

# **Best Practices in Subregional Freight Planning**

*Literature Review*

## final report

*prepared for*

**Gateway85 Gwinnett Community Improvement District**

*prepared by*

**Cambridge Systematics, Inc.**



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## 1.0 Introduction

The Gateway85 Community Improvement District (CID) is undertaking a Freight Cluster Study to understand how the district's transportation infrastructure is being used for the handling of freight. The purpose of the Study is to address transportation planning, traffic operations, and related planning needs, and to identify and recommend projects and policy changes to address those needs. This technical memorandum provides a review of freight planning efforts at the subregional level that have taken place across country. These studies will potentially provide insights and ideas that are useful to the Gateway85 CID and the Metro Atlanta region.

The objective of the Best Practices Review is to review existing notable practices in freight planning projects, literature, and data sets, assess the degree to which data, tools and processes in these efforts are available and meet the technical needs of this study, and recommend additional data collection and analysis to support subsequent tasks. Chapter 2 outlines some of the key challenges that have emerged at the subregional level due to changes in how goods are moved into, out of, and within communities. Chapter 3 presents a series of case studies that provide useful information on freight planning at the subregional level in general and that are related to particular challenges and issues that arise in subregional freight planning. Chapter 4 summarizes the information presented in Chapters 2-3 and identifies some potential strategies for future planning and implementation efforts.





## 2.0 Changing Nature of Freight Demand and its Impact at the Subregional Level

Over the years, Gwinnett County has transitioned from a small, rural county into a large and increasingly densely populated regional center with nearly 1 million people. The County is expected to continue to grow and to become the most populous county in the state with over 1.5 million people by 2040<sup>1</sup>. As the County continues to grow, development and land use patterns are continually changing with former industrial and commercial areas transitioning high-density residential and mixed-use developments, especially along the I-85 corridor.

Changes in logistics business practices and consumer preferences will likely contribute to the continuation of this trend. The Amazon Prime effect, changes in delivery vehicle types, and technological capabilities are changing consumer expectations, commercial vehicle use of the roadways, and warehouse size and types. The rise of Amazon Prime and similar services has raised consumer expectations who now expect a larger number of packages to be delivered for free or low prices and with shorter delivery windows. More broadly, electronic commerce (i.e., e-commerce) and its commitment to short delivery windows, has also caused companies to locate facilities closer to population centers whereas in the past companies were shifting away from the urban core for cheaper land costs and fewer conflicts with residential uses. Increasingly, these facilities feature more technology, higher ceilings, and larger staffing needs.

Regional freight clusters like the Gateway85 CID are at the epicenter of these and other changes in how goods are moved across the United States. Thus, it is appropriate to investigate the efforts these subregions have taken to facilitate freight travel on their transportation network. The following subsections discuss freight activity in the Gateway85 CID and some of the challenges that arise from facilitating significant levels of freight activity at the subregional level.

### 2.1 Freight in the Gateway85 Community Improvement District

The Gateway85 Community Improvement District occupies a strategic location in Metro Atlanta for goods movement. Metro Atlanta is ranked sixth nationally in ground freight movement and fifth for logistics and supply chain employment. The CID sits at the crux of two major interstate highways, contains multiple arterial serving region-wide freight and commuter demand, has access to Class I rail, and has access to pipeline terminals for the distribution of fuel and other refined petroleum products. With the deepening of the Savannah Port and the Panama Canal the need to accommodate freight in the CID will remain important.

The I-85 and Peachtree Industrial Boulevard corridor has 7.7 thousand square feet of warehousing 3.7 thousand square feet of manufacturing and is third in the region for both categories. I-85/PIB/Jimmy Carter Boulevard was identified as one of two regional freight intensive clusters in Gwinnett County by the Atlanta Regional Commission (ARC) in their 2016 Regional Freight Mobility Plan Update. Freight-related employment is expected to increase in Gwinnett County over the long term. Freight related employment is expected to increase 10 percent countywide between 2015 and 2040. In 2015, 74 percent of the freight related jobs or 74,100 employees were within areas that are within a mile of Peachtree Industrial Blvd., SR 316, I-985, and I-85 like the Gateway85 CID.

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<sup>1</sup> Gwinnett 2040 Unified Plan,  
<https://www.gwinnettcountry.com/web/gwinnett/Departments/PlanningandDevelopment/Gwinnett2040UnifiedPlan>.

Planning for increased goods movement through the CID freight system is critical to continuing economic vitality and improving quality of life. However, this planning is more challenging than in a traditional jurisdiction since the CID is comprised of multiple municipalities and public agencies, each responsible for the area's roadways and land use policies and each with their own priorities for investment and long-term development. Not only do each of these jurisdictions have their own priorities and policies, they each have leadership putting support for freight uses and developing compatible land use zoning even more challenging.

## 2.2 Freight Challenges at the Subregional Level

As more non-industrial activities locate in and around the CID, there will be challenges with sometimes conflicting economic activities being proximate to each other. In addition, congestion, state of good repair, and equity are all challenges the freight cluster currently and will continue to encounter. This section of the report provides a broad overview of some of the challenges faced by the logistics industry and freight-intensive industries at the sub-regional level.

### Conflicts Between Industrial and Non-Industrial Activities

As industrial areas begin to accommodate a more diverse array of economic activities, an increase of residents, bicyclists, pedestrians, personal vehicle drivers, and transit raises the potential for conflict between incompatible uses. Conflicts with non-industrial activities often arise from issues related to noise from truck movements, idling, and commercial vehicle loading/unloading. Conflicts can also arise from issues related to roadways not designed to carry modern commercial vehicles. In these environments, it is not uncommon for trucks to strike signs, damage sidewalks, and block bicycle lanes, among others, causing tension with non-industrial stakeholders. Ultimately, these are issues that can be addressed but that require planning appropriate design guidelines.

### Congestion and Mobility

Congestion on Interstate highways, major arterials, and on local streets due to growing volumes of commuter and freight traffic create a challenge for freight clusters like the Gateway85 CID. Commercial vehicles must compete for limited space with pedestrians, bicyclists, transit, and other roadway users. Congestion is a negative externality for all roadway users, from the trucks and personal vehicles on the road caught in the congestion to the pedestrians walking alongside a backup of cars and emissions. Congestion in dense commercial districts can also restrict the space for freight movement, limiting delivery, pick-up times, turn radii, and access. These types of restricted or difficult environments can increase the potential for safety conflicts especially as the residential and commercial populations are increasing at the same time.

Congestion also affects the productivity of the region, businesses will require more employees and equipment to deliver goods, move inventory when/if deliveries are unreliable, and more distribution centers when traffic restricts timely deliveries. These challenges may eventually lead companies to relocate to other areas.

### State of Good Repair

Freight movements impact, and are impacted by, the state of repair of the highway system. Growing truck volumes and trucks operating on roadways can accelerate pavement deterioration and cause other types of damage such as striking signs and street furniture or raising noise or vibration levels. However, trucks

likewise suffer from poor roadway conditions as poor pavement conditions cause increased fuel consumption, increased need for vehicle repair and maintenance costs, and can damage cargo. Deteriorating roadway conditions then has a direct impact on transportation costs and economic vitality in the region and can cause an inability to compete with other jurisdictions in business attraction and quality of life. Generally, federal and state funding levels have not kept up with the need for roadway and other asset repair and many jurisdictions are consistently behind in maintenance and preservation of their road systems.



## 3.0 High-Level Review of Best Practices

Consistent with the geographic scope of this study, the high-level review of best practices focuses on freight planning efforts at the sub-regional level. While several states and metropolitan regions have conducted statewide and region-wide goods movement studies, far fewer agencies have conducted freight studies aimed specifically at sub-regions or freight clusters. Notably, the Florida Department of Transportation is in the process of conducting a series of sub-regional freight studies focusing in on discrete clusters of freight-generating land uses.

### 3.1 Subregional Freight Movement Truck Access Study, 2004

In 2004, the Southern California Association of Governments (SCAG) and the San Bernardino Associated Governments (SANBAG) undertook the Subregional Freight Movement Truck Access Study<sup>2</sup>. The motivation for the study was the continued growth of the Inland Empire, particularly the western San Bernardino and Riverside County area, as a hub of warehouses, distribution centers, rail intermodal facilities, international airports with significant cargo operations, and other freight-intensive industries. The main goal of the study was to develop strategies and planning tools to improve the forecasting of goods movement and trucking trends and to better characterize truck access to intermodal facilities and truck activity centers in the Inland Empire. The Truck Access Study developed SCAG and SANBAG can be described as consisting of three major technical tasks: (1) network usage and performance, (2) truck trip generation, and (3) stakeholder outreach. Those tasks are described in greater detail in the paragraphs that follow.

One of the primary components of the network usage and performance technical task was the compilation of existing truck volume data and the collection of new data where existing data sources were missing or out of date. The collection of volume data provided SCAG and SANBAG a better understanding of network usage and how the highway system facilitates goods movements in the study region. Related to performance, SCAG and SANBAG concentrated on the number, rate, and severity of truck-involved crashes. Observing that incidents involving trucks typically result in larger highway closures and longer recovery times, the Truck Access Study treated the safety analysis as a key component to mitigating non-recurring congestion.

At the time of their study, the accuracy of methods for forecasting truck trip demand were a significant concern for SCAG and SANBAG. As a result, they conducted a review of local and national efforts for developing truck trip generation rates. These included methods previously developed by SCAG as well as national efforts such as the National Cooperative Highway Research Program Synthesis 298, which provided truck trip generation data from numerous cities across the nation.

The final major component of the Truck Access Study, stakeholder outreach, was closely related to the truck trip generation rate task. Recognizing that the region was lacking in truck trip generation data and tools, SCAG and SANBAG conducted a shipper and motor carrier survey on truck travel patterns. The survey asked questions about the types of trucks being operated, their origins, destinations, type of cargo transported, and the frequency of trips, among other questions. The results of the survey were used to develop detailed, local truck trip generation rates to support future modeling and forecasting efforts.

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<sup>2</sup> Southern California Association of Governments and San Bernardino Associated Governments, Subregional Freight Movement Truck Access Study, July 2004.

**Figure 3.1 Trucking Company Survey Summary**

**Table 2 Trucking Company Survey Summary**

**What type of trucking services do you offer?**

Trucking Service	Percentage
LTL	15%
Truckload	27%
Refrigerated	6%
Flatbed	6%
Tank	9%
Bulk	3%
Parcel	6%
Drayage	9%
Agricultural	0%
Other	18%
Total	100%

**What truck types do you operate?**

Truck Type	Percentage
Straight	13%
Tractor-trailers	65%
Doubles	10%
Others	12%
Total	100%

**About how many trips do you make within the study area each day?**  
Average 15

**About how many trips do you make to and from the study area each day?**  
Average 8

**About how many trips do you make transiting through the study area each day?**  
Average 12

**About what percentage of your outbound trips from each facility go to:**

Trip destination	Percentage
With the study area	15%
Elsewhere in San Bernardino County	8%
Elsewhere in Riverside County	8%
Orange County	7%
San Diego County	8%
Los Angeles County	10%
Ventura County	2%
Outside of SCAG Modeling Region	5%
Beyond California	33%
Total	100%

**If located elsewhere in So. Cal., about what percentage of your outbound trips from each facility go to:**

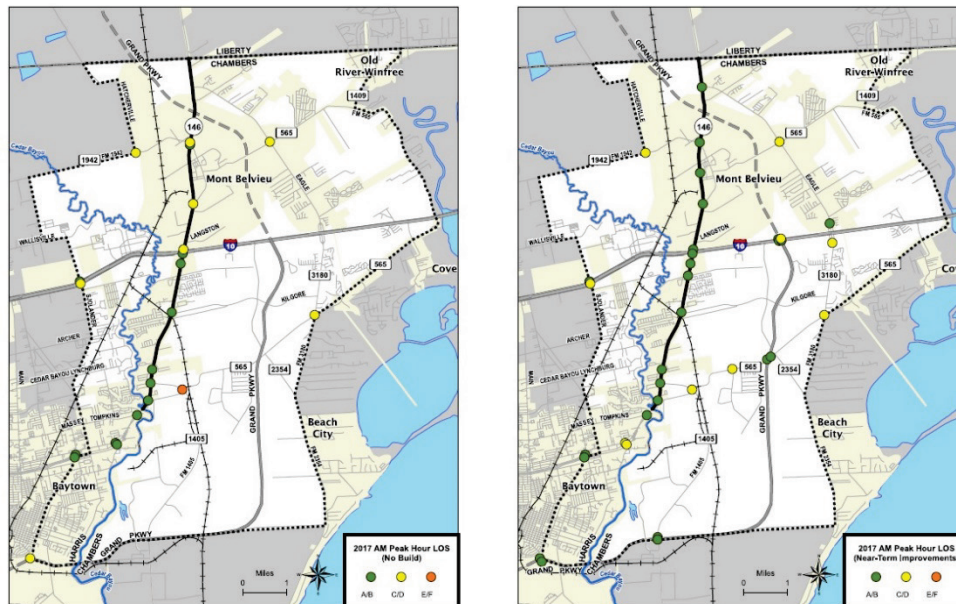
Trip destination	Percentage
With the study area	6%
Elsewhere in San Bernardino County	11%
Elsewhere in Riverside County	8%
Orange County	18%
San Diego County	8%
Los Angeles County	26%
Ventura County	3%
Outside of SCAG Modeling Region	14%
Beyond California	6%
Total	100%

Source: Southern California Association of Governments, Subregional Freight Movement Truck Access Study, 2004.

## 3.2 State Highway 146 Subregional Study, 2018

In September 2018, the Houston-Galveston Area Council (H-GAC) in partnership with the Texas Department of Transportation (TxDOT) released the State Highway 146 Subregional Study. The Study focused on the areas surrounding State Highway (SH) 146, an important regional corridor for freight and hurricane evacuation, in the Houston-Galveston metropolitan area. The study was motivated by the observation that these areas, namely the cities of Mont Belvieu and Baytown, have been experiencing rapid growth in terms of population, employment, traffic, and freight movements.

Though the State Highway 146 Subregional Study was not exclusively a freight study, it did have a heavy focus on goods movement. The large amount of industrial land uses within the study area along with the high percentage of truck traffic on area roadways made freight a key consideration in the study's goals, objectives, and ultimately the recommendations. Both cities in the study area have large clusters of petrochemical facilities and other freight-intensive industries along SH 146 generating significant levels of truck traffic.

**Figure 3.2 Traffic Operations Results from SH 146 Subregional Study**

Source: Houston-Galveston Area Council, Texas Department of Transportation, State Highway 146 Subregional Study, 2018.

Key technical tasks of the State Highway 146 Subregional Study included the collection of arterial and turning movement counts, an analysis of crash data, and intersection level-of-service analyses, among others. In particular, the State Highway 146 Subregional Study highlights the importance of traffic data and performance analysis in being a driver of identified needs and recommendations at the subregional level. As part of the study, existing, base year, and future year level-of-service was determined along all intersections on the SH 146 corridor.

### 3.3 City of Opa-locka Freight Implementation Plan

District 6 of the Florida Department of Transportation (FDOT) encompasses Miami-Dade and Monroe Counties in South Florida, which is home to over 2.5 million people<sup>3</sup>. District 6 is also home to transportation assets that are critical to freight mobility at the regional, statewide, and in some cases the national level. These include gateways for international trade such as the Port of Key West, the Port of Miami, and the Miami International Airport. With significant investments made to these facilities in order to compete globally for new cargo opportunities stemming from growing trade with South America, among other trends, FDOT District 6 predicted these investments would result in increased demand for warehouses, distribution centers, and truck parking facilities at the regional level. Recognizing that demand for new freight assets would be met in clusters of industrial based communities spread across District 6, FDOT determined that it was essential for these communities to identify and invest in infrastructure improvements to position themselves for economic development and growth in cargo. To meet this need, FDOT District 6 began an initiative to develop subregional freight plans focused on identifying freight system improvements at the project level. Subregional freight plans were conducted or planned for the Town of Medley, City of Opa-locka, City of

<sup>3</sup> <https://www.fdot.gov/agencyresources/districts/index.shtm>



Doral, City of Miami Gardens, City of Hialeah, City of Miami Gardens, City of Homestead, and the Miami River area. This case study focuses on the subregional freight plan developed for the City of Opa-locka.

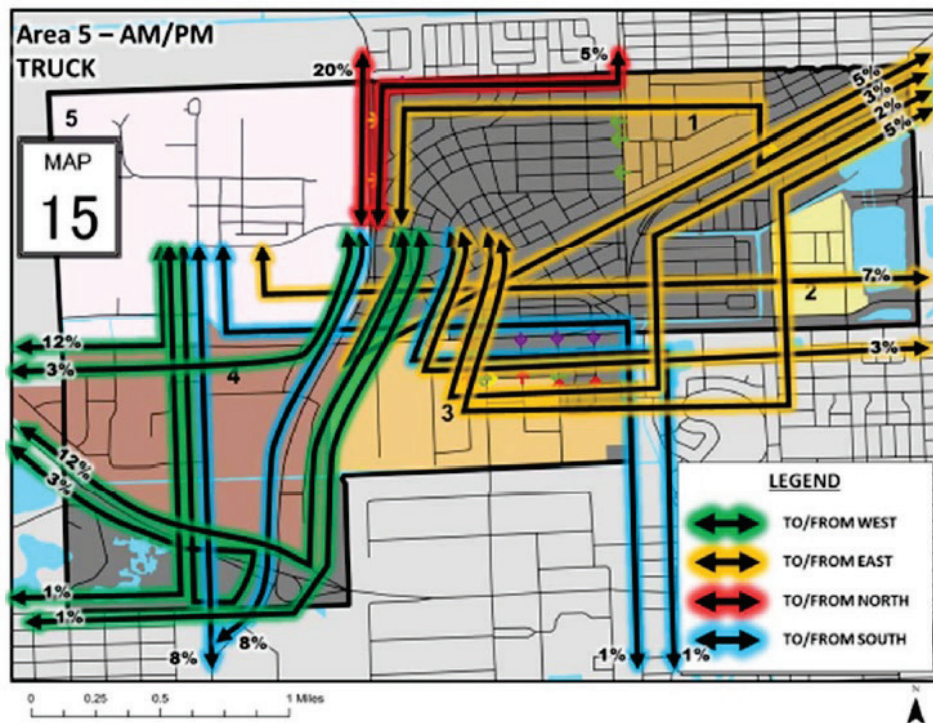
The goal of the Opa-locka Freight Implementation Plan was to investigate freight corridors within the Opa-locka area and develop a plan of viable improvements to enhance freight connectivity and minimize conflicts. The Opa-locka Freight Implementation Plan consisted of seven major tasks, all of which are generally applicable to conducting subregional freight planning. These include: (1) stakeholder outreach; (2) assessment of existing conditions; (3) programming which included identifying performance measures and applying environmental screening; (4) mapping the condition of the subregion's freight infrastructure as well as identified needs; (5) performing an analysis of alternatives for improving the subregion's freight network; (6) developing cost estimates for the different; and (7) developing a set of final recommendations.

Two notable practices employed as part of the Opa-locka Freight Implementation Plan were: (1) the use of alternative growth scenarios to envision how would be moved on the subregion's highway system and its impact on performance; and (2) the division of the subregion into smaller subareas based on commonalities among the specific types of freight generating economic activities within the subarea such as warehousing, manufacturing, and transportation. The alternative scenarios represent the potential location of new warehousing or logistics space, and redevelopment opportunities. The scenarios developed as part of the Freight Implementation Plan were:

- Trend – Conditions continue as is, with new businesses building on the little remaining vacant land;
- Moderate Growth – Additional freight traffic occurs beyond historic trends, potentially driven by increased freight demand at PortMiami;
- High Growth – Significant growth occurs in Opa-locka, particularly around the airport;
- Most Likely – In this scenario, a potential development at the airport by Amazon comes to fruition.

The division of the subregion into a smaller set of subareas tied into the Freight Implementation Plan's scenario analysis. For each of the identified scenarios, traffic analyses were prepared to determine the number of new trips that would be produced. The rate and magnitude at which new trips would be generated were specifically tied to the subregion's subareas and their predominant land uses. In this manner, the Opa-locka Freight Implementation Plan was able to produce traffic forecasts tailored to each subarea and ultimately identify recommendations that considered the unique conditions and potential outcomes for each subarea.



**Figure 3.3 Truck Assignment AM/PM Peak**

Source: Florida Department of Transportation, City of Opa-locka Freight Implementation Plan, 2017.

### 3.4 South Fulton Community Improvement District Multimodal Study

Over the November 2016 to March 2018 time period, the South Fulton Community Improvement District (CID) conducted a Multimodal Transportation Study to understand how the CID's transportation infrastructure is being used to handle freight and to support local resident and commuter mobility. The South Fulton CID, located primarily along the I-85 and Oakley Industrial Boulevard corridors, is experiencing substantial growth as a result of significant warehousing and distribution center development and resulting increases in freight movements to, from, and within the area. Much of this new development can be traced to the construction of the Fairburn CSX Intermodal Center, completed in 1999, which created a high-volume rail corridor connection for intermodal service between southern California ports, Atlanta, and the rest of the southeast region. While ancillary logistics, warehousing, and transportation jobs and investment have flourished, so too has congestion and access issues for both freight and passenger movements in the area.

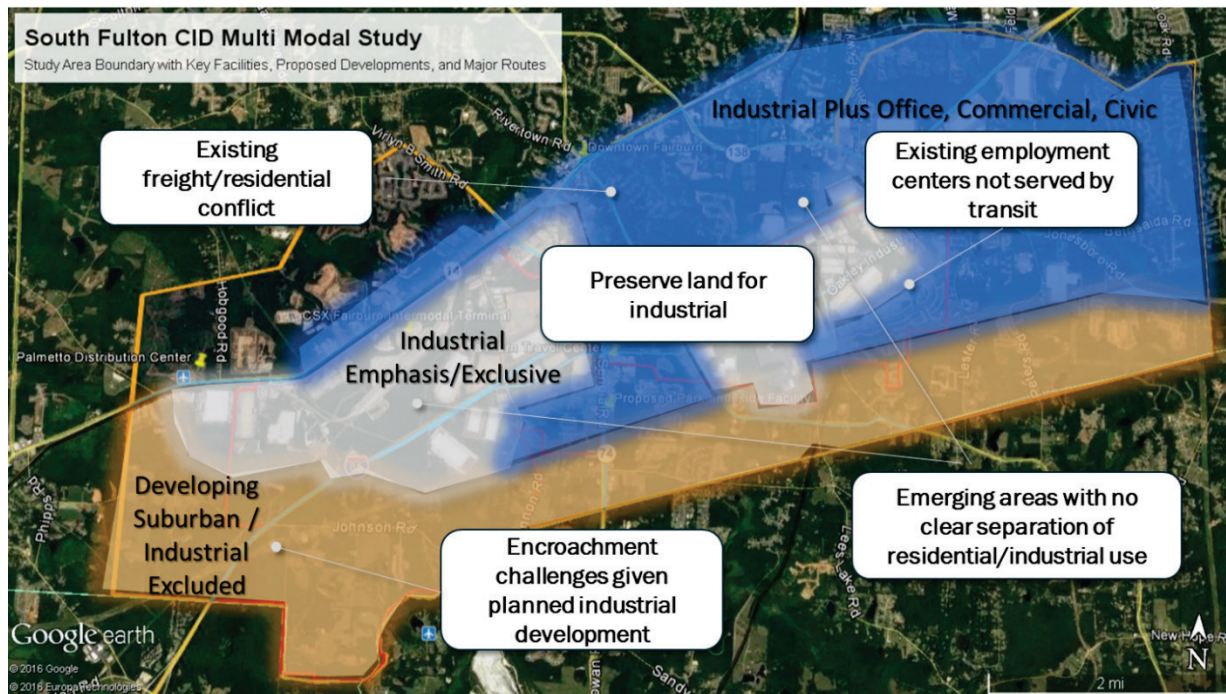
The purpose of the Multimodal Transportation Study was to develop and prioritize a strategic set of transportation solutions within the study area to address both short and long-term investment needs. Though the Multimodal Transportation Study was not exclusively a freight study, the South Fulton CID is characterized by the large cluster of freight-intensive land uses contained within its boundaries and also by large volumes of heavy truck traffic generated by area industries. In addition, the ARC designated the broader area that encompasses the South Fulton CID a regional freight cluster. Thus, the Multimodal Study can be viewed as subregional freight plan.

To address the complex mobility challenges in the study area, the Multimodal Transportation Study was guided by a technical approach that considered multimodal system performance (both current and projected), system conditions, and evolving land use and development trends. The analysis included a detailed assessment of the following:

- An assessment of existing and projected roadway congestion;
- A detailed crash analysis based on geo-located crash data from the last five years;
- A network and asset-level pavement and bridge conditions assessment;
- An evaluation of roadway operations and design;
- A multimodal gap analysis for bicycle, pedestrian, and transit infrastructure; and
- A detailed analysis of existing and projected land use and development trends to identify potential areas of opportunity or conflict between proposed transportation investment and planned land use.

In addition to the technical analysis, targeted stakeholder input was gathered throughout the study to calibrate technical findings against local realities and ensure a comprehensive perspective on investment needs. This integrated process directly informed the identification and prioritization of projects and policies for the study area, as reflected in final study recommendations.

A notable component of the Multimodal Transportation Study was the land use analysis which included a stakeholder workshop and build-out analysis. The purpose of the workshop was to bring awareness of existing and projected transportation and land use conditions to a broader set of project stakeholders and provide an understanding of the impacts that land use decisions have on transportation system performance. The South Fulton CID viewed dialogue around the transportation/land use dynamic as important for stakeholders to take informed positions on the challenges, opportunities, and desired investment strategies to enable the CID's future growth and development. The stakeholder land use workshop was informed by the results of the build-out analysis, which painted a picture of what the study area would look like if all developable land was consumed according to plans and policies for future development as articulated through approved Developments of Regional Impact (DRIs), ARC's Unified Growth Policy Map and local comprehensive plans.

**Figure 3.4 Fragmentation of Land Uses**

Source: South Fulton Community Improvement District, South Fulton Community Improvement District Multi-Modal Study, 2017

### 3.5 Special Topics in Subregional Freight Planning

While the previous set of case studies focused on subregional freight planning in general and common elements across freight planning efforts, this set of case studies focuses on specific issues that may be particular to a subregion. The issues that this review focuses on include truck routing, the transition of industrial areas to commercial centers, preserving freight land uses, and retrofitting commercial corridors. These issues were selected to reflect challenges within the study area as articulated by the CID.

#### 3.5.1 Truck Routing

Truck routing is an important operational issue to consider in freight planning, especially at the state, regional, and subregional levels. At the state and regional levels, oversize/overweight trucks are of primary concern as state departments of transportation work to protect public safety by routing these vehicles away from routes with insufficient vertical clearance (for bridges, power lines, and other structures), routes with insufficient horizontal clearances (for tunnels, underpasses, and other roadside objects), and routes that contain bridges that are unable to support the weight of a truck and its load, among other considerations. At the subregional level, another facet of truck routing that becomes more important is minimizing impacts to communities especially those that are adjacent to freight-intensive land uses and are thus a part of the first/last mile.

Effective truck routing can minimize community impacts and promote safe and efficient movement of goods in and around a community. Routing is utilized to avoid travel on inappropriate residential streets, reduce traffic congestion throughout the region, preserve pavement and bridge conditions, improve the economic competitiveness and attractiveness of industrial sites, and to provide a transition between external truck traffic and the internal road network. Truck routes are an essential component of a region's truck routing policies and practices. Making information about those routes easy and accessible is important to the effectiveness of truck routing policies and practices. Readily available maps, and clear indications of weight and size limits are important pieces of information for commercial vehicle drivers to have before they are even on the road, where consistent, readable, and accurate signs should support the information already conveyed.

At the regional level, several metropolitan planning organizations (MPO) have included the designation of truck routes and/or a highway freight network as part of broader regional freight plans. Fewer MPOs have developed truck route plans, among them the Atlanta Regional Commission (ARC)<sup>4</sup>, the Miami-Dade County MPO<sup>5</sup>, and the Indian River County MPO<sup>6</sup>. Even fewer MPOs or State DOTs have developed truck route plans at the subregional level. To the authors' knowledge, only the Chicago region has developed a truck route plan at the subregional level.

### O'Hare Subregion Truck Route Plan

The Chicago O'Hare International Airport Subregion is a significant economic engine for the Chicago region, the State of Illinois, and the nation. The region is home to numerous manufacturing, logistics, and other freight-intensive industries. While O'Hare International Airport is the hub of the subregion, the regional highways and streets that connect suppliers, customers, warehouses, and other businesses are critical to the subregion, facilitating the travel of thousands of trucks on a daily basis. The O'Hare Subregion Truck Route Plan was developed by the Chicago Metropolitan Agency for Planning (CMAP) for the purpose of helping the municipalities surrounding Chicago O'Hare International Airport coordinate policy and investment decisions to facilitate the flow of trucks in the region while mitigating the negative impacts of such high levels of freight activity.

The primary outcome of the O'Hare Subregion Truck Route Plan was the development of a subregional truck route network that provided connectivity to the National Highway Freight Network as well as local destinations. The Truck Route Plan first identified several overarching needs for the O'Hare subregion including: (1) closing gaps in the existing truck route network; (2) designating existing and developing new arterial routes to facilitate through truck traffic; (3) improving direct interstate connectivity for major facilities; (4) providing relief to truck bottlenecks; and (5) planning for increased levels of truck traffic as the O'Hare Subregion continues to add new freight-intensive developments and aging facilities are renovated.

To meet the region's identified needs, CMAP developed a truck route categorization framework that features a four-tier system for describing the use and need of the subregion's roadways as related to trucks.

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<sup>4</sup> <https://atlantaregional.org/transportation-mobility/freight/atlanta-strategic-truck-route-master-plan-astromap/>

<sup>5</sup> <http://miamidadetpo.org/library/studies/truck-route-system-final-report-2007-06.pdf>

<sup>6</sup> <http://www.irmpo.com/Documents/Truck-Traffic-Routing-Plan.pdf>



- Level A Truck Routes – These are high-mobility roads critical to through truck movements and for providing access to high-volume intermodal facilities. Truck-related investments should be prioritized on Level A Truck Routes even if passenger improvements are not necessary.
- Level B Truck Routes – These roads facilitate both through movements and local access for large trucks, including first-/last-mile connections. Truck-related investments should be balanced with passenger improvements on Level B Truck Routes.
- Level C Truck Routes – These roads provide local access for small trucks. Truck-related investments on these routes may be considered but not necessarily prioritized.
- Level D Roads – Trucks are strongly discouraged or restricted on these roads and truck access should not be a consideration in investment decisions.

The CMAP O'Hare Subregion Truck Route Plan concluded with a proposed truck route network and a set of recommendations related to identifying capital improvement projects, coordinating across agencies, and improving regional truck data, among others. Other technical tasks conducted as part of the Truck Route Plan that are relevant to the subregional freight planning in general include examining barriers to multi-jurisdictional truck routes (such as changing land use patterns, lack of local support, different weight limits across jurisdictions, etc.) and identifying opportunities for freight funding at the federal and state levels.

### *3.5.2 Industrial Areas Transitioning to Mixed-Use and Commercial Districts*

The combination of an aging building stock not suitable for modern logistics and industrial needs and the back-to-downtown trend that has resulted in population growth in city centers has placed considerable pressure on formerly industrial areas to transition to mixed-use areas characterized by residential and commercial land uses. For existing freight-intensive industries, this raises the concern that they will be priced, complained, or zoned out of the area entirely as new residents and businesses move in. The Brady Arts District in Tulsa, OK represents an example of a formerly primarily industrial area that has transitioned into a mixed-use district while still retaining some freight-intensive industries such as Borden Dairy, Baird Manufacturing Company, and L.A. King<sup>7</sup>.

#### **Brady Arts District, Tulsa, OK**

The Brady Arts District in Tulsa, OK is a former rail-served industrial cluster that became a hub for trucking depots, warehousing, and transfer facilities starting in the 1940s. As the district's building stock grew older and provided less functionality for modern logistics and industrial needs, industries moved to newer buildings in the suburbs where it was easier to access highways. Most of the rail spurs and sidings were removed after railroad access from the west was discontinued in 1964. In the 1970s and 1980s, investors began to acquire old buildings and market them to theater and music groups.

Since the early 1990s, the Brady Arts District in Tulsa Oklahoma has transitioned into an entertainment and arts district but maintained the industrial character that defined it as a rail serving industrial area. More importantly, industrial or freight-generating businesses remain in the district despite its changes. As reported in NCHRP Research Report 844, the overall view on retaining freight-generating industries in the district was

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<sup>7</sup> National Cooperative Highway Research Program, Research Report 844, Guide for Integrating Goods and Services Movement by Commercial Vehicles in Smart Growth Environments, 2016.

mixed as some stakeholders viewed the remaining industrial properties as eyesores while others appreciated the jobs they provided and their ability to serve as a buffer between entertainment and residential areas.

Despite the different viewpoints, the Small Area Plan for the Brady Art District<sup>8</sup>, which established the long-term vision for the area and was adopted as an amendment to the Tulsa Comprehensive Plan, described a mix of residential, entertainment, commercial, and industrial land uses for the district. Furthermore, the Small Area Plan developed a set of design guidelines focused on streetscapes, safety, and other design considerations that specifically listed meeting industrial demands along with demands from other economic sectors as a goal. However, the transportation component of the design guidelines made no specific provisions for truck parking, truck-friendly roadway design, or other design considerations that would be important for preserving freight-intensive economic activities.

Due to inconsistencies between design guidelines and commercial vehicle needs as well as conflicting stakeholder views on the continued presence of industrial land uses, NCHRP Research Report 844 observed that as the area continues to grow there will likely be conflicts between industrial and non-industrial uses. Future iterations of the Small Area Plan would need to address these and other issues that arise as the area continues to transition. In particular, future iterations of the plan would need to address traffic calming and streetscaping strategies and their potential to unintentionally restrict truck movements.

### 3.6 Preservation of Freight and Industrial Land Uses

Though a challenge, maintaining industrial land uses as the overall land use in an area is diversified can be accomplished with careful planning for accommodating what can be perceived as incompatible economic activities. Buffer zones refer to land uses that are put in place in order to create a transition between two other land uses that are incompatible, an example is a commercial development between a residential zone and an industrial zone. Buffer zones can be an important tool for preserving freight-intensive land uses as they help to mediate some of the negative externalities experienced by neighboring communities. In addition to buffer zones, efforts to modify local ordinances and zoning codes to protect industrial land uses are also an important tool for preserving industrial land uses. This set of case studies highlights two examples from the Baltimore and Chicago regions to preserve freight-intensive land uses.

#### 3.6.1 Maritime Industrial Zone Overlay District (MIZOD), Baltimore, MD

The City of Baltimore's Maritime Industrial Zoning Overlay District (MIZOD) is an example of an effective zoning tool that preserves current freight-intensive land uses, in this case waterfront land adjacent to the Port of Baltimore, for industrial uses in the face of speculative commercial real-estate development activity that has applied considerable pressure to convert waterfront industrial properties to mixed-use<sup>9</sup>. The City enacted the MIZOD in 2004 to preserve maritime properties with deep water, rail and highway access in order to protect maritime-dependent uses and intermodal freight movement. The goal was to balance the needs of both mixed-use and maritime shipping. The City categorized its waterfront into two general districts: Mixed-Use and Maritime Industrial. In the first, mixed-use would be allowed, while in the second the MIZOD would protect maritime uses by prohibiting conversion of land to non-industrial uses. The MIZOD is credited with protecting the integrity of the maritime area by preventing the encroachment of mixed use into maritime areas and with retaining major industrial employers dependent on port access, such as Domino Sugar.

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<sup>8</sup> <https://www.cityoftulsa.org/media/1561/bradyartsdistrict.pdf>

<sup>9</sup> [https://planning.baltimorecity.gov/sites/default/files/MIZODREPORT2010\\_1.pdf](https://planning.baltimorecity.gov/sites/default/files/MIZODREPORT2010_1.pdf)

Originally set to expire in 2014, the MIZOD was renewed in 2009 extending its expiration date to 2024 despite the risk that the tax base benefit resulting from the residential redevelopment might not be substantial enough to make up for the lost industrial and revenue-generating land.

### **3.6.2    *City of Chicago Industrial Corridor Program***

Chicago has been a hub of freight activity since its founding as it is the meeting point of the nation's east and west coast railroads, a port on the Great Lakes, an air cargo hub, in addition to containing Interstate highways that facilitate thousands of truck trips every day. Despite the historical and continued importance of freight-intensive industries to the Chicago region's economic prosperity, the need for housing and the desire of residents to live close to downtown has put pressure on the industrial land uses as many sites have been or are being converted into residential developments. To combat the encroachment of non-industrial land uses, the City of Chicago created the Industrial Corridor Program in the 1990's to protect industrial land use and to guide further development along identified corridors<sup>10</sup>. A feature of the Industrial Corridor Program is the identification of Planned Manufacturing Districts (PMD), which limits the type of developments within the PMD and establishes buffer zones near the edges of the PMD to allow a transition between industrial and non-industrial land uses.

Each PMD established also specifies the level of noise, vibration, smoke and particulate matter, toxic matter, noxious odorous matter, fire and explosive hazards, and glare or heat that can be emitted from properties within the zones. The corridors with PMDs are identified by set characteristics including the existence of compatible uses within the corridor and their accessibility to goods dependent industries and transit. There were 24 corridors identified in 2004 and 35 in 2011. These corridors and the PMDs have helped to legitimize the industrial clusters in the City of Chicago and have served as mechanisms for appropriate redevelopment.

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[https://www.chicago.gov/content/dam/city/depts/zlup/Sustainable\\_Development/Publications/Chicago\\_Sustainable\\_Industries/CSI\\_3.pdf](https://www.chicago.gov/content/dam/city/depts/zlup/Sustainable_Development/Publications/Chicago_Sustainable_Industries/CSI_3.pdf)





## 4.0 Identified Strategies for Addressing Freight Challenges at the Sub-Regional Level

There is a range of solutions for addressing freight planning challenges at the subregional level that can be identified from the case studies included in the high-level review of freight planning. These are primarily in the areas of policy/planning, operations, design, stakeholder engagement, and technology. This section of the report provides an overview of these strategies.

### 4.1.1 Policy/Planning Strategies

#### Incorporate Freight into Planning at the Subregional Level

The first strategy is to simply incorporate freight into planning at all levels. Though States and MPOs now have federal requirements to conduct freight planning, this may not always extend down to the subregional level. The Atlanta Regional Commission, through this effort, and the Florida Department of Transportation are examples of larger agencies that are taking a systematic approach to subregional freight planning. Counties, municipalities, community improvement districts and other entities that generally engage in subregional planning should ensure that freight goals and objectives are incorporated into planning documents, goals, and visions at the municipal and county levels and should reflect the needs unique to the area's freight-intensive industries. Incorporating freight into planning at the subregional level has broader region-wide benefits in that it supports a bottom-up planning approach where region-wide goals and objectives are informed by the localized challenges and needs of the clusters of freight-intensive land uses that generate much of the region's freight. Incorporating freight into planning at the subregional level helps to sustain economic growth, of which freight growth is an indicator, while mitigating the negative externalities associated with freight so that its impact to communities is minimal.<sup>11</sup>

#### Consider Freight in Building and Zoning Codes

When approving new buildings or building renovations, the loading and truck access should be evaluated and considered. This is the opportunity to determine how to provide goods access to the building (as well as trash and recycling pickup), and to plan for it rather than being stuck in dealing with the situation as it plays out later. Truck turn movements and truck size should be provided and incorporated into the decision making in order to make the most informed and efficient decision. This can facilitate easier and faster delivery of goods to residential, commercial, and industrial establishments however loading and truck access requirements are often exempted during the development permitting process.

#### Utilize Zoning to Preserve or Maintain Industrial Land Uses or to Create Buffers

The case studies also demonstrate that zoning and land-use planning are important best practices in planning for freight at the subregional level. The MIZOD and Industrial Corridors Program case studies highlighted how zoning can be used to protect industrial land uses in the face of encroaching commercial and residential developments. Notably, the MIZOD overlay district case study in Baltimore provides an example of how such efforts can be tied to economic development, as the program was credited with retaining a major employer.

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<sup>11</sup> <https://www.planning.org/policy/guides/adopted/freight/>

Related to zoning, buffer zones are another useful feature of subregional freight planning that may be considered a best practice. Maintaining industrial land uses as the overall land use in the area that is diversified can create a vibrant, sought-after district with careful planning for combining what can be considered incompatible land uses as observed in the Brady Arts District case study. Buffers are vital for combining what are thought of as incompatible land uses as they help mediate some of the negative externalities of industrial land uses. Buffers can be utilized in mixed-use projects through: minimizing and screening unsightly nuisances; establishing height and massing buffers and transitions between industrial and non-industrial uses; protecting and conserving the architectural character; promoting connectivity between adjacent neighborhoods while maintaining visual and spatial relationships between adjacent buildings; and strengthening the visual and functional quality of the industrial environment.<sup>12</sup> A key recommendation of the South Fulton CID Multi-Modal Study case study was the use of buffers to protect industrial areas against encroaching commercial and residential land uses.

### Designate Truck Routes that are Consistent Across Jurisdictions

Truck routing is generally an important component of freight planning but is especially important at the subregional level as it represents the first- and last-mile of truck trips and often contains many of the physical barriers (e.g., narrow lanes, low vertical clearances, etc.) that most impact freight mobility. Trucks range in size, shape, and weight and have special operating characteristics that require advanced planning. The weigh, height, or length of a truck might make travel by that truck difficult or dangerous on certain roads if a tunnel is not high enough to allow the truck to pass or a bridge doesn't support enough weight for the truck to go across. Both external (pass-through) and internal (local deliveries) should be considered when developing the regional truck routes. Internal truck movements might require more access to minor arterials or collectors whereas external truck routes should be focused on interstates and provide access to any available truck parking or fuel.

Effective routing can minimize negative impacts and facilitate safe and efficient movement of goods in and around a community. Routing also preemptively deters trucks from traveling on inappropriate residential streets, can help reduce congestion, and increase the attractiveness of the jurisdiction to industrial companies. Routes need to be planned not only within a jurisdiction but also across neighboring jurisdictions so that they provide seamless and safe transition between political boundaries as observed in the O'Hare Subregion Truck Route Plan.

### Collect and Share Data and Management Practices Across Jurisdictions

Data is a fundamental part of transportation and freight planning and management of freight movements in a jurisdiction is the key to planning for a determined future rather than responding to what happens. Both data and management can go further when more resources are included and as such, data and management practices should be communicated and shared across jurisdictions. One solution does not necessarily apply or work everywhere but when a project or program yields useful results or insights, sharing that information across jurisdictions can improve benefits. Additionally, data collected within a single jurisdiction may reveal larger, region-wide patterns.

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<sup>12</sup> FHWA Freight and Land Use Handbook, 2012

### 4.1.2 Operational Strategies

#### Signal Timing and Coordination Along Freight Corridors.

Though not included as a formal case study, the Integrated Corridor Management and Freight Opportunities report from the Federal Highway Administration also represents a best practice in subregional freight planning. Integrated corridor management (ICM) allows jurisdictions to realize significant operational improvements in the movement of people and goods through proactive management of existing infrastructure along major corridors. In ICM corridors are managed as a multimodal system and operational decisions are made for the benefit of the entire corridor rather than individual segments.

Integrating freight into ICM can provide more timely, reliable information on work zones and incidents and can improve route planning to avoid delays and can reduce costs through better decision making. On the private side, ICM can facilitate on-time pick-ups and deliveries, improved travel reliability, reduced fuel consumption, reduced labor and vehicle maintenance costs, and reduced crash involvement. It also provides a direct safety and mobility benefit to passenger cars and other roadway users.<sup>13</sup>

#### Overnight/Off-Hour Deliveries

Without efficient and timely deliveries, restaurants, offices, retail stores, and other establishments in commercial areas would not be able to serve customers. However, receiving deliveries during the day requires delivery trucks to travel during peak congestion times. Off-hour deliveries (OHD) provides incentives to receivers to shift their daytime deliveries to off-peak hours to reduce congestion and pollution from truck traffic. Though an OHD program may not be relevant for a freight cluster such as the Gateway85 CID, it could be relevant for other freight clusters and regional centers identified in the ARC Freight Mobility Plan Update such as Downtown/Midtown.

OHD has been successful in several U.S. and international cities where carriers, receivers, and truck drivers all reported positive outcomes. Major chains including Starbucks and CVS, who manage their own logistics and fleets, have switched to OHD without government incentives simply because it saves them time and money in that they are able to deliver the same amount of goods to the same number of locations in less time and more consistently. Existing programs show that unassisted OHD programs are the most successful, so extra incentives should be provided for those who incorporate double doors or keypad entry or lockboxes in their building or businesses to allow deliveries after they close without an associate present. Zoning policy can also be created to facilitate building buildings that allow for unassisted deliveries through double-door refrigerators with exterior access, double-door entry, lockboxes, or extra space at the storefront to place deliveries. Noise is the most frequent complaint; jurisdictions should be mindful to continuously work with vendors and communicate with residents and to address issues in a timely manner once they arise.

#### Centralized Shipping/Receiving Points for Goods Movements

Moving large amounts of goods to and from a single location utilizes economies of scale to create a more efficient system than dispersed pickups and deliveries provides. Freight villages provide space for businesses to consolidate multiple activities, like product assembly and consolidation of shipments, in close proximity. Urban logistics centers combine goods from multiple vendors into a single vehicle. Both types of

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<sup>13</sup> <https://ops.fhwa.dot.gov/publications/fhwahop15018/index.htm>

consolidation can improve how freight activities are integrated into an urban environment by reducing truck trips and vehicle miles traveled (VMT).<sup>14</sup>

## Residential Delivery Consolidation and Non-Motorized Freight Vehicles

Residential deliveries can also be consolidated through delivery lockers or delivery points. Residential deliveries offer convenience to customers but result in a higher volume of delivery trucks from USPS, UPS, FedEx, and other providers on local streets and in residential neighborhoods. This convenience combined with an increase in e-commerce have resulted in a significant number of delivery vehicles on residential roads. Consolidating these residential deliveries at a pickup point or delivery lockers creates a more straightforward delivery system, from one location to another, rather than web-like, from one location to many locations.

Additionally, using non-motorized freight vehicles, like freight tricycles, in dense areas can reduce emissions and congestion for trips that do not require a full vehicle. Non-motorized vehicles have flexibility in navigating and parking and are cheaper to own and maintain relative to diesel-powered commercial vehicles.

## Oversize and Overweight (OS/OW) and Construction Vehicle Routing

OS/OW and construction vehicles are critical for economic development and redevelopment in communities. Due to their large size and/or weight there are increased safety and operation concerns related to OS/OW and construction vehicle travel. Jurisdictions can alleviate these concerns by requiring permits and a permitted route for OS/OW and construction vehicle travel throughout their jurisdiction. In this way, the jurisdictions ensure these vehicles travel on roads suited for their characteristics and avoid potential safety conflicts that can occur when OS/OW vehicles end up on roads unable to accommodate their size, weight, height, or turning operations.

### 4.1.3 Design Strategies

## Integrate Heavy Truck Design into Streets in Mixed-Use Areas

Providing access for large trucks and other commercial vehicles in communities can be a contentious issue. Although it is not appropriate to design every street to accommodate large commercial vehicles, smaller box trucks and emergency vehicles need to be able to access areas where retail, restaurant, industrial, and institutional freight customers are located and even residential areas as well. Traffic-calming treatments including cushioned humps, speed tables, and rumble strips, can reduce vehicle travel speeds and enhance drivers' awareness of pedestrian and cyclists without restricting their access to the street.<sup>15</sup> Some intersections can be designed with traversable aprons, which provide additional width around the perimeter of the central island for larger vehicles. They are often used on roundabouts and occasionally on the corners of traditional four-way intersections to allow trucks, buses, and emergency vehicles to complete tight turns. In some cases, existing roadways might no longer be able to carry modern commercial vehicles due to limited turning radii, vertical clearances, or other design considerations. These roadways should be re-visited, and the design improved to provide safe accommodations to commercial vehicles needing access.

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<sup>14</sup> [https://coe-sufs.org/wordpress/ncfrp33/psi/logistical\\_management/ucc/](https://coe-sufs.org/wordpress/ncfrp33/psi/logistical_management/ucc/)

<sup>15</sup> Project for Public Spaces, 2016

## Develop Truck Parking and Staging Facilities

Space for truck parking and staging is extremely limited in and around many U.S. cities, including at warehouses, distribution centers, ports, and other freight hubs. Providing adequate space and advanced notification of where that space is provided for parking or staging can help avoid illegal parking (e.g., highway ramps and shoulders), reduce time and fuel used towards finding a place to park, and increase safety for truck drivers and other road users.

Additionally, leveraging alleys and facilitating appropriate loading dock design can provide staging locations at delivery points. Many cities or historic areas have existing alleys that provide access to commercial establishments and properties. These spaces can be utilized for loading and unloading. If and when loading docks are provided instead of or in addition to alleys (or strategically placed with access off of an alley), ensuring loading dock design through zoning or building code that accommodates a large variety of vehicles will reduce the time required to load and unload and provide a safer location to complete these activities. Loading docks can eliminate the need for curbside access to some buildings.

## Separate Trucks from Other Vehicles Where Possible

There is always a potential for conflict when commercial vehicles operate in the same space as pedestrian and bicyclists, especially so when planning for and promoting walkability and multimodal transportation access in mixed-use areas or somewhat industrial areas. Being mindful of truck access when designing a streetscape can help to maximize the safety and mobility of all road users. In particular, improving the separation of trucks from other vehicles and non-motorized traffic through methods such as off-street loading facilities, designated curbside loading zones, truck routing, and traffic-calming techniques can improve safety and livability in urban areas.

### 4.1.4 Stakeholder Engagement Strategies

Conflicts will arise when a relatively compact area must accommodate multiple types of land uses with often competing needs. However, stakeholder engagement can help to educate competing groups and to communicate shared goals including safety, economic development, and other mutually shared interests. This section of the report will focus on solutions centered on stakeholder engagement.

Conflicts can and will arise when planning and working with freight uses and transportation however, stakeholders – freight and residents alike – ultimately have some common goals around which they can work together to support. Those goals include safety, efficiency, peaceful coexistence, and access.<sup>16</sup> Integrating freight planning into a jurisdiction's projects and programs in order to facilitate an effective and efficient regional economy involves stakeholders from many levels of governments, private companies, and the public. Depending on the location and issue, stakeholders can include:

- Municipal Departments or Agencies,
- Regional and State Transportation or Planning Agencies,
- Federal Agencies,
- Private Developers and Financers,
- Shippers, Carriers, and Logistics Companies, and
- Community Groups.

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<sup>16</sup> Guide for Integrating Goods and Services Movement by Commercial Vehicles in Smart Growth Environments, 2016

There are four phases of stakeholder engagement: stage setting, creating places and streets, operation with minimal effects, and ongoing monitoring. Setting the stage involves coordinated land use planning at the local, regional, and state levels. Planners should identify compatible land uses and buffer land uses that are not compatible however in legacy communities or transitioning communities this is not always possible. Conflicts can arise in the stage setting phase when new non-industrial uses encroach on existing or planned industrial areas and transportation corridors or when planners do not explicitly integrate industrial or freight activity in communities.<sup>17</sup>

Creating places and streets involves addressing the methods for designing streets and public places using urban design, site planning, and streetscaping. Some of these issues are resolved through already established zoning decisions though local planners, state DOT's and private developers will typically be ironing out important details what can affect the way users interact within a community. If stakeholders do not communicate clearly throughout this process potential conflicts will arise in build-out including noise issues, lack of buffering, inappropriate or restrictive intersection design and commercial vehicle access, and on-street loading.

Once an area is built out it is necessary that it operate with minimal impacts. Commercial vehicles must be able to make deliveries without negatively affecting the environment or quality of life for the community. Adding to congestion, inappropriate parking and loading, and unsafe vehicle movements are particular areas of concern with commercial vehicle operations. However, policies, practices, and investments from the public and private sectors can facilitate peaceful operations. Time of day, loading regulations or payment for use of the curbside, emissions and air quality, and enforcement regulations can and should be discussed amongst stakeholders to create an effective solution for operations with minimal impact.

Perhaps most importantly, the stakeholder group needs to continue to be engaged after build-out and operations begin. Ongoing monitoring is instrumental in ensuring the community that their concerns will be heard and addressed and that freight needs are considered vital and important. Evaluation performance will facilitate continued program improvements by determining what projects and programs are working, which are not, and by allowing the community to continually reevaluate their goals and objectives and how they plan to get there. Some common evaluation questions include:

- Is the community safer?
- Are deliveries being made safely and efficiently?
- Are business establishments thriving?
- Are the environmental impacts reduced and quality of life enhanced?<sup>18</sup>

#### **4.1.5 Technology Strategies**

This section of the report focuses on technology-based solutions to address freight challenges at the sub-regional level. Technology continues to play a role in helping all types of transportation become cleaner,

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<sup>17</sup> Guide for Integrating Goods and Services Movement by Commercial Vehicles in Smart Growth Environments, 2016

<sup>18</sup> Guide for Integrating Goods and Services Movement by Commercial Vehicles in Smart Growth Environments, 2016

safer, and more reliable. For freight transportation, technology can improve mobility and traffic flow, communications, and safety conditions for both drivers and pedestrians in urban areas. One area of focus will be solutions that provide timely information to commercial vehicles on parking availability, roadway closures/detours, blocked grade-level crossings, and other information that is useful for managing freight traffic at the sub-regional level.

### Real Time Road/Travel Information and Truck Parking Availability

Providing real-time travel information to drivers allows them to reschedule or re-route trips away from traffic incidents, road closures, or construction zones improving travel time reliability, safety, and quality of life as a result. Best practice real-time travel systems provide consistent, accurate information pre-trip and en-route through a variety of methods and devices. Dynamic messaging signs, highway advisory radios, and websites can convey the most current information available to drivers. Time-based travel and delay information allows drivers to divert to a different route (if available, also would be conveyed through messaging) or notify others of their delay. In San Antonio, Texas dynamic message signs combined with an incident management program resulted in a 2.8 percent decrease in crashes.<sup>19</sup>

Truck parking availability can also increase safety and help drivers better manage their travel routes. Real-time truck parking availability can be displayed on highway signs and be made available as open source to smartphone applications, telematics companies, and travel information websites allowing drivers to plan pre-trips as well as during trips if/as conditions change. Creating a standardized feed of real-time truck parking availability would allow the jurisdiction to combine their availability with other jurisdictions and states, making the information easy to access to an industry that requires information from numerous jurisdictions.

Similar real-time parking information can also be conveyed for loading zone availability in dense, mixed-use or commercial areas. Parking spaces tend to be limited in these areas, resulting in trucks double-parking, potentially causing safety conflicts, or circling the block waiting for space to open. Real-Time Truck Parking Availability. In many city centers, parking spaces are very limited, which results in trucks either double-parking or circling the block waiting for a parking space to free up. Real-time truck parking availability systems can help truck drivers maximize their productivity and focus on delivery of goods, rather than finding parking.

### Automated Enforcement of Curbside Space

While many of the identified best practices focus on improving freight mobility through operational, design, or land use practices, best practices can also include technology solutions to limit negative impacts to residential communities that border industrial zones. This is especially important at the subregional level. For example, the District Department of Transportation (DDOT) recommended an automated enforcement pilot program for curbside loading zones as part of their 2014 curbside management study<sup>20</sup>. Enforcing loading zones is often difficult because they are scattered through a commercial area and it is not always clear what is or is not a commercial vehicle. DDOT observed that technologies such as RFID tags, enforcement could be streamlined. Though curbside management is not likely a freight challenge that directly impacts the CID study area, it can be considered a best practice that can be applied to other clusters of freight activity in

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<sup>19</sup> [https://ops.fhwa.dot.gov/aboutus/one\\_pagers/traveler\\_info.htm](https://ops.fhwa.dot.gov/aboutus/one_pagers/traveler_info.htm)

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<https://comp.ddot.dc.gov/Documents/District%20Department%20of%20Transportation%20Curbside%20Management%20Study.pdf>

Metro Atlanta, namely the Downtown/Midtown area. Furthermore, this is an issue that likely impacts companies in the CID study area that make deliveries into the urban core of the region.



## 5.0 Summary

This report reviewed existing notable practices in freight planning projects, literature, and data sets. It assessed the degree to which data, tools and processes in these efforts are available and meet the technical needs of the Gateway85 CID Freight Cluster Study. The review found that though several states and MPOs have conducted statewide and regionwide freight plans, fewer freight plans have been conducted at the subregional level. Those studies that have focused on subregional freight planning made issues such as local truck routing, industrial and non-industrial land use conflicts, and the preservation of industrial land uses hallmarks of their efforts. Furthermore, many of the reviewed studies also highlight the importance of collecting local truck traffic data to identifying needs and finding solutions to improve first- and last-mile freight mobility.