

Memorandum

TO: Gerry Bogacz, NYMTC

FROM: Chris Lamm and Whitney Faron, Cambridge Systematics, Inc.

DATE: April 26, 2021

RE: Regional Freight Land Use Study Task 2 Draft Deliverable: Literature Review

STUDY OVERVIEW

NYMTC has initiated a Regional Freight Land Use Study to assess the current mix of land uses related to goods movement in the region, assess recent and projected future trends that affect the region's supply and use of land to support freight-generating economic activity, and develop a "typology" that categorizes freight land uses in the region and describes key features and trends affecting each category. This study will fulfill a recommendation of the Regional Freight Plan element of Plan 2045, NYMTC's current Regional Transportation Plan. To understand the state of the practice around freight-oriented land use as well as emerging trends, the project team has conducted a literature review of relevant plans, studies, and news articles.

A list of documents included in this review is provided in Figure 1.

Figure 1. List of Documents Reviewed

Studies of Regional Freight Land Use Issues

- Feasibility of Freight Villages in the NYMTC Region, 2011
- Rail Freight Yard Requirements/Land Assessment for East of Hudson Area, *NYMTC*, 2003
- Multi-State Truck Rest Stop Inventory Assessment, *NYMTC*, 2009
- Truck Terminals and Warehouses Survey Results, *NYMTC*, 2001

Regional Planning Documents

- *NYMTC Moving Forward*, expected 2021
- NYCEDC FreightNYC, 2017
- Connecticut Statewide Freight Plan, 2017
- New Jersey Statewide Freight Plan, 2017
- Pennsylvania Statewide Freight Plan, 2016
- NJTPA 2050 Freight Industry Level Forecasts Study, 2020
- MOVELV Lehigh Valley Regional Freight Plan, 2015

Non-Regional Academic Studies

- FHWA Freight and Land Use Handbook, 2012
- Improving Freight System Performance in Metropolitan Areas, *National Academy of Sciences*
- Freight-Efficient Land Uses: Methodology Strategies, and Tools, *Sustainability*, 2021
- NCHRP Report 844: Integrating Goods and Services Movement by Commercial Vehicles in Smart Growth Environments, 2017

Relevant and Recent Periodicals

- “E-Commerce Drives New York City Warehouse Boom,” *Wall Street Journal*, 2019
- “Will Multistory Warehouses Catch On? In NYC And A Handful of Markets, Maybe.”, *Bisnow*, 2019
- “Not Everyone is Sold on Multistory Warehouses As the Way Forward for Industrial,” *Bisnow*, 2019
- Warehouse Sprawl: Plan Now or Suffer the Consequences, *New Jersey Future*, 2021

STUDIES OF REGIONAL FREIGHT LAND USE ISSUES

Feasibility of Freight Villages in the NYMTC Region Study (2011)¹

This report summarizes the work conducted to analyze opportunities for the development of freight villages in the NYMTC region, and how they might achieve the regional goals and objectives of NYMTC's Regional Transportation Plan. A Freight Village was defined as a clearly demarcated and actively managed location, within which both multimodal freight transfer facilities and industrial activities are situated, along with commercial and/or worker support activities. The study specifically considered six potential sites for potential freight villages in the NYMTC planning area; three on Long Island, one in Brooklyn, one in the Bronx, and one on Staten Island.

The study found that the total volume of traffic that would be generated by alternative land uses at these sites, such as business parks, amusement parks, or multipurpose recreation facilities would be substantially higher compared to the traffic generated by a freight village. In addition, the study posited that freight village development is associated with regional job generation and value creation. The report concludes that freight village development was responsive to several of NYMTC's regional objectives, including: (a) mitigating congestion by reducing vehicle miles traveled (VMT) and increasing modal balance; (b) fostering rational and efficient land uses that would curb sprawl, focus development on desired growth areas, and promote compatible land uses; and (c) promoting economic development in the form of job creation.

Rail Freight Yard Requirements/Land Assessment for East of Hudson Area (2003)²

This study investigated the need for additional freight facilities and assessed the land necessary for these facilities. Furthermore, the study cataloged potential parcels for the future rail freight system east of the Hudson River. To determine site suitability, the study employed a combination of fieldwork and quantitative screening. A GIS-based methodology was used to screen parcels that had access to a highway (<1 mile away), were zoned for

¹ Boile, Maria, Sotirios Theofanis, and Kaan Ozbay. 2011. "Feasibility of Freight Villages in the NYMTC Region: Task 6 - Site Impact Assessment," March. <https://trid.trb.org/view/1118320>.

² Mann, H. J. 2003. "Rail Freight Yard Requirements Land Assessment for East of Hudson Area." New York Metropolitan Transportation Council. <https://trid.trb.org/view.aspx?id=659982>.

commercial or industrial uses, were two acres in size or larger, and were located adjacent to the rail line. For all sites under consideration, fieldwork was conducted to determine their suitability. During fieldwork, considerable attention was given to whether a site had access to major arterial roads, contained the necessary space for intermodal or bulk transfer operations, was able to absorb additional capacity, or had any conflicting uses (such as passenger rail). The study emphasized the need to be creative in expanding freight network facilities, suggesting the potential on Long Island to have joint freight/maintenance-of-way operations at some MTA Long Island Rail Road sites.

Multi-State Truck Rest Stop Inventory Assessment (2009)³

NYMTC, in association with the North Jersey Transportation Planning Authority (NJTPA) and Connecticut Department of Transportation (CTDOT), performed this study to provide a comprehensive evaluation of existing truck stops and to determine the need to enhance existing truck stops and/or develop new stops. The study found that the truck parking supply was insufficient to meet demand during peak overnight hours. Stakeholder recommendations gathered through the study included addressing “problems with municipal land use control and regional truck parking needs” and encouraging “corridor planning across jurisdictions to identify appropriate locations for [truck parking] sites.” Specific land use-related recommendations included incorporating truck parking requirements in large, multi-facility warehouse districts, exploring opportunities to use land under existing highways or over highways, or possibly using highway “air rights” to develop truck parking elsewhere, as well as opportunities to develop truck parking sites in brownfield zones.

The study noted that land near the region’s core was expensive to acquire and maintain, and site development was more likely to face community opposition due to higher residential densities. Therefore, sites on the region’s periphery were seen as more attractive for truck stop development. Additionally, context-sensitive site design could make a truck parking facility less intrusive, making trucks less visible and audible. Outreach and education programs for local community boards and municipal planners were recommended to communicate the need for truck parking in the region, as well as explain the safety issues

³ Mann, Howie. 2009. “Multi-State Truck Rest Stop Inventory Assessment.” New York Metropolitan Transportation Council. https://www.njtpa.org/NJTPA/media/Documents/Planning/Regional-Programs/Studies/Truck%20Rest%20Stop%20Study/TruckStop_Study.pdf.

associated with informal parking and the consequences of doing nothing to remedy the situation.

Truck Terminals and Warehouses Survey Results (2001)⁴

The purpose of the survey was “to provide an inventory of the existing trucking and storage facilities in NYMTC area, and to identify the highway and other access bottlenecks to truck movements, adequate storage place, and commodity flows.” Surveys were distributed to 1,000 establishments in the NYMTC planning area, and 164 (16%) were returned with completed responses. The survey showed that the location of truck terminals is dependent on access to major through-routes, access to the central business district and region as a whole, and real estate costs. Most of the warehouses and distribution centers were being developed in northern New Jersey due to the lack of available land and the high cost in New York. The survey identified highway congestion and aging/inadequate infrastructure as major issues contributing to the costly and unreliable freight travel, with two-thirds of the survey respondents indicating that congestion is their main problem.

REGIONAL PLANNING DOCUMENTS AND STUDIES

Moving Forward

Chapter 7 of the NYMTC’s next Regional Transportation Plan, entitled *Moving Forward*, presents a Shared Vision for Regional Mobility as a strategic framework. The Plan’s Freight Element recommends the development of needed warehouse/distribution space in alignment with existing transportation system capabilities and improvement opportunities and additionally encourages the development of potential Freight Villages, inland port sites, and other models integrating land use and multimodal transportation. *Moving Forward* also recommends greater freight transportation system equity by “distributing freight land uses more equitably and thoughtfully, with better separation from sensitive land uses and better accessibility for workers in disadvantaged communities.” Finally, the plan highlights opportunities for regional and multi-state pooled funding programs to address land use/land banking/redevelopment and re-use opportunities.

⁴ Hrabowska, Mary, and Christina Adidjaja. 2001. “Truck Terminals and Warehouses Survey Results In The New York Metropolitan Area.” New York Metropolitan Transportation Council. <https://trid.trb.org/view/660508>.

NYCEDC *FreightNYC* (2017)⁵

The New York City Economic Development Corporation's *FreightNYC* plan includes modernizing and developing new distribution facilities among its principal freight goals. *FreightNYC* notes that e-commerce distribution is a fast-growing industrial land use within New York City, with the square footage of e-Commerce distribution space growing by 73% in New York City between 2016 and 2019, and that these distribution spaces are increasingly located in urban centers. *Freight NYC's* Urban Distribution Vision calls for the development of freight hubs connected to the multimodal freight network. These hubs would also include support facilities such as off-street truck parking and alternative fueling/electrical charging stations. The strategy specifically calls for the city government to support the development of geographically dispersed hubs throughout the city, specifically calling out the Brooklyn Army Terminal, hubs in Bathgate and Hunts Point in the Bronx, Maspeth and the John F. Kennedy International Airport in Queens, and Staten Island's West Shore and North Shore.

New York State Freight Transportation Plan (2019)⁶

The New York State Freight Transportation Plan provides a comprehensive statewide framework for coordinating freight planning activities and ensuring that the goals and concerns of freight stakeholders in the state are considered. To guide the plan's development, the New York State Department of Transportation (NYSDOT) reviewed a range of freight-related plans completed by NYSDOT and partner agencies including Metropolitan Planning Organizations (MPOs) and transportation facility owners and operators. One of the principal themes identified through this review of freight plans was "land-use practices and policies that support freight movement while mitigating community impacts." Recommended actions within the plan that are relevant to issues related to the intersection of freight and land use include expanding available truck parking by partnering with the private sector to pursue opportunities for

⁵ "Freight NYC: Goods for the Good of the City." 2017. New York City Economic Development Council.

https://edc.nyc/sites/default/files/filemanager/Programs/FreightNYC_book__DIGITAL.pdf.

⁶ "New York State Freight Transportation Plan." 2019. New York State Department of Transportation. https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/NYS%20Freight%20Plan%20September_2019.pdf.

targeted expansion of public and private spaces in new or existing facilities, as well as enhancing first/last mile connections by supporting municipal training on design requirements of freight-intensive development.

Connecticut Statewide Freight Plan (2017)⁷

The Connecticut Statewide Freight Plan sets out six main goals, including safety and security, economic competitiveness and efficiency, optimized operations and performance, state-of-good-repair, environmental protection and livability, and program and service delivery. Discussion of issues related to the intersection of freight and land use is principally addressed in a section of the plan that summarizes the involvement of Connecticut's Metropolitan Planning Organizations (MPOs) in statewide freight planning. This section includes a summary of the South Western Region Freight Overview (2010), which notes that due to limited land availability and high costs, if land use trends continue, existing freight-related businesses will be overtaken by high-end residential and commercial uses. The plan also notes a 2014 study that recommends the development of an airport enterprise zone and "freight village" for the Tweed- New Haven Airport to accommodate the high volume of medical supplies and other time-sensitive goods. Finally, a 2005 report from the Capital Region Council of Governments (CRCOG) suggests land use planning near the Bradley International Airport should consider access to the CSX West Springfield Intermodal Terminal to make sites attractive for high-volume distributions. Statewide, the limited availability of truck parking was flagged as a safety issue, causing drivers to park on ramps and shoulders, sparking an important discussion about the location of truck parking facilities in urban locations. For rail freight, the plan identifies the need to identify locations where sidings, interchange, off-loading areas, and railcar storage yards are needed and prioritize their construction to minimize bottlenecks.

New Jersey Statewide Freight Plan (2017)⁸

The New Jersey Statewide Freight Plan notes that warehousing and distribution center

⁷ "Connecticut Statewide Freight Plan." 2017. Connecticut Department of Transportation. https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf.

⁸ "New Jersey Statewide Freight Plan." 2017. New Jersey Department of Transportation. <https://www.state.nj.us/transportation/freight/plan/pdf/NewJerseyStatewideFreightPlan.pdf>.

development supporting retail, e-commerce, and wholesale trade is expected to continue growing in New Jersey's traditional warehousing hubs and emerging clusters, with millions of square feet of new warehousing and distribution states. However, the plan notes an emerging trend where companies are increasing the number of distribution centers (DC), but the DCs are becoming automated and thus require a much smaller footprint. With a 100,000 square foot DC only needing 8 acres, the plan notes opportunities for redevelopment of the existing warehouse building stock. This trend also shows a reduced demand for very large DCs in rural exurbs and opens the opportunity for modern facilities on more urban parcels. These trends indicate that New Jersey can expect more local distribution and less freight sprawl, with more concentrations of facilities near urban cores.

NJTPA Plan 2045⁹

While NJTPA's Plan 2045 does not discuss the intersection of freight and land use in great detail, within its "Regional Context" chapter, the plan does highlight some major changes in the freight industry that will shape the future of freight planning in the region, including the growth of e-commerce, truck platooning, delivery drones, and 3-D printing. Specifically, the plan mentions that the growth of e-commerce will put more delivery trucks on the road and a proliferation of smaller warehouse operations closer to consumers to meet delivery demands.

NJTPA 2050 Freight Industry Level Forecasts Study

The 2050 Freight Industry Levels Forecasts study developed estimates of the current and projected future freight demand out to 2050 to help member agencies identify where the concentration of goods movement activity will occur, the types of commodities that will be moving, and where strategic investments should be considered. The study provides a holistic look at employment changes, as well as changes in commodity flows across the NJTPA region between 2020 and 2050.

The study used business establishment data from CoStar, InfoUSA, and input from subregion (county) planning officials to identify the locations of warehouses, manufacturing facilities, and distribution centers that send and/or receive shipments of goods in each of the 12 "bundles" of freight commodities that this study grouped freight commodities into. The

⁹ <https://www.njtpa.org/Planning/Plans-Guidance/Plan-2045.aspx>

study also profiled the logistics chain for e-commerce deliveries and includes research on e-commerce demand, fulfillment, and shipping centers for e-commerce carriers, and an origin-destination matrix for the base year (2020) and projected future (through 2050) e-commerce delivery trips.

Pennsylvania Statewide Freight Plan (2016)¹⁰

Pennsylvania DOT's Statewide Freight Plan presents several focus areas and opportunities that address critical challenges and help to ensure the efficiency of the state's transportation system. Included in these focus areas is "supporting local efforts to evaluate potential land use options for Freight as a Good Neighbor" to help avoid conflicting land uses and improve overall mobility, as well as integrating freight considerations into NEPA and Preliminary Engineering processes to identify freight issues early in the project development process to result in projects designed with freight in mind and ideally improving project delivery timelines. Through the plan's stakeholder outreach, PennDOT determined that many stakeholders felt that there is a disconnect between land use processes and infrastructure improvements, resulting in insufficient attention given to freight mobility needs when planning for new economic development. Locating future freight facilities needs to consider the unequal impact of noise, air pollution, congestion, and safety. Conversely, land use planning should be responsive to protecting the safety and viability of freight transportation. Additionally, the plan contains a "stewardship" goal which includes supporting the coordination of land use and transportation planning and the number of municipal officials trained through the Local Technical Assistance Program (LTAP) on the coordination of land use and transportation planning as a performance indicator.

Connecticut COG Plans of Conservation & Development (POCD)

Connecticut's Councils of Government (COGs) have developed Plans of Conservation & Development (POCDs) that serve as a blueprint for future growth and development for each region. Below is a description of sections of the POCDs that are relevant to the intersection of freight and land use.

¹⁰ "PA On Track: Comprehensive Freight Movement Plan." 2016. Pennsylvania Department of Transportation. <https://www.penndot.gov/ProjectAndPrograms/Planning/Documents/PennDOT-CFMP%20-%20FINAL%20August%202016.pdf>.

Western Connecticut Council of Governments (WestCOG)¹¹: There are twenty-nine industrial zones in the region, with eighteen of these zones located in Danbury, Newtown, Norwalk, and Stamford – all of which share proximity to the interstate highway system. The region also provides over 4,154 acres of industrially zoned land, with about thirty percent of it within these four municipalities. Municipalities that have established industrial zones in areas less accessible to sewer, water, and interstate highways are generally at a disadvantage when marketing the business advantages of their community and may need to reassess their long-term land use plans. While the region has an adequate capacity for future residential, commercial and industrial development, there are clear limitations on the sewage treatment plants' build-out capacity without capital investments in expanded water pollution controls and proactive approaches to reducing non-point sources for nitrogen and phosphorous.

Capital Region Council Of Governments (CRCOG)¹²: Industrial zones, both general industrial and planned industrial, comprise the third largest zone type in the Capitol Region (seven percent of the region's land). Not all of the over 32,000 acres zoned industrial in the region is currently being used for strictly industrial purposes. Significant portions of industrial land in the region are vacant, idle, or host a commercial use that is permitted by local zoning regulations. The plan also notes that The Hartford area suffers from freight connectivity issues, as freight must connect to the trade corridors through either the New York metro area or via Albany. The nearest major seaboard centers to the Capitol Region are Halifax, New York, and Norfolk, with each having less than ideal freight linkage to the region.

South Central Regional Council of Governments (SCRCOG)¹³: Existing land use in the region shows a direct relationship with the region's transportation network, with significant areas of industrial and commercial uses clustered around the I-91 and I-95 corridors, as well as the Routes 1, 5, 10 and 80 corridors. A stakeholder discussion contained within the plan notes that growing industrial/manufacturing companies are leaving the City of New Haven as a result of space and parking constraints, and the costs associated with expanding in an urban environment (brownfields, historic preservation, land acquisition, etc.), and stresses the need to work to understand the needs of these types of these companies.

¹¹ https://westcog.org/wp-content/uploads/2020/07/ADOPTED_-2020-2030-WESTCOGPOCD.pdf

¹² <https://crocog.org/2016/05/regional-plan-of-conservation-and-development/>

¹³ <https://scrcog.org/wp-content/uploads/2018/07/2018-07-SCRCOG-POCD-report-online.pdf>

Naugatuck Valley Council of Governments (NVCOG)¹⁴: The NVCOG plan notes that the junction of I-84 and Route 8 at the geographic center of the Naugatuck Valley planning region provides universal expressway access to the trucking industry. According to the plan, demand for new distribution centers in the region is on the rise. Some areas in the region, including parts of Cheshire south of I-691, have used their geographic proximity in developing distribution centers to deliver goods by truck for local retail. The number of these facilities is expected to increase as demand for home delivery continues to rise. Because these facilities are major local freight generators, the plan states that the region must work closely with municipalities to ensure economic development is supported by regional infrastructure planning.

Connecticut Metropolitan Council of Governments (MetroCOG)¹⁵: The MetroCOG POCD calls for new industrial development and employment-based uses to be concentrated on vacant or underutilized infill sites near existing ports, airports, rail spurs, and highways. This will enable businesses to better capitalize on investments in existing transportation infrastructure that will provide excellent access to domestic and international markets.

MOVELV Lehigh Valley Regional Freight Plan (2015)¹⁶

The Lehigh Valley Regional Freight Plan includes a detailed account of regional land uses that generate significant amounts of freight traffic. The bulk of the region's freight attractions sit along the US-22 corridor and employment growth is projected to grow more along this corridor, which could lead to increased demand for freight distribution. The plan notes that an issue of growing concern for area planners is land consumption related to warehousing and distribution centers. These facilities by nature consume enormous amounts of acreage, but do not employ many workers in return, and create additional freight demands on area transportation infrastructure. The availability of land is at a premium for warehousing and distribution for sites with access to rail sidings in the Lehigh Valley.

NON-REGIONAL STUDIES

¹⁴ <https://nvcogct.gov/wp-content/uploads/2019/03/NVCOG-MTP-DRAFT1-w-Appendices-20190222.pdf>

¹⁵ <https://metrocoog-website.s3.us-east-2.amazonaws.com/GBRC-Draft-Plan-HQ-ADOPTED-December-17-2015.pdf>

¹⁶ "MoveLV: Lehigh Valley Regional Freight Plan." 2015. Lehigh Valley Planning Commission. https://lvpc.org/pdf/MOVELV/freight/LV_RegionalFreightPlan.pdf.

FHWA Freight and Land Use Handbook (2012)¹⁷

The FHWA's Freight and Land Use Handbook aims to provide resources and tools for public and private sector transportation and land use planners to be able to assess the impacts of land use decisions on freight movement as well as impacts of freight growth and development on land use planning goals and specifically focuses on methods for better-integrating land use and freight transportation projects as the benefits (increased employment, tax benefits, increased economic output) and disbenefits (air quality, environmental justice concerns, livability impacts) of freight movement are directly impacted by land use choices. The handbook promotes the idea of "Freight as a Good Neighbor," where freight planning and land-use decisions are well integrated to provide a mutual public and private benefit through reduced congestion and transportation costs, improved air quality and safety, greater operational efficiency, and access to markets. Additionally, the study advances the concept of "sustainable freight," which maximizes economic development and employment while minimizing negative externalities.

The handbook suggests that public agencies can achieve freight sustainability through the adoption of appropriate and coordinated land use policies, effective transportation systems and services, effective operations and management policies of transportation infrastructure and terminals, and continuous education and outreach programs to engage the community and industry representatives. Suggested actions for regional planning agencies include regional visioning and goods movement studies; creating regional freight plans to define key freight mobility goals and land use priorities; defining model ordinances and best practices for local governments' use; creating corridor or sub-area plans that consider freight needs and impacts; and working with rail, air, and waterborne freight planners to determine needs at regional terminals.

Improving Freight System Performance in Metropolitan Areas¹⁸

The Center of Excellence for Sustainable Urban Freight Systems (CoE-SUFS) "Improving Freight System Performance in Metropolitan Areas: Planning Guide" includes a chapter on

¹⁷ Lamm, Christopher, and Sophia Hartshorn. 2012. "Freight and Land Use Handbook." Federal Highway Administration. <https://ops.fhwa.dot.gov/publications/fhwahop12006/index.htm>.

¹⁸ National Academies of Sciences, Engineering, and Medicine 2015. Improving Freight System Performance in Metropolitan Areas: A Planning Guide. Washington, DC: The National Academies Press. <https://doi.org/10.17226/22159>.

Land Use Policy, with specific initiatives designed for the public sector. Initiative 47 urges local and regional governments to carefully consider relocating large traffic generators (LTGs) as there are often unintended consequences of moving these freight traffic centers to address concerns of local communities, such as the proliferation of “logistic sprawl” that results in more freight traffic on the net. Initiative 48, “Integrating Freight into Land Use Planning Process” proposes a proactive approach to incorporate the consideration of freight in the urban land use planning process, using a multi-layered, multi-stakeholder collaborative approach and the cooperation between different public agencies. The initiative points to the example of Chicago’s Industrial Corridor Program, which was designed to protect and guide industrial land use development along specific corridors.

Freight-Efficient Land Uses: Methodology Strategies, and Tools (2021)¹⁹

This journal article summarizes key findings from the Freight-Efficient Land Use (FELU) project, which is “aimed at designing policy procedures to foster land uses that minimize the private and external costs associated with the production, transportation, and consumption of goods.” Recent trends in logistics sprawl, where logistics facilities relocate to the outskirts of cities, have caused an increase in truck travel distances and increased inefficiencies. The article outlines five key FELU principles: minimize social costs, foster compactness of supply chains, mitigate supply chain externalities, seek appropriate solutions, and engage stakeholders. In developing a FELU plan, the article notes four steps that include: (1) gaining a solid understanding of the chief features of the local economy, freight activity, and supply chain patterns in the area, (2) developing an understanding of the issues to be addressed, and the opportunities that could be exploited, (3) identify the most effective FELU initiatives, and (4) engage stakeholders to determine the way forward. The article then illustrates these concepts through local and international case studies. Finally, the article provides tools for decision-makers to utilize moving forward, including the Guidebook for Planning Freight-Efficient Land Uses, Land-Use and Transportation Initiative Selector, Freight and Service Trip Generation Software, and Behavioral Micro-Simulation.

¹⁹ Holguin-Veras, J.; Ramirez-Rios, D.; Ng, J.; Wojtowicz, J.; Haake, D.; Lawson, C.T.; Calderón, O.; Caron, B.; Wang, C. Freight-Efficient Land Uses: Methodology, Strategies, and Tools. *Sustainability* 2021, 13, 3059. <https://doi.org/10.3390/su13063059>

NCHRP Research Report 844: Guide for Integrating Goods and Services Movement by Commercial Vehicles in Smart Growth Environments

This report addressed how considerations for the movement of goods and services by commercial can be integrated into “smart growth” environments. The smart growth paradigm has been advanced to boost compact and transit-oriented land uses while reducing urban sprawl to create livable and sustainable communities. The guide identifies common issues and conflicts between goods movement and smart growth, how those issues and conflicts manifest themselves in different smart growth environments, and the types of strategies and actions stakeholders can take to better integrate goods and services movement by commercial vehicles in smart growth environments. Examples of conflicts include consequences of smart growth development that can potentially subject freight movement to risks, such as freight-generating users being pushed to the periphery of urban areas and zoning that excludes freight uses. Additionally, there are also externalities from freight use that can hinder smart growth and sustainable development, like vehicle noise and increased street safety risks from freight traffic.

The guide then identified strategies to avoid freight conflicts, mainly by fostering cooperation between public- and private-sector stakeholders. Strategies within the guide are split into three separate groups. “Strategies to set the stage for freight” focus on how communities can plan for freight uses that are compatible with smart growth while preserving the role of freight. These strategies include the promotion of freight villages, overlay zoning to preserve freight uses, brownfield reuse for freight development, and cargo-oriented development around rail hubs. “Strategies for creating places and streets” are geared towards minimizing streetscape conflicts between freight users and pedestrians, cyclists, or transit riders. Specific strategies include off-street loading facilities in new development, establishing curbside loading zones, and designating truck routes. Finally, “strategies for operations with minimal impacts” are intended to minimize negative externalities of freight deliveries in mixed-use communities. Specific strategies include off-peak delivery plans, utilization of smaller or non-motorized delivery vehicles, and investment in advanced freight operations technology.

RELEVANT AND RECENT PERIODICALS

“E-Commerce Drives New York City Warehouse Boom,” *Wall Street Journal* (2019)²⁰

This *Wall Street Journal* article describes the increasing proliferation of e-commerce distribution centers in New York City, with their sales outpacing office and apartment buildings for the first time in 2019. According to real estate industry experts, the boom has been driven by the growing desire of e-commerce companies to expedite deliveries to urban consumers and help solve the “last-mile element.” This has led to an increasing appetite for urban warehouse space, with the median sale price for warehouses increasing from \$281 per square foot in 2016 to \$414 per square foot in the third quarter of 2019. Much of the increased sales activity has been concentrated in Brooklyn, specifically in Flatbush and Bedford-Stuyvesant. Rising warehouse values and investor competition for these properties in New York City mirror the investment growth and demand around the country and globally.

“Will Multistory Warehouses Catch On? In NYC And A Handful of Markets, Maybe.”, *Bisnow* (2019)²¹

This article discusses the possible rise of multistory warehouses in the US, following the example of the Sunset Industrial Park in Brooklyn. While demand for goods is increasing nationwide, the demand for multistory warehouses is correspondingly smaller because most regional markets do not have the same land constraints as places like NYC or cities in Asia where these warehouses are currently in existence. To necessitate a multistore warehouse, the article notes “there has to be a perfect storm of traffic congestion, population, and a lack of available land.” Despite the success of Sunset Industrial Park, the lack of available land continues to present challenges in NYC, where rezoning towards a mix of uses has made support for new industrial development harder.

²⁰ Morris, Keiko. 2019. “E-Commerce Drives New York City Warehouse Boom.” *Wall Street Journal*, November 7, 2019, sec. US. <https://www.wsj.com/articles/e-commerce-drives-new-york-city-warehouse-boom-11573144779>.

²¹ Paltiel, Benjamin. 2019. “Will Multistory Warehouses Catch On? In NYC And A Handful Of Markets, Maybe.” *Bisnow*. August 21, 2019. <https://www.bisnow.com/new-york/news/industrial/will-multistory-warehouses-catch-on-in-nyc-and-a-handful-of-markets-maybe-100320>.

**“Not Everyone is Sold on Multistory Warehouses As the Way Forward for Industrial,”
Bisnow (2019)²²**

This article highlights a discussion of the feasibility and future of multistory warehouses. With e-commerce increasing demands for faster delivery, multistory warehouses have been seen as a creative solution for faster delivery into densifying cities. While some believe this may be a model for the future, others are skeptical of its scalability and long-term success. The Prologis Georgetown Crossroads multistory warehouse in Seattle is one of the first national examples of such a warehouse, but it is still needing tenants to fill the space. Others in the industry believe that, despite the advantages presented by such facilities, the lack of available land and high rents present limited opportunities for success.

Warehouse Sprawl: Plan Now or Suffer the Consequences (2021)²³

This post from the nonprofit smart growth organization New Jersey Future discusses the need to properly plan for the continued growth of warehouses, as land constraints near ports and other redevelopment areas have caused warehouse development to sprawl into outlying farmlands. The article frames the issue by noting the importance of goods movement to the New Jersey economy, and discussing the rise in traffic at the Port of New Jersey and New York resulting from increased international trade and e-commerce. While there have been focused efforts to locate new warehouses in redevelopment areas and areas near major turnpike interchanges, the Lehigh Valley in Pennsylvania has seen an explosion of warehouse development into former farming areas. Recently, concerns arose that undeveloped areas in western New Jersey may follow a similar trajectory. While there is a financial incentive to bring these industries into lesser developed regions of New Jersey, there is concern that warehouses will bring truck traffic onto local regions that are not equipped to handle them. As such, the article emphasizes the importance of regional planning for locating new warehousing facilities, rather than relying on a series of fragmented municipal decisions. Looking forward, the article recommends the continued encouragement of warehouse development on redevelopment sites, the consideration of

²² Hall, Miriam. 2019. “Not Everyone Is Sold On Multistory Warehouses As The Way Forward For Industrial.” *Bisnow*. March 28, 2019. <https://www.bisnow.com/new-york/news/industrial/industrial-nyc-98227>.

²³ Evans, Tim. 2021. “Warehouse Sprawl: Plan Now or Suffer the Consequences. *New Jersey Future*. <https://www.njfuture.org/research-reports/warehouse-sprawl-plan-now-or-suffer-the-consequences/>

multi-story warehouses, and the continued prioritization of rail freight, due to its traffic and air quality benefits.

FINDINGS

While the scope and context of the studies, plans, and articles examined for this literature review varied, there were several cross-cutting themes and insights about challenges relating to the coordination of freight and land use planning that was shared by many of these documents. The need for regional and local governments to integrate land use and freight transportation planning, which are mostly siloed off from each other in current practice, was emphasized. Proactive cooperation from public agencies and industry stakeholders is needed.

Perennial issues of traffic and congestion, coupled with the continued growth of e-commerce and the associated pressure for faster delivery times, have led to intensified demand for urban warehouse space and last-mile distribution centers. In the NYMTC region specifically, there is increasing demand for warehouse spaces inside the urban core, which has the potential to conflict with the longer-standing trend of industrial-to-residential warehouse conversions. This growing demand could lead to future conflicts over land use in certain communities. The principle of “Freight as a Good Neighbor” should be used in proactive context-sensitive planning for these facilities, while conducting effective outreach to communities about how freight facilities can be successfully integrated for mutual benefit.

Finally, solutions like well-located “freight villages” and other hubs that integrate different freight functions and take advantage of economies of scale should be pursued to fully take advantage of existing large urban industrial parcels while reducing overall traffic caused by freight movements.