends of the route for vehicle travel, and these terminals could be established by carriers or companies (for instance, from one FedEx terminal to another).

Figure 72: Aurora Terminal



Source: Aurora Innovation.

Kroger (a large grocery retailer) teamed with Gatik (an autonomous middle-mile logistics provider) in 2023 to transport customer orders within Kroger's Dallas-Fort Worth distribution network.¹⁰⁶ The connection, between distribution centers and retail locations, is a critical leg of the grocery retail supply chain. Gatik's autonomous medium-duty box trucks transport fresh products from Kroger's customer fulfillment center in Dallas to various Kroger retail locations. The trucks have been making delivery runs multiple times per day, seven days a week across

Figure 73: Autonomous Medium-duty Box Trucks



Source: Gatik.

¹⁰⁵ Adler, A. (2023, November 1). Aurora opens driverless trucking route in Texas as opposition grows. *FreightWaves*. <https://www.freightwaves.com/news/aurora-opens-driverless-trucking-route-in-texas-amid-autonomous-jitters>

¹⁰⁶ Gatik (2023, March 6). We Own the Middle Mile: Deploying Autonomous Box Trucks to Future-Proof Kroger's Supply Chain. <https://gatik.ai/news/blog/we-own-the-middle-mile-deploying-autonomous-box-trucks-to-future-proof-krogers-supply-chain/>

Kroger’s Dallas distribution network.¹⁰⁷ Autonomous delivery also allows Kroger to fulfill e-commerce orders faster with increased responsiveness while reducing costs and providing dedicated capacity to move products between various facilities.¹⁰⁸

Artificial Intelligence-Based Deployments

Virginia is currently piloting a project with Drivewyze to implement an artificial intelligence-based video recognition system to monitor parking locations and determine truck parking availability, without the need to deploy sensors or have personnel constantly monitor videos to determine available spots. This information is then shared with Drivewyze customers through their Dynamic Parking Availability Alerts.

In addition, Virginia is also looking to improve congestion in its ports, with the Port of Virginia studying the potential impacts of implementing a truck reservation system and a radio frequency identification system. This would allow truckers to conduct most administrative tasks online prior to arriving at the terminal, and trucking companies and shippers could also check container availability, observe vessel schedules, identify any holds that may exist on their containers, or schedule truck arrival appointments. The study found that these solutions could potentially reduce truck trip time by 66 percent and save trucking companies \$2.72 million in fuel costs at the port.¹⁰⁹

Alternative Fuels and Electric Vehicles in Freight Transportation

In freight transportation, fuels other than petroleum-based fuels such as gasoline and diesel are considered alternative fuels. Diesel fuel is by far the most popular fuel for freight vehicles, making up around 76 percent of Class 3 to Class 8 trucks in the U.S.¹¹⁰ However, due to stricter emissions regulations going into effect on the federal level, and expected to be enacted in the coming years, the adoption of alternative fuels and zero-emission vehicles is likely to accelerate.^{111, 112} Alternative fuels and related technologies for freight

¹⁰⁷ Gatik (2023, December 14). *Gatik and Kroger Celebrate Successful Autonomous Trucking Operations with City of Dallas and Texas State Partners*. Business Wire. <https://www.businesswire.com/news/home/20231214836909/en/Gatik-and-Kroger-Celebrate-Successful-Autonomous-Trucking-Operations-with-City-of-Dallas-and-Texas-State-Partners>

¹⁰⁸ Silverstein, Sam (2023, March 15). Kroger to deploy driverless trucks in Dallas. *Grocery Dive*. <https://www.grocerydive.com/news/kroger-to-deploy-driverless-trucks-in-dallas/645093/>

¹⁰⁹ ITS Deployment Evaluation (2023, September 29). *A Truck Reservation System Using RFID Tags and Real-Time Information from a Cloud-Based System Was Expected to Reduce Truck Trip Time by 66 Percent and Save Trucking Companies \$2.72 Million in Fuel Costs at the Port of Virginia*. U.S. Department of Transportation. <https://www.itskrs.its.dot.gov/node/212508>

¹¹⁰ Engine Technology Forum (2022, July 13). *New Analysis Shows How Diesel, Natural Gas, Electric and Gasoline Power the Nation’s Commercial Truck, Transit and School Bus Fleets* [Press Release]. <https://enginetechnologyforum.org/press-releases/posts/new-analysis-shows-how-diesel-natural-gas-electric-and-gasoline-power-the-nations>

¹¹¹ U.S. Environmental Protection Agency (2023, April 12). *Biden-Harris Administration Proposes Strongest-Ever Pollution Standards for Cars and Trucks to Accelerate Transition to a Clean-Transportation Future* [Press Release]. <https://www.epa.gov/newsreleases/biden-harris-administration-proposes-strongest-ever-pollution-standards-cars-and>

¹¹² Divis, A., Genette, G., and Martin, J. (2023, July 26). *Fuel for Thought: The commercial vehicle fleet accelerates toward ZEV adoption*. S&P Global Mobility <https://www.spglobal.com/mobility/en/research-analysis/fuel-for-thought-the-commercial-vehicle-fleet-accelerates.html>

trucks include but are not limited to compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG, often referred to as Propane), ethanol, biodiesel, renewable diesel, hydrogen, hydrogen fuel cell, hybrid electric and battery electric vehicle (BEV) technology.

The section below contains further information on the current status of national and statewide initiatives, the status of alternative fuel infrastructure in the Atlanta region, noteworthy pilot projects around the country, and potential funding opportunities and pilot projects to consider for the Atlanta region.

National Initiatives

In an effort to reduce dependency on fossil fuels and achieve net zero carbon emissions, in recent years there has been a significant push for the adoption of alternative- and zero-emission fuel sources for passenger vehicles and public transportation. However, alternative fuel adoption for freight trucks has been comparatively slow.

In June 2020, California enacted zero-emission commercial truck requirements by adopting Advanced Clean Trucks standards which set ambitious targets to transition medium- and heavy-duty vehicles (MHDVs) to fully electric vehicles.¹¹³ Since several other states have adopted the Advanced Clean Trucks standards in an effort to promote zero-emission trucks.¹¹⁴

In March 2024, the U.S. government unveiled the National Zero-Emission Freight Corridor Strategy, which outlines a comprehensive strategy to accelerate the deployment of a zero-emission freight network across the country by 2040.¹¹⁵ The strategy aims to accelerate the adoption of zero-emission MHDVs in four phases: Phase 1 (2024-2027) focuses on establishing priority freight hubs (of which Metro Atlanta is one) and building out the alternative-fueling and charging infrastructure within a 100-mile radius; Phase 2 (2027-2030) will focus on connecting these hubs along critical freight corridors; Phase 3 (2030-2035) will focus on expanding the corridor connections and initializing network development; and Phase 4 (2035-2040) will focus on establishing a national network by connecting regional corridors and ensuring access to zero-emissions medium- and heavy-duty vehicle infrastructure. The strategies identify the ATL Airport and the Austell, Hulsey, Inman, and Fairburn Intermodal Yards in the Atlanta region as zero-emission freight hubs.

Existing Alternative Fuels Infrastructure in the Region

The lack of robust existing infrastructure both nationally and regionally for alternative fuels for freight trucks is often cited as a barrier to the adoption of these fuels. However, in recent years there has been

¹¹³ California Air Resources Board. Advanced Clean Trucks. <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks>

¹¹⁴ Transport Topics (2022, January 6). *Six States Adopt Clean Truck Rule*. <https://www.ttnews.com/articles/six-states-adopt-clean-truck-rule>

¹¹⁵ Joint Office of Energy and Transportation (2024, March). *National Zero-Emission Freight Corridor Strategy*. <https://driveelectric.gov/files/zef-corridor-strategy.pdf>

significant improvement in the alternative fuel infrastructure for freight, especially as building out the public alternative-fueling and charging network is a rising federal priority.

Alternative Fuel Corridors in GA

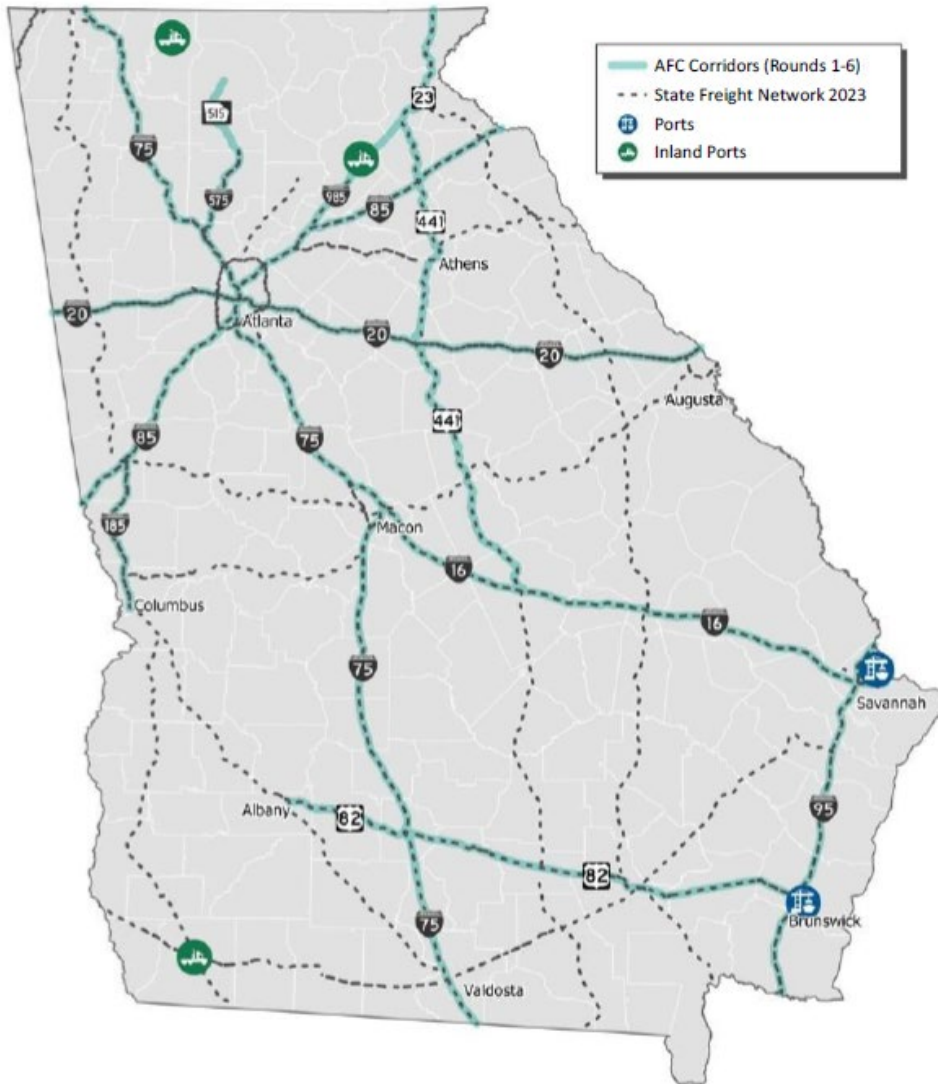
FHWA has designated Alternative Fuel Corridors to support the installation of various alternative fuel infrastructures, including the installation of EV charging, hydrogen, propane, and natural gas fueling along major national highways. These corridors are identified using a nomination process wherein state and local governments nominate the corridors to be designated as an Alternative Fuel Corridor.¹¹⁶ The IIJA established the National Electric Vehicle Infrastructure (NEVI) Formula Program, and the Charging and Fueling Infrastructure (CFI) Grant Program, which is a discretionary grant program. The funding from the NEVI and CFI programs can be used on designated Alternative Fuel Corridors.

The NEVI program will provide \$5 billion to fund strategic deployment of EV charging infrastructure nationally. Georgia's portion of the allotment is \$135 million to develop portions of the nation's EV charging network.¹¹⁷ GDOT's NEVI plan was approved by FHWA in September 2022.¹¹⁸ GDOT will deploy NEVI funds on the 10 corridors in the state shown in Figure 74. Alternative Fuel Corridors in the Atlanta region include I-75, I-20, I-85, I-985/US 23 and I-575/GA 515. The initial allocation of NEVI funds will take place along Georgia's Alternative Fuel Corridors. Over the next few years, these funds will be directed toward investing in direct current fast charging (DCFC) stations that adhere to federal guidelines. Currently, a majority of Georgia's DCFC stations are concentrated in the metro Atlanta region.

¹¹⁶ FHWA. Environment - Alternative Fuel Corridors. https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/

¹¹⁷ GDOT. Georgia's National Electric Vehicle Infrastructure Deployment Program. <https://nevi-gdot.hub.arcgis.com/>

¹¹⁸ FHWA (2022, September 14). Approval of *Georgia Electric Vehicle Infrastructure Deployment Plan* [Letter]. https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/ga_approval_letter.pdf

Figure 74: Alternative Fuel Corridors with Freight Assets from GDOT NEVI Plan

Source: GDOT. *Georgia Electric Vehicle Infrastructure Deployment Plan*.¹¹⁹

Electric Power as Alternative Fuel for Freight

In recent years electric power has been gaining traction as an alternative to diesel power trucks. BEVs and hybrid EVs have been used by fleets across the country as they show potential to reduce emissions and improve efficiency, especially for short trips in urbanized areas.

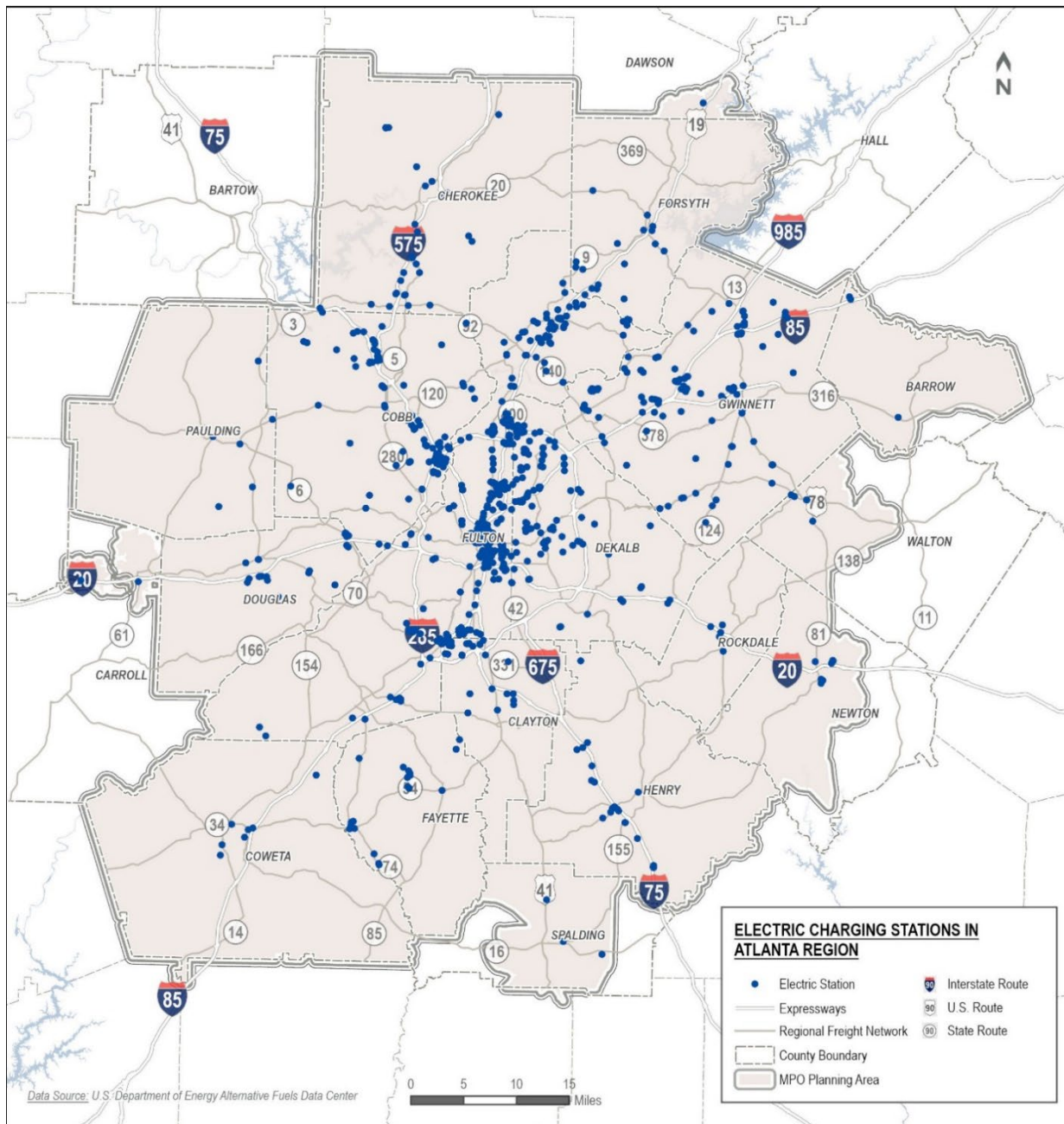
Georgia has positioned itself as a hub for electrification and battery electric manufacturing, drawing on its robust industrial base and favorable business climate. However, the EV charging infrastructure is mostly focused on passenger vehicles, and there is a notable gap when it comes to accommodating electric trucks. There are around 1,251 public EV charging stations in the Atlanta region, including 175 DCFC stations.

¹¹⁹ GDOT. Georgia National Electric Vehicle Infrastructure Deployment Program. <https://nevi-gdot.hub.arcgis.com/>

Most EV charging stations are not accessible to medium- and heavy-duty vehicles since there are limitations related to charging capacity and maneuverability of the site and surrounding access roads.

U.S. Department of Energy’s Alternative Fuels Data Center fueling station locator is one of the leading databases for finding information on alternative fueling stations. However, in the Alternative Fuels Data Center’s database, information on accessibility to medium- and heavy-duty vehicles is incomplete. Figure 75 shows the locations of EV charging stations in the Atlanta region, without regard for their accessibility to medium- and heavy-duty vehicles.

Figure 75: EV Charging Stations in the Atlanta Region, January 2024



Given the current state of charging infrastructure, EVs are most readily used as local delivery or fleet vehicles, where fleet operators can centrally charge their vehicles instead of relying on publicly available charging. In January 2024, USPS brought chargers online at a facility in south Atlanta, as part of the early stages of electrification of its fleet nationwide.¹²⁰ Nonetheless, utilizing BEVs for long-distance hauls remains less appealing compared to diesel trucks due to several factors. Firstly, the public charging network is not yet sufficiently developed and reliable. Secondly, the weight of the batteries reduces payload capacity and overall range. Lastly, the time required to charge an EV to completion often remains impractically long.

Georgia's concerted efforts to grow in the EV and battery manufacturing industry could be conducive to freight vehicle electrification in the future. Major players in this industry, including Kia (at its existing facility in West Point, GA), Hyundai, Rivian, and SK Battery have already invested billions of dollars at sites across the state that are already manufacturing or are slated to start production in the next 2-3 years, and smaller companies involved in different elements of this industry have put down roots in Georgia as well.¹²¹

CNG, LNG, LPG, Hydrogen, Biodiesel, and Renewable Diesel as Alternative Fuels for Freight

Fleets across the country have demonstrated that CNG, LNG, and LPG are viable alternative fuels for medium- and heavy-duty trucks. Transitioning to these fuels is generally easier for fleets than power the freight fleet on electricity or hydrogen, as it is simpler to convert or retrofit existing diesel vehicles and even fueling infrastructure to these fuels, than to convert a fleet to electric charging or hydrogen fueling. Each of these fuels has its advantages and disadvantages, with characteristics such as availability of public fueling, ease of transition or adaptation from diesel vehicles and infrastructure, emissions, and cost-effectiveness. In addition, analysis of natural gas production shows that, while it is cleaner-burning at the time of use, methane leaks during the production and distribution processes can make using natural gas as emission-producing as burning coal, depending on the rate of leakage.¹²² These concerns affect calculations of the environmental benefits of using natural gas, renewable diesel, and other fuels in the long-term as well as in the short-term as stopgap solutions while waiting for EV technology to improve.

¹²⁰ U.S. Postal Service (2024, January 22). *U.S. Postal Service Unveils First Postal Electric Vehicle Charging Stations and Electric Delivery Vehicles* [Press Release]. <https://about.usps.com/newsroom/national-releases/2024/0122-usps-unveils-first-postal-electric-vehicle-charging-stations-and-electric-delivery-vehicles.htm>

¹²¹ Georgia Department of Economic Development. Georgia Electric Vehicle Manufacturing. https://www.georgia.org/EV#/analyze?show_map=true®ion=US-GA

¹²² Gordon, D. et al. (2023, July 17). Evaluating net life-cycle greenhouse gas emissions intensities from gas and coal at varying methane leakage rates. *Environmental Research Letters*, 18(8). IOPscience. <https://iopscience.iop.org/article/10.1088/1748-9326/ace3db>

Table 43 compares the pros and cons of CNG, LNG, and LPG¹²³¹²⁴ as alternative fuels for freight trucks.

Table 43: Pros and Cons of CNG, LNG, and LPG

Fuel	Fuel State	Fuel Material (Sourced From)	Pros	Cons
Compressed Natural Gas (CNG)	Compressed gas	Natural gas reserves and renewable biogas (produced from the decomposition of organic waste)	- Cheaper and more readily available than other alternative fuels. - CNG burns cleanly, producing minimal particulate matter and volatile organic compounds. - CNG engines are reliable and have a longer lifespan. - Lower maintenance costs and reduced flammability compared to diesel.	- Upfront costs are higher. - CNG fueling stations are less common than diesel stations. - CNG tanks store less energy per volume, resulting in shorter driving ranges.
Liquefied Natural Gas (LNG)	Cryogenic liquid	Natural gas reserves and renewable biogas	- LNG is denser than CNG and is favorable for trucks requiring a higher driving range.¹²⁵ - LNG is cheaper than diesel.	- Cryogenic tanks are needed. - Drivers and mechanics must be trained in LNG safety. - There are very few publicly available refueling stations.
Liquefied Petroleum Gas (LPG), also called Propane	Pressurized liquid	Byproduct of petroleum refining, natural gas production	Dispensing is very similar to gasoline and diesel. LPG is cheaper than diesel. ¹²⁶	- LPG has a lower energy density than natural gas. - Less suitable for heavy-duty trucks.

¹²³ Jhawar, P.S. (2022, May 5). *Natural gas (CNG) vs. LPG, LNG, RNG and Diesel*. Cummins Inc. Newsroom.

<https://www.cummins.com/news/2022/05/05/natural-gas-cng-vs-lpg-lng-rng-and-diesel>

¹²⁴ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Alternative Fuels Data Center: Fuel Properties Comparison. <https://afdc.energy.gov/fuels/properties>

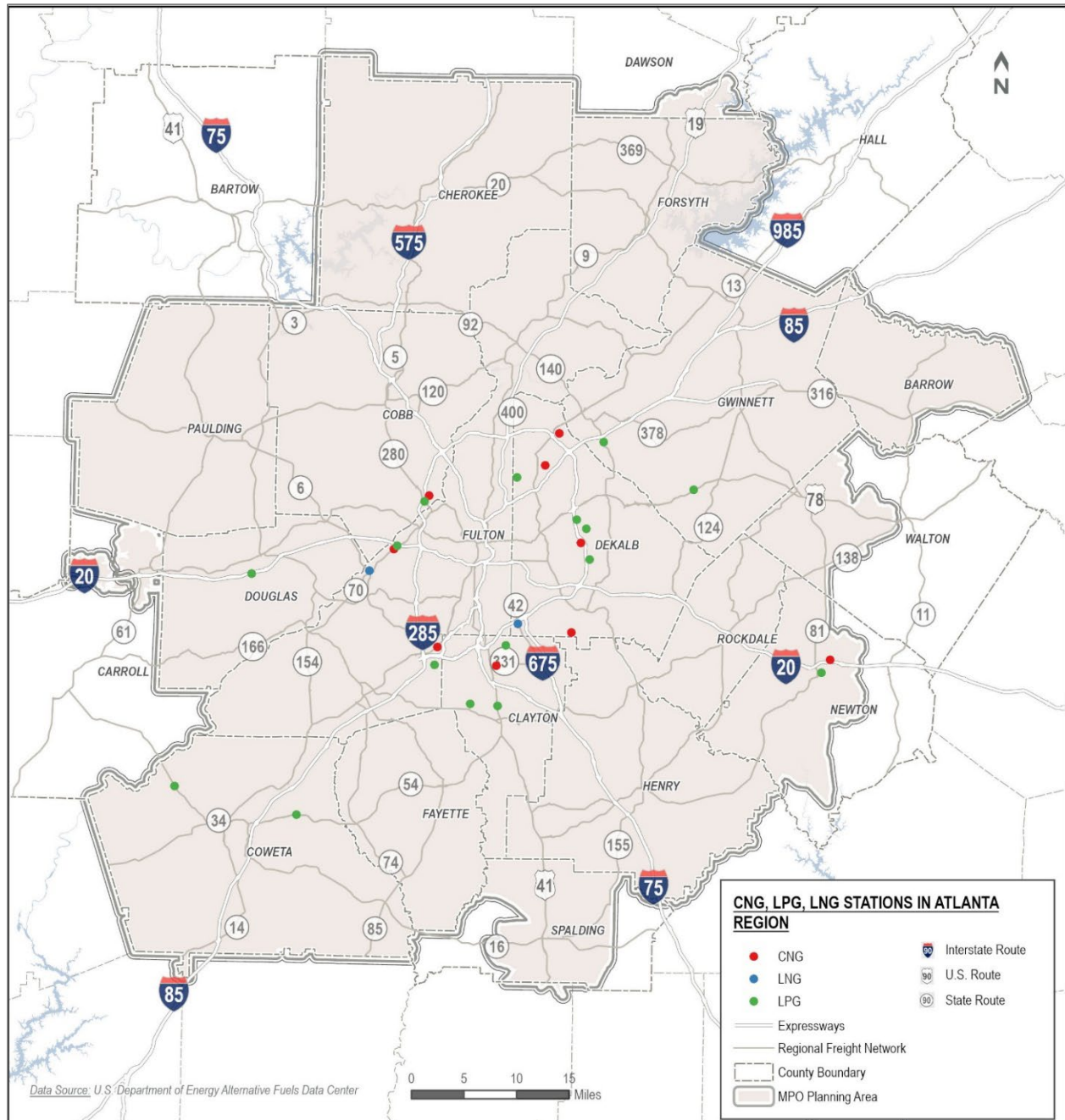
¹²⁵ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (2020, March). Natural Gas Vehicle Basics. https://afdc.energy.gov/files/u/publication/natural_gas_basics.pdf

¹²⁶ Straight, B. (2019, March 14). The forgotten transportation fuel: Why some believe propane deserves a second look. *FreightWaves*. <https://www.freightwaves.com/news/fuel/advocates-push-for-propane-as-a-vehicle-fuel>

In the ARC region, U-Haul and other operators have a total of 16 LPG fueling stations available, and companies like Trillium, GAIN Clean Energy, and Clean Energy operate 10 CNG stations and two LNG stations, largely located near I-285 or Hartsfield-Jackson Atlanta International Airport, DeKalb-Peachtree Airport, Fulton Industrial Boulevard, or other major industrial centers.¹²⁷ Figure 76 shows the location of CNG, LPG, and LNG refueling stations in the Atlanta region. In addition, the DeKalb County government has had success using CNG for their heavy-duty sanitation fleet and other county vehicles, alongside EVs for some light-duty vehicles, resulting in cost savings and reduced emissions.¹²⁸

¹²⁷ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Alternative Fuels Data Center: Alternative Fueling Station Locator. <https://afdc.energy.gov/stations#/find/nearest>

¹²⁸ DeKalb County Georgia. The Fleet. <https://www.dekalbcountyga.gov/public-works/fleet-management/fleet>

Figure 76: CNG, LPG, and LNG Refueling Stations in the Atlanta Region

Biodiesel and renewable diesel are also renewable alternatives to fossil diesel used in freight trucks. However, experts have concerns about the viability and actual environmental benefits provided by these fuels. One of the participants of the alternative fuels advisory group for the project pointed out that the supply of renewable diesel was maxed out by usage in California, and increasing production would likely mean using more palm oil or other products which produce a net environmental detriment due to

deforestation for their cultivation. However, there are innovators in this sector, such as Neste,¹²⁹ which has brought a sustainably sourced renewable diesel to market. Currently, there are no publicly available biodiesel or renewable diesel fueling stations in the Atlanta region.

Hydrogen as Alternative Fuel for Freight

Hydrogen is another fuel that has been emerging as an alternative to diesel for freight trucks, especially for long-haul operations. Hydrogen fuel cell (HFC) vehicles (also known as fuel cell electric vehicles) function by generating electricity onboard from hydrogen gas drawn from a pressurized tank.¹³⁰ The advantage that fuel cell electric vehicle technology presents over BEVs is that there is no need for a heavy battery, and hydrogen fueling, which consists of pumping the pressurized gas into a vehicle's tank, is substantially quicker than even DCFC EV charging. UPS and FedEx are among entities that have deployed full hydrogen fuel cell or hybrid trucks, and major manufacturers are producing medium- and heavy-duty vehicles as demand, use, and infrastructure grow.^{131,132} GDOT is beginning planning efforts with the private-sector on deploying hydrogen fueling stations for commercial vehicles in Georgia.¹³³ In August 2023, GDOT released a request for information to gather information on hydrogen refueling stations in Georgia.¹³⁴

A principal challenge to its adoption has been building out the grid of available hydrogen fueling stations. Currently, California is the only state with publicly available hydrogen vehicle fueling stations. Another hindrance to the adoption of hydrogen as an alternative to diesel is its higher cost compared to diesel. Georgia is making steps toward hydrogen fuel deployment, and Hyundai's plan to use hydrogen trucks at its EV manufacturing plant near Savannah may provide the demand needed to justify building out

¹²⁹ Neste. Neste MY Renewable Diesel. <https://www.neste.us/neste-my-renewable-diesel>

¹³⁰ Edmunds. 8 Things You Need to Know About Hydrogen Fuel-Cell Cars. <https://www.edmunds.com/fuel-economy/8-things-you-need-to-know-about-hydrogen-fuel-cell-cars.html>

¹³¹ Turpen, Aaron (2018, May 1). FedEx Express delivers the goods with fuel cell-powered truck. *New Atlas*. <https://newatlas.com/plug-power-workhorse-fedex-hydrogen-delivery-van/54439/>

¹³² U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. *Hydrogen Fuel Cell Hybrid Electric Delivery Vans in Disadvantaged Communities*. <https://www.energy.gov/eere/fuelcells/articles/hydrogen-fuel-cell-hybrid-electric-delivery-vans-disadvantaged-communities>

¹³³ Governor Brian P. Kemp Office of the Governor (2023, August 7). *Georgia Takes Lead in Preparations for Hydrogen Fueling Stations* [Press Release]. <https://gov.georgia.gov/press-releases/2023-08-07/georgia-takes-lead-preparations-hydrogen-fueling-stations>

¹³⁴ Georgia Department of Administrative Services. Georgia Procurement Registry: Hydrogen Refueling Station Deployment. <https://ssl.doas.state.ga.us/gpr/eventDetails?eSourceNumber=48400-DOT0002848&sourceSystemType=ps>

hydrogen corridors, potentially starting with I-16 and I-95 and then spreading to the ARC region.^{135,136}

In addition to hydrogen fuel cell trucks, hydrogen internal combustion engine vehicles are under development by several companies that are largely eyeing freight as their market, but these heavy-duty vehicles are not yet on the market.¹³⁷ Concerns are also present around the life cycle emissions of using hydrogen. While hydrogen fuel cell electric vehicles have no carbon or methane emissions, the production of hydrogen often involves large amounts of energy (which in turn may be sourced renewably or non-renewably) or the use of natural gas, with its associated concerns.¹³⁸

Noteworthy Pilot Projects Adopting Alternative Fuels in Freight around the Country

Numerous pilot projects have successfully implemented alternative fuels for freight trucks across various regions. These initiatives provide valuable insights and learning opportunities for the Atlanta region. By studying both successes and failures, the Atlanta region can refine its approach to alternative fuels and shape effective policies. The experiences gained from these pilot programs will empower the region to make informed decisions, optimize resource allocation, and contribute to a more sustainable and environmentally friendly freight transportation system.

The landscape for the adoption of alternative fuels in the freight industry is undergoing rapid transformation. As of 2023, over 17,500 zero-emission trucks had been deployed in the U.S., with the majority of these being light and medium-duty vehicles, though this number is projected to grow quickly, similar to the estimated global rate of zero-emission truck adoption growth of 34 percent yearly from 2024 to 2030.¹³⁹

Public-Private Partnerships

PPPs have demonstrated and are continuing to demonstrate the best-use cases for zero-emission trucks and provide lessons learned for future large-scale deployment. Heavy involvement from multiple parties helps make these deployments feasible in the current environment where charging and support are still in

¹³⁵ Governor Brian P. Kemp Office of the Governor (2023, August 7). *Georgia Takes Lead in Preparations for Hydrogen Fueling Stations* [Press Release]. <https://gov.georgia.gov/press-releases/2023-08-07/georgia-takes-lead-preparations-hydrogen-fueling-stations>

¹³⁶ Yamanouchi, K. (2024, January 9). Hyundai Plans for Hydrogen Trucks to Supply Georgia Factory. *Transport Topics*. <https://www.ttnews.com/articles/hyundai-hydrogen-trucks-georgia>

¹³⁷ EVreporter (2023, February 20). Understanding the H2-ICE technology for sustainable heavy-duty vehicles. <https://evreporter.com/understanding-the-h2-ice-technology-for-sustainable-heavy-duty-vehicles/#:~:text=Various%20companies%20are%20working%20on%20Hydrogen%20ICE%20vehicles%2C,Leyland%2C%20Cummins%2C%20and%20Toyota%2C%20to%20name%20a%20few>

¹³⁸ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Alternative Fuels Data Center: Hydrogen Basics. <https://afdc.energy.gov/fuels/hydrogen-basics>

¹³⁹ Electrify News (2024, January 31). U.S. Market for Heavy-Duty Electric Freight Trucks Growing Fast in 2024. <https://electrifynews.com/news/work-evs/u-s-market-for-heavy-duty-electric-freight-trucks-growing-fast-in-2024/>

the earlier stages of scaling, especially for Class 8 zero-emission trucks that are less established. The following two projects describe PPPs in California:

- **Volvo LIGHTS:** This project in southern California was a partnership between Volvo, fleet operators, nonprofits, universities and colleges, a utility provider, and local government authorities. The project deployed 24 of Volvo's Class 8 EVs, six MDEVs, seven yard tractors, and 34 EV forklifts and yard vehicles, allowing Volvo and its partners to gather insights for future projects.¹⁴⁰ These included the importance of early engagement with utilities and public incentives to get projects off the ground, and other insights made public in a resulting guidebook.¹⁴¹
- **Joint Electric Truck Scaling Initiative (JETSII):**¹⁴² This project has received funding in southern California for the deployment of 100 Class 8 battery-electric trucks produced by Volvo and Daimler Truck North America.¹⁴³ Both projects have focused on operations related to the Ports of Los Angeles and Long Beach, and have focused on improving air quality in state-recognized disadvantaged communities experiencing low air quality. The South Coast Air Quality Management District has been a primary public partner in both of these projects. While providing relatively small portions of funding, they were responsible for assembling project teams, capturing grant funding, and serving as the project administrator.¹⁴⁴

It is worth noting that the context for clean energy pilots like those in California is unique. For starters, the state is the national focus for alternative fuels and EVs, and it has stricter emissions rules in place and on the horizon, so private partners are building their operations there. Both Volvo LIGHTS and JETSII benefited from large amounts of funding from California Climate Investments, which captures cap-and-trade dollars paid by companies on the state's carbon market, which is a system that currently only exists in California, Washington, and a handful of northeastern states. Without this cap-and-trade funding, it is unlikely that the \$90 million LIGHTS project and the comparably large JETSII project could have come to be. Carbon markets have proven to be powerful incentives for companies to pursue clean energy or otherwise invest in outside projects to come into compliance with emissions regulations but necessitate legislative action and regulatory framework on the state level.

¹⁴⁰ University of California Riverside, Center for Environmental Research and Technology (2022, July). Volvo Lights. <https://www.cert.ucr.edu/volvo-lights>

¹⁴¹ Volvo LIGHTS. *Bringing Battery-Electric Freight Trucks to Market: From Demonstration to Commercialization Lessons Learned Guidebook*. <https://cdn.lightsproject.com/collateral/volvo-lights-lessons-learned-guidebook.pdf>

¹⁴² Joint Electric Truck Scaling Initiative (JETSII). JETSII Homepage. <https://www.jetsiiprject.com/>

¹⁴³ JETSII (2023, June). Joint Electric Truck Scaling Initiative Update. <https://www.jetsiiprject.com/wp-content/uploads/2023/06/JETSII-Joint-Electric-Truck-Scaling-Initiative-Update-06-2023-v08.pdf>

¹⁴⁴ JETSII. Project Partners. <https://www.jetsiiprject.com/project-partners/>

Private-Sector Initiatives

Major companies have adopted alternative fuel and electric trucks in the U.S. to comply with current regulations in some states, to get ahead of anticipated future regulations in others, and to push for carbon neutrality.

- UPS has deployed over a thousand light- and medium-duty vehicles and launched its first Class 8 EV (a Freightliner Cascadia) in late 2022.¹⁴⁵
- Amazon has begun its rollout of Rivian delivery vehicles and aims to scale this to 100,000 vehicles by 2030.¹⁴⁶ Figure 77 shows a picture of the Amazon electric delivery vehicle.
- Pepsico is using Tesla semis for deliveries, primarily out of their all-renewable electric facility in Sacramento; and other companies are implementing these alternative fuel and electric trucks across the country.¹⁴⁷

Figure 77: Amazon Electric Delivery Vehicle



Source: Amazon.

Innovative Initiatives from Cities

Many cities around the country have piloted alternative fuel programs, especially related to last-mile delivery vehicles.

- **Zero-Emission Delivery Zones (ZEDZ):** The cities of Santa Monica, CA, and Los Angeles have also piloted the use of zero-emission delivery zones as testing environments for innovative delivery practices catering to the increasing volume of e-commerce.^{148,149} These include operating ZE light and medium-duty delivery vehicles and running charging infrastructure to support these vehicles, testing out different curb management systems, and enabling last-mile delivery by cargo e-bikes, other personal micromobility vehicles, or even automated robotic deliveries. They did this by prioritizing curb space for use by zero-emission vehicles and micromobility vehicles and

¹⁴⁵ Heavy Duty Trucking (HDT) (2023, February 23). *UPS on Its New Electric Heavy-Duty Trucks* [Video]. Trucking Info. <https://www.truckinginfo.com/10193253/ups-on-its-new-electric-heavy-duty-trucks-video>

¹⁴⁶ Amazon (2022, July 21). *Amazon's electric delivery vehicles from Rivian roll out across the U.S.* [Amazon News]. <https://www.aboutamazon.com/news/transportation/amazons-electric-delivery-vehicles-from-rivian-roll-out-across-the-u-s>

¹⁴⁷ Lambert, F. (2023, August 4). *Pepsico explains how it uses Tesla Semi electric trucks in glimpse of the future of trucking.* Electrek. <https://electrek.co/2023/08/04/pepsico-explains-uses-tesla-semi-electric-trucks-glimpse-future-of-trucking/>

¹⁴⁸ City of Santa Monica. Zero Emission Delivery Zone. <https://www.santamonica.gov/zero-emission-delivery-zone>

¹⁴⁹ Urban Movement Labs. City of Los Angeles Zero Emission Delivery Zones – Demonstration Project [Fact Sheet]. <https://urbanmovementlabs.org/wp-content/uploads/2021/10/ZEDZ-Fact-Sheet.pdf>

partnering with delivery companies and vehicle makers. Santa Monica's zero-emission delivery zones stayed in place after the project's conclusion.¹⁵⁰

- **E-Cargo Bike Deliveries:** Miami, New York, and many European cities have focused on scaling up e-cargo bike deliveries, engaging companies like DHL and Amazon to use these options for deliveries in dense neighborhoods.¹⁵¹ ¹⁵² This system is most feasible in very dense neighborhoods and requires truck and van delivery operations to have areas where they can break down loads for last-mile delivery by cargo bikes. New York City in particular has continued to scale this mode up as urban deliveries, spurred by e-commerce, continue to grow and increase the demand for vehicles traveling the streets of dense neighborhoods.

Incentive Programs

Often, these pilot projects are facilitated by the application of local, state, federal, and utility incentives, which can tilt the financial decision for companies in favor of adoption. California has been at the forefront of these incentives programs.

- **Hybrid and Zero-Emission Truck and Bus Voucher Program.**¹⁵³ The statewide Hybrid and Zero-Emission Truck and Bus Voucher Program provides point-of-sale vouchers to help with the cost of purchasing alternative fuel and electric medium- and heavy-duty vehicles.
- **EnergiIZE Commercial Vehicles program.**¹⁵⁴ This program provides pathways toward the funding of medium- and heavy-duty vehicle charging and refueling infrastructure projects.
- **Carl Moyer Memorial Air Quality Standards Attainment Program.** Local Air Quality Districts distribute Carl Moyer Program grant funds to different types of projects, including freight-related rounds of funding.

¹⁵⁰ Knoll, K. (2023, September 14). Curb-management innovations: Lessons from smart and zero-emission loading zone pilots. *Smart Cities Dive*. <https://www.smartcitiesdive.com/news/curb-management-innovation-smart-loading-zones-zero-emissions/693678/>

¹⁵¹ Crowe, C. (2020, May 18). Miami pilots e-cargo bikes to reduce congestion, pollution. *Smart Cities Dive*. <https://www.smartcitiesdive.com/news/miami-e-cargo-bike-pilot-dhl-city-congestion-pollution/578115/>

¹⁵² Ralston, W. (2022, September 21). It's Time for Cities to Ditch Delivery Trucks—for Cargo Bikes. *WIRED*. <https://www.wired.com/story/cargo-bikes-greener-quicker/>

¹⁵³ California HVIP. Home - Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project. <https://californiahvip.org/>

¹⁵⁴ EnergiIZE (Energy Infrastructure Incentives for Zero-Emission) Commercial Vehicles Project. EnergiIZE Home. <https://www.energiize.org/>

Challenges and Needs Related to Alternative Fuels Adoption

Challenges related to Alternative Fuel Vehicles/EVs and Technology

Although various alternative fuels are emerging as promising alternatives to diesel trucks for freight transport, currently there are some barriers to widespread adoption of alternative fuels MHDVs. The following are some challenges related to alternative fuels:

- **Limited public refueling stations:** There is very limited public refueling station infrastructure for all alternative fuels.
- **Special handling of some alternative fuels:** Some alternative fuels such as LNG necessitate special handling including the use of cryogenic tanks. This not only elevates the operational costs but also mandates comprehensive safety training for operators.
- **Limited range:** Fleet operators are concerned with the limited range especially for BEV trucks, because the weight of batteries reduces their payload capacity, restricting their use to short local routes.
- **Reliability concerns and downtime risk:** Fleet operators express concerns about the reliability of alternative fuel medium- and heavy-duty vehicles. The risk of downtime due to failure and the longer time spent charging batteries compared to traditional fueling are significant challenges.
- **Shorter lifespan:** Electric Class 8 trucks reportedly have shorter mileage lifespans compared to the 750,000- to 1-million-mile standard for diesel semis.
- **High upfront costs:** The electrification of fleets involves high upfront costs, including site electrical upgrades for EV charging, the purchase and installation of EV chargers, and the vehicles themselves.
- **Maintenance challenges:** Post-purchase, the maintenance of alternative fuel MHDVs, which differs from diesel trucks, poses another challenge. For operations with in-house mechanics, transitioning to another fuel type would require retraining staff and establishing new parts suppliers.
- **Cost of conversion:** The cost of conversion of diesel trucks to alternative fuels could be significant.
- **Premature adoption requirements:** Without necessary technological advancements, premature alternative fuel and electric truck requirements could lead to consumer price increases as operators seek to mitigate the costs of buying new vehicles, installing equipment, and potential malfunctions with newer technology.
- **Balancing compliance with operational efficiency:** Stakeholders noted that EV restrictions may impact small operations similarly to electronic logging device restrictions. Large companies seem to be better positioned to transition away from diesel trucks compared to small trucking operations, largely because they have more flexibility to spend money to overhaul operations to a

new fuel source, and infrastructure and mechanic training/hiring costs would end up being cheaper for operations with many trucks over which these costs would essentially be distributed. Intuitively, operations with more vehicles can also more readily absorb truck downtime due to malfunctions than operations that would be incapacitated by one or a few vehicles going out of service.

- **Knowledge and training gap:** Large companies are proactively adjusting their business models to comply with advanced regulations and stricter restrictions that are on the horizon or already in place regarding emissions and fuel economy. To comply, these larger companies' business models are already shifting. As a result, they are establishing relationships with suppliers, staff experienced in the electrification process and the applications of other fuels, and examples of what works and what does not in transitioning fleets away from diesel. This leaves gaps in knowledge, training, and industry connections that small-scale operators may experience more acutely.

Needs for Efficient Adoption of Alternative Fuel Vehicles, Electric Vehicles, and Related Technology

The following are some needs identified by industry stakeholders related to alternative fuel and EV technology that will facilitate the adoption of alternative fuels and EVs in freight:

- **Technological Improvements:** Continued advancements in battery technology, refueling and charging infrastructure, and overall alternative fuel MHDV performance are necessary. Innovations that enhance range, reliability, and efficiency will drive adoption.
- **Affordability:** Lowering the upfront cost of alternative fuel MHDVs is critical. While total cost of ownership calculations may favor alternative fuel vehicles over diesel vehicles, addressing the initial investment barrier is essential.
- **Infrastructure Expansion:** Expanding refueling and EV charging infrastructure, especially for long-haul routes, is vital. Strategic placement of fast-charging stations will alleviate range anxiety.
- **Incentives and Support:** Government incentives, grants, and policies can encourage fleet operators to transition to alternative fuels. Support for site upgrades and charger installations can ease the financial burden.
- **Workforce Development:** As medium- and heavy-duty alternative fuel and EV adoption grows in the region, workforce training initiatives for repair personnel can ensure proper support for these new technologies.
- **Support of Small Fleets:** Advocacy for incentives aimed at mitigating disadvantages faced by small operators during the transition away from diesel can aim to mitigate disadvantages faced by small fleets.

Charging and Fueling Infrastructure Needs

Below are some needs identified by industry stakeholders related to alternative fuel and EV infrastructure that will facilitate the adoption of alternative fuel and EVs in freight

- **Infrastructure Update and Grid Demand:** Scaling up charging and alternative-fueling infrastructure is vital for alternative fuel and electric truck deployment. Medium- and heavy-duty vehicle EV charging operations will demand significant electrical grid upgrades, comparable to the load work for entire neighborhoods. This process can take years and be costly. The potential of hydrogen fueling also requires substantial infrastructure investment. Hyundai's plans to use hydrogen trucks for its new EV plant in Georgia may drive this development, with state agencies like GDOT and the Georgia Environmental Protection Division playing a role in the early buildout of Georgia's hydrogen infrastructure.
- **Engagement with the Utility Companies:** Engaging with utilities early and often is essential. These conversations have already kicked off statewide: per its fiscal year 2024 NEVI Deployment Plan, GDOT held several working group meetings with representatives from Georgia Power, electric membership corporation cooperatives, and municipal utilities in the fall of 2022. GDOT assessed and coordinated expected roles and processes in the future installation of large-scale EV charging operations.¹⁵⁵ Though utilities in Georgia are well aware of the growing need for infrastructure to support widely deployed EV charging and have been engaged on this topic, it remains important to continue to have these conversations.
- **Partnerships:** As in other areas where partnerships are needed to find solutions for freight, ARC can work as a convener of stakeholders. In this case, this would mean local jurisdictions or CIDs working to increase public refueling and charging station availability, companies with large fleets seeking alternative fuel vehicles, representatives of smaller trucking companies, and utility companies, on either a project-by-project or a recurring basis. Other partners to be brought to the table, either through invitation or procurement, are the firms providing EV charging equipment, installation, and know-how.
- **Advocacy for Funding:** ARC can also work as an advocate for state or local funding and cost-sharing of utility improvements related to electrification.

Different Needs Based on Truck Size and Trip Lengths

Alternative fuel trucks are already represented at Atlanta-area dealerships, with alternative fuel and electric trucks for sale alongside traditional diesel trucks; fleet operators are looking at these different options. Stakeholders maintained that—while there is a willingness to go green among operators—transitioning to alternative fuel and EVs has to make financial sense. There is no single solution for all freight vehicles: rather, decisions on when and how to transition away from diesel are heavily based on the type of vehicles

¹⁵⁵ GDOT. Georgia National Electric Vehicle Infrastructure Deployment Program. <https://nevi-gdot.hub.arcgis.com/>

employed and the type of operation concerned. Analyses of total costs of ownership estimate that the operation of EV commercial vehicles will become cheaper than their diesel counterparts within the next one to two decades. GDOT cited an estimate of 2030 for regional and local hauls reaching cost parity between these two fuel choices, with 2035 being the tipping point for long range hauls.^{156,157,158} This reflects the common calculation that medium-duty trucks and delivery vehicles will be the first targets for electrification, followed by heavy-duty trucks and long-distance operations. It is important to note that the total costs of ownership and the feasibility of implementation can be swayed by regulations, incentives, and the pace of relevant infrastructure development. Costs and barriers to adoption can differ by an operation's sector and size.

Medium-duty trucks and delivery vehicles are involved in shorter trips, often in stop-and-go traffic, and these limited routes match better with current range limitations.¹⁵⁹ Limited local routes allow for a return to a site for overnight or another central charging or fueling location, thus avoiding depending on the availability of publicly accessible charging or fueling infrastructure. With overnight charging, the speed of charging is not especially crucial, so fleets can deploy less powerful chargers (typically level 2 chargers) that require less preparation to deploy the infrastructure.¹⁶⁰ In addition, fleets operating in more densely populated areas have a crucial impact on air quality, so switching to electric trucks and vans in urbanized areas reduces emissions where their acute effects are most felt. The use case of yard vehicles, which rarely or never leave a facility's premises, is likewise better matched with current vehicle capabilities and charging infrastructure.

Heavy-duty and long-distance operations face more barriers and thereby steeper fuel transition costs. More public charging infrastructure is needed for intermediate stops on long-haul routes, which the federal government has recognized and is encouraging planning toward this goal with Alternative Fuel Corridors. Fast charging is also more important for heavy-duty trucks on interstate trips, as diesel trucking operations rely on speedy fueling as a given. To increase range, bigger, heavier batteries would be needed, which would reduce payload. These considerations play into BEVs being less attractive for heavy-duty trucks and long hauls, while hydrogen fuel cell technology, with its fast fueling and extended range, is more promising for long hauls, as well as more broadly for use by ships and trains. Similar to building a

¹⁵⁶ GDOT (2023). *Georgia Freight Plan*, pages 4-92, 4-93.

<https://www.dot.ga.gov/InvestSmart/Freight/GeorgiaFreight/GeorgiaFreightPlan.pdf>

¹⁵⁷ Argonne National Laboratory (2021, April). *Comprehensive Total Cost of Ownership Quantification for Vehicles with Different Size Classes and Powertrains*. <https://publications.anl.gov/anlpubs/2021/05/167399.pdf>

¹⁵⁸ Wang, G. et al. (2022, June). *The Current and Future Performance and Costs of Battery Electric Trucks: Review of Key Studies and A Detailed Comparison of Their Cost Modeling Scope and Coverage*, page iv. National Center for Sustainable Transportation [White Paper]. <https://escholarship.org/content/qt8zj9462h/qt8zj9462h.pdf?t=re8ml4>

¹⁵⁹ For example, the Ford E-Transit, a popular Medium-Duty Van, has a range of 125-160 miles.

¹⁶⁰ Ferris, D. (2024, January 10). Inside Amazon's EV charging challenge. E&E News by *POLITICO*. <https://www.eenews.net/articles/inside-amazons-ev-charging-challenge/>

comprehensive charging network, corridors would have to be built out with accessible, regularly spaced hydrogen fueling stations, which is reflected by hydrogen fuel cells' inclusion in Alternative Fuel Corridor planning.

Funding Opportunities and ARC's Role in Potential Pilot Projects

Applying for and coordinating federal funding for the buildout of alternative-fueling and electric charging infrastructure (outside of NEVI funds, which are handled by state DOTs) is a major role that ARC can play in supporting alternative fuel and EVs in freight. ARC has already won funds from the FHWA's CFI Grant Program,¹⁶¹ which covers a wide range of projects related to the buildout of alternative fuel and EV corridors and increasing charging and fueling access in communities, prioritizing low- and moderate-income areas and rural communities.¹⁶² Funding can be used for installation and the first five years of operations, and covers not only electric charging but also hydrogen, LPG, CNG, and LNG fueling. Though the program is not explicitly intended for freight vehicles, several sites that received funding alongside ARC in the first cohort of awards (fiscal year 2022-2023) had projects including or tailored toward medium- and heavy-duty fleets. These included building out interstate corridors for heavy-duty electric and hydrogen fueling and aiding campus medium- and heavy-duty fleet's transition to electricity and hydrogen.¹⁶³ Future rounds of funding from 2024-2026 will be worth a total of \$1.8 billion and may be renewed in the future.¹⁶⁴

The federal government also offers several tax credits relevant to EV projects and applicable to freight, which were either extended or established by the 2021 Inflation Reduction Act. The Alternative Fuel Vehicle Refueling Property Credit provides a 30 percent tax credit up to \$100,000 per item of refueling property installed in a given tax year at a business location.¹⁶⁵ Businesses and tax-exempt organizations are also eligible for the Commercial Clean Vehicle Credit, with qualifying vehicles with a gross vehicle weight rating under 14,000 pounds receiving up to \$7,500, and vehicles heavier than that eligible for up to

¹⁶¹ U.S. Department of Transportation (2024, September 30). Charging and Fueling Infrastructure Grant Program. <https://www.transportation.gov/rural/grant-toolkit/charging-and-fueling-infrastructure-grant-program>

¹⁶² FHWA. Bipartisan Infrastructure Law - Charging and Fueling Infrastructure Discretionary Grant Program [Fact Sheet]. <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/charging.cfm> It is important to note that this program is geared toward publicly available charging installations.

¹⁶³ FHWA. Charging and Fueling Infrastructure Program Grant Recipients, FY 2022 and 2023 Grant Award Recipients. https://www.fhwa.dot.gov/environment/cfi/grant_recipients/cfi-awardees-project-description-table.pdf

¹⁶⁴ Further information on this program's terms and conditions can be found on the FHWA Bipartisan Infrastructure Law - Charging and Fueling Infrastructure Discretionary Grant Program Fact Sheet. <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/charging.cfm>

¹⁶⁵ Internal Revenue Service. Alternative Fuel Vehicle Refueling Property Credit. <https://www.irs.gov/credits-deductions/alternative-fuel-vehicle-refueling-property-credit>

\$40,000.¹⁶⁶ These credits serve to accelerate the tipping of the total cost of ownership scale in favor of electrification for small and large operations alike.¹⁶⁷

In addition to these federal programs, Georgia Power offers two incentive programs related to EV charging installation, along with resources, such as consultation, for fleets looking to electrify.¹⁶⁸ Georgia Power business customers can receive up to \$20,000 per project toward the purchase of EV chargers through the Electric Vehicle Charger Plus Rebate.¹⁶⁹ Through Georgia Power's Make Ready Infrastructure Program, publicly accessible charging stations and charging installations serving public fleets can benefit from Georgia Power designing, building, and maintaining the costly infrastructure from the customer meter to the actual vehicle chargers.^{170,171} These funding opportunities provide incentives for businesses looking to charge their private fleets on-site, local governments installing central charging, and businesses installing publicly available charging, including potential medium- and heavy-duty vehicle-accessible DCFCs.

ARC is positioned to play the role of applicant for funding as well as convener in the alternative fuel and electric freight vehicle space, pointing businesses and local governments toward the aforementioned federal and utility-sponsored incentives. As GDOT takes charge of building out Alternative Fuel Corridors in pursuit of the goal of making Interstate Class 8 alternative fuel and EV transportation feasible through reliably located and available charging and fueling, ARC can support smaller-scale deployments requiring less investment and help build freight-accessible electric charging and alternative fuel infrastructure, through efforts such as the following:

- **Supporting the Transition of Municipal and County Fleets:** DeKalb County's CNG operation is known nationally and provides a good example of the feasibility of transitioning to alternative fuels and electricity for fleets that already centrally fuel. Organizations such as CALSTART, Clean Cities of Georgia, and others are equipped to partner with fleets and guide them in fuel transition. Transitioning government fleets puts emissions reduction goals into action in a public-facing way and can result in a total cost of ownership savings.
- **Implementing Zero-Emissions Delivery Zones:** ARC can help marry ITS innovation and emissions reduction by working components of zero-emission prioritization into smart loading

¹⁶⁶ Internal Revenue Service. Commercial Clean Vehicle Credit. <https://www.irs.gov/credits-deductions/commercial-clean-vehicle-credit>

¹⁶⁷ CALSTART (2024, January). *Zeroing in on Zero-Emission Trucks: The State of the U.S. Market*, page 20. https://calstart.org/wp-content/uploads/2024/01/ZIO-ZET-2024_010924_Final.pdf

¹⁶⁸ Georgia Power. Electric Transportation Business Programs. <https://www.georgiapower.com/business/products-programs/business-solutions/electric-transportation-business-programs.html>

¹⁶⁹ Georgia Power. Electric Vehicle Charger Plus Rebate. <https://www.georgiapower.com/business/products-programs/business-solutions/electric-transportation-business-programs/electric-vehicle-charger-rebate.html>

¹⁷⁰ Georgia Power. Make Ready Infrastructure Program. <https://www.georgiapower.com/business/products-programs/business-solutions/electric-transportation-business-programs/make-ready.html> Georgia Power notes high demand for this program.

¹⁷¹ Note: these two programs cannot be combined.

zone curb management pilots (and vice versa, making sure ITS solutions are tested and implemented when relevant to zero-emission vehicles incentives and projects). An analysis of the highest-density neighborhoods in terms of e-commerce deliveries in the Atlanta region would reveal the areas most in need of, and suitable for, a pilot like those conducted in Santa Monica and Los Angeles. ARC could also study the possibility of guiding municipalities in the institution of zero-emissions quotas in areas currently affected by bad air quality, as local urban deliveries are a large part of this.

- Partnering with Delivery Companies to Pilot Cargo e-bikes and Other Micromobility Delivery Solutions:** Cargo e-bikes have been deployed in dense neighborhoods in cities across the country, with New York City having the most established presence. They are a way for companies to show emissions reduction in action in a public-facing way, as well as save curb time and fuel costs, and potentially avoid traffic. This can be enacted during a zero-emission delivery zone pilot or on its own through engagement with delivery companies.
- Incorporating EV Truck Charging/Alternative Fueling in New Truck Parking Developments:** Though this may primarily fall under GDOT’s purview as they work to build out Alternative Fuel Corridors, ARC can pursue or facilitate PPPs for truck parking with available DCFC chargers. Local governments could also pursue regulations requiring the availability of DCFC infrastructure at large truck parking facilities.
- Working with CIDs to Install Shared Truck Charging/Fueling Facilities:** CIDs and other areas with a high density of freight activities could benefit from shared charging and fueling facilities, as this would spread the sometimes-prohibitive cost of infrastructure upgrades needed, especially for large DCFC operations. Setting this up would require substantial investment, including potential grant funds, as well as a regulatory framework and collaboration between Georgia Power, local governments, GDOT, and the freight companies involved.
- Ensuring New Public Charging/Fueling is Physically Accessible to Freight Vehicles:** Most new public charging and fueling stations will not be designed with freight in mind, but in projects that have the potential to serve freight, ARC can support design that considers and remediates physical access barriers, such as low clearances, turn radii, and other barriers that can impede truck access. This may mean roadway, site, or intersection improvements to make charging infrastructure accessible to medium- or heavy-duty vehicles where applicable.
- Supporting the Transition of Yard Vehicles:** Forklifts, yard tractors, and other on-site freight operations vehicles are a natural early target for transition to electricity or alternative fueling because their exclusive use on an operation site means that they do not rely on publicly available charging at all. In addition, an analysis of the Volvo LIGHTS project found that yard tractors proved to be “an excellent use case for BEVs because their duty cycle is characterized by low

speeds, low mileage, and long idle periods.”¹⁷² This makes applying for and/or administering grant funds for operations willing to deploy proven EV yard tractors a good early focus of ARC-coordinated efforts.

- **Engaging Institutes of Higher Learning:** As with ITS and autonomous vehicles, the concentration of research in the Atlanta area can create the opportunity for innovative pilot project such as testbeds for micromobility vehicle deliveries with research conducted by universities or using campuses as testing grounds.

Access to Jobs

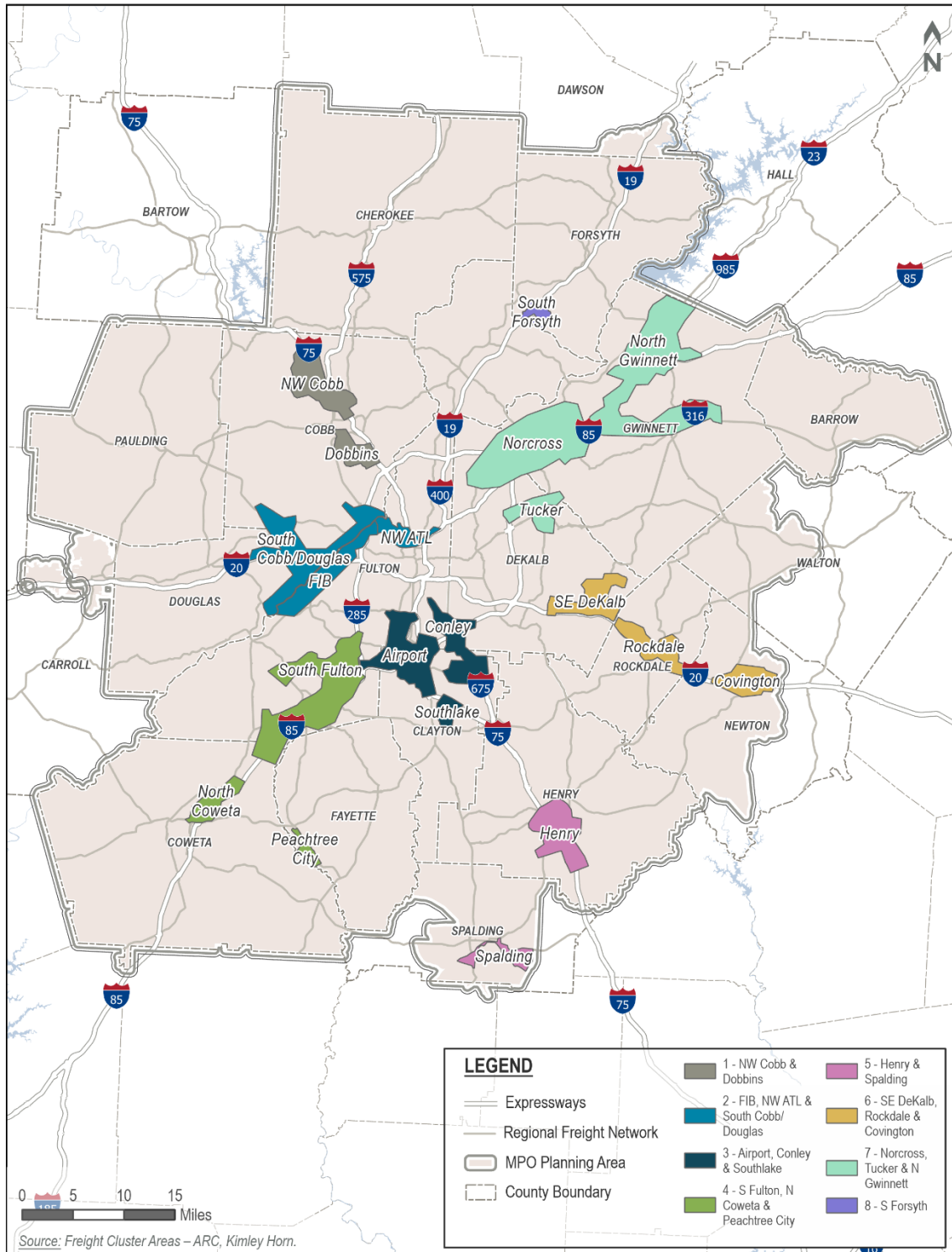
Freight clusters throughout the Atlanta region were analyzed to better understand where employees who work in the freight clusters live and how they access jobs. There were 20 freight clusters identified during the planning process of this plan. The 20 freight clusters were consolidated into the following eight analysis zones to streamline the data analysis process. The project team identified home locations and mode split for each zone using data from Replica, which is a “big data” tool that creates simulated activity and movement patterns within a specific area and timeframe. This is achieved by combining mobile location data with consumer, resident, and verified factual information. The analysis was based on a typical Thursday in spring 2023 and specifically targeted individuals whose workplace locations aligned with the identified 2024 freight clusters. The analysis was conducted at the tract level for the following eight groupings of the 2024 freight clusters:

- Northwest Cobb and Dobbins,
- Fulton Industrial Boulevard, Northwest Atlanta, South Cobb, and Douglas,
- Airport, Conley, and Southlake,
- South Fulton, North Coweta & Peachtree City,
- Henry and Spalding,
- Southeast DeKalb, Rockdale, and Covington,
- Norcross, Tucker, and North Gwinnett,
- South Forsyth.

Figure 78 shows each of these 20 freight cluster areas consolidated into eight analysis zones.

¹⁷² CALSTART. *The Zero-Emission Freight Revolution: California Case Studies*. Presented at the 35th International Electric Vehicle Symposium and Exhibition (EVS35) in Oslo, Norway, June 11-15, 2022. Retrieved from <https://cdn.lightsproject.com/downloads/volvo-lights-website-content-news-resource-evs35-zero-emission-freight-revolution-report.pdf>

Figure 78: Location of Each of the Eight Freight Cluster Areas Used for Analysis



Home Location Mapping

To enhance the recommendations emerging from the *2024 Atlanta Regional Freight Mobility Plan*, the project team conducted an analysis to identify employee home locations and associated commute mode split in relation to freight clusters. Maps and data tables from the analysis can be found in Appendix C. In addition, the mode split for employees residing in the freight clusters and the Atlanta region as a whole was computed and compared to gain additional insights into the mode choice of the workers. Table 44 shows the mode share for employees working in the eight freight cluster analysis zones based on data from Replica's model¹⁷³ and the mode share for residents of the Atlanta region as a whole based on the 2021 5-Year American Community Survey data.

Table 44: Percentage Mode Split for Eight Freight Cluster Analysis Zones (Rounded to Nearest Whole Number)

Freight Cluster Group Number	Freight Cluster	Private Auto	Auto Passenger	Walking	Public Transit	Taxi / Transportation Network Company	Biking	Other
1	Northwest Cobb and Dobbins	76%	19%	4%	1%	0%	0%	1%
2	Fulton Industrial Boulevard, Northwest Atlanta, South Cobb, and Douglas	71%	21%	4%	3%	0%	0%	1%
3	Airport, Conley and Southlake	69%	23%	3%	5%	0%	0%	0%
4	South Fulton, North Coweta & Peachtree City	73%	21%	3%	2%	0%	0%	1%
5	Henry and Spalding	68%	29%	3%	0%	0%	0%	1%
6	Southeast DeKalb, Rockdale & Covington	74%	20%	4%	1%	0%	0%	1%
7	Norcross, Tucker and North Gwinnett	68%	26%	4%	2%	0%	0%	1%
8	South Forsyth	71%	25%	3%	0%	0%	0%	1%
Average (mean)		71%	23%	4%	2%	0%	0%	1%
Atlanta regional mode split (2021 Population, ACS 5-Year Estimates)		73%	9%	1%	2%	1%	0%	14%*
Difference between freight cluster average and regional mode split		-3%	+14%	+3%	0%	-1%	0%	-13%

*13% teleworking, 1% other

¹⁷³ Replica. Demographics and Employment. <https://documentation.replicahq.com/docs/demographics-employment>

The analysis of employee home locations and commute mode split provided crucial insights for understanding the commuting patterns of employees. They highlight several key aspects as follows:

- Some freight cluster areas, such as “South Forsyth” and “Henry and Spalding” clusters, have significant numbers of employees who live very far from their workplace and have limited access to public transit. This finding suggests that solutions like microtransit or vanpooling could be effective.
- The effectiveness of various transportation demand management strategies might vary depending on where employees live in relation to their workplace.
- In certain freight cluster areas, such as “Norcross, Tucker, and North Gwinnett” and “Fulton Industrial Boulevard, Northwest Atlanta, South Cobb, and Douglas,” there is a high concentration of employees who live and work in the same vicinity. This scenario is conducive to promoting and enhancing walking or biking as a mode of transportation.

The disparity between the regional commute mode split and the average freight cluster commute mode split highlights the potential amount of informal carpooling occurring for commuting. It also shows how employees are unable to participate in teleworking, and that a larger proportion of people walk to work.

Crash Hot Spot Mapping

The crash hot spot analysis, focused on motor vehicle crashes involving bicyclists and pedestrians, highlights key areas with the highest incidence rates. This crucial data not only pinpoints immediate safety hot spots but also suggests popular walking and biking routes used by workers commuting to their jobs.

Key findings from the hot spot mappings include the following:

- Intersections appear more often as crash hot spots, where vulnerable road users such as people who bike or walk interact with motorized traffic.
- The increased incidence of crashes involving people walking or biking shows that people are commuting using these modes to access the freight cluster areas. Freight clusters with more crash hot spots include Norcross, South Fulton and Tucker.
- Arterial streets often have more crash hot spots than other roadway types.

These findings are vital for directing targeted safety interventions, underscoring the need for improvements not only at workplaces but also along the routes leading to them. The analysis shows the urgent need to improve safety for pedestrians and bicyclists, including those accessing freight and logistics worksites.

The crash data for this analysis was sourced from GEARS. It encompasses crashes within the Atlanta region involving bicycles and/or pedestrians, covering the years 2018 through 2022. The dataset is limited to crashes on public roads that were officially reported to law enforcement.

A crash hot spot map book showing each freight cluster area can be found in Appendix D.

Transportation Demand Management Recommendations

This section highlights the transportation demand management recommendations emerging from this planning process and a review of ARC’s updated *Atlanta Regional Transportation Demand Management (TDM) Plan*. Recommendations that overlap with those from ARC’s *Strategic Transportation Demand Management Plan* are noted.

Atlanta Regional Transportation Demand Management Plan Recommendations

The Regional Transportation Demand Management Plan provides numerous recommendations that can be applied to employees and employers.

Several direct services are described in the plan that are applicable. They are described as “operational in focus and include the regional transportation demand management program’s core functions of commuter and school/university traveler outreach, employer services, incentives, tools, and marketing and communications.” The core services include the following:

- Education and outreach to commuters and students,
- Employer services,
- Incentives,
- Transportation demand management technology,
- Marketing and communications,
- Industry outreach,
- Tailored marketing messages to reach diverse audiences.

The Atlanta Regional Transportation Demand Management Plan provides an overview of existing programs within these services and recommendations for expansion and improvement. Among these *existing* core services, several resonate with freight worker’s needs.

Freight Plan Transportation Demand Management Recommendations

Through analysis of the freight cluster areas and engagement with stakeholders in the region, the project team developed a series of transportation demand management and safety recommendations.

Recommendations are split into three themes:

- Job access,
- Staff retention,
- Safety.

Table 45 includes all Atlanta Regional Transportation Demand Management Plan recommendations that relate to freight workers, and the recommendations emerging from this planning process. Each strategy includes a source, name, and brief description.

Table 45: Transportation Demand Management Programs and Recommendations

Source	Name	Description
Atlanta Regional Transportation Demand Management Plan	Education and Outreach to Commuters and Students	• Awareness: Employees will benefit from increased awareness about transportation demand management services and options, which may offer them alternative ways to travel to work, reducing dependency on single-occupancy vehicle use. • Access to Information: Through outreach programs, employees can receive tailored information that may help them optimize their commutes or participate in sustainable transportation practices. • Leverage Georgia Community Option's expertise: Offer technical assistance for employers in freight cluster areas looking to establish or improve transportation programs. This could include workshops, toolkits, and one-on-one consulting on how to set up vanpools, secure grants for clean commute initiatives, and implement telework programs where feasible.
Atlanta Regional Transportation Demand Management Plan	Employer Services	• Technical Assistance: Employers in freight cluster areas may receive assistance in developing and implementing programs that facilitate better commute options for their employees, such as carpooling or transit use, which could reduce parking pressure and congestion around freight facilities. • Employee Satisfaction: Services aimed at addressing commuter needs can lead to higher job satisfaction and employee retention, as employees have more reliable and less stressful commute options. • Corporate Goals: Employers in freight cluster areas with environmental and social governance goals can align their transportation policies with these objectives, potentially enhancing their corporate image and compliance with regulations.

NEEDS ASSESSMENT REPORT

Source	Name	Description
Atlanta Regional Transportation Demand Management Plan	Incentives	- Guaranteed ride home offers a free or low-cost ride home from work in cases of emergency for commuters who do not drive alone. - Vanpool subsidies (40 percent of operating costs) and implementation support encourage ridership and provide administrative resources for vanpool formation. - Incentives for logging clean commute trips (coupons and a \$25 monthly raffle) allow customers who participate in regular trip-logging activities to be eligible for gift raffles and discount coupons at select locations. - The Gimme Five (\$5 A Day) Program provides eligible participants the opportunity to earn \$5 a day for trying a new commute to work. Carpooling, vanpooling, transit, walking, and biking are all eligible options. - The \$40-\$60 Gas Card Program allows carpool riders to earn monthly gas cards for 12 months within three years. If the carpool includes at least three people, riders can earn a \$40 gas card each month. If the carpool includes four or more people, riders can earn a \$60 gas card each month. - Vanpool Referral Incentive provides participants the opportunity to receive a monetary incentive for referring a new vanpool rider.
Atlanta Regional Transportation Demand Management Plan	Transportation Demand Management Technology	Digital Apps and Platforms: Employees can benefit from apps like the GA Commute app that assist with ridematching, which can be particularly useful for employees who have irregular hours or who work in locations that are not well served by public transit. They can find carpool partners and vanpool options, and can even receive incentives for sustainable commuting. Multimodal Trip Planning: For those who do not drive trucks but work in freight logistics, multimodal trip planning can help them find the most efficient way to commute, whether it is by bike, public transit, or carpooling. Guaranteed Ride Home or to Work: This feature can be a significant benefit for employees, providing a safety net for those who carpool or vanpool and may occasionally need to stay late or go home unexpectedly due to work demands. A more streamlined technology platform will further support the Guaranteed Ride Home program. Guaranteed Ride to Work builds upon guaranteed ride home by providing a service that is especially useful for employees who normally use alternative modes of transportation like public transit, carpooling, biking, or walking, but may encounter disruptions, such as missed transit connections, a breakdown of their carpool, or an unexpected situation where their usual commute isn't feasible. If an employee's usual mode of transportation fails (e.g., carpool cancellation, transit delays), they can rely on the program to ensure they can still get to work on time. Commute Calculator: It can help employees understand the financial impact of their commute choices and encourage the use of more cost-effective and sustainable options.

Source	Name	Description
Atlanta Regional Transportation Demand Management Plan	Transportation Demand Management Technology	• Enhancing GA Commute Platform: For employees who do have some flexibility, enhancements in the app could make carpooling or vanpooling more accessible and administratively simpler. • Digital Wallet for Mobility: Over time, the implementation of a digital wallet could simplify the process of receiving incentives for sustainable commuting, which can be a bonus for employees considering alternative modes of transportation.
Atlanta Regional Transportation Demand Management Plan	Industry Outreach	• Build relationships with industry associations: Establish relationships with broad-based associations (e.g., Manufacturing Association, Property Managers Association) to build understanding and strategy around integrated transportation demand management services. • Transit and Transportation Demand Management promotion with new employees: Formalize the process with new employees to get transit passes and other transportation demand management materials to employees early in the hiring process. Target materials distribution to temporary worker needs, e.g., free transit passes for the first two weeks (until the first paycheck).
Atlanta Regional Transportation Demand Management Plan	Tailored marketing messages to reach diverse audiences	Translate transportation demand management technology such as the GA Commute platform into languages beyond English to improve accessibility to those with limited English proficiency. Spanish, Vietnamese, Korean, and Chinese are the four most commonly spoken languages in the Atlanta region by persons with limited English proficiency.
Freight Transportation Demand Management Study—Job Access	Employee Transportation Coordinators	Employee transportation coordinators can serve as in-house experts in logistics companies, providing personalized transit planning and assistance. By using employee transportation coordinators more effectively, companies can help workers identify the most efficient modes of transportation, address issues related to scheduling, and manage benefits like transit pass assistance.
Freight Transportation Demand Management Study—Job Access	Explore Georgia Commute Options (GCO) Grant Programs	Explore how GCO grants can positively impact job access as they are rolled out.
Freight Transportation Demand Management Study—Job Access	Subsidized Transit Pass Assistance for New Employees	• Offer subsidized transit passes for the first month or two of employment, helping new employees settle into their roles without the added stress of commute costs. This period of assistance can ease the transition to regular transit use. • For longer-term solutions, partner with Georgia Commute Options and Metropolitan Atlanta Rapid Transit Authority (MARTA) to offer discounted MARTA transit passes to employers. Large employers that participate in the program can offer employees monthly transit passes for \$76 versus the regular price of \$95. Employees pay for the passes with pre-tax income, which reduces the cost by an additional 15 percent to 30 percent depending on their tax rate. The program will require some level of facilitation to aggregate purchases from smaller employers that may not otherwise qualify for the discount.

NEEDS ASSESSMENT REPORT

Source	Name	Description
Freight Transportation Demand Management Study—Job Access	Extended Bike Loan Programs	Lend-A-Bike Initiative: Launch a program where bikes are loaned to workers for a trial period, encouraging a shift to cycling as a primary mode of commuting. After the free trial, options to purchase the bike at a discounted rate can foster a long-term commitment to biking.
Freight Transportation Demand Management Study—Job Access	Utilize the GCO Ridematching Platform	Promote a ridematching platform within the freight cluster areas to support carpooling.
Freight Transportation Demand Management Study—Job Access	Extended Transit Hours	Explore extended service hours around large freight hubs to accommodate the round-the-clock nature of the industry.
Freight Transportation Demand Management Study—Job Access	Explore Microtransit	• Microtransit could help address final mile issues identified by stakeholders. However, providing microtransit service is generally expensive. A microtransit service to a freight cluster area could improve connections in areas with poor multimodal access. • To limit the risk and cost associated with implementing microtransit, it is recommended that a demonstration project be designed and tested. Multiple options should be explored including the use of vanpools or fleet vehicles to move employees from transit to workplaces, small EVs such as eTuks (eTUKs are small, customizable EVs from a company called e-TUK Factory), partnerships with transportation network companies like Uber and Lyft, or more traditional services like that operated by Via and similar companies. The demonstration period will allow microtransit to be tested with limited cost commitment and would offer an opportunity to identify potential issues that could be addressed if a long-term solution is deemed feasible.

Source	Name	Description
Freight Transportation Demand Management Study—Job Access	Support Employee Carpools	- Carpools of two or more offer a lower cost and more efficient way for employees to get to work versus driving alone. Carpools are also an affordable travel option for employees who lack access to good transit service. - Businesses could help encourage carpooling by implementing a branded preferential carpool parking program. Employers with 200 or more employees would receive signage for preferential parking for carpoolers that would be located either at the front of the building, as premier upfront parking, or close to the exit if there is site-specific congestion as shifts end. This program would be paired with the Georgia Commute Options app (MyGCO), which helps commuters find carpool partners and also offers monetary rewards for carpooling. - Enforcement of preferential parking can generally be handled by posting a number on the sign that people can call to report abuse. This supports employees who wish to vanpool or carpool by purchasing a program or app that can easily connect vans and carpoolers together. Employers can use the app and sign-ups to identify clusters of employees. Employees can also be incentivized to drive carpools or vanpools through financial incentives, or incentivized to upgrade their car to a minivan to carry more workers.
Freight Transportation Demand Management Study—Job Access	Support Employer Vanpools	- Most employees within the freight clusters lack access to high-quality transit connections. Vanpools can provide additional commute options. Vanpools are groups of people who live and work near one another and who share a van that seats seven to 12 people to commute to work. Vanpools typically serve long-distance commutes that are 20 miles or longer one-way. Riders lease the van from a third party, and the lease cost includes maintenance, fuel, and insurance. - Vanpooling is typically most cost-effective for longer trips. Encouraging nearby employees to ride in vanpools may require higher employer subsidies to make trip costs more competitive on a per-mile basis.
Freight Transportation Demand Management Study—Staff Retainment	On-site Childcare	Having childcare facilities within the workplace can significantly reduce the logistical and time barriers that working parents face. It enables parents, especially shift workers, to manage their professional and familial responsibilities without the additional stress of finding suitable childcare during non-standard hours.
Freight Transportation Demand Management Study—Staff Retainment	Childcare Subsidies	For employers who cannot provide on-site childcare, offering subsidies can help alleviate the financial burden of childcare costs, making it easier for parents to afford quality childcare and maintain their employment.
Freight Transportation Demand Management Study—Staff Retainment	Mobile Healthcare Options at Facilities: Vaccinations	On-site vaccination services mean employees do not need to take time off work for these essential healthcare needs, promoting higher vaccination rates and a healthier workforce. Easy access to vaccinations can reduce the incidence of preventable diseases, potentially decreasing absenteeism and healthcare costs for both employees and employers.

NEEDS ASSESSMENT REPORT

Source	Name	Description
Freight Transportation Demand Management Study—Staff Retainment	Mobile Healthcare Options at Facilities: Physical Therapy Assessments	Providing on-site physical therapy assessments can lead to early detection of musculoskeletal issues common in physically demanding freight jobs, which can be addressed before causing more serious injuries. Physical therapists can recommend modifications to workstations or practices to prevent injuries, promoting a safer and more comfortable work environment.
Freight Transportation Demand Management Study—Staff Retainment	Mobile Healthcare Options at Facilities: Mental Health Resources	Having accessible mental health resources at work can help normalize the conversation around mental health and encourage employees to seek help when needed. Regular access to mental health professionals can aid in stress management, critical in high-pressure environments such as freight and logistics operations.
Freight Transportation Demand Management Study—Safety	Safety Signage	Businesses can place signs to alert drivers to the presence of pedestrian or bicyclist traffic in certain areas, especially near entrances and exits of factories or warehouses.
Freight Transportation Demand Management Study—Safety	Crosswalk Enhancements	Improvements could include elevated crosswalks, rumble strips to slow down vehicles, or motion-activated lighting. Installation of countdown timers and audible signals at crosswalks can also improve safety for pedestrians and those with visual impairments.
Freight Transportation Demand Management Study—Safety	Safety Audits	Safety audits can help identify key safety needs around businesses and should be undertaken periodically. Safety audits should be conducted with the involvement of staff that walk, bike, or take transit in the area.
Freight Transportation Demand Management Study—Safety	Install pedestrian-scale lighting	Lighting is associated with fewer pedestrian injuries and deaths due to crashes. It is also associated with decreased crime and improved walking comfort. Investments in lighting should prioritize areas where nighttime crashes are most common and where the most complex intersections are located.
Freight Transportation Demand Management Study—Safety	Add leading pedestrian intervals at key intersections	Leading pedestrian intervals at intersections give pedestrians a three to seven-second head start to cross a street before a traffic light turns green. They can reduce crashes involving pedestrians by 60 percent. Initiatives should target intersections where pedestrian-involved crashes have occurred or where heavy right or left turning volumes create conflicts between vehicles and pedestrians. They should also consider similar treatment for future bicycle facilities that will be impacted by heavy turning volumes.
Freight Transportation Demand Management Study—Safety	Reduce Speeds	Reducing traffic speeds is the most impactful method to improve the safety of vulnerable road users (such as pedestrians and bicyclists). There are a variety of methods to reduce speeds, though enforcement and roadway design changes are the most effective.

Appendix E of this report includes a case study and a resource to provide further information on potential strategies.

Roles and Responsibilities

To effectively implement the transportation demand management recommendations for freight mobility in the Atlanta region, outlined in the *2024 Atlanta Regional Freight Mobility Plan*, various organizations and entities must collaborate and assume specific roles and responsibilities. These include the following:

- **Georgia Commute Options (GCO):** GCO should play a pivotal role in offering technical assistance to employers in freight cluster areas. They could help establish or improve transportation programs, such as vanpools, clean commute initiatives, and telework programs. GCO could also assist in leveraging grant programs to enhance job access, facilitate ridematching platforms, and support the implementation of microtransit demonstration projects.
- **ARC:** ARC's involvement supports integrating transportation demand management recommendations with the broader regional transportation strategy. ARC's involvement can promote coordination between different entities, support for policy development, and ensuring that the transportation demand management strategies align with regional goals and objectives. ARC could also help in disseminating information and facilitating outreach programs to raise awareness about transportation demand management services and options.
- **CIDs:** CIDs can play an essential role in local implementation and advocacy. They should focus on identifying specific needs within their jurisdictions and working with ARC and GCO to tailor the transportation demand management recommendations to these local contexts. CIDs could also engage in community outreach and support the adoption of transportation demand management strategies by local businesses and organizations.
- **Employers in freight cluster areas:** Employers must actively participate in the implementation of transportation demand management recommendations for them to be successful. This involves engaging in programs like vanpooling, supporting employee access to public transit, and possibly participating in microtransit projects. They should also collaborate with GCO and ARC for technical assistance and leverage any available incentives for clean commute initiatives.
- **Local governments:** Municipal and county governments in the Atlanta region can support the implementation of transportation demand management strategies by aligning local transportation policies with the regional plan, facilitating infrastructure improvements for safer bike and pedestrian routes, and possibly providing funding or incentives for transportation demand management initiatives.
- **Transportation and safety agencies:** Involvement by organizations such as the GDOT and local jurisdictions can promote safety of freight corridors by improving infrastructure for safer first- and last-mile connections and addressing crash hot spots.
- **Employers and employees in freight cluster areas:** Both employers and employees in the designated freight cluster areas should engage with the transportation demand management

recommendations. Employers can support by providing resources like on-site childcare, healthcare services, and incentives for sustainable commuting. Employees can participate in carpooling, vanpooling, and utilizing the transit options provided.

- **Community members and advocacy groups:** These groups can play a role in advocating for improved freight mobility and safety in their areas. They should participate in community outreach efforts and provide feedback on the implementation of transportation demand management strategies.

By collaborating and fulfilling these roles and responsibilities, these various entities can collectively enhance freight mobility, improve job access and safety for workers, and ultimately contribute to a more efficient and sustainable transportation system in the Atlanta region.

The transportation demand management recommendations encompass a range of solutions, including the implementation of employee transportation coordinators, leveraging GCO for technical assistance, exploring guaranteed ride-to-work programs, subsidized transit pass assistance, extended bike loan programs, and exploring microtransit solutions. Furthermore, this report suggests support for employee carpools, employer vanpools, on-site childcare, mobile healthcare options, and various safety enhancements.

The recommendations are tailored to address the unique needs of employees and employers in the freight cluster areas within the Atlanta region. They reflect the challenges faced in the freight sector, including job access difficulties due to location and shift timings, safety concerns in first- and last-mile connections, and the need for better integration of transportation modes.

The implementation of these recommendations requires a collaborative effort among various stakeholders, including the ARC, GCO, CIDs, employers in freight cluster areas, local governments, and the community at large. By working together, these entities can significantly improve freight mobility, enhance job access and safety for workers, and contribute to a more efficient and sustainable transportation system in the region.

5. Priority Corridors

Recommendations to the Critical Urban Freight Corridors

Background

The Fixing America's Surface Transportation (FAST) Act mandated FHWA to create the NHFN. This network focuses federal efforts and resources on enhancing the efficiency of the U.S. freight transportation system's highway segments. The NHFN guides the allocation of funds from the NHFP and determines the eligibility for the Nationally Significant Freight and Highway Projects grant program, also known as INFRA. IIJA further refined the NHFN, allowing states to designate additional miles as critical urban and rural freight corridors, thereby expanding the network's scope and impact on freight transportation.¹⁷⁴

The NHFN consists of the PHFS, other interstate portions not on the PHFS, CRFCs, and CUFCs. There are currently 325.7 miles of PHFS and 71.8 miles of non-PHFS interstates in the metro Atlanta region. CRFCs do not apply to the metro Atlanta region. The remaining discussion in this section focuses on the recommendations to the CUFCs only.

Federal Guidance on CUFC designation

CUFCs are vital public roads in urbanized areas that provide access and connection to the PHFS and other interstates for ports, intermodal facilities, or other key freight-reliant establishments. States and MPOs designate up to either 150 miles or 10 percent of the PHFS mileage in the state, whichever is greater, as CUFCs. IIJA increased this cap from the previous 75-mile limit set by the FAST Act. In this context, Georgia, which had not designated any CUFCs before, can now allocate up to 150 miles for such corridors, statewide.

A public road designated as a CUFC must be in an urbanized area and meet one or more of the following criteria:¹⁷⁵

- Connects an intermodal facility to the PHFS, the Interstate System, or an intermodal freight facility,
- Is located in a corridor of a route on the PHFS and provides an alternative highway option important to goods movement,

¹⁷⁴ Federal Register (2022, December 12). *Final Re-Designation of the Primary Highway Freight System (PHFS)*. Accessed January 23, 2024, on <https://www.federalregister.gov/documents/2022/12/22/2022-27875/final-re-designation-of-the-primary-highway-freight-system-phfs>

¹⁷⁵ FHWA. *FAST Act, Section 1116 National Highway Freight Program (NHFP) Guidance: Designating and Certifying Critical Rural Freight Corridors and Critical Urban Freight Corridors*. Accessed November 22, 2023, on https://ops.fhwa.dot.gov/fastact/crhc/sec_1116_gdnce.htm

- Serves as a major freight generator, logistics center, or manufacturing and warehouse industrial land, or
- Is important to the movement of freight within the region, as determined by the MPO or the state.

FHWA encourages states, when making CUFC designations, to consider first- or last-mile connector routes from high-volume freight corridors to freight-intensive land and key urban freight facilities, including ports, rail terminals, and other industrial-zoned land. A state or MPO may designate a planned public road or facility critical to the future efficient movement of goods as long as it meets the certification requirements.

A CUFC must be designated and certified before authorizing the use of NHFP funds on the route. There is no deadline for designating the CUFC, and designations and de-designations are made on a rolling needs-based assessment. In an urbanized area with a population of more than 500,000, the MPO is responsible for designating the CUFC in consultation with the state.

Methodology

Metro Atlanta's Potential Share of GA's CUFC Mileage

Table 46 shows Metro Atlanta's potential share of Georgia's allowable CUFC mileage. Based on the population of the MPO region over the total urbanized area population in Georgia, Metro Atlanta may have around 105 miles of roadways that could be designated as CUFCs.

Table 46: Metro Atlanta's Potential Share of Georgia's CUFC Mileage

	Population (2022)	Share	CUFC Mileage
ARC MPO Region	5,573,370*	70.22%***	105.3*****
GA Urban Areas	7,936,829**	100.00%	150****

*Total population at the block group level adjusted by the proportion that is within the MPO boundary, by area.¹⁷⁶ The population data is sourced from the 2022 ACS 5-year estimates.¹⁷⁷

**Total population for the Urban Areas in GA. The population is sourced from the 2022 ACS 5-year estimates. For urban areas that span multiple states, the share of the population of the GA side is derived from the profile for each using 2020 census data.¹⁷⁸

***This is calculated by dividing the total population of GA Urban Areas by the population within the MPO region.

****Total CUFC mileage allowable for the State of Georgia. Data source: 2023 *Georgia Freight Plan*.¹⁷⁹

¹⁷⁶ The Counties that are fully within the MPO region include: Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Paulding, and Rockdale. The Counties that are partially within the MPO region include: Barrow, Carrol, Dawson, Newton, Pike, Spalding, and Walton.

¹⁷⁷ U.S. Census Bureau (2022). *American Community Survey 5-year Data*. Accessed December 14, 2023, on <https://www.census.gov/data/developers/data-sets/acs-5year.html>

¹⁷⁸ Example of an urban area that spans multiple states and its GA side population: Eufaula, AL–GA Urban Area (2020) (part). U.S. Census Bureau. Accessed December 14, 2023, on <https://data.census.gov/profile/Eufaula?g=420XX00US1328090>

¹⁷⁹ GDOT (2023). *Georgia Freight Plan*. Chapter 3, Georgia Freight Transportation Infrastructure, pages 3-8. Accessed November 22, 2023, on <https://www.dot.ga.gov/InvestSmart/Freight/GeorgiaFreight/GeorgiaFreightPlan.pdf>

*****Metro Atlanta’s potential share of the CUFC mileage is based on its population share.

ARC’s Candidate CUFCs

The consultant team took a two-step approach to identifying the recommended CUFCs. Initially, a long list of projects was identified as potential candidates for CUFC consideration based on a thorough review of important local planning documents, which includes the following:

- 2016 Atlanta Regional Freight Mobility Plan,
- Freight Cluster Plans,
- Comprehensive Transportation Plans,
- Findings from local jurisdictional outreach.

Then the projects were separated into segment projects (e.g., roadway capacity improvement projects) and point projects (e.g., railroad grade separation projects or signal/intersection improvement projects). The projects were further categorized into qualitative tiers based on an assessment of the following criteria:

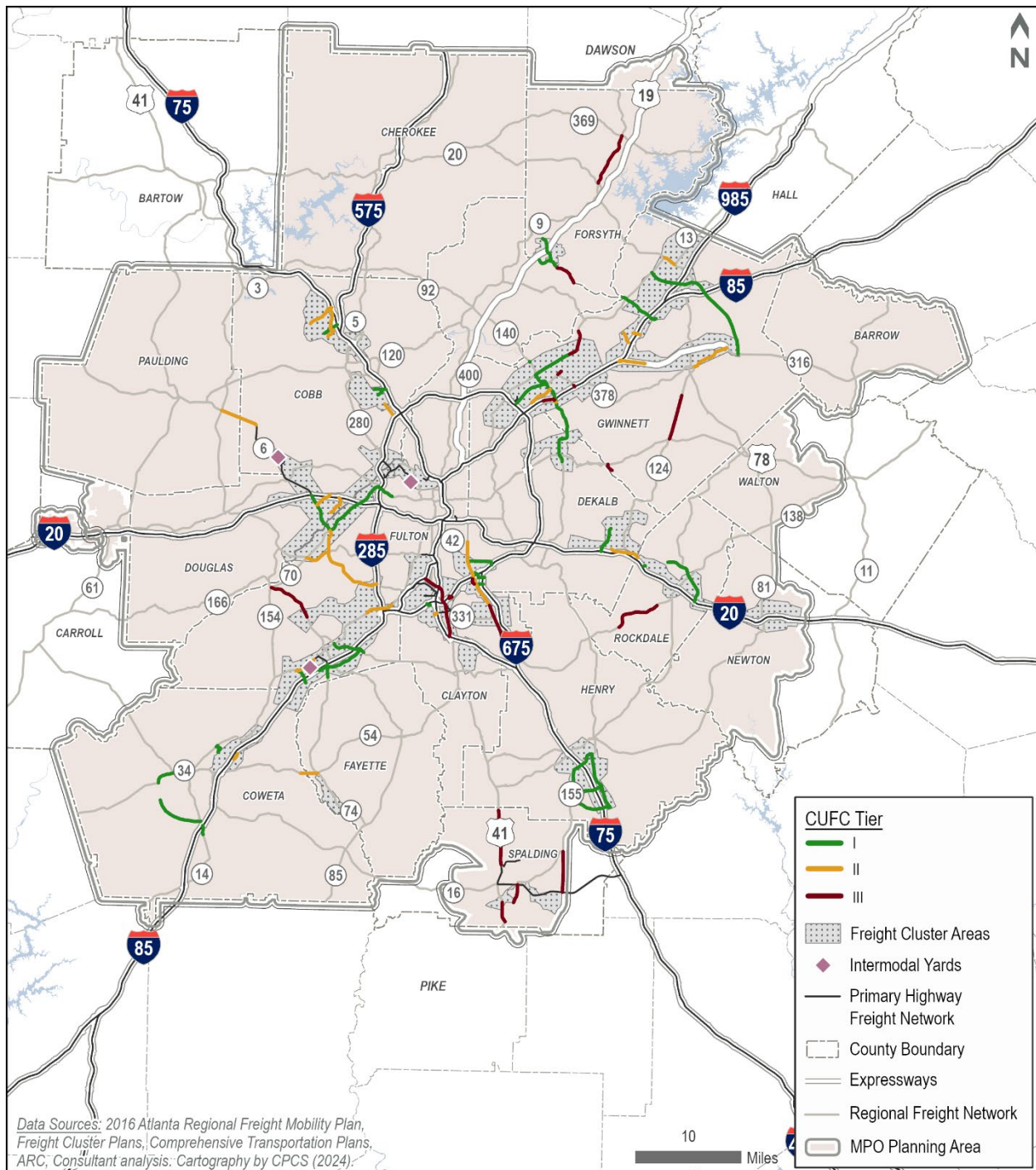
- Connections with the PHFS, the interstate system, or a key freight facility,
- Proximity to the revised freight cluster areas,
- Total traffic and truck traffic volume,¹⁸⁰
- Whether the projects were prioritized in the source plan or have been recommended as CUFCs by the Freight Cluster Plans.

This initial assessment and the resulting long list of projects were presented to the ARC Transportation Coordination Committee (TCC) during the March 22, 2024, meeting. No comments were received from TCC members during the comment period. This initial list was further refined through continuous coordination with GDOT and other stakeholders and adjusted during this plan’s project prioritization process. The updated list was presented to the ARC TCC during the Aug 23, 2024, meeting. No comments were received from TCC members during the comment period. The list was further refined by ARC filling in network gaps to make a more complete network and adjusted the tiering ranking. Table 47 shows the final number of projects and mileage of ARC’s candidate CUFCs. Figure 79 shows the ARC’s candidate CUFCs in relation with the Freight Cluster Areas and the Primary Highway Freight Network. See Appendix F for the complete list of corridors.

Table 47: ARC’s Candidate CUFCs

Tier	Number of Projects	Length (Miles)
I	46	104.4
II	23	53.0
III	19	51.8
Total	88	209.2

¹⁸⁰ The best available data from GDOT will be used.

Figure 79: ARC's Candidate CUFCs

Local Truck Routes/Prohibition Corridors Criteria

The size, weight, height, and operational characteristics of trucks are uniquely different from those of passenger cars. The designation of truck routes and/or truck prohibition corridors helps shape discussions around roadway freight infrastructure investment, design, and operation decisions at different planning levels (e.g., national, state, regional, and municipal levels)

Local planning agencies typically employ two main approaches: truck route adoption and truck prohibition corridor designation. Counties and local planning authorities designate their own network of truck routes or truck prohibition corridors based on an assessment of local truck movements and community needs. Such actions and suggestions are typically detailed in counties' or municipalities' codes of ordinances (for example City of Atlanta¹⁸¹). Some counties also highlight the recommended truck routes in their county Comprehensive Transportation Plans (for example, DeKalb County¹⁸² and Gwinnett County¹⁸³).

Designing roadways to accommodate the diverse needs of nonmotorized users, cars, transit vehicles, and heavy vehicles requires a tailored approach rather than a universal solution. This section aims to assist counties and municipalities in developing effective criteria for designating local truck routes or prohibition corridors. The sample criteria presented are informed by the National Cooperative Highway Research Program (NCHRP) Research Report 943: *Design and Access Management Guidelines for Truck Routes: Planning and Design Guide* (2020).¹⁸⁴

Sample Criteria for Designating Local Truck Routes

Designating local truck routes requires careful planning and consideration of multiple factors to balance the needs of freight movement with community safety, environmental protection, and quality of life. The following is a set of sample criteria that could guide the process:

- **Connectivity and Accessibility:**
 - **Major Highway Connections:** Routes should provide efficient access to and from major highways, interstates, and other key transportation corridors.
 - **Industrial and Commercial Areas Access:** The routes should connect major industrial areas, warehousing, distribution centers, and commercial areas to facilitate the easy movement of goods.
 - **Access to Freight Generators:** The routes should prioritize access to key freight generators such as ports, factories, and terminals to minimize truck travel distances on local roads.
- **Road Design and Characteristics:**

¹⁸¹ City of Atlanta Code of Ordinances No. 2018-54. Retrieved from <https://library.municode.com/search?stateId=10&clientId=1093&searchText=truck&contentType=ORDINANCES>

¹⁸² DeKalb County (2022). *DeKalb 2050 Unified Plan Comprehensive Transportation Plan*. https://www.dekalb2050unifiedplan.com/docs/2022_1005_DRAFT_DeKalb%20Comprehensive%20Transportation%20Plan.pdf

¹⁸³ Gwinnett County 2040 Unified Plan, Chapter 4 Plan Document. Accessed October 16, 2024, on <https://www.dca.ga.gov>

¹⁸⁴ National Academies of Sciences, Engineering, and Medicine (2020). *Design and Access Management Guidelines for Truck Routes: Planning and Design Guide*. Research Report 934. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25950>

- **Road Width and Lane Capacity:** Roads should be wide enough to safely accommodate trucks alongside other vehicles, with lanes that are adequately sized for truck dimensions.
- **Intersection Turning Radius:** Intersections along the route should accommodate the turning radius of large trucks, potentially including dedicated turning lanes where necessary.
- **Pavement Strength and Surface Condition:** The road surface should be able to withstand the weight and frequency of truck traffic without deteriorating prematurely.
- **Infrastructure Constraints:**
 - **Bridge Clearances:** Routes should consider the height clearance of bridges and overpasses to ensure they can accommodate standard truck heights.
 - **Weight-Restricted Bridges:** The route should account for any weight-restricted bridges that may limit truck access.
 - **Railroad Crossings:** Routes should avoid at-grade railroad crossings where trucks may be at risk of getting stuck.
 - **Other Infrastructure Limitations:** Any other infrastructure constraints specific to the region that may impact truck movement should be identified and considered.
- **Traffic Management:**
 - **Traffic Speed and Congestion Level:** Routes should be selected to minimize the impact on traffic congestion, ideally utilizing roads with less peak-time traffic or those capable of handling additional traffic volumes.
 - **Traffic Control Devices:** Consideration of the placement of traffic signals, stop signs, and other control devices to ensure smooth traffic flow and reduce potential conflicts between trucks and other road users.
 - **Volume of Other Roadway Users:** Truck routes should be selected to minimize potential conflicts with other road users, particularly vulnerable users such as pedestrians and cyclists. Routes with lower volumes of non-truck traffic, especially during peak hours, are preferable. In cases where truck routes must pass through areas with significant pedestrian or cyclist activity, additional safety measures should be considered, such as dedicated bike lanes, wide sidewalks, and clearly marked crosswalks. The goal is to keep all roadway users safe and allow them to comfortably use the system while also supporting efficient freight movement.
 - **Local and Through Traffic Split:** Truck routes should be selected to prioritize the separation of local and through truck traffic where possible. This means directing through trucks to major arterial roads or highways that are designed to handle heavy vehicles while encouraging

local delivery trucks to use designated routes that minimize their impact on residential streets and other sensitive areas.

- **Environmental and Community Impact:**

- **Noise and Air Quality:** Routes should minimize exposure of residential areas to truck-related noise and air pollution due to the potential impacts on public health and quality of life.
- **Vibration Damage:** Truck routes should focus on a selection of roads where truck traffic is less likely to cause structural damage to buildings and infrastructure from vibrations.
- **Nearby Land Use Characteristics:** Truck routes should whenever reasonably possible avoid roads that pass through environmentally sensitive areas, historical districts, or areas with a high concentration of schools, parks, and residential zones.

- **Implementation Considerations:**

- **Public Consultation:** Development of truck routes should involve engagement with stakeholders, including community groups, businesses, and trucking associations, to gather feedback and build consensus around designated truck routes.
- **Adequate Signage and Markings:** Proper signage and road markings should be in place to guide truck drivers along the designated routes and inform them of relevant regulations.
- **Enforcement Strategies:** There should be clear enforcement strategies to ensure compliance with route designations, including penalties for non-compliance.
- **Monitoring and Evaluation:** Routes should be regularly monitored to assess their effectiveness and impact, with periodic reviews to make adjustments based on changing conditions, traffic patterns, and community needs.

These criteria should be adapted to the specific conditions and needs of each locality, considering both current realities and future growth. It's important to note that due to existing infrastructure constraints, some roads that are not ideal for trucks may need to be designated as truck routes. This underscores the importance of considering infrastructure improvements to address these constraints in the long term.

Sample Criteria for Truck Prohibition Corridors

Developing criteria for designating truck-prohibited roadways is a complex process that requires a balance between ensuring the efficient movement of goods while protecting public safety, road infrastructure, and community well-being. Though there is no national guidance on criteria for designating certain roads as prohibited to trucks, federal law 49 USC 5112 specifies that “states, local jurisdictions, and Indian tribes can designate routes for or prohibit the transportation of hazardous materials shipments requiring

placarding on particular routes, but such decisions must enhance public safety”.¹⁸⁵ The law stipulates that any alternatives provided must maintain reasonable routes for hazardous material trucks to reach facilities for food, fuel, repairs, rest, and loading or unloading.

The following is a set of criteria that could be considered:

- **Road Design and Characteristics:**
 - **Maximum Weight Capacity:** Roads that cannot support the heavy weight of trucks due to their design or current condition.
 - **Road Width and Layout:** Narrow roads or those with sharp curves, steep inclines, or inadequate shoulders that may not accommodate trucks safely.
 - **Bridge and Overpass Clearances:** Low-clearance bridges and overpasses that are not suitable for the height of most trucks.
 - **Weight-Restricted Bridges:** Bridges that cannot safely support the weight of heavy trucks should be identified as prohibition points.
 - **Problematic Railroad Crossings:** At-grade railroad crossings where trucks are at risk of getting stuck should be considered for truck prohibitions.
 - **Surface Material:** Roads not paved with materials that can withstand the repetitive stress of heavy truck traffic.
- **Traffic Safety:**
 - **High-Crash Zones:** Areas with a history of crashes involving trucks, which may indicate that the road is not suitable for truck traffic.
 - **Visibility and Lighting:** Roads with poor visibility due to natural obstructions, inadequate lighting, or prone to adverse weather conditions affecting truck driving.
 - **Pedestrian and Cyclist Safety:** Areas with high pedestrian and cyclist traffic, particularly in residential areas, school zones, and commercial districts where trucks could pose a greater risk.
- **Environmental and Community Impact:**
 - **Noise Pollution:** Roads passing through residential areas or near hospitals and schools where noise from truck traffic could be a significant disturbance.

¹⁸⁵ Office of the Law Revision Counsel of the United States House of Representatives. United States Code: Chapter 51 – Transportation of Hazardous Material. Retrieved from <https://uscode.house.gov/view.xhtml?path=/prelim@title49/subtitle3/chapter51&edition=prelim>

- **Air Quality:** Areas where additional truck traffic could worsen air quality, particularly in urban centers or near sensitive environments like nature reserves.
- **Vibration Damage:** Roads where heavy truck traffic could cause structural damage to nearby buildings or infrastructure due to vibrations.
- **Community Facilities Nearby:** Roads leading directly to community centers, parks, schools, or residential areas where truck traffic could disrupt community activities or pose a risk to residents.
- **Historical and Cultural Sites:** Roads passing through or near historical districts or cultural sites where truck traffic could pose a threat to the preservation of these areas.
- **Scenic Routes:** Areas where the visual impact of truck traffic could detract from the natural or aesthetic value of the area.
- **Economic Impact:**
 - **Availability of Alternate Routes:** Existence of alternate routes that can handle truck traffic efficiently without significantly increasing travel time or costs for freight operations.
 - **Economic Impact Assessment:** Evaluating the economic impact of truck restrictions on local businesses and the wider supply chain to ensure that such measures do not unduly hinder economic activities.
- **Implementation Considerations:**
 - **Public Consultation and Communication:** Engaging with stakeholders, including local communities, businesses, and trucking associations, to gather feedback and ensure that the criteria meet the needs and concerns of all affected parties.
 - **Enforcement Mechanisms:** The feasibility of enforcing truck prohibitions, including the availability of technology and resources for monitoring and penalizing violations.
 - **Periodic Review:** Establishing a process for the periodic review of truck-prohibited road designations to adapt to changes in road conditions, traffic patterns, and community needs.

This set of criteria is a starting point. Each jurisdiction may need to adapt these criteria based on local conditions, priorities, and legal frameworks. It's crucial to recognize that infrastructure constraints play a significant role in determining both truck routes and prohibition corridors. These constraints may necessitate designating some less-than-ideal roads as truck routes, highlighting the importance of long-term planning for infrastructure improvements.

Appendix A: Rail-Served Facilities

Name and Description	Satellite Image
1. Norfolk Southern Whitaker Yard The Norfolk Southern Austell-Whitaker intermodal yard is located in Austell and serves five tracks. The facility offers container-on-flatcar (COFC) / stack car capabilities¹⁸⁶ and can accommodate approximately 525,000 container lifts per year, the most of all yards in the region.¹⁸⁷ The facility is served by an NHS-designated intermodal connector that runs 0.48 miles from I-20 along SR 6 to the entrance of the facility.¹⁸⁸ Much of the facility's traffic comes from the Ports of Savannah and Charleston.¹⁸⁹ In January 2023, NS announced six new gantry cranes were in operation at its Whitaker Yard that would double the facility's international intermodal throughput.¹⁹⁰ This is made possible by a switch from primarily wheeled operations to stacking.	
2. CSX Fairburn Yard The CSX Fairburn intermodal facility is located in Fairburn and serves domestic freight.¹⁹¹ The facility offers trailer-on-flatcar (TOFC) and COFC capabilities. In 2018, CSX Fairburn underwent an expansion that introduced two crane rails for mounted cranes and an extension of the existing track, which increased the facility's capacity from 350,000 to 750,000 lifts per year.¹⁹² The facility is served by an NHS-designated intermodal connector that runs along SR 74 and McLarin Rd between I-85 and the entrance to the facility.¹⁹³	

¹⁸⁶ Norfolk Southern. Intermodal Terminal and Schedules: Atlanta, GA—Austell. Accessed February 2023 on <https://www.norfolksouthern.com/en/ship-by-rail/our-rail-network/intermodal-terminals-schedules>

¹⁸⁷ GDOT. 2021 *Georgia State Rail Plan*, Appendix, page A-34.

<https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft%20Appendices.pdf>

¹⁸⁸ FHWA, National Highway System: Intermodal Connectors -Georgia, accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

¹⁸⁹ Angell, M. (2023, January 31). Norfolk Southern adds to Southeast intermodal capacity with new cranes. *S&P Journal of Commerce*. https://www.joc.com/article/norfolk-southern-adds-southeast-intermodal-capacity-new-cranes_20230131.html

¹⁹⁰ Angell, M. (2023, January 31). Norfolk Southern adds to Southeast intermodal capacity with new cranes. *S&P Journal of Commerce*. https://www.joc.com/article/norfolk-southern-adds-southeast-intermodal-capacity-new-cranes_20230131.html

Name and Description	Satellite Image
3. Norfolk Southern Inman Yard Norfolk Southern Inman Yard is located in Atlanta and serves eight tracks. The facility offers TOFC, COFC, and stack car capabilities,¹⁹⁴ and it can accommodate approximately 325,000 container lifts per year.¹⁹⁵ The facility is served by an NHS-designated intermodal connector that runs 4.6 miles along SR 280, Bolton Road NW, and Marietta Road NW between I-285 and the entrance to the facility.¹⁹⁶	
4. Norfolk Southern Industry Yard The Norfolk Southern Industry Yard is located in East Point. The facility is served by an NHS-designated intermodal connector that runs 0.44 miles from SR 166 and Lakewood Avenue to the facility.¹⁹⁷	

¹⁹¹ CSX Intermodal Terminals, Fairburn, GA. Accessed February 2023 on

http://www.csxintermodalterminals.com/index.cfm/terminals/terminal-detail/?terminal_id=1&Core=true

¹⁹² Contech Engineered Solutions. CSX Fairburn Intermodal Expansion. Accessed February 2023 on

<https://www.conteches.com/knowledge-center/case-studies/details/slug/csx-fairburn-intermodal-expansion>

¹⁹³ USDOT Federal Highway Administration, National Highway System: Intermodal Connectors: Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

¹⁹⁴ Norfolk Southern. Intermodal Terminal and Schedules: Atlanta, GA – Inman. Accessed February 2023 on

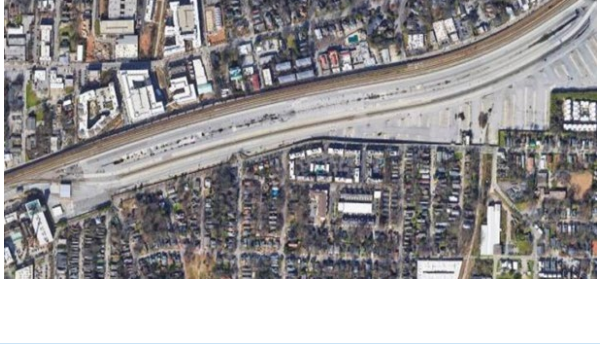
<http://www.nscorp.com/content/nscorp/en/shipping-options/intermodal/terminals-and-schedules/atlanta-ga.html>

¹⁹⁵ GDOT. 2021 *Georgia State Rail Plan* Appendix, page A-34.

<https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft%20Appendices.pdf>

¹⁹⁶ USDOT Federal Highway Administration, National Highway System: Intermodal Connectors: Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

¹⁹⁷ USDOT Federal Highway Administration, National Highway System: Intermodal Connectors: Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

Name and Description	Satellite Image
5. Norfolk Southern Griffin Yard The Norfolk Southern Griffin Yard is located in Griffin. The facility is served by an NHS-designated intermodal connector that runs 14.68 miles from SR 3/US 19 and 41 along SR 16, past the facility, to I-75 Exit 205.¹⁹⁸	
6. Norfolk Southern Forest Park Yard The Norfolk Southern Forest Park Yard is located in Forest Park. The facility is served by an NHS-designated intermodal connector that runs 0.8 miles from I-75 to Forest Parkway and Kennedy Road to the entrance of the facility.¹⁹⁹	
7. CSX Hulsey Facility The CSX Hulsey facility is located in Atlanta and serves domestic freight. CSX ceased operations at the Hulsey yard in 2019 but started up again in 2020.²⁰⁰ The reactivated facility focuses on the transload of bulk commodities.²⁰¹ This transition is expected to lead to a reduction in area truck traffic. The facility is served by an NHS-designated intermodal connector that runs 0.5 miles along Boulevard SE between I-20 and the entrance to the facility.²⁰²	
8. CSX Transflo Tilford Yard The CSX Transflo Tilford bulk terminal facility was bulldozed in 2017, but in 2021, CSX announced that it was building a Transflo transload facility on part of the site that would move dry goods between rail and truck modes.²⁰³ The site is served by the same NHS-designated connector as the NS Inman Yard: a 4.6-mile route along SR 280, Bolton Road NW, and Marietta Road NW between I-285 and the facility.²⁰⁴	

Name and Description	Satellite Image
9. CSX Transflo Atlanta The CSX Transflo bulk terminal facility is located in Atlanta and handles chemicals, asphalt, foods, plastics, and petroleum products.²⁰⁵ The facility has 185 car spots and offers rail heating capabilities.²⁰⁶ The site is served by an NHS-designated connector that runs 0.93 miles from I-75 at Exit 225B along Howell Mill Road to the entrance of the facility.²⁰⁷	

¹⁹⁸ USDOT Federal Highway Administration, National Highway System: Intermodal Connectors: Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

¹⁹⁹ USDOT Federal Highway Administration, National Highway System: Intermodal Connectors: Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

²⁰⁰ Trubey, J.S., and Wickert, D. (2019, May 6). Dreams of redevelopment as CSX closes Atlanta's Hulsey Yard. *The Atlanta Journal-Constitution*. <https://www.ajc.com/news/local-govt--politics/dreams-redevelopment-csx-closes-atlanta-hulsey-yard/ODldMvzBgGse1dyNLXRhiI/>; and Keenan, S.R. (2020, February 21). Exclusive: CSX to reactivate Hulsey Yard, frustrating neighbors' dreams for site. *Curbed Atlanta*. <https://atlanta.curbed.com/2020/2/21/21147228/atlanta-csx-hulsey-yard-activation-masterplan-transit>

²⁰¹ Keenan, S.R. (2020, February 21). Exclusive: CSX to reactivate Hulsey Yard, frustrating neighbors' dreams for site. *Curbed Atlanta*. <https://atlanta.curbed.com/2020/2/21/21147228/atlanta-csx-hulsey-yard-activation-masterplan-transit>

²⁰² FHWA, National Highway System: Intermodal Connectors - Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

²⁰³ Stephens, Bill (2021, November 16). CSX building Transflo terminal at site of Tilford Yard in Atlanta. *Trains*. <https://www.trains.com/trn/news-reviews/news-wire/csx-building-transflo-terminal-at-site-of-tilford-yard-in-atlanta/>

²⁰⁴ FHWA, National Highway System: Intermodal Connectors - Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

²⁰⁵ TRANSFLO. TRANSFLO Locations Near You: Georgia. <https://transflo.net/locations/georgia-atlanta/>

²⁰⁶ TRANSFLO. TRANSFLO Locations Near You: Georgia. Accessed February 2023 on <https://www.transflo.net/locations/georgia-atlanta/>

²⁰⁷ FHWA, National Highway System. Intermodal Connectors - Georgia. Accessed February 2023 on https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/georgia.cfm

Name and Description	Satellite Image
10. CSX SPTS Trimac Fairburn The CSX SPTS Trimac Fairburn bulk terminal facility is located in Fairburn handles dry bulk, food grade and liquids products.²⁰⁸ The facility can accommodate approximately 420,000 container lifts per year.²⁰⁹	
11. Industries Norcross The Pax Industries Norcross bulk terminal facility is located in Duluth just northeast of Norcross, and handles chemicals and plastics, among other goods. The facility offers bulk loading and unloading, packaging services, and shipping container capabilities. There are 160,000 square feet of storage on-site as well as 35 rail spots. It is serviced by NS.	
12. A&R Transport College Park The A&R Transport bulk facility in College Park primarily handles dry bulk and liquids.²¹⁰	

²⁰⁸ Commtrex. Trimac - Fairburn, GA. <https://www.commtrex.com/transloading/location/2013.html>

²⁰⁹ GDOT. 2021 Georgia State Rail Plan, Appendix, page A-34.

<https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft%20Appendices.pdf>

²¹⁰ Commtrex. A&R Transport - College Park, GA. <https://www.commtrex.com/transloading/location/1473.html>

Name and Description	Satellite Image
13. Bulkmatic Transport Doraville The NS Bulkmatic Transport bulk facility in Doraville handles dry bulk commodities.²¹¹ Bulkmatic reports that it is the largest dry bulk carrier in North America.²¹²	
14. NS Poole Creek Automotive Facility The Poole Creek automotive rail facility is located in Hapeville, GA. It is served by NS and handles Chrysler and Ford vehicles. The facility is located just to the east of Hartsfield-Jackson Atlanta International Airport.²¹³	
15. CSX Lawrenceville Facility The CSX Lawrenceville facility is located in Lawrenceville and is operated by the subsidiary Total Distribution Services Inc.²¹⁴ The facility handles Chrysler, Ford, GM, and Honda vehicles.²¹⁵	

²¹¹ Bulkmatic. Transport. <https://www.bulkmatic.com/service/transloading>

²¹² Bulkmatic. Accessed February 2023 on <https://www.bulkmatic.com/>

²¹³ GDOT. 2021 Georgia State Rail Plan, Appendix, page A-37.

<https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft%20Appendices.pdf>

²¹⁴ CSX. Total Distribution Services Inc. Accessed February 2023 on <https://www.csx.com/index.cfm/customers/value-added-services/product-transloading-and-distribution/total-distribution-services-inc-tdsi/>

²¹⁵ GDOT (2021). Georgia State Rail Plan, Appendix, page A-37.

<https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft%20Appendices.pdf>

Appendix B: Commodity Flow Analysis Data Sources

Differences between the Transearch and FAF Datasets

Difference	Transearch	Freight Analysis Framework (FAF)
Geographical Units	Transearch data is granulated to the county-level data within GA and Bureau of Economic Analysis (BEA) area-level data outside of GA.	FAF regions combine Core-Based Statistical Areas delineated by the Office of Management and Budget and state boundaries. ²¹⁶ This analysis uses the Atlanta-Athens-Clarke County-Sandy Springs Commodity Flow Survey (CFS) area as the equivalent to the ARC region. However, the Atlanta CFS region covers an area larger than the 20-county ARC region, including 39 counties.
Air Cargo Information	Transearch's air cargo flow data only includes domestic movements.	FAF's air cargo flow data includes both domestic and international movements.
Commodity Codes	Transearch categorizes commodities using the Standard Transportation Commodity Codes (STCC), which contains specific product information of 50 commodity groups.	FAF uses Standard Classification of Transported Goods (SCTG) commodity codes, which contain 43 product groups.
Forecast Methodology	Transearch forecasting data is enabled by S&P Global's (formerly called IHS Markit) proprietary macroeconomic, regional, interindustry, and intrastate forecast modeling capabilities. The freight movements are projected using the Business Market Insights (BMI) for each commodity at the county level. The aggregated county-level results are further calibrated by comparing them to the national totals generated by the proprietary IHS U.S. macroeconomic long-term forecasts. Its international freight forecasts are generated using growth drivers for international business transactions and gateway/port market analysis.	FAF 5 includes baseline year data from 2017 and forecasts for 2022–2050. ²¹⁷ FAF extrapolates forecasts based on the 2017 base-year freight flow data. The domestic flow forecasts are estimated using the BMI growth factors for each FAF zone at the 2-digit SCTG commodity code level and adjusted against national control totals. The international flows are projected using BMI, the business transactions matrix, and the Global Trade Atlas commodity trade model. ²¹⁸ The future mode shares are generated by imposing the forecasted mix of commodities on the base-year mode shares by commodity.
COVID Impact	Transearch's forecast data reflects the impact of the COVID-19 pandemic.	FAF's 2050 forecast data is based on 2017 baseline data and does not take COVID's impact on cargo flows into account for the 2050 forecast. ²¹⁹

Source: CPCS; FAF5 User Manual;²²⁰ FAF Commodity Flow Forecast Study (FAF Version 5): Final Forecasting Results.²²¹

²¹⁶ Bureau of Transportation Statistics. Freight Analysis Framework Frequently Asked Questions. Accessed August 1, 2023, on <https://www.bts.gov/faf/faqs>

²¹⁷ Bureau of Transportation Statistics. Freight Analysis Framework 12/22/22 Updated. Accessed August 1, 2023, on <https://www.bts.gov/newsroom/freight-analysis-framework-122222-updated>

²¹⁸ FHWA (November 2022). *Freight Analysis Framework Commodity Flow Forecast Study (FAF Version 5): Final Forecasting Results*. Accessed August 2, 2023, on <https://ops.fhwa.dot.gov/publications/fhwahop22037/fhwahop22037.pdf>

²¹⁹ Bureau of Transportation Statistics. Freight Analysis Framework 12/22/22 Updated. Accessed August 1, 2023, on <https://www.bts.gov/newsroom/freight-analysis-framework-122222-updated>

²²⁰ Bureau of Transportation Statistics and FHWA (2021, July 20). *Freight Analysis Framework Version 5 User's Guide for Release 5.1*. Accessed August 2, 2023, on <https://faf.ornl.gov/faf5/data/FAF5%20User%20Guide.pdf>

²²¹ FHWA (2022, November). *Freight Analysis Framework Commodity Flow Forecast Study (FAF Version 5): Final Forecasting Results*. Accessed August 2, 2023, on <https://ops.fhwa.dot.gov/publications/fhwahop22037/fhwahop22037.pdf>

Appendix C: Employee Home Locations

Employee home locations for the eight freight cluster analysis zones are shown in the following figures:

- Northwest Cobb and Dobbins,
- FIB, Northwest Atlanta, and South Cobb/Douglas,
- ATL Airport, Conley and Southlake,
- South Fulton, North Coweta, and Peachtree City,
- Henry and Spalding,
- Southeast DeKalb, Rockdale, and Covington,
- Norcross, Tucker, and North Gwinnett,
- South Forsyth.

Figure 80: Northwest Cobb and Dobbins Employee Home Locations

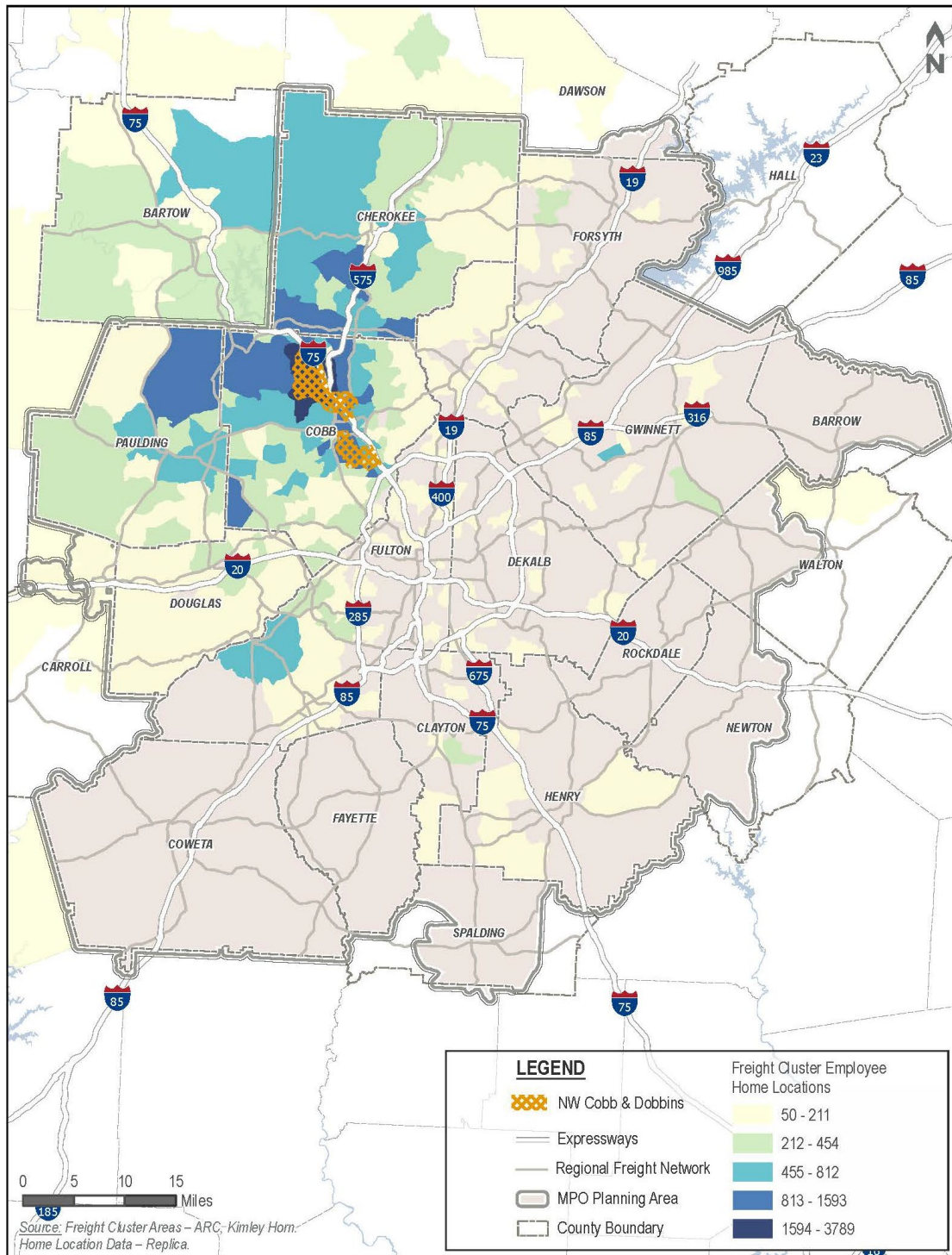


Figure 81: FIB, Northwest Atlanta, and South Cobb/Douglas Employee Home Locations

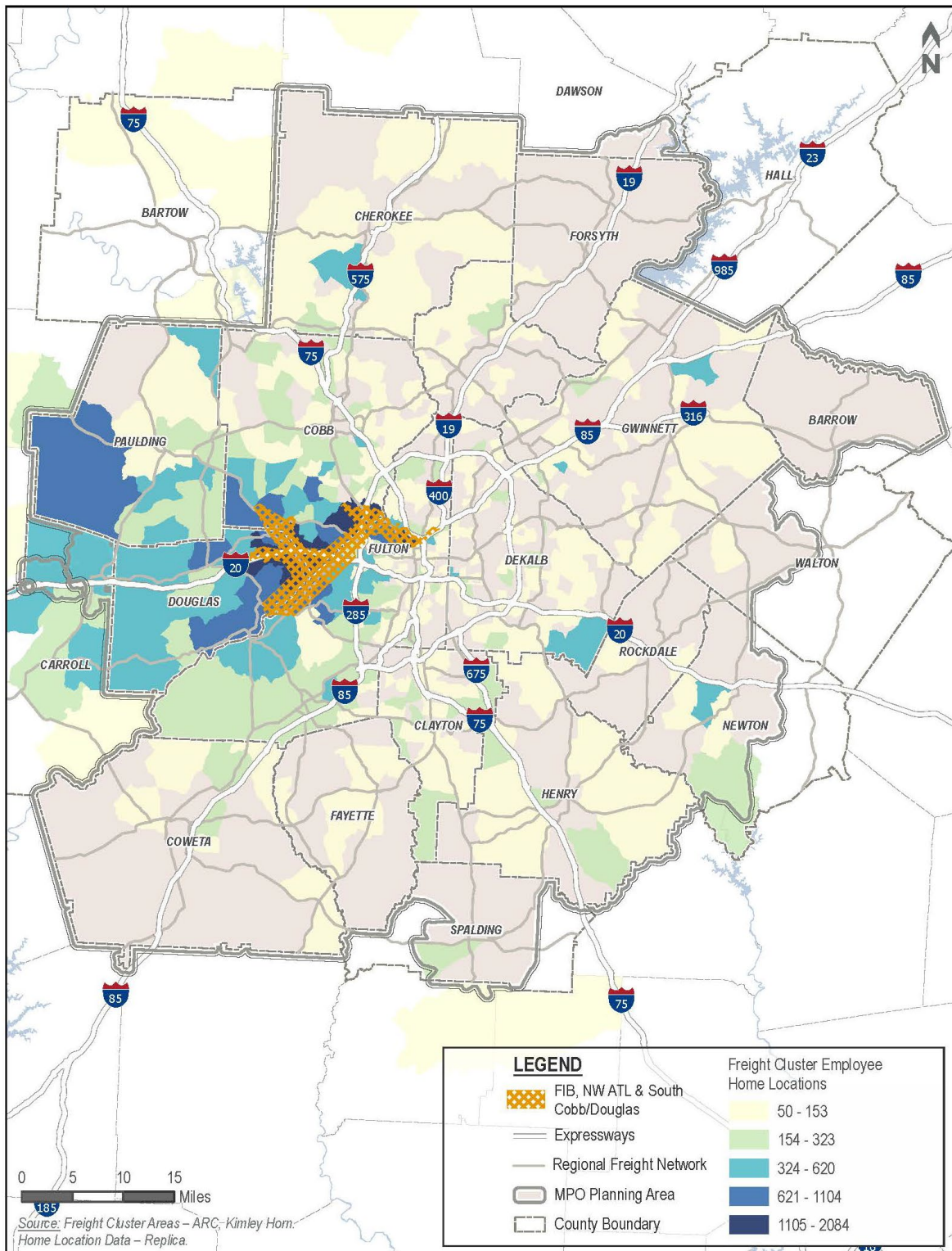


Figure 82: ATL Airport, Conley, and Southlake Employee Home Locations

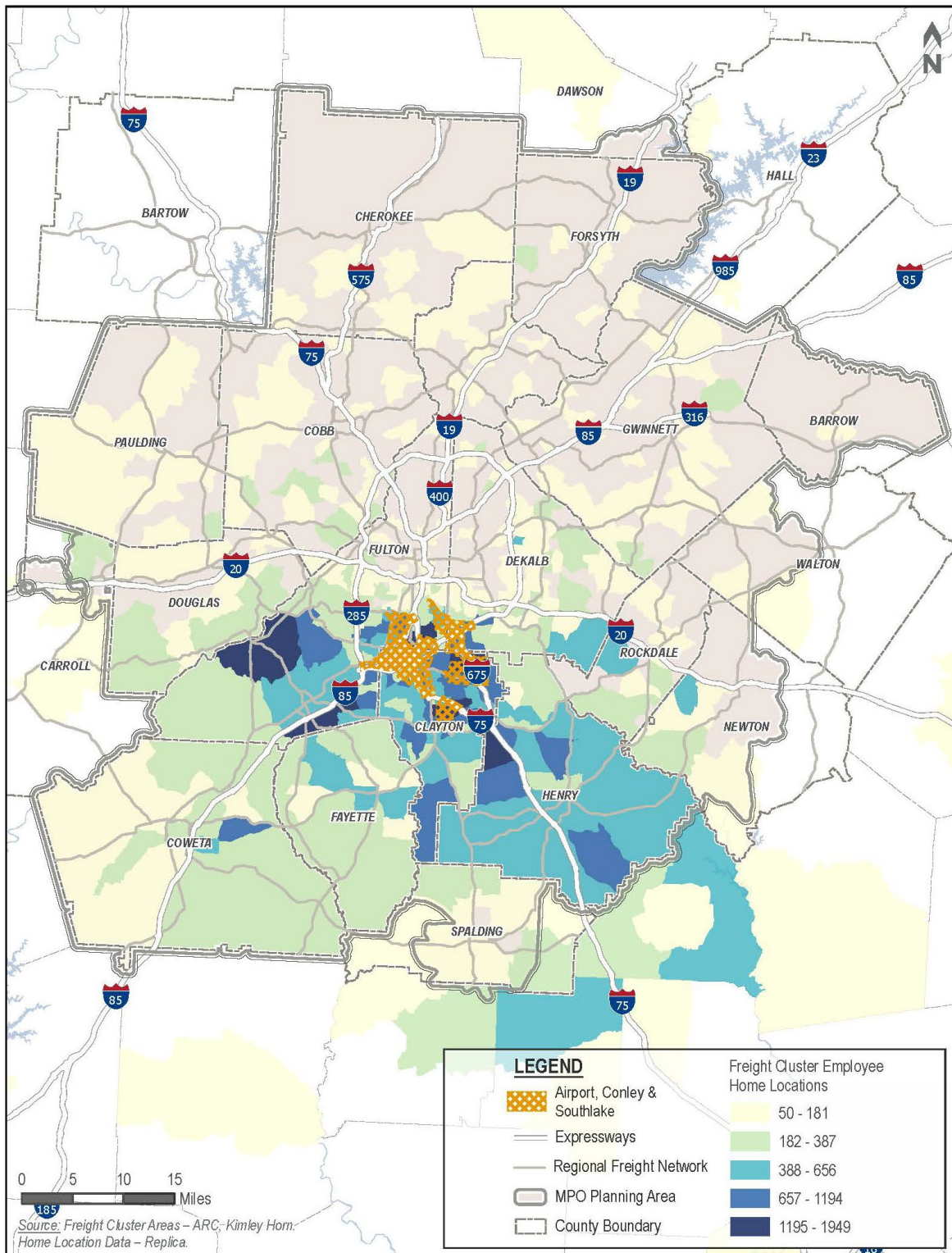


Figure 83: South Fulton, North Coweta, and Peachtree City Employee Home Locations

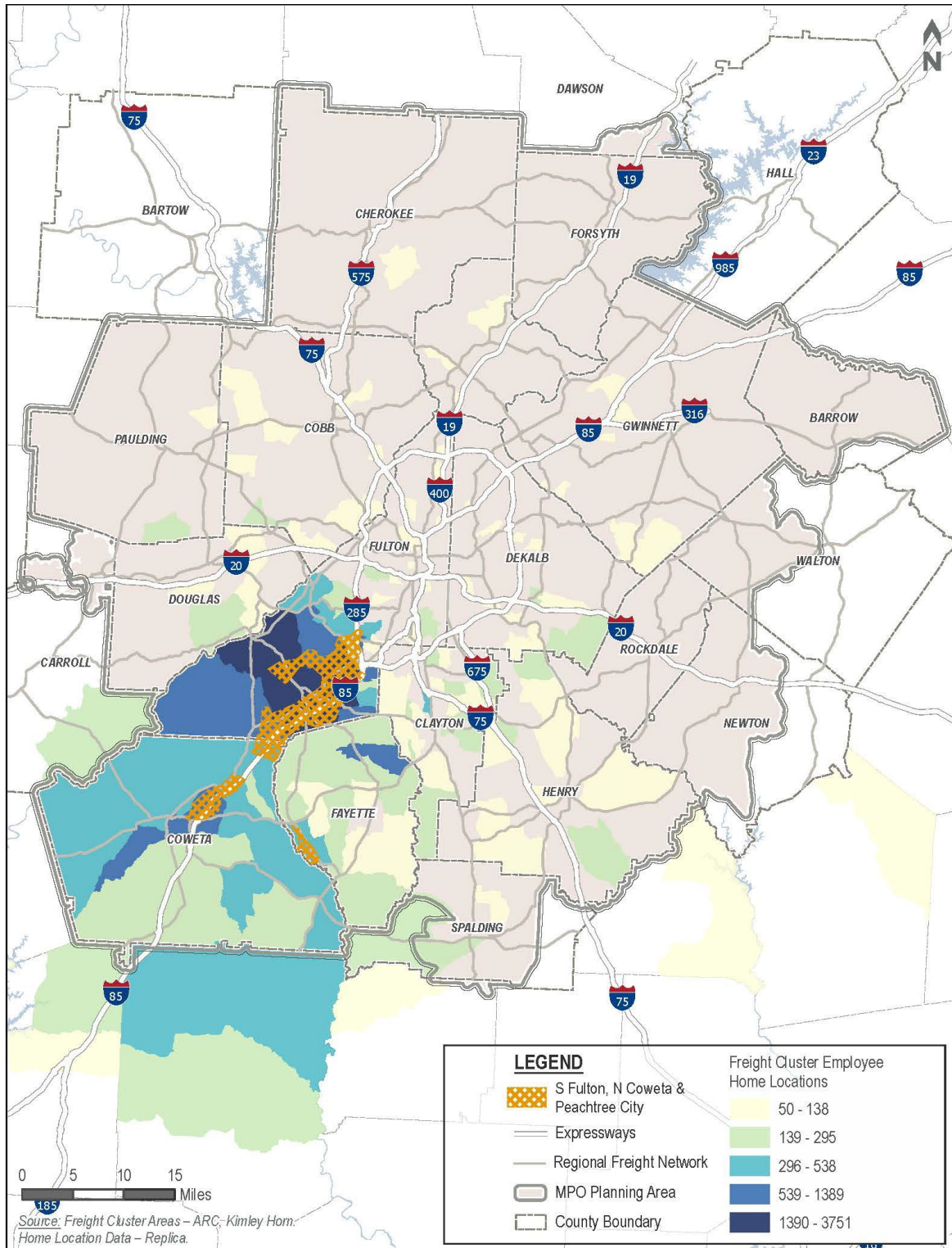


Figure 84: Henry and Spalding Employee Home Locations

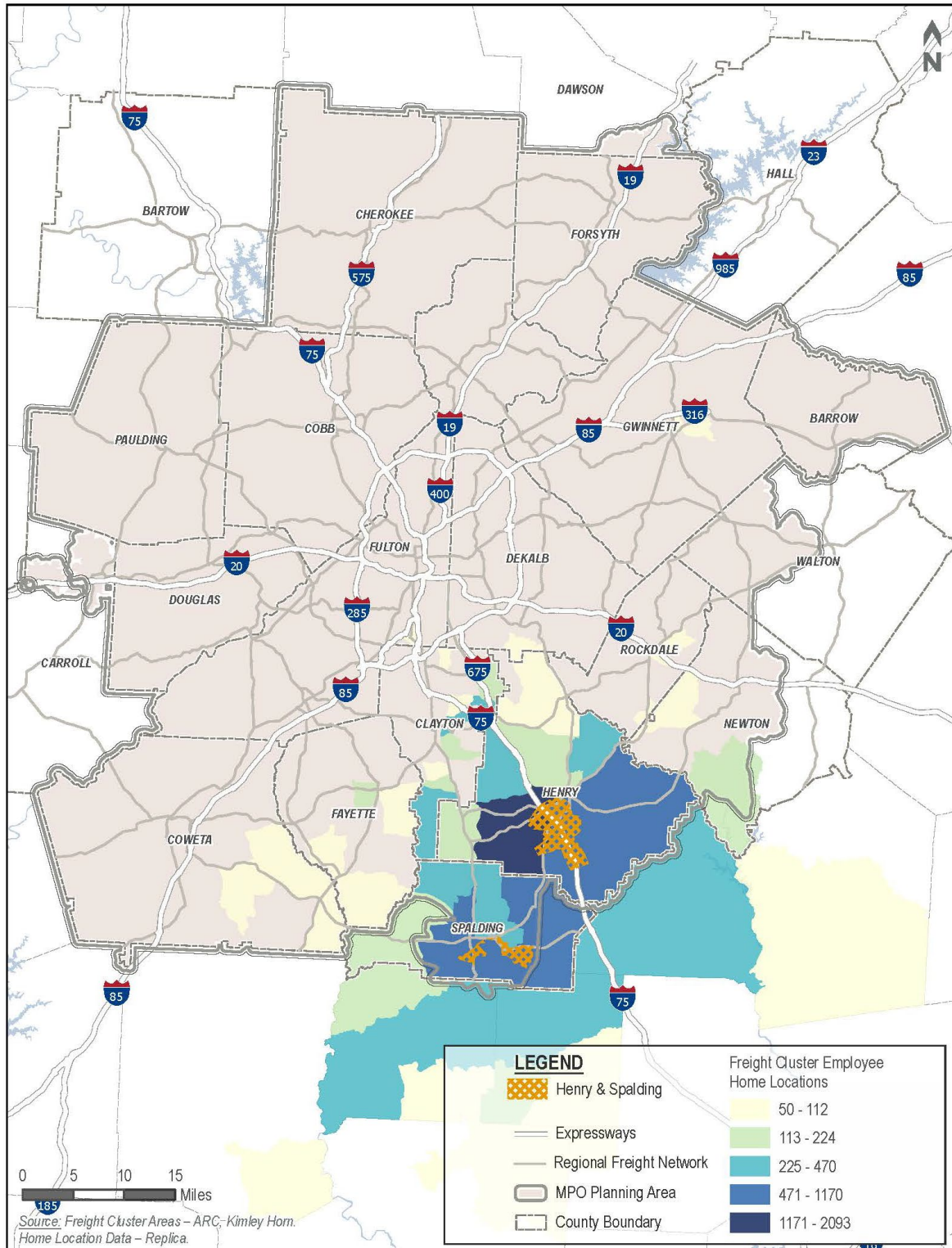


Figure 85: Southeast DeKalb, Rockdale, and Covington Employee Home Locations

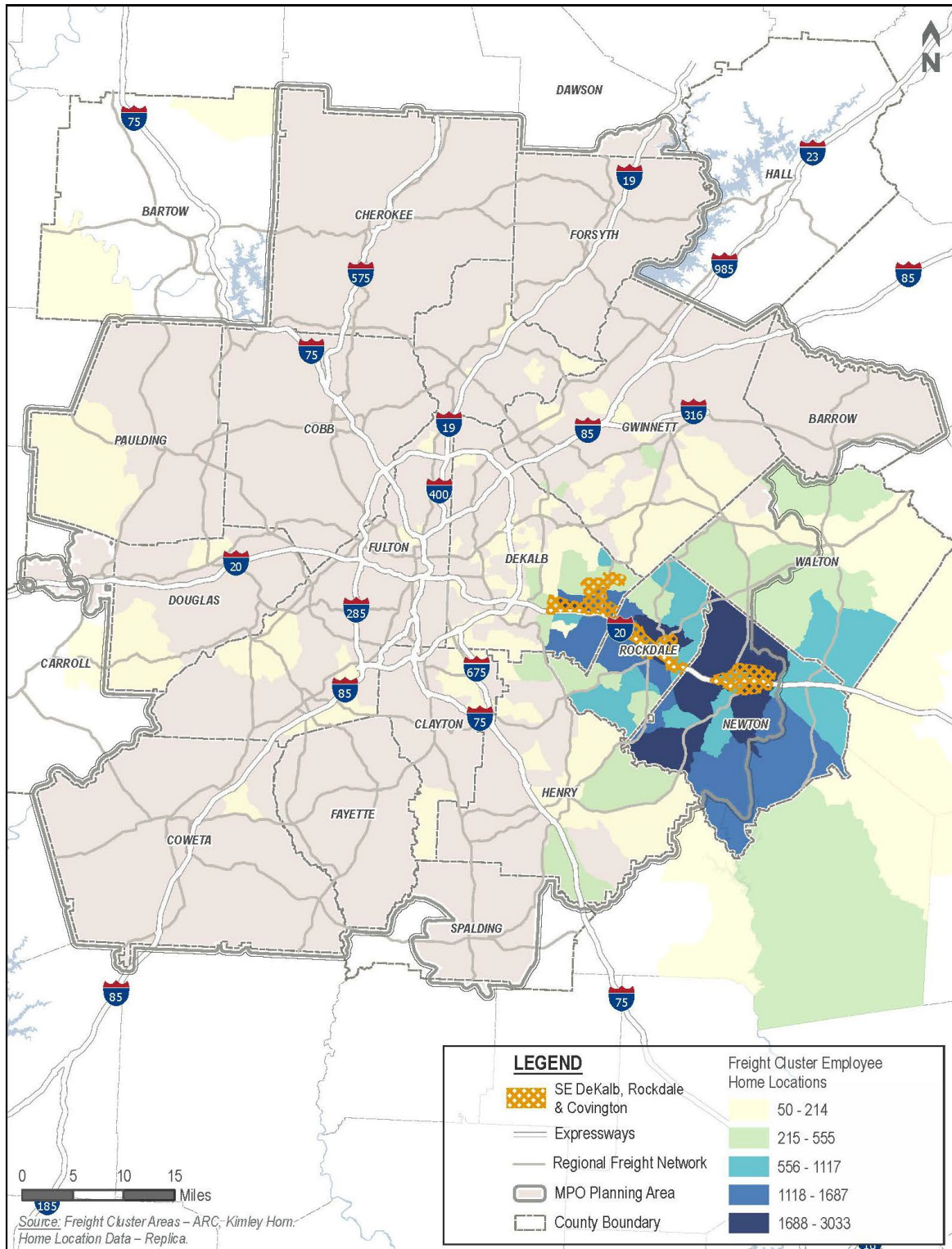


Figure 86: Norcross, Tucker, and North Gwinnett Employee Home Locations

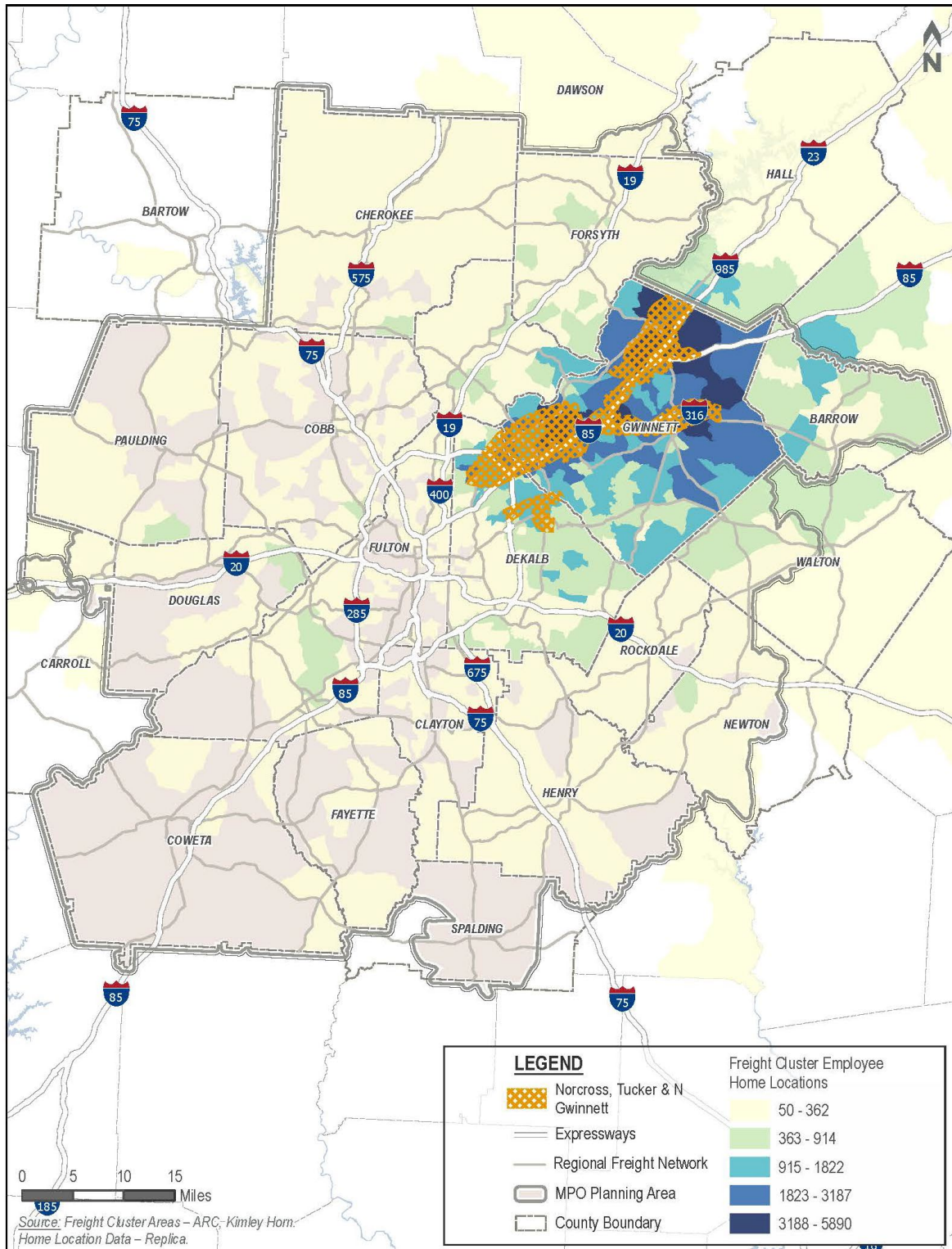
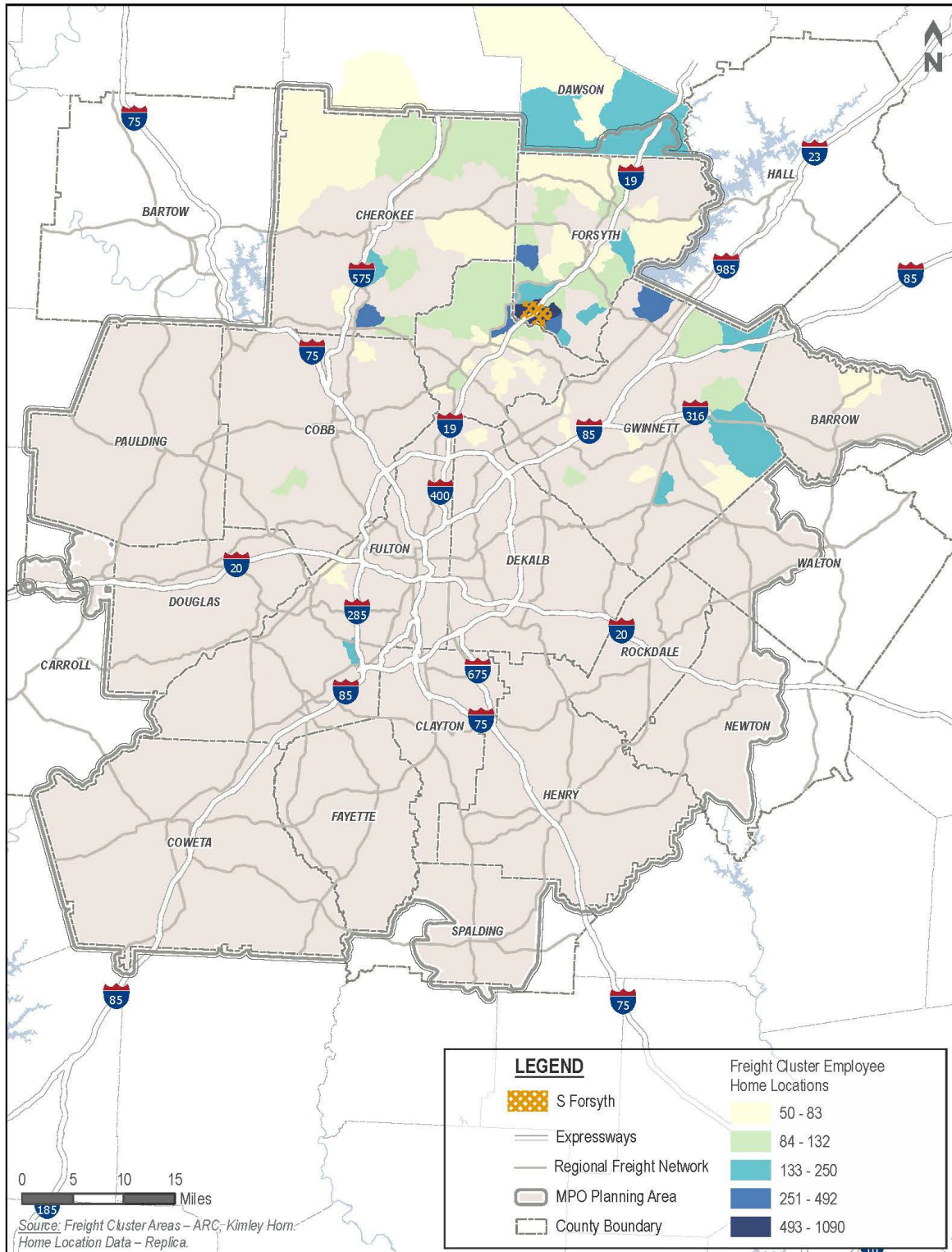


Figure 87: South Forsyth Employee Home Locations



Appendix D: Bicycle and Pedestrian Crash Hot Spot Analysis

Appendix D contains maps showing bicycle and pedestrian crash hot spots at the following freight clusters, which are shown in the figures below:

- ATL Airport
- Conley
- Dobbins
- Fulton Industrial Boulevard
- Henry
- Norcross
- Northwest Atlanta
- Northwest Cobb
- Peachtree City
- Rockdale
- South Cobb/Douglas
- Southeast Dekalb
- South Forsyth
- South Fulton
- Southlake
- Tucker

Figure 88: ATL Airport Bicycle and Pedestrian Crash Hot Spots

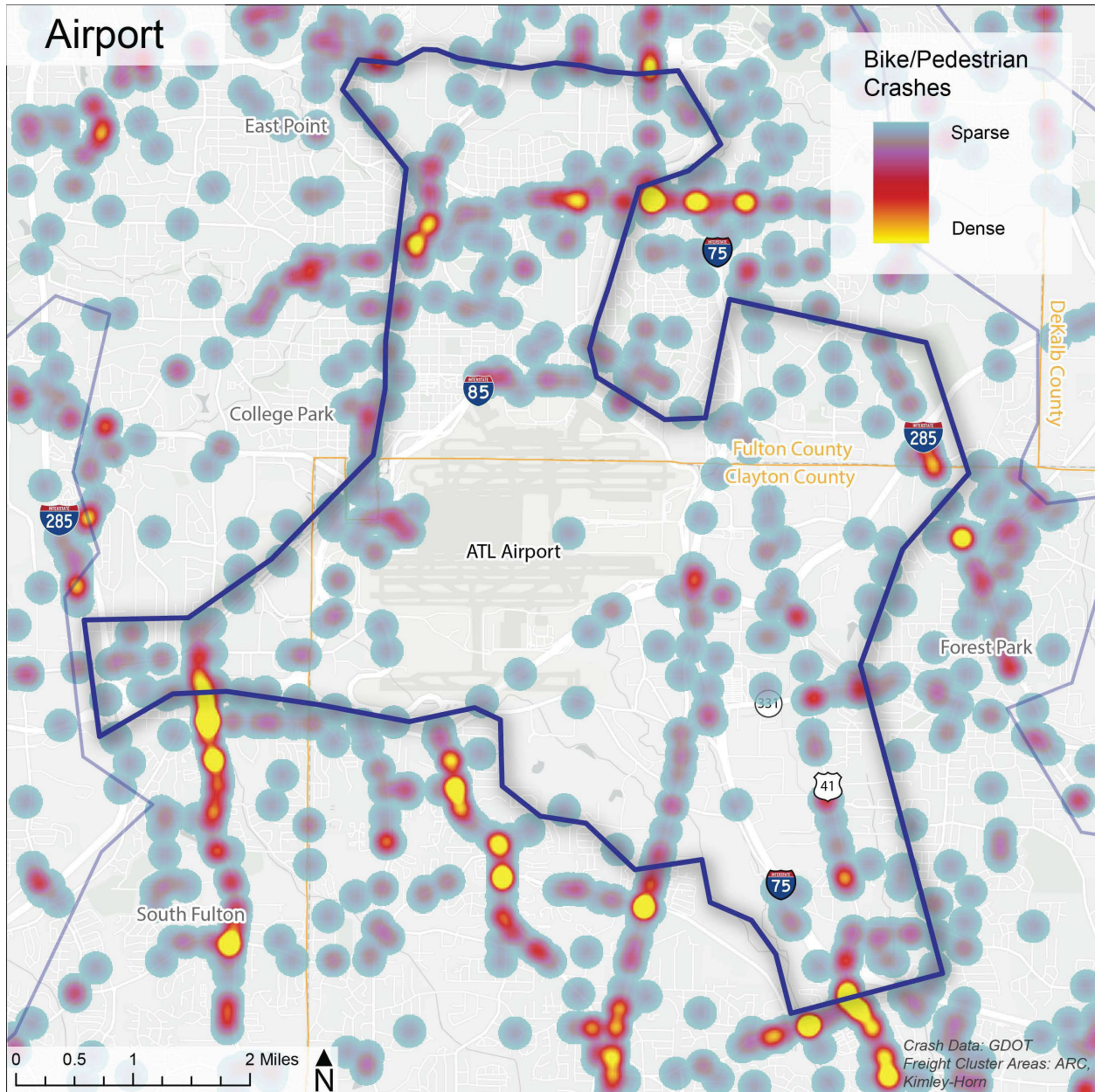


Figure 89: Conley Bicycle and Pedestrian Crash Hot Spots

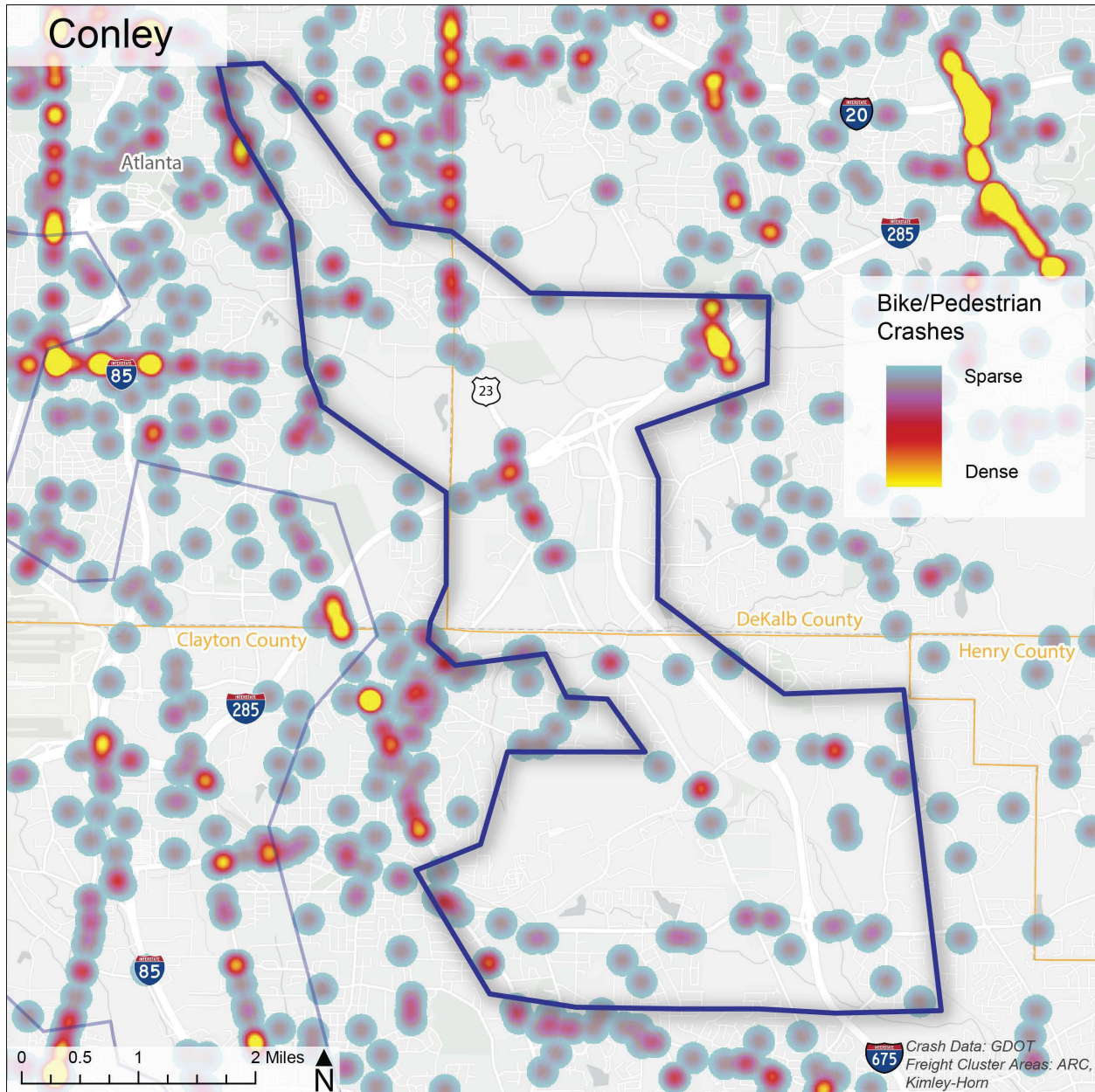


Figure 90: Dobbins Bicycle and Pedestrian Crash Hot Spots

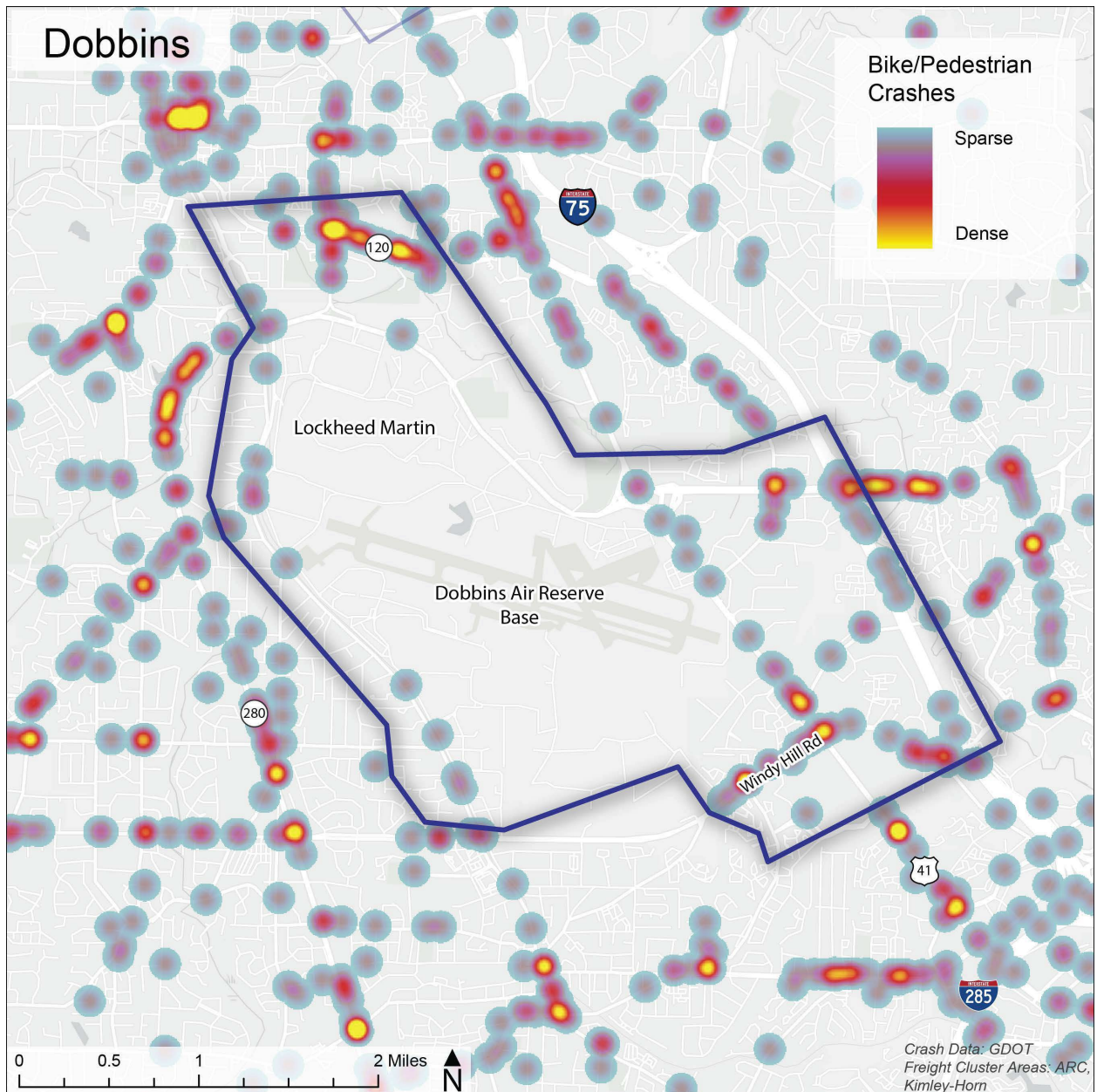


Figure 91: Fulton Industrial Boulevard Bicycle and Pedestrian Crash Hot Spots

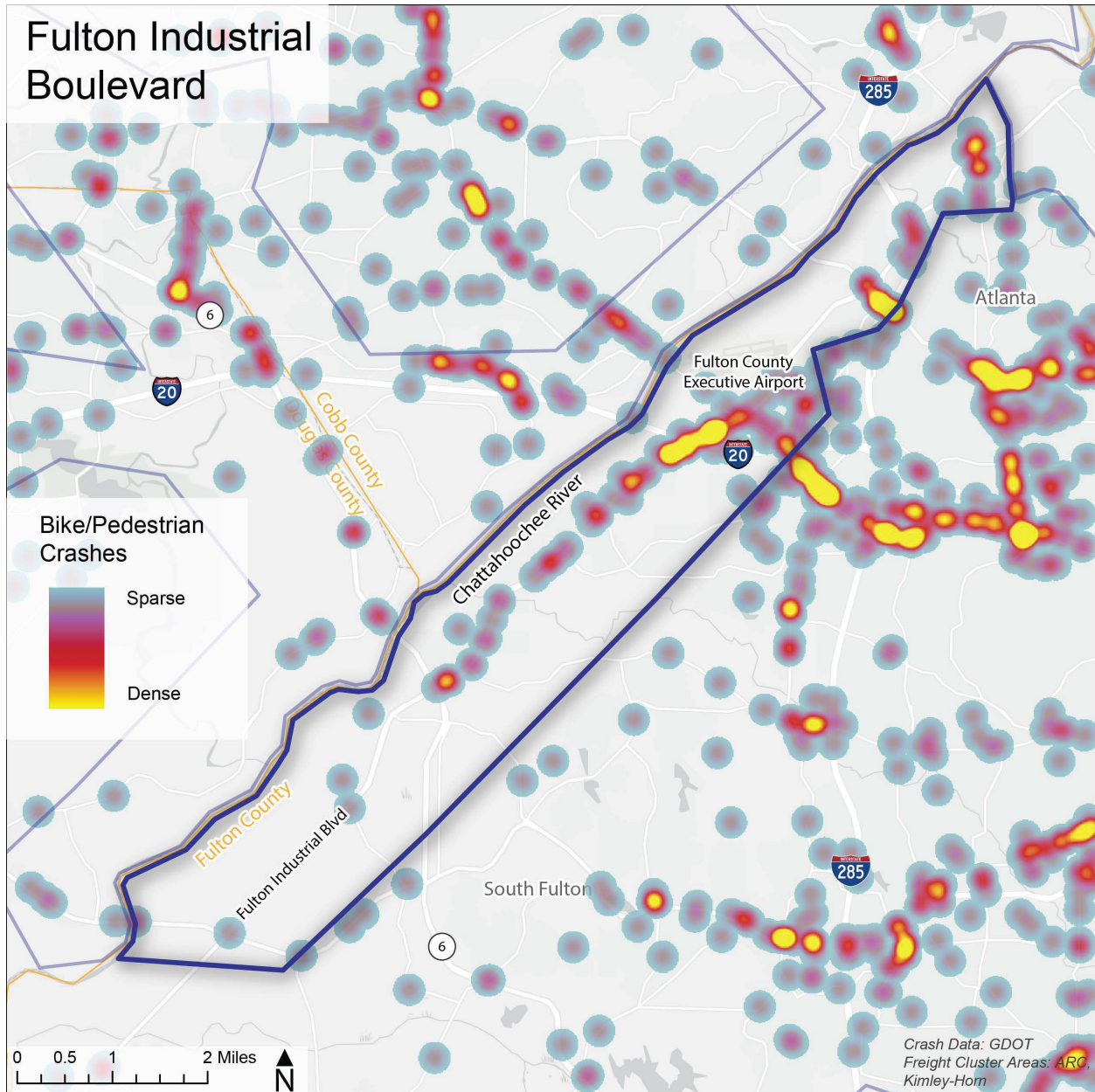


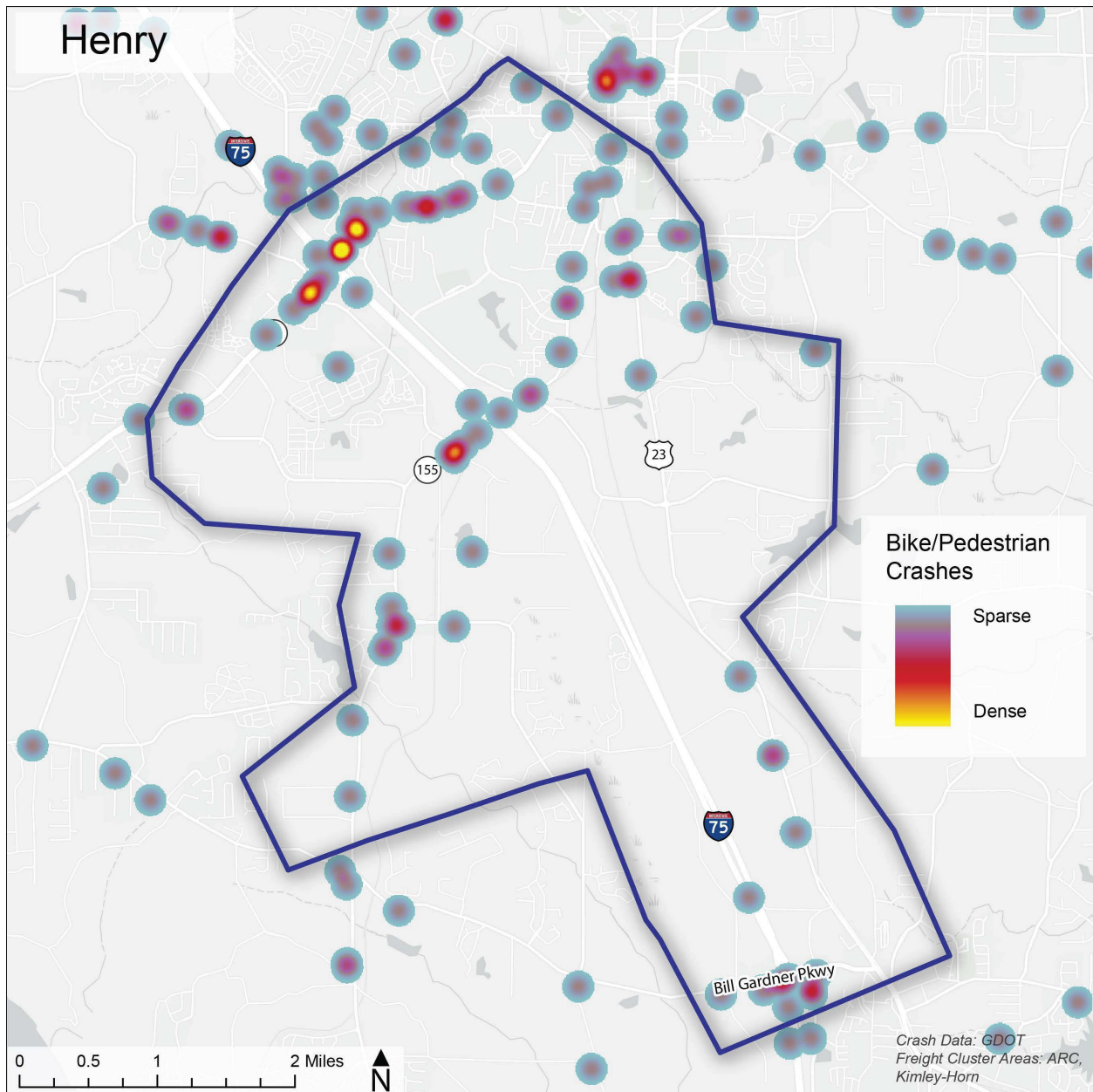
Figure 92: Henry Bicycle and Pedestrian Crash Hot Spots

Figure 93: Norcross Bicycle and Pedestrian Crash Hot Spots

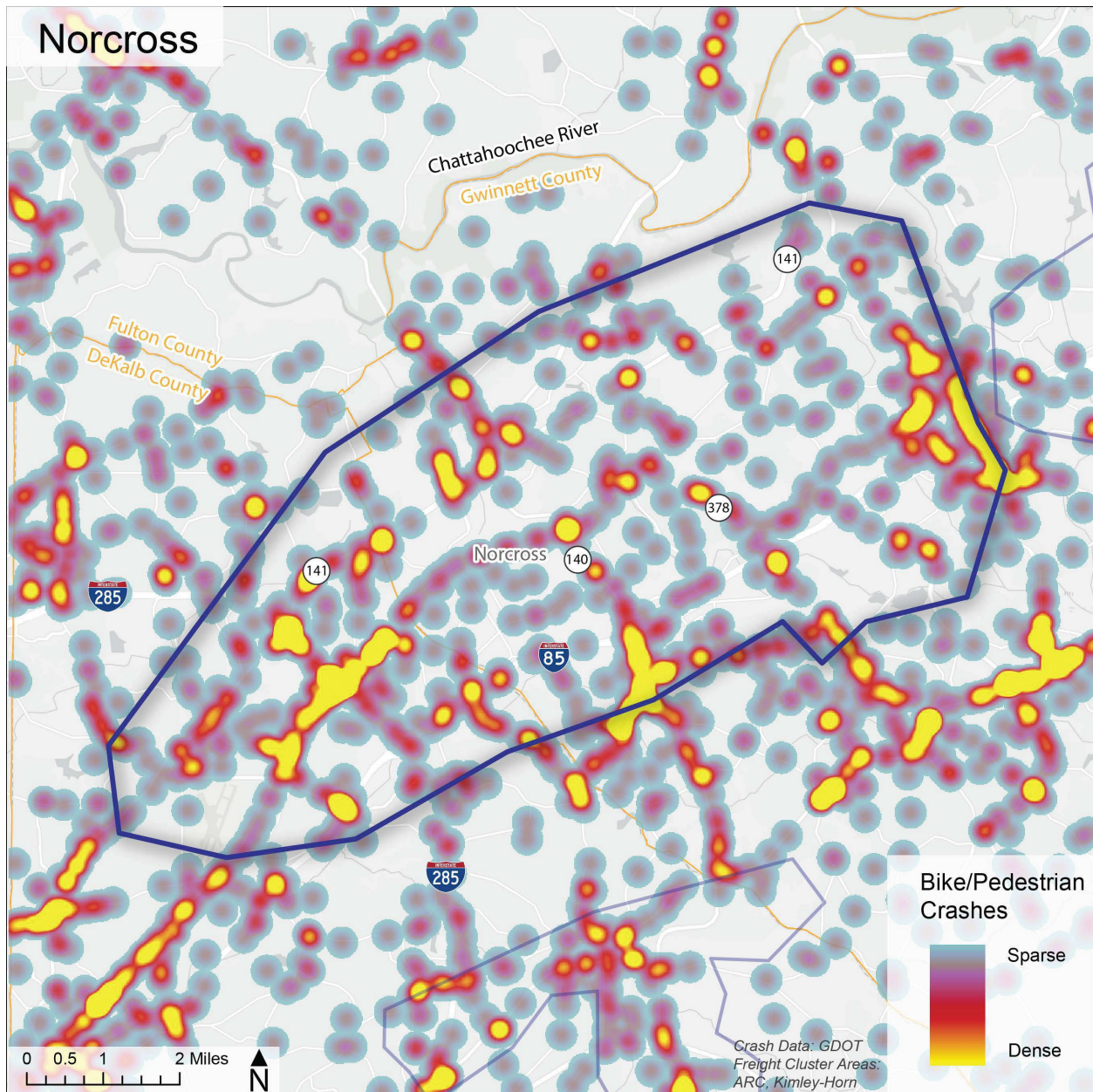


Figure 94: Northwest Atlanta Bicycle and Pedestrian Crash Hot Spots

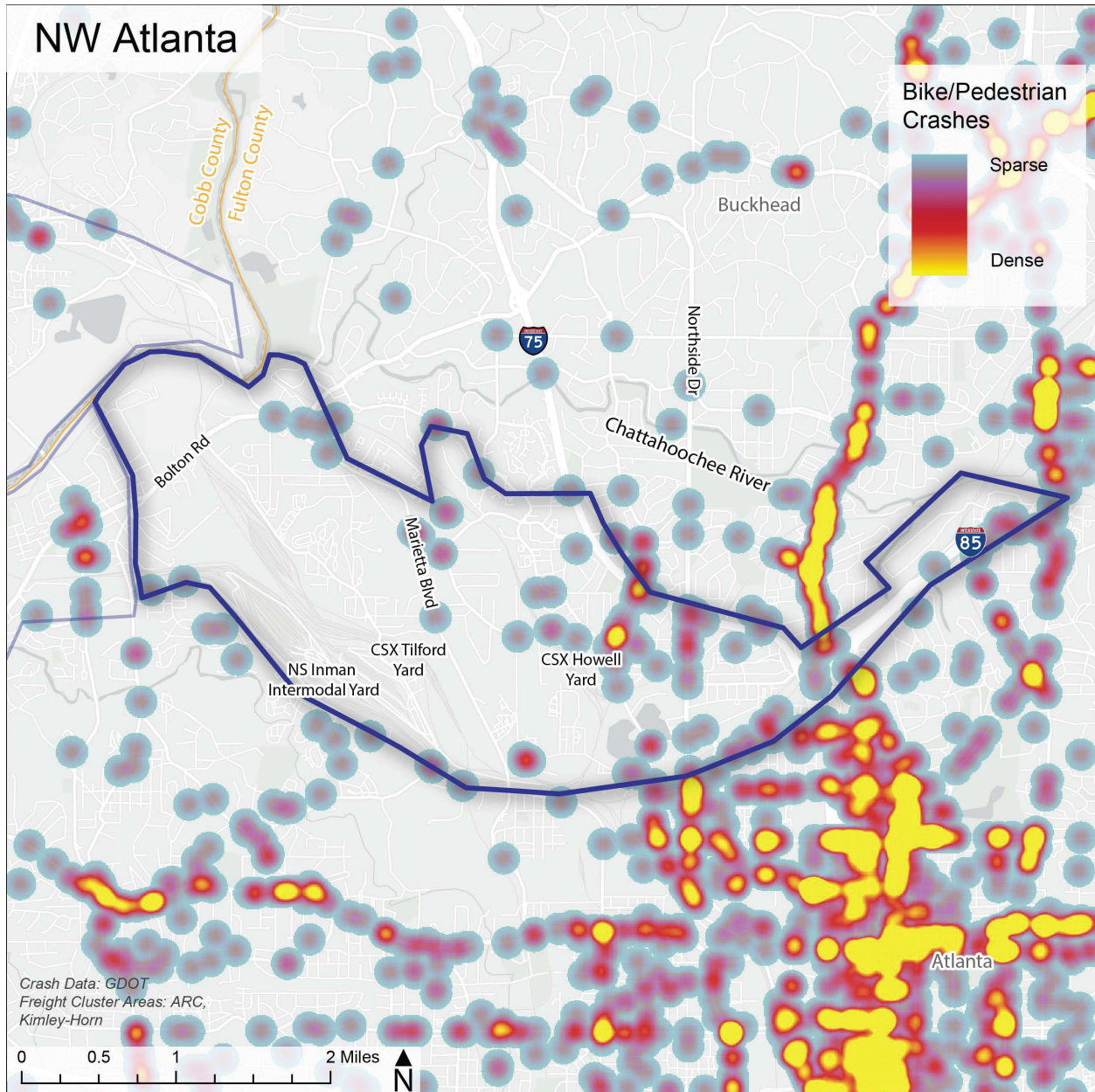


Figure 95: Northwest Cobb Bicycle and Pedestrian Crash Hot Spots

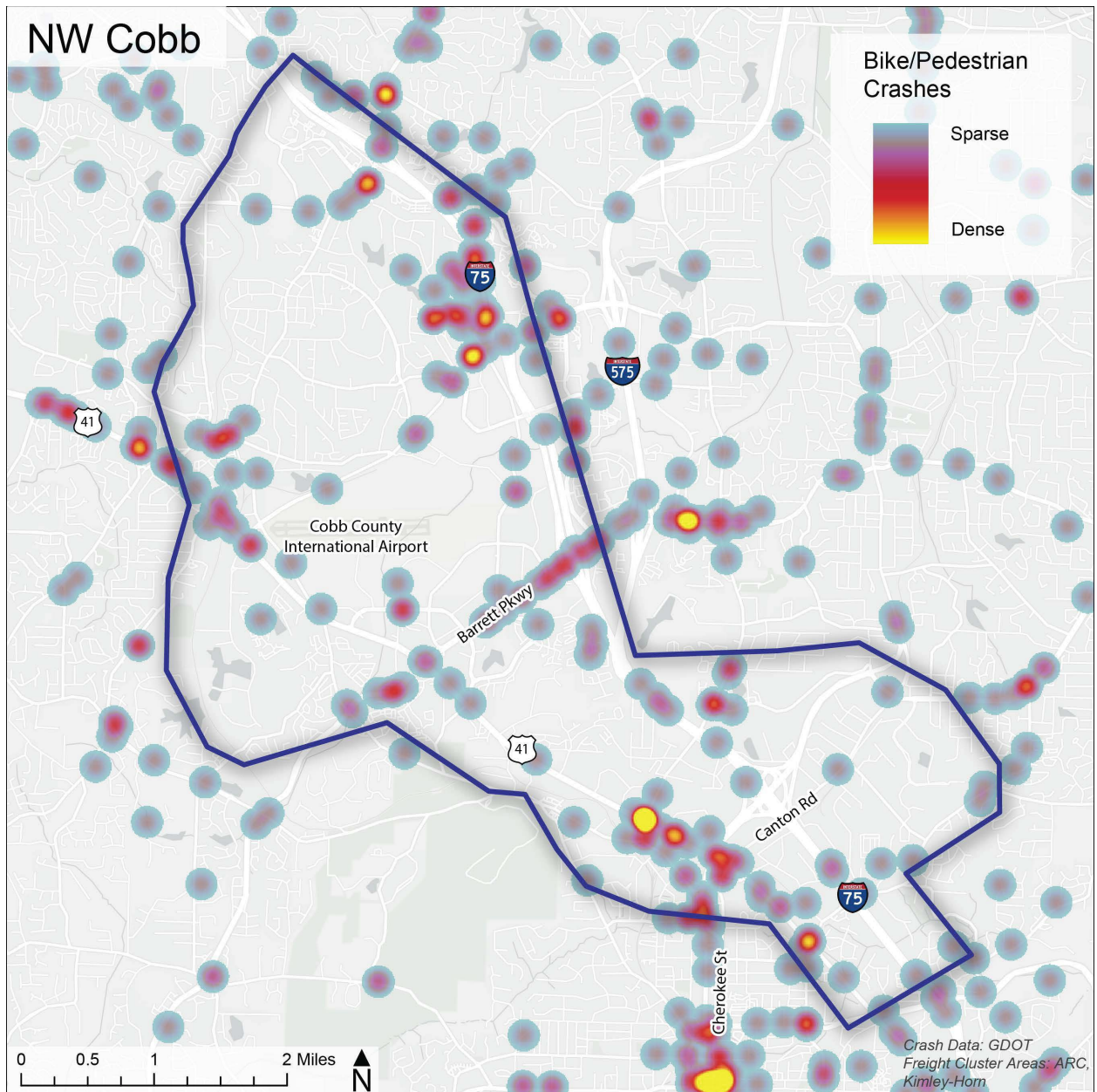


Figure 96: Peachtree City Bicycle and Pedestrian Crash Hot Spots

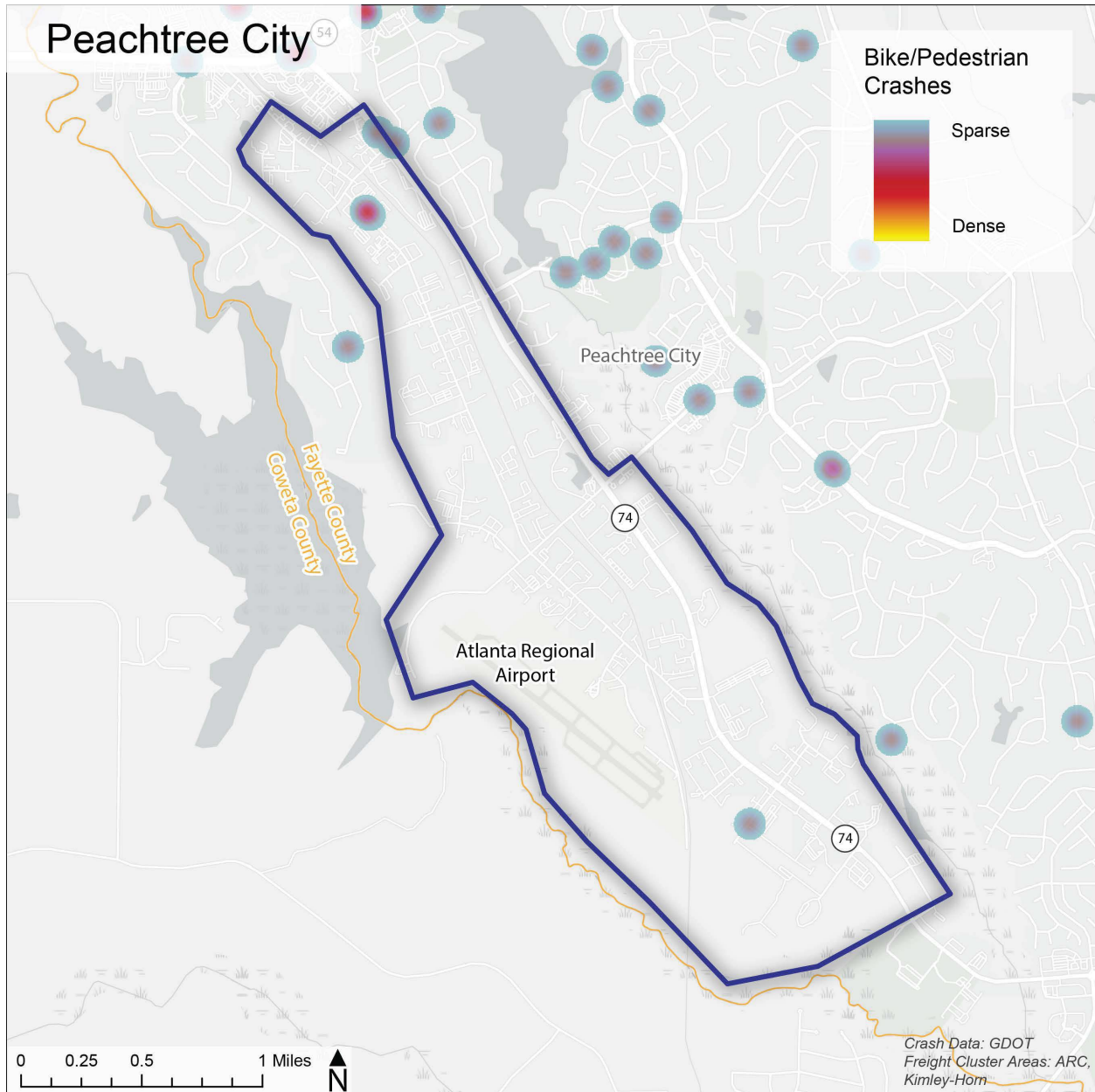


Figure 97: Rockdale Bicycle and Pedestrian Crash Hot Spots

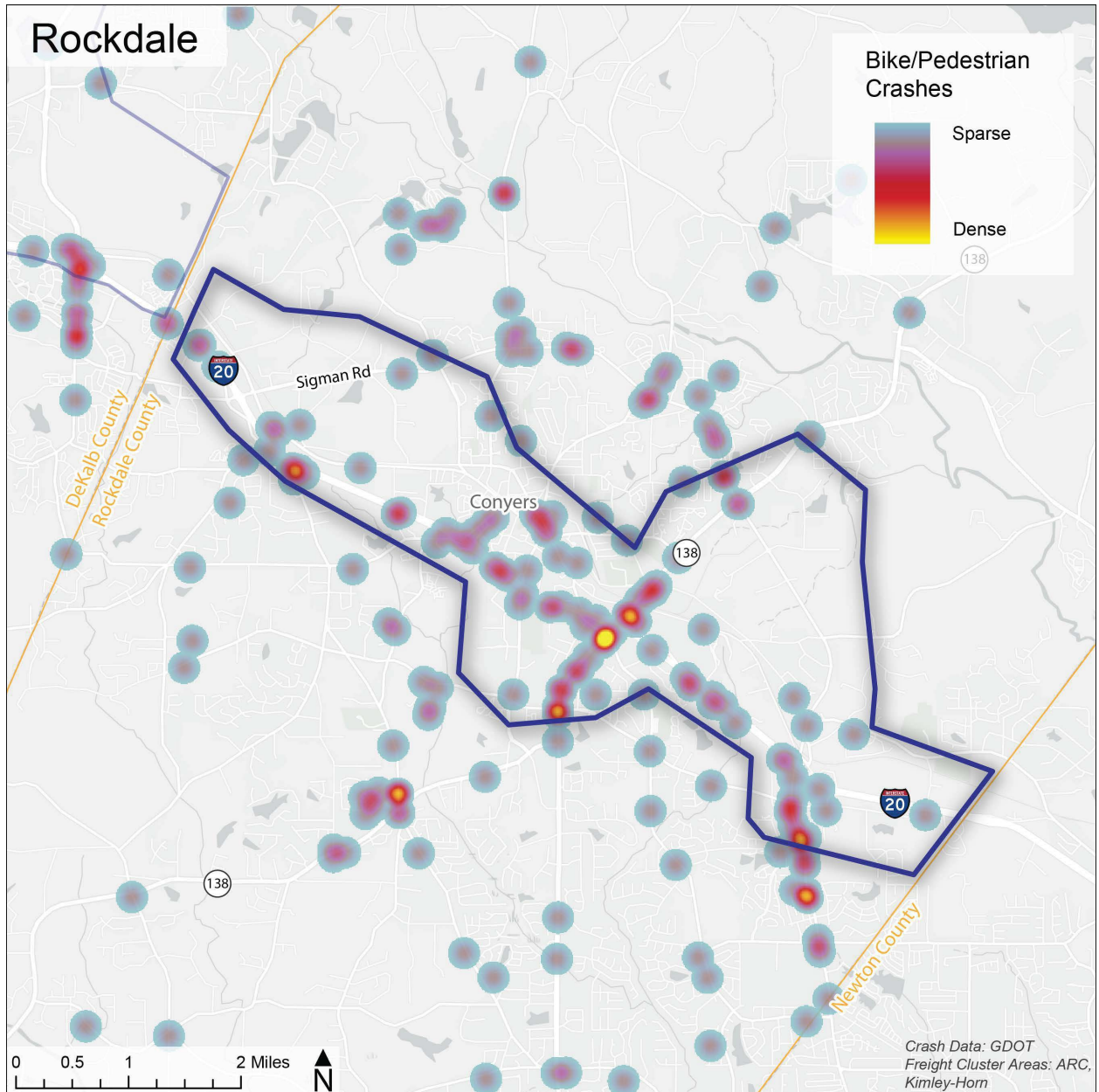


Figure 98: South Cobb/Douglas Bicycle and Pedestrian Crash Hot Spots

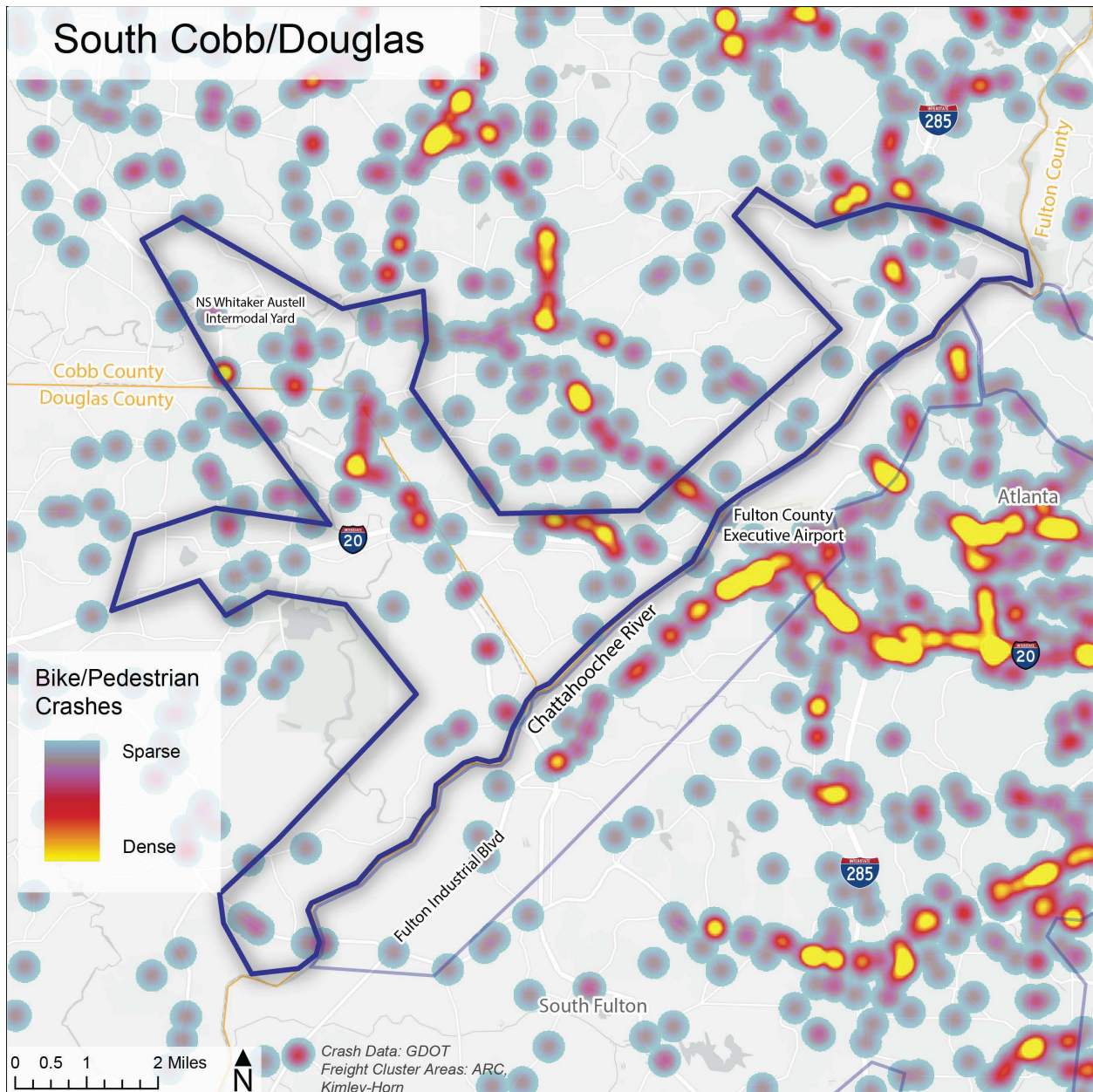


Figure 99: Southeast DeKalb Bicycle and Pedestrian Crash Hot Spots

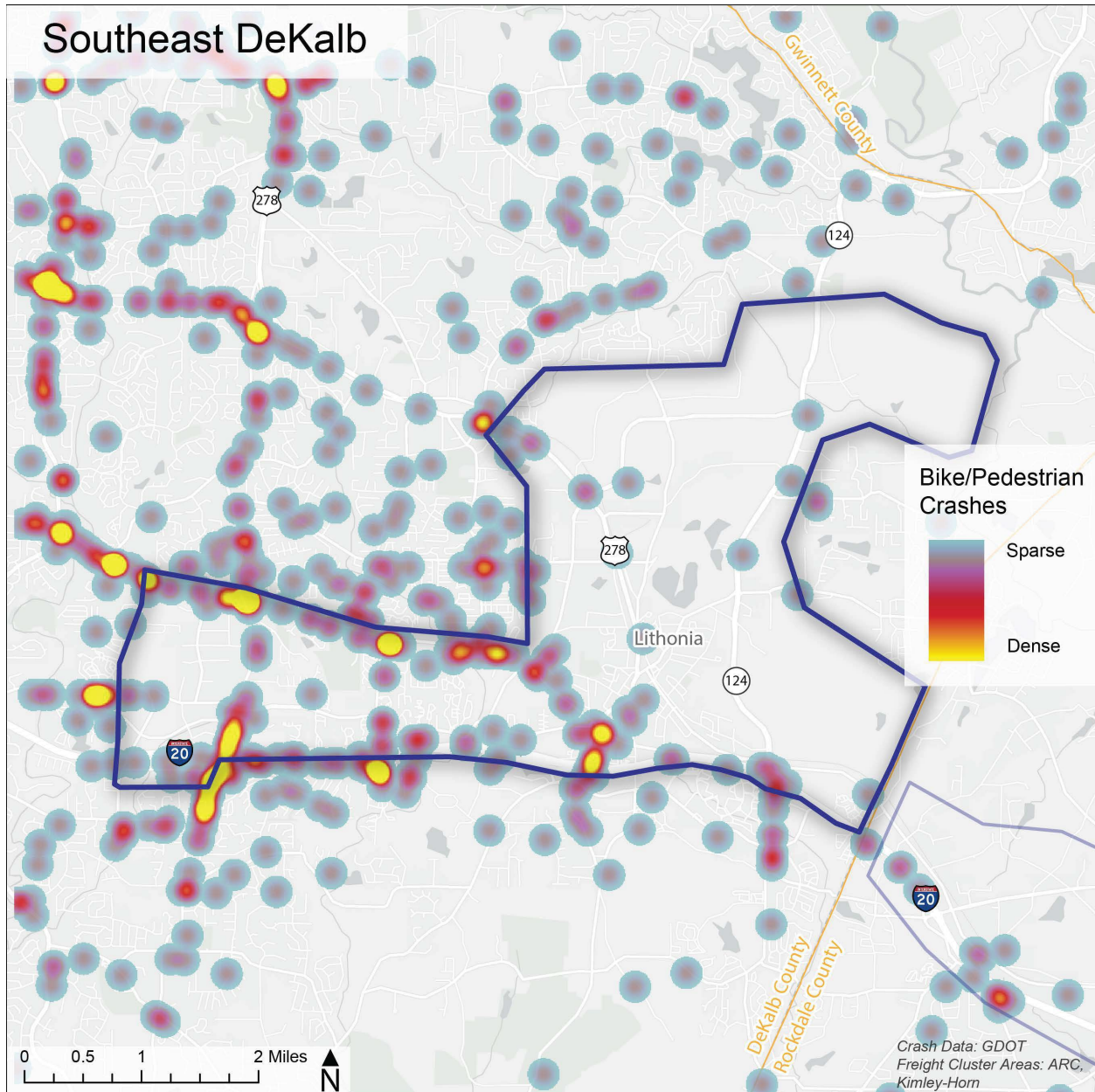


Figure 100: South Forsyth Bicycle and Pedestrian Crash Hot Spots

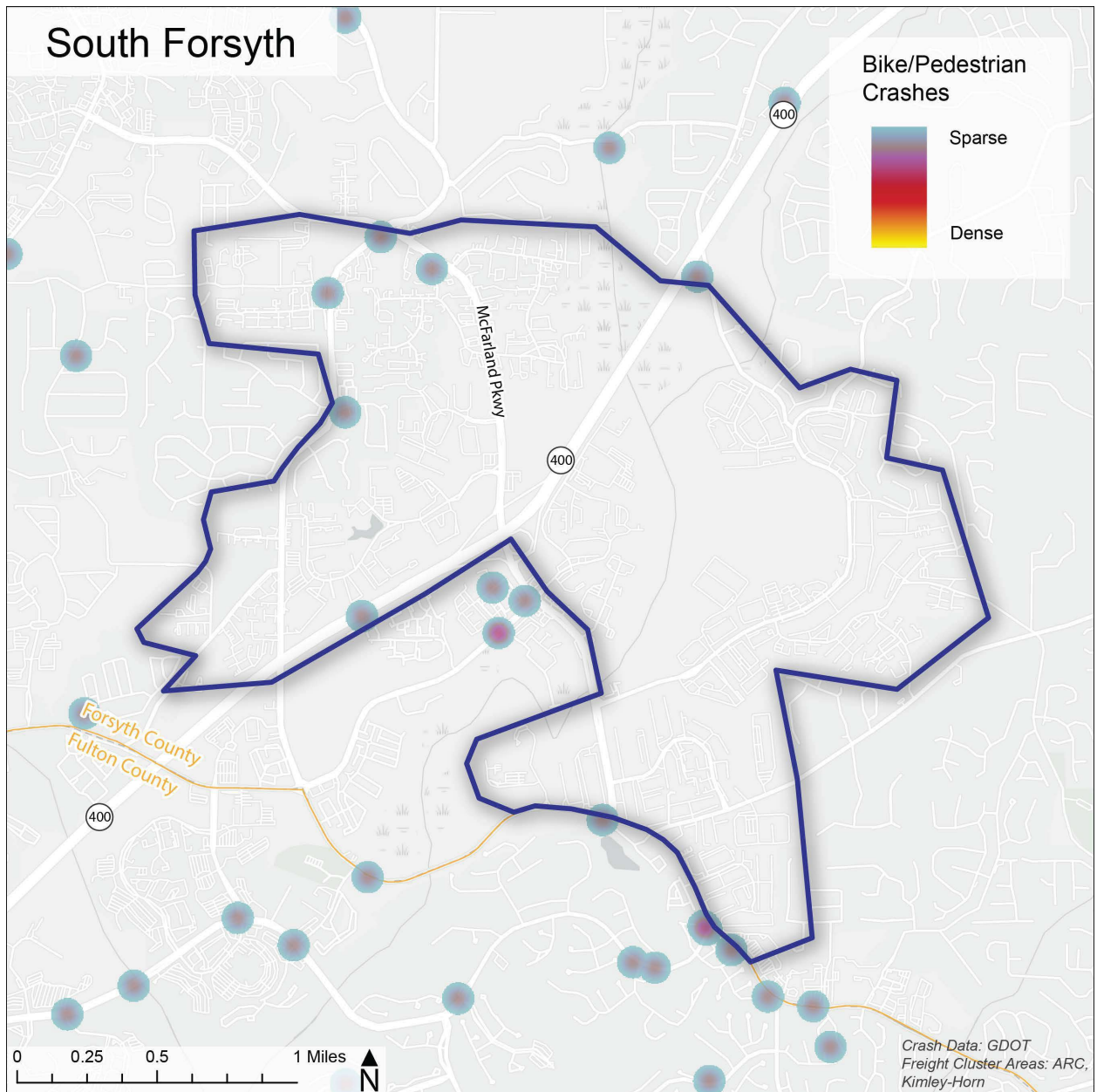


Figure 101: South Fulton Bicycle and Pedestrian Crash Hot Spots

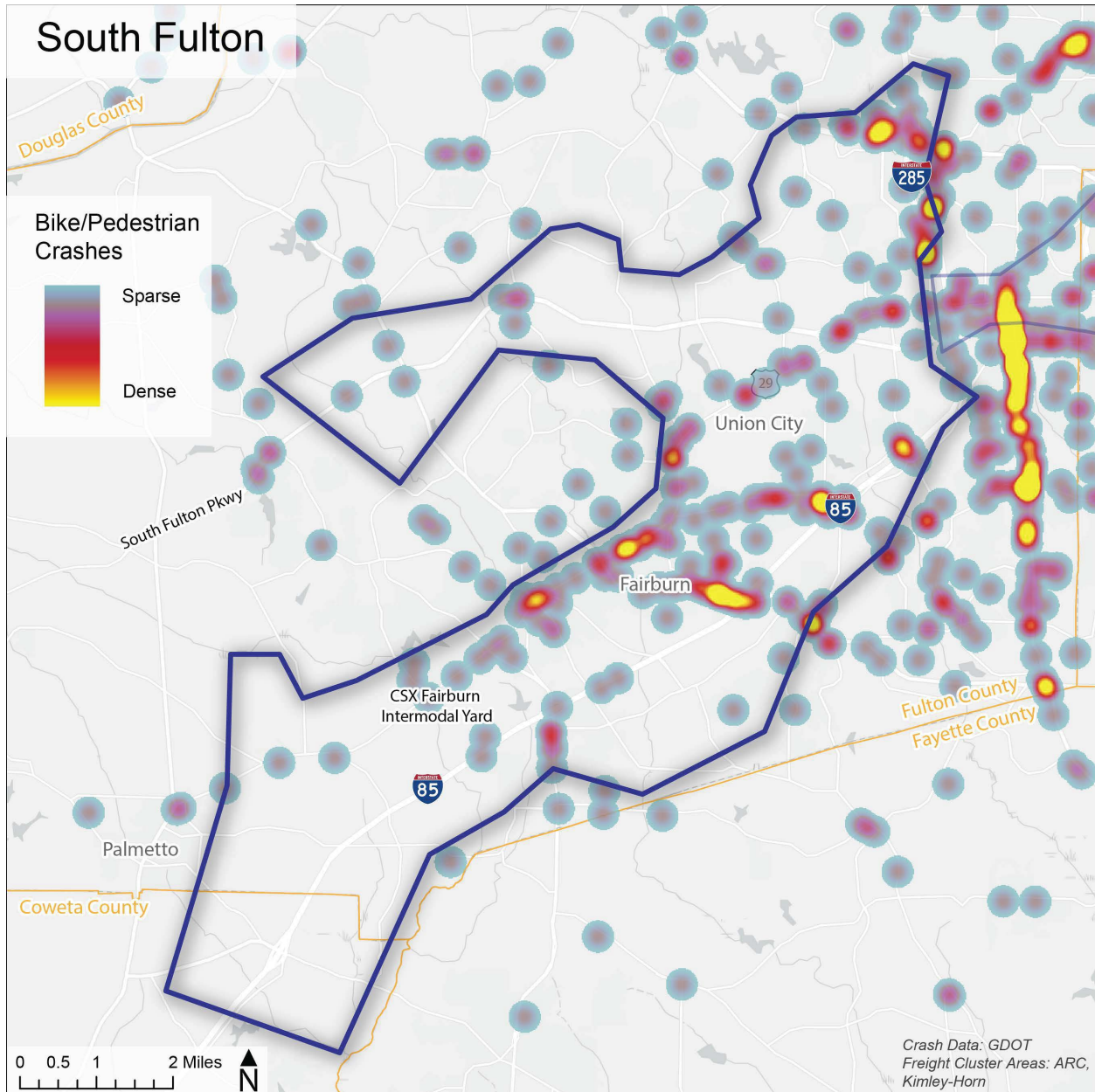


Figure 102: Southlake Bicycle and Pedestrian Crash Hot Spots

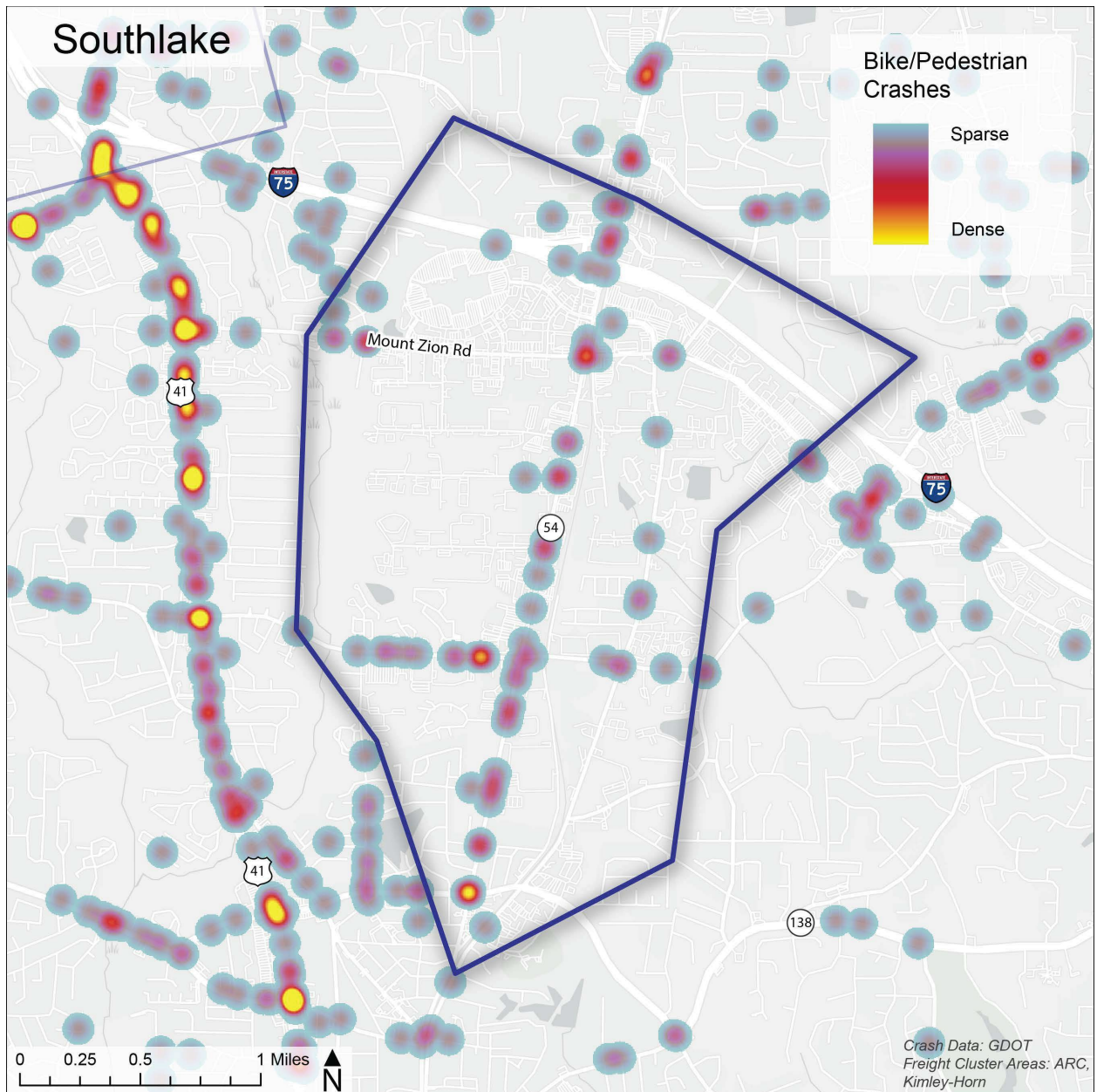
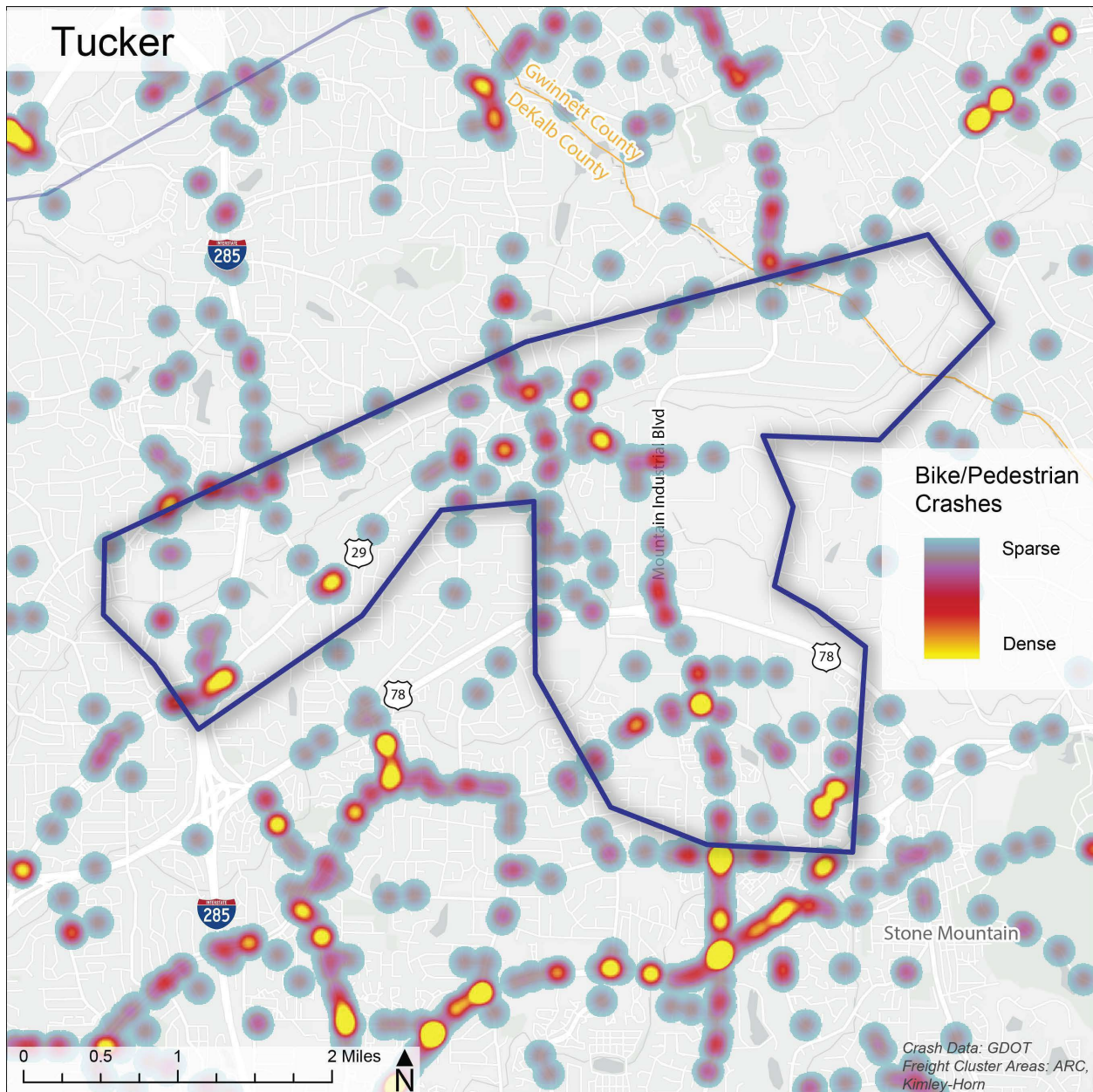


Figure 103: Tucker Bicycle and Pedestrian Crash Hot Spots



Appendix E: Transportation Demand Management Case Studies and Resources

Appendix E includes a case study and a resource as follows to provide further information on potential strategies for transportation demand management :

- **MARTA (Metropolitan Atlanta Rapid Transit Authority) Reach On-Demand Multimodal Transit Systems (ODMTS) pilot project results:** This case study provides additional context to the potential of microtransit in the Atlanta region.
- **NACTO (National Association of City Transportation Officials) Industrial Street Design:** This resource provides best practices for industrial street designs, including how to make streets safe for employees accessing industrial zones.

MARTA Reach On-Demand Multimodal Transit Systems (ODMTS)

MARTA Reach aimed to explore the potential of ODMTS to enhance connectivity in the Atlanta region. By integrating on-demand transit services with MARTA's traditional fixed-route network, the project aimed to address first- and last-mile transportation challenges. This innovative initiative was a collaboration between Georgia Tech, MARTA, and Propel Atlanta, funded by a National Science Foundation Civic grant.

The pilot focused on four distinct destination areas to better understand the impact of ODMTS in different contexts. One key area was the Gillam Logistics Center, a hub for numerous large industrial businesses with a substantial workforce. Including this destination provided insights into how ODMTS could support industrial workers and their unique commuting needs. The other three zones were West Atlanta, Belvedere and North Fulton. The data used here comprises the entire study area. The project aimed to answer several questions as follows:

- Are MARTA riders interested in on-demand transit service?
- What is the nature of ridership and the types of trips taken?
- What is the cost-effectiveness of such a service?
- What are the usage differences between residential, commercial, and industrial zones?

Pilot Summary (Covering the entire Study Area)

- **Duration:** March 1st to August 31st, 2022.

- **Ridership:** Over 7,580 trips, serving 8,335 riders with 739 unique accounts between March 1st, 2022, to August 31st, 2022²²². The reported riders are the total number of patrons served through the service; each patron could request trips for up to four riders.
- **Service Efficiency:** Average wait time was around seven minutes, and travel time was approximately nine minutes.
- **Pilot Design:** The service-connected virtual stops to fixed-route hubs, operating from 6:00 AM to 7:00 PM on weekdays. A virtual stop refers to a designated location where passengers can board or disembark from a vehicle, but unlike traditional bus stops, these stops are not fixed in the infrastructure with signs or shelters. Instead, virtual stops are dynamically assigned based on passenger requests and operational efficiency, typically determined through a mobile app or scheduling software.

Key Observations

- **Ridership Growth:** Approximately 35 percent of all trips were taken in August, indicating a lag between introducing the service and the response in ridership.
- **Zone Impact:** 58 percent of all trips occurred in the West Atlanta zone, suggesting that zone characteristics and available connecting services significantly impact ridership.
- **Modal Shift:** Reach diverted some trips from single-occupancy vehicles (SOVs), carpooling, and rideshare, indicating on-demand transit's potential to reduce dependence on driving.
- **Scalability and Cost-Effectiveness:** The pilot showed potential for service expansion while maintaining costs and identified opportunities for further optimization.
- **Integration into the Broader Network:** Recommendations emphasized the need for on-demand services to be part of the broader public transportation network and to connect with community points of interest.

Lessons Learned

- **Service Connectivity:** Ridership is driven by connections to other reliable, high-frequency services.
- **Technology Adaptation:** Software must anticipate real-world behavior and potential human error.
- **Safe and Accessible Stops:** Ensuring safety and accessibility for both patrons and operators.

²²² Marta, End of Pilot Project Update #1, October 13, 2022 Work Session, Accessed on December 18, 2024, https://itsmarta.com/uploadedFiles/Get_to_Know_MARTA/Mobile_Apps/App_Station/MARTA%20Reach%20Presentation%20October%2013%202022.pdf

- **Efficient Service:** The number of idle/layover locations affects service quality, with more locations leading to greater efficiency.
- **Community Engagement:** Word of mouth is vital for information spread and community engagement.

Georgia Tech Study²²³

Published on September 26, 2023, this study takes a deeper dive into the MARTA Reach pilot, providing numerous insights into the service, including the following:

- **Valued Service:** Reach provided a highly valued service, addressing a fundamental need, and resulted in significant mode switches from private vehicles to public transit.
- **Ridership and Satisfaction:** Ridership continuously increased, with the highest numbers in the last month of the pilot. About 94 percent of riders were satisfied or very satisfied with the service.
- **Operational Challenges:** The pilot revealed challenges in driver and fleet management, which were addressed through technological enhancements.

Connections to Freight

MARTA Reach's pilot demonstrated the effectiveness of ODMTS in urban settings, providing valuable insights for future transportation planning and policy, particularly in integrating on-demand services into existing transit systems and tailoring them to community needs.

The MARTA Reach study on ODMTS could significantly impact commuters in freight cluster areas in the Atlanta region in various ways:

- **Enhanced First- and Last-Mile Connectivity:** By integrating on-demand services with traditional transit routes, the ODMTS could provide more efficient and convenient options for employees to commute from their homes to work, particularly addressing the first- and last-mile gap.
- **Increased Ridership and Satisfaction:** The pilot's success in increasing ridership and high satisfaction rates indicates that similar services could be well-received in freight cluster areas, offering a reliable and preferred alternative to private vehicle use and may improve staff retention.
- **Operational Improvements:** Learning from the operational challenges and technological enhancements made during the pilot, similar services in freight cluster areas could be more efficient and better managed, leading to smoother and more reliable commuting experiences.
- **Service Expansion and Optimization:** The scalability and cost-effectiveness shown in the pilot suggest that similar on-demand transit services could be expanded in freight cluster areas, providing wider coverage and potentially longer service hours for shift workers.

²²³ Retrieved from <https://arxiv.org/pdf/2308.02681.pdf>

- **Community Engagement and Tailored Services:** By emphasizing the importance of community engagement and adapting technology to meet local needs, ODMTS could be tailored to address the specific commuting challenges and preferences of workers in freight clusters.

NACTO Industrial Street Design

The National Association of City Transportation Officials' (NACTO) guide on Industrial Streets²²⁴ focuses on transforming these traditionally utilitarian spaces into more environmentally friendly and pedestrian-accommodating and safe areas. Here are the key points:

- **Current Use and Potential:** Industrial streets typically support manufacturing, warehouses, and heavy commercial uses, prioritizing truck traffic over pedestrian or bicycle access. However, there is a shift toward incorporating local producers, retail, and entertainment, making these streets more multifunctional and destination-oriented.
- **Existing Conditions:** Currently, these streets rely heavily on gray stormwater systems, lack greenery, and are designed mainly for heavy vehicle traffic. Pedestrian facilities are minimal and often obstructed, and while key bus routes serve these areas, they have low ridership due to inhospitable waiting and crossing conditions. The stormwater runoff carries significant sediment, debris, and pollutants.

Recommendations for Improvements

- Restructuring roadways to enhance safety for bicycling and walking.
- Incorporating green infrastructure, like bioretention facilities and street trees, to improve environmental and transit conditions.
- Adding bikeways to encourage cycling and provide space for green infrastructure.
- Designing bikeways with adequate width and using permeable paving treatments for comfort and sustainability.

²²⁴ Retrieved from <https://nacto.org/publication/urban-street-stormwater-guide/stormwater-streets/industrial-street/>

Appendix F: ARC's Candidate CUFCs

Corridor ID	Corridor	Section Description	County	Length (miles)
Tier I				
RC-56A/B/C	Sugarloaf Pkwy	SR 316/University Pkwy to I-85	Gwinnett	6.9
RIM-106	Sigman Rd	I-20 Interchange (E) to Irwin Bridge Rd	Rockdale	6.5
New-1001	US-42 / SR-42	From SR-155 to Bill Gardner Pkwy	Henry	5.5
OTH-3A	SR 155	Bill Gardner Pkwy to US 23/SR 42/Macon St	Henry	5.3
Cap-33	Southwest Newnan Bypass	From US 29 to Smokey Road at Ishman Ballard Rd	Coweta	4.7
SOF-1A	Oakley Industrial Blvd	Bohannon Rd to SR 138	Fulton	4.6
FID-1A	Fulton Industrial Blvd / Bolton Rd (GA-70)	From SR 6/Camp Creek Parkway to MLK Jr. Dr	Fulton	4.4
New-1015	McGinnis Ferry Rd (#1)	From SR 317 to the Chattahoochee River	Gwinnett	3.9
FID-2A	GA-6/Camp Creek Pkwy	Between I-20 and Fulton Industrial Bld	Douglas, Fulton	3.9
RC-60A	Sugarloaf Pkwy	I-85 to Satellite Blvd (Phase 1)	Gwinnett	3.7
Network-1000	Jimmy Carter Blvd	I-85 to DeKalb County line	Gwinnett	3.5
GTW-2A	SR 13/US 23/Buford Hwy	I-285 to Beaver Ruin Rd	DeKalb, Gwinnett	3.5
TRS-1A	Mountain Industrial Blvd	Lawrenceville Hwy to Ponce de Leon Ave	DeKalb, Gwinnett	3.4
New-1050	Bill Gardner Pkwy	From SR-155 to I-75 Southbound Ramp	Henry	3.4
SF-1156	SR 138/Jonesboro Rd	Roosevelt Hwy to Evander Holyfield Hwy	Fulton	3.2
GTW-1A	SR 140/Jimmy Carter Blvd	Peachtree Ind. Blvd. to Lawrenceville Hwy	Gwinnett	3.2
New-1020	McFarland Pkwy	From Union Hill Rd to McGinnis Ferry	Forsyth	2.4
New-1019	McGinnis Ferry Rd (#2)	From Douglas Road to Union Hill Rd	Forsyth	2.3
RC-60B	Sugarloaf Pkwy	Satellite Blvd to Peachtree Industrial Blvd (Phase 2)	Gwinnett	2.1
New-1013	Fulton Industrial Blvd	From MLK Jr. Drive to Hollowell Pkwy	Fulton	2.0
Cap-32	SR 34 Bypass	From SR 34 (Franklin Hwy) to US 27 Alt/SR 16 (Carrollton Hwy)	Coweta	1.9
OTH-1A	Bethlehem Rd and I-75	From Greenwood Rd/Lester Mill Rd to I-75	Henry	1.9
RC-73	Peachtree Industrial Blvd	Peachtree Industrial Blvd from ST 141 to Medlock Bridge Rd	Gwinnett	1.8
MES-6A	Constitution Rd	Fayetteville Rd to Bouldercrest Rd	DeKalb	1.8
RC-1	Peachtree Industrial Blvd	Peachtree Industrial Blvd widening from N Peachtree St to South Berkeley Lake Rd	Gwinnett	1.6
R_1121	Lithonia Industrial Blvd	Lithonia Industrial Blvd from Stone Mountain Lithonia Rd to US-278	DeKalb	1.6
New-1055	Gullatt Rd	From US 29 to Johnson Rd	Fulton	1.5
New-1029	Barrett Pkwy	From I-75 to Cobb Pkwy (US-41)	Cobb	1.5
MES-5A	Henrico Rd	Moreland Ave to Koppers Rd	DeKalb	1.4

Corridor ID	Corridor	Section Description	County	Length (miles)
FID-5A	GA 8/US 78/US 278/Donald L. Hollowell Pkwy	I-285 to SR 280 (termini modified)	Cobb, Fulton	1.3
NR-07	Madras Connector Phase 1	From US 29 / SR 14 to Herring Rd	Coweta	1.3
New-1054	Senoia Rd (SR 74)	From I-85 to Milam Rd	Fulton	1.3
New-1025	Delk Road Southeast Improvements	I-75 to Cobb Pkwy (US-41)	Cobb	1.2
R_1122	Lithonia Industrial Blvd	Lithonia Industrial Blvd from US-278 to I-20	DeKalb	0.9
Op-99	US 29 / Alt 27 US 29 Railroad St US 29/27A	From I-85 to Airport Rd	Coweta	0.9
R_926, R_925, R_1064, R_1046_PE, R_1068, R_1064	Cedar Grove Rd	Thurman Rd to Old Moore Rd	DeKalb	0.9
New-1010	Bill Garnder Pkwy	From I-75 to SR 42	Henry	0.7
New-1026	Franklin Gateway	From Cobb Pkwy (US-41) to SR 280	Cobb	0.7
Network-1003	Bouldercrest Rd	From Constitution Rd to I-285	DeKalb	0.5
New-1002	Lake Mirror Rd	From South Loop Rd to Clark Howell Hwy	Clayton	0.4
Network-1001	Peachtree Industrial Blvd	From Jimmy Carter Blvd to SR 144 split	Gwinnett	0.4
Network-1002	Donald Lee Hollowell Pkwy	From I-285 to Fulton Industrial Blvd	Fulton	0.33
New-1012	Sigman Road Rail Crossing	From Old Covington Hwy to Chambers Dr	Rockdale	0.17
MES-2A	Bailey St	Moreland Ave to Fayetteville Rd	DeKalb	0.13
MES-3A	Fayetteville Rd	Bailey St to Constitution Rd	DeKalb	0.11
B-53	Crooked Creek Bridge	Jimmy Carter (SR 140) @ Crooked Creek Tributary	Gwinnett	0.1
Tier II				
MES-1B	Moreland Ave	Custer Rd to I-675 to Anvil Block Rd	Fulton, DeKalb, Clayton	6.6
AER-1C	Camp Creek Pkwy (GA-6)	SR 70 to Butner Rd	Fulton	5.1
Cap-27	SR 8	From Stanley Ct to SR 124	Gwinnett	3.7
R_362	US 278/SR 6/Thornton Rd	East of Florence Rd to SR 92 (Hiram Douglasville Hwy)	Cobb	3.5
New-1031	Barrett Lakes Blvd	From Cobb Pkwy (US-41) to Chastain Rd	Cobb	3.3
SF-1044	Camp Creek Pkwy/SR 6	Conley St/Convention Center Concourse to Butner Rd SW	Fulton	3.3
Cap-38	SR 316 EB	From I-85 to Sugarloaf Pkwy	Gwinnett	2.8
R_401	Covington Hwy	Old Covington Hwy from Jeremiah Industrial Way SW to Evans Mill Rd	DeKalb	2.7
New-1000	McCollum Pkwy	From I-75 to US-41	Cobb	2.6
Cap-30	US 29 (Roosevelt Hwy)	From SR 279 to SR 14 Spur	Fulton	2.6
SF-263	SR 166/Campbellton Rd	SR 70/Fulton Industrial Blvd to Reynolds Rd	Fulton	2.4
GTW-3A	Best Friend Rd	Pleasantdale Rd to Jimmy Carter Blvd	DeKalb, Gwinnett	2.2

NEEDS ASSESSMENT REPORT

Corridor ID	Corridor	Section Description	County	Length (miles)
SOF-3A	McLarin Rd	SR 74 to its terminus at Owens Corning	Fulton	2.0
New-1022	Riverside Pkwy	From Bob White Rd to I-20	Cobb	1.9
R_704	Factory Shoals Rd	Six Flags Dr to Douglas County Line	Cobb, Douglas	1.7
New-1008	SR 54 (Floy Farr Pkwy)	From SR 74 to SR 34 (Coweta County)	Fayette	1.6
New-1017	Buford Dr NE (#2)	From US-23 to Peachtree Industrial Blvd	Gwinnett	1.2
New-1028	Cobb Pkwy (US-41)	Windy Ridge Pkwy to Windy Hill Rd	Cobb	1.1
New-1043	Sugarloaf Pkwy (#1)	From Meadow Church Rd to Satellite Blvd	Gwinnett	1.1
New-1047	Old Peachtree Rd	From Satellite Blvd to N Brown Rd	Gwinnett	0.7
NR-08	International Park Connector	From International Park to Hollz Pkwy	Coweta	0.6
AER-5A	Forest Pkwy (GA 331)	Hwy 85 to Parris St	Clayton	0.3
New-1018	Dawson Blvd	From Jimmy Carter Blvd to McDonough Dr NW	Gwinnett	0.3
Tier III				
AER-4A	Old Dixie Rd (US 19/US 41/GA 3)	Dogwood Rd (extended to Sylvan Rd) to I-75 (3-4 mi south of I-285)	Clayton, Fulton	6.4
SPC-1A	Martin Luther King, Jr. Pkwy (US 19/41)	Malier Rd to Bowling Ln	Spalding	5.2
FT-001E	SR 9 (Atlanta Rd / Pilgrim Mill Rd)	From SR 20 (Buford Highway) to SR 369	Forsyth	5.2
Cap-21	SR 138 (Stockbridge Hwy)	From East Fairview Rd to Ebenezer Rd / Stanton Rd	Rockdale	4.7
Cap-29	SR 92	From SR 14 Spur to SR 70	Fulton	4.7
RC-48A	SR 124/Scenic Hwy	(US 78 to Sugarloaf Pkwy) (Phase 1)	Gwinnett	4.3
New-1056	SR 155 Relocation (Griffin South Bypass Phase 1)	From Jackson Rd to Arthur K Bolton Pkwy	Spalding	3.8
MES-1A	Moreland Ave	Lake Harbin Rd to Anvil Block Rd	Clayton	3.5
RC-1A	Peachtree Industrial Blvd	South Berkeley Lake Rd to Pleasant Hill Rd	Gwinnett	2.6
FTP-34	McGinnis Ferry Rd	From Douglas Rd to Sargent Road	Forsyth	2.3
SPC-1B	Martin Luther King, Jr. Pkwy (US 19/41)	Airport Rd/Kalamazoo Dr to Zebulon Rd	Spalding	1.9
SPC-3A	S Hill St (GA 155)	Taylor St (GA 16) to Airport Rd	Spalding	1.8
R_801	McCollum Parkway/ Old 41 Hwy	Cobb Pkwy to McCollum Pkwy near Airport Entrance	Cobb	1.4
RS-109	Dawson Blvd	Dawson Blvd from Graves Rd to McDonough Dr NW	Gwinnett	1.1
OTH-8A	I-285 Interchange	I-285 @ Conley Rd interchange	Clayton	1.0
RC-58	West Park Place	US 78 to Amazon Facility	Gwinnett	0.8
MES-4A	Old McDonough Rd	Mason Dixon Ln to Thurmond Dr	DeKalb	0.6
RS-10	US-23/SR-13	US 23/SR 13/Buford Hwy from SR 378/Beaver Ruin Rd to Langford Rd	Gwinnett	0.4
RS-66	Indian Trail Liburn Rd NW	Indian Trail Liburn Rd NW from Brook Hollow Pkwy to I-85	Gwinnett	0.2

Appendix G: Public Truck Parking Facilities Inventory

ID	Name	Type	Truck Parking Spaces	Address	City
1	GDOT Open Rest Area 52	Open Rest Area	43	I-20 MP 103	Rutledge, GA
2	Georgia Visitor Information Center Tallapoosa	Visitor Info Center	50	I-20 MP 1	Tallapoosa, GA
3	Georgia Weigh Station Region 3 East (Douglas)	Weigh Station	13	I-20 MP 42	Lithia Springs, GA
4	Georgia Weigh Station Region 3 West (Carroll)	Weigh Station	53	I-20 MP 15	Bremen, GA
5	GDOT Open Rest Area 53	Open Rest Area	38	I-20 MP 108	Rutledge, GA
6	Georgia Weigh Station Region 5 North (Troup)	Weigh Station	20	I-85 NB MP 22	LaGrange, GA
7	Georgia Weigh Station Region 5 South (Troup)	Weigh Station	20	I-85 SB MP 22	LaGrange, GA

Appendix H: Privately Owned Truck Parking Facilities Inventory

ID	Name	Truck Parking Spaces	Address	City
1	Circle K	7	978 Ga-155 S	McDonough, GA
2	Capital Fuels	3	2338 Sullivan Rd	College Park, GA
3	RaceTrac	24	1211 Thornton Rd	Lithia Springs, GA
4	TA Express Travel Center	23	85 Exit 6, 300 Kia Blvd	West Point, GA
5	QuikTrip	10	3522 White Sulphur Rd	Gainesville, GA
6	Circle K	28	1810 Dry Pond Rd	Jefferson, GA
7	JP Travel Center	90	2781 Ga-16	Jackson, GA
8	Love's	108	1500 Monticello Rd	Madison, GA
9	BP	70	1389 Hwy 29 S	Newnan, GA
10	BP	10	356 Main St	Whitesburg, GA
11	Chevron	13	2964 Moreland Ave	Atlanta, GA
12	Circle K	15	1278 Candler Rd	Gainesville, GA
13	Exxon	15	3008 Alabama South Ave	Bremen, GA
14	Exxon	2	4504 Cornelia Hwy	Lula, GA
15	Exxon	3	529 Patrick Mill Rd SW	Winder, GA
16	Fairburn Family Travel Center/BP	200	7860 Senoia Rd	Fairburn, GA
17	Flying J Travel Plaza	174	1125 Bucksnot Rd	Jackson, GA
18	Flying J Travel Plaza	154	650 Carrollton St	Temple, GA
19	Love's	100	150 Old Allatoona Rd SE	Emerson, GA
20	Love's	57	1621 Bass Cross Rd	Hogansville, GA
21	Love's	33	115 Truck Stop Way	Jackson, GA
22	Love's	60	523 Atlantic Ave	Waco, GA
23	Marathon	37	2320 Hwy 411 NE	Cartersville, GA
24	Marathon	24	1490 US 78	Monroe, GA
25	Newborn Truck Stop	172	840 Georgia Hwy 100	Tallapoosa, GA
26	Patty's Truck Stop	54	950 Hwy 140	Adairsville, GA
27	Petro Stopping Center	411	3181 Donald Lee Hollowell Pkwy	Atlanta, GA
28	Pilot Travel Center	93	2605 Bouldercrest	Atlanta, GA
29	Pilot Travel Center	78	968 Cassville-White Rd	Cartersville, GA
30	Pilot Travel Center	148	2995 Hwy 36 W	Jackson, GA
31	Pilot Travel Center	124	1645 S Hwy 29	Newnan, GA
32	Pilot Travel Center	100	882 Ga Hwy 100	Tallapoosa, GA
33	Pilot Travel Center	86	625 Carrollton St	Temple, GA
34	Pilot Travel Center	87	43 Liberty Rd	Villa Rica, GA
35	Quicktrip	31	961 Highway 140 NW	Adairsville, GA
36	Quicktrip	52	5705 Fulton Industrial SW Blvd	Atlanta, GA
37	Quicktrip	9	4086 Pleasantdale Rd	Doraville, GA
38	Quicktrip	34	2881 Forest Pkwy	Ellenwood, GA
39	Exxon	38	1599 Jonesboro Rd	McDonough, GA

ID	Name	Truck Parking Spaces	Address	City
40	Racetrac	44	132 Forest Pkwy	Forest Park, GA
41	Travel Center of America	216	981 Cassville-White Rd	Cartersville, GA
42	Travel Center of America	110	122 Truck Stop Way	Jackson, GA
43	Shell	128	30732 US-441	Commerce, GA
44	Love's	108	4855 Maysville Rd	Commerce, GA
45	QuikTrip	36	5240 US Hwy 129 N	Jefferson, GA
46	Pilot Travel Center	73	5888 Hwy 53	Braselton, GA
47	Pilot Travel Center	110	1881 Eatonton Rd	Madison, GA
48	Madison Travel Center	132	2021 Eatonton Rd	Madison, GA

Appendix I: Industrial Outdoor Storage Sites Inventory

ID	Name	Truck Parking Spaces	Address	City
1	Midtown Atlanta Truck Parking	25	1521 Huber St	Atlanta, GA
2	Atlanta Truckers Parking	66	4365 Best Rd	College Park, GA
3	Park My Truck in Atlanta	170	4250 Stacks Rd	College Park, GA
4	Tucker Boat, RV & Truck Storage	12	4857 N Royal Atlanta Dr	Tucker, GA
5	Atlanta Truck Terminal	97	7414 Jonesboro Rd	Jonesboro, GA
6	Fairburn Truck Stop Parking	30	1045 Fairburn Rd SW	Atlanta, GA
7	Moreland Avenue Truck Parking & Loading Docks	120	1000 S River Industrial Blvd SE	Atlanta, GA
8	Graham Rd Truck Parking - Fairburn	70	7450 Graham Rd	Fairburn, GA
9	Moreland Avenue Truck Parking	130	2952 Moreland Ave	Atlanta, GA
10	Austell/Powder Springs Big Rig Truck Parking	66	2970 Angellette Dr	Austell, GA
11	Austell Semi Truck Parking	60	700 Lee Industrial Blvd	Austell, GA
12	Dallas Ga Truck Parking	36	1302 Industrial Blvd N	Dallas, GA
13	Braselton Big Truck Parking and Storage	68	400 Jesse Cronin Rd	Braselton, GA
14	Jefferson Braselton Truck Parking	25	1004 Dry Pond Rd	Jefferson, GA
15	Jefferson Semi Truck Parking	127	2817 Bill Wright Rd	Jefferson, GA
16	Conley Ellenwood Big Truck Parking	21	4010 Speir Ct	Ellenwood, GA
17	Powder Springs Tractor Trailer Parking & Storage	50	100 County Access Rd	Powder Springs, GA
18	Smyrna Big Truck Parking	85	1845 Freeman Pkwy	Mableton, GA
19	Conley Tractor Trailer Parking	142	1890 Rock Cut Rd	Conley, GA
20	Atlanta High Security Truck Parking	500	2100 Jonesboro Rd	Atlanta, GA
21	Atlanta Tractor Trailer Parking & Container Storage	60	4650 Stacks Rd	College Park, GA
22	Atlanta Truck Parking and Trailer Storage	173	7200 Graham Rd	Fairburn, GA
23	Graham Road Lot	112	7472 Graham Rd	Fairburn, GA
24	Graham Road Lot	142	8780 Brumbley Ct	Union City, GA
25	Lithonia Big Truck Parking	123	1600 Lithonia Industrial Blvd	Lithonia, GA
26	Lithonia Conyers Big Truck Parking and Storage	124	2375 Turner Hill Rd	Lithonia, GA
27	Lithonia Tractor Trailer Truck Parking	112	2061 Rock Chapel Rd	Lithonia, GA
28	Fairburn Truck Parking	48	7805 Bishop Rd	Fairburn, GA
29	Fairburn Palmetto Truck Parking	145	7055 Roosevelt Hwy	Fairburn, GA
30	Douglasville Tractor Trailer Parking	125	13031 Veterans Memorial Hwy	Douglasville, GA
31	Norcross Truck Terminal	53	471 South Cemetery St	Norcross, GA
32	South Atlanta Tractor Trailer Truck Parking	162	4140 Stacks Rd	College Park, GA

ID	Name	Truck Parking Spaces	Address	City
33	West Atlanta Tractor Trailer Truck Parking	69	7290 Delta Circle	Austell, GA
34	Secured Parking LLC	160	4215 Thurman Rd	Conley, GA
35	Fairburn Tractor Trailer Parking	135	7060 Goodson Rd	Union City, GA
36	Kennesaw Big Truck Parking and Storage	18	8105 Cobb Center Dr	Kennesaw, GA
37	Marietta Big Truck Parking and Storage	66	785 Pickens Industrial Dr	Marietta, GA
38	Cartersville/Emerson Discount Tractor Trailer Parking	41	101 Old Mill Rd	Cartersville, GA
39	Intown Atlanta Truck Parking	81	230 Cleveland Ave	Atlanta, GA

Note: This inventory represents the most complete data available at the time this report was written and is not meant to be a comprehensive list of all industrial outdoor storage sites in the region. These locations are typically smaller than a conventional truck stop and may be independently owned, making it challenging to develop a comprehensive inventory.