

Regional Strategic Freight Direction

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Introduction

By almost any measure, the Chicago region is North America's premier freight hub. Approximately \$1.3 trillion in goods move into and out of metropolitan Chicago each year -- an amount more than twice the region's Gross Domestic Product (GDP) -- underpinning a national freight system that drives economic growth and improves quality of life for both businesses and consumers.¹ Within the region, freight routes play a critical role in ensuring that residents and businesses can obtain the goods they need on a daily basis, from coffee to printer paper.

Approximately 25 percent of all freight trains and 50 percent of all intermodal trains in the nation pass through metropolitan Chicago, which serves as the continent's main interchange point between western and eastern railroads.² Trucks account for about one in seven vehicles on the urban Interstate highways in Illinois, and some facilities in metropolitan Chicago carry over 30,000 trucks each day.³ The region is also home to one of the nation's largest and fastest growing air cargo hubs and the only direct maritime connection between the Great Lakes and Mississippi River basins. The CMAP region is one of the largest industrial real estate markets in the nation, with approximately 1.1 billion square feet of industrial development supporting freight and manufacturing activity.⁴

Past CMAP research has established that the freight cluster is an important regional economic advantage.⁵ Metropolitan Chicago's concentration in freight provides substantial direct employment, with the region's freight cluster accounting for 190,000 jobs in 2016 and over \$14 billion in personal income for the residents of northeastern Illinois.⁶ Employment in the freight cluster has been growing faster than overall employment in the region in recent years (13.8 percent compared to 2.3 percent, respectively, between 2001-16) with wages that slightly exceed the regional average (\$72,825 vs. \$70,530, respectively).⁷

The freight system touches almost every other economic sector, and is especially pronounced in industries that rely on the frequent shipment of inputs and/or outputs, including manufacturing, construction, and retail trade. Collectively, these three freight-dependent industries represent nearly one-quarter of all jobs in the region and add over \$115 billion per year to the regional economy.⁸ The role of freight is expected to grow over time with the rising importance of trade to the global economy.

¹ "Overview of freight flows into and out of the Chicago region," CMAP, October 28, 2014, <http://cmap.is/1vCpgch>.

² "Update on freight rail activity," CMAP, October 9, 2015, <http://cmap.is/1GnYRe3>.

³ CMAP staff analysis of Illinois Department of Transportation (IDOT) data, including "2015 Illinois Travel Statistics," <http://cmap.is/2oGOY0v>.

⁴ "Industrial development trends in the CMAP region," CMAP, January 16, 2015, <http://cmap.is/2D0ixoG>.

⁵ For example, "Metropolitan Chicago's Freight Cluster: A Drill-Down Report on Infrastructure, Innovation, and Workforce," CMAP, 2012, <http://cmap.is/2AWAcvU>.

⁶ CMAP staff analysis of Economic Modeling Specialists International data (Emsi 2017.3).

⁷ *Ibid.*

⁸ "Metropolitan Chicago's Freight Cluster: A Drill-Down Report on Infrastructure, Innovation, and Workforce," CMAP, 2012.

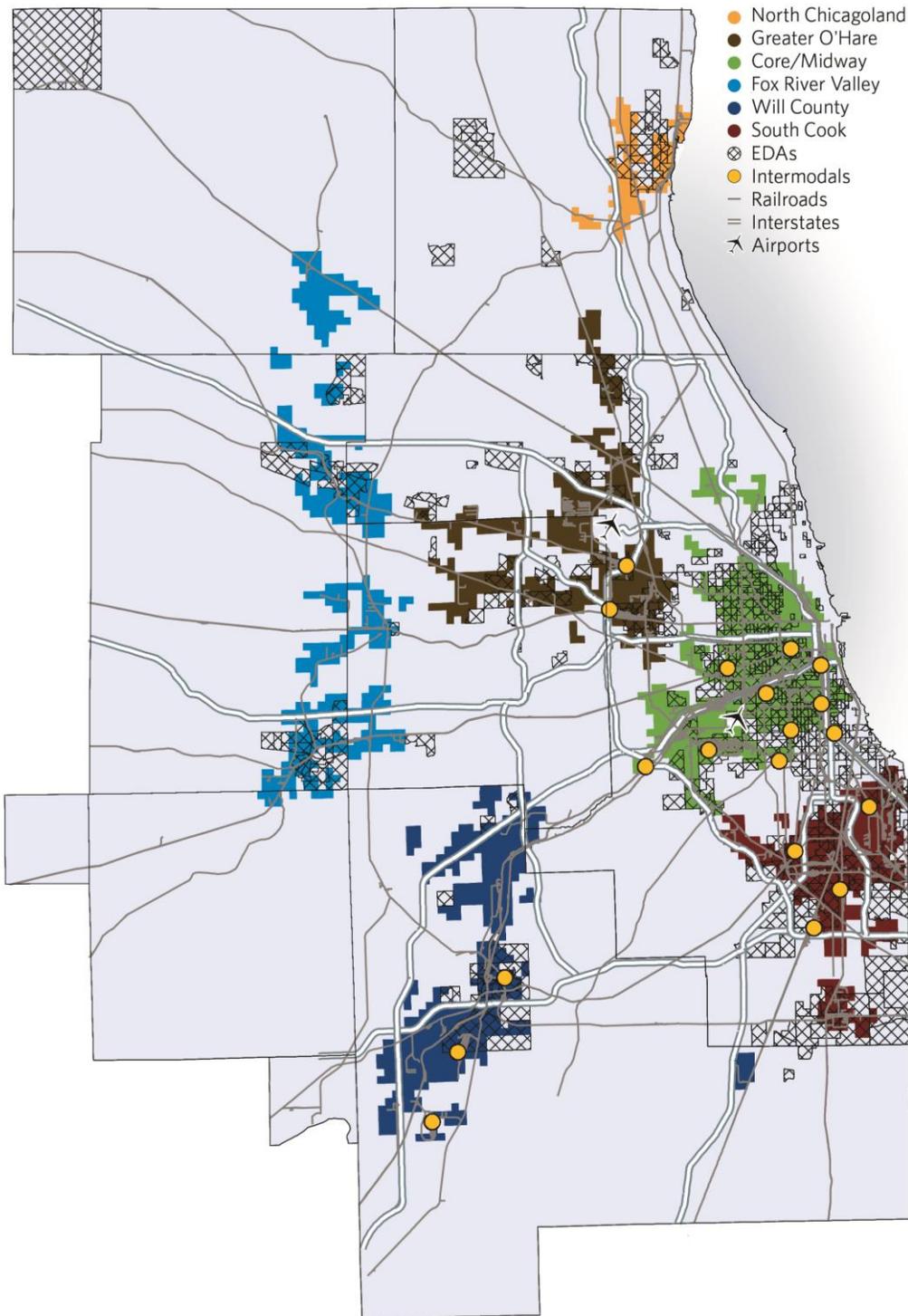


Although many communities in the region value their identities as major industrial centers -- as well as the employment and local tax revenues these centers generate -- freight traffic can impose significant impacts on quality of life. Freight activity generates significant transportation and land use impacts, including congestion, condition of roads and bridges, safety, and nuisances such as noise and vibrations. These costs are real and, given the region's role as the nation's preeminent freight hub, are disproportionately borne by residents of northeastern Illinois. Within the region, they are often borne by certain communities. Often, residents of economically disconnected areas, or areas with a high proportion of low-income households and a high proportion of either minority population or a limited English proficiency population,⁹ live in the closest proximity to freight facilities. The map below (Figure 1) demonstrates the frequent overlap between clusters of freight activity and economically disconnected areas.

⁹ As defined in CMAP's Inclusive Growth strategy paper. See: "Inclusive Growth," CMAP, July 2017, <http://cmap.is/2ujsSrQ>.



Figure 1. Economically disconnected areas (EDAs) and regional freight clusters



Source: Chicago Metropolitan Agency for Planning, 2017.



There is great potential to address the challenges that come with the region's status as the nation's freight hub while enhancing the region's competitive position in goods movement. Today, there is a "freight moment" occurring in public policy at the national, state, and local levels. At the federal level, there has been a growing emphasis on freight policy, and new planning requirements and programming opportunities are now being implemented. State and local units of government are pursuing broad freight plans to best address their unique needs. In addition, CMAP has built a strong base of technical and policy research over the past several years, working in close collaboration with stakeholders across the region.

Given this background, the Regional Strategic Freight Direction is a bold, focused, and actionable document that lays out CMAP's freight policy agenda for the near term. It complements other planning efforts, including the ON TO 2050 comprehensive regional plan. This document lays out specific policy recommendations for a limited number of key topics, identifying major freight issues of regional importance and filling gaps in other plans where new regional leadership would be most valuable.

Reconciling the costs and benefits of freight activity is a key challenge for northeastern Illinois. The aim of the Regional Strategic Freight Direction is to drive both economic growth and local quality of life. This overarching vision guided the development of the policy recommendations in this document, which focus on truck, rail, land use, and programming topics.

The discussion and recommendations in the Regional Strategic Freight Direction build on past regional planning efforts, including the freight system recommendations in GO TO 2040, the subsequent Regional Freight Leadership Task Force, and several years' worth of engagement with key stakeholders. This outreach primarily occurred through the CMAP Freight Committee, but also included coordination with other CMAP working committees and direct, one-on-one outreach with individual stakeholders. The CMAP Board and Metropolitan Planning Organization Policy Committee will consider the Regional Strategic Freight Direction in January 2018.

This document lays out a framework that will broadly inform the policy recommendations and implementation of the region's upcoming long-range comprehensive plan, ON TO 2050. In turn, ON TO 2050 will offer more specific policy recommendations and implementation actions related to freight. Due to the interdisciplinary nature of goods movement, these relevant recommendations may span transportation, land use, economic development, and other topic areas in the plan. In particular, the themes and concepts included in the Regional Strategic Freight Direction will influence the evaluation of regionally significant transportation projects prioritized in ON TO 2050.



Freight facilities in the region

Northeastern Illinois is home to an extensive, multimodal network of freight facilities, including some 30,000 miles of highways, 3,900 miles of rail, 100 miles of navigable waterways, and major airports.¹⁰ While freight facilities, particularly truck routes, are located throughout the region, they do tend to be clustered in the region's core -- the city of Chicago and Cook County -- as well as in Will County (Figure 2). This close proximity allows for numerous connections between modes -- particularly truck-rail transfers at intermodal centers in Cook and Will counties -- and supports major industrial areas.

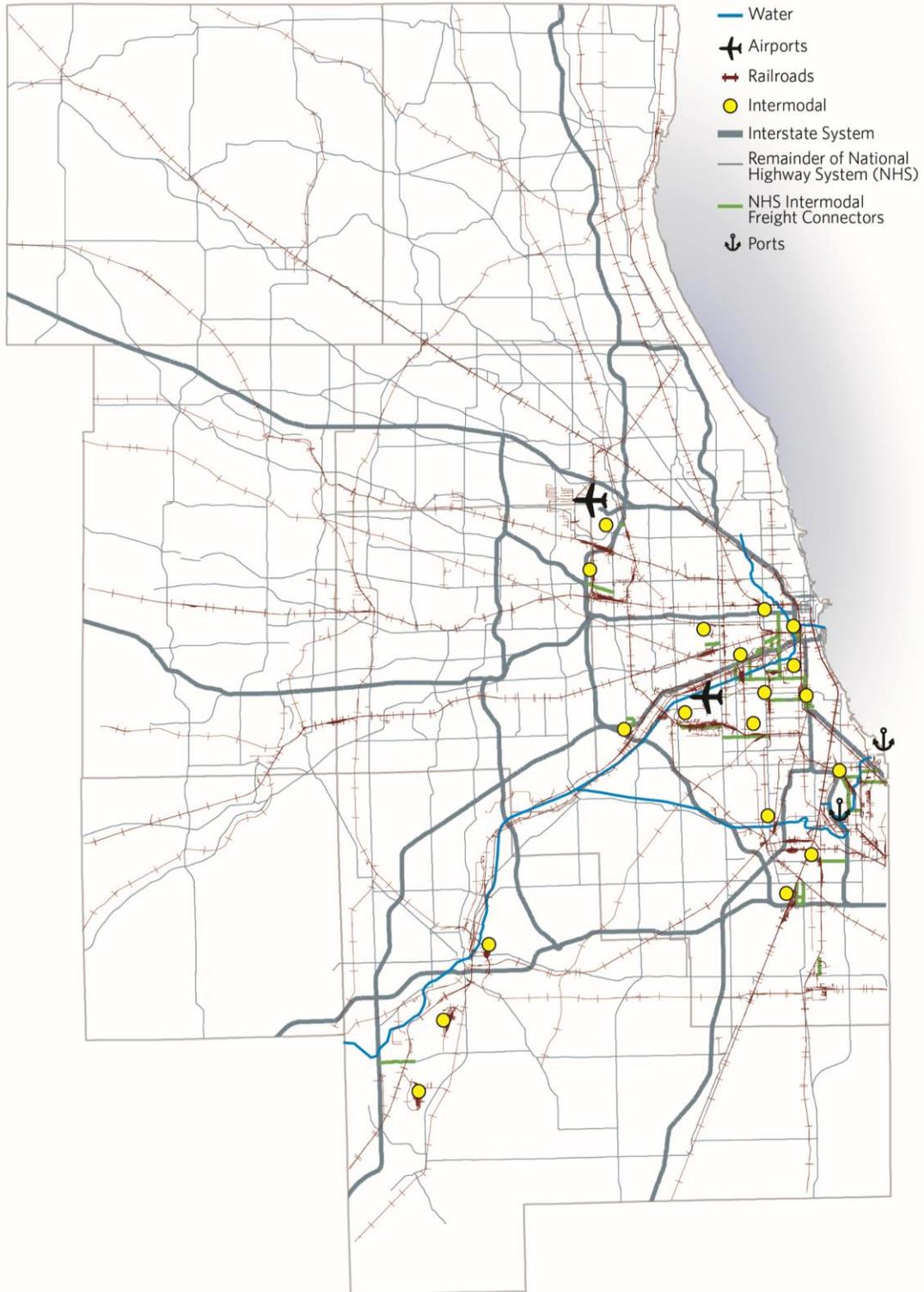
The Freight System Trends snapshot report,¹¹ published in May 2017 as part of the ON TO 2050 development process, provides greater detail on the existing conditions of the region's freight system, organized around freight's role in the economy, infrastructure, and local regulations.

¹⁰ "Freight System Trends," CMAP, 2012, <http://www.cmap.illinois.gov/onto2050/snapshot-reports/freight-system>.

¹¹ *Ibid.*



Figure 2. Chicago regional freight system



Source: Chicago Metropolitan Agency for Planning, 2016.



Role of air and water facilities

Metropolitan Chicago's economic success is strongly linked to its unparalleled access to freight networks across air, water, rail, and road modes. CMAP's planning jurisdiction is largely restricted to surface transportation modes -- highway and rail -- and available data is strongest for these modes. As a result, the majority of the Regional Strategic Freight Direction's policy recommendations focus on trucking and freight rail.

Nevertheless, the Regional Strategic Freight Direction recognizes the multimodal nature of goods movement while focusing on CMAP's core roles in planning for surface transportation modes. Investments in the highway network, for example, can improve groundside access to major air and water cargo facilities, and local technical assistance projects can promote planning efforts related to waterways and airports. The following discussion highlights the importance of air and waterborne cargo, which serve specific freight markets within the region.

Air

While air cargo makes up just a small percentage of the region's freight by volume, it is critical to the region's economy, providing direct access to international markets and carrying goods with the highest value and time sensitivity.¹² As such, the ability to handle large volumes of air cargo is an important component of the strong freight network that gives our region a competitive advantage in the movement of goods. The volume of air cargo moving through the region has recently hit record levels, outpacing the growth seen in peer metropolitan areas across the country.¹³

According to 2015 data from the Federal Aviation Administration,¹⁴ O'Hare International Airport is the nation's fourth-busiest air cargo hub by volume, behind Memphis, Anchorage, and Louisville (Table 1). These three airports, however, play special roles in freight and logistics as major hubs for private courier services or, in the case of Anchorage, a common stopover point between Asia and North America. O'Hare has higher volumes and, since 2000, these volumes have grown faster than at peer airports in Miami, Los Angeles, New York City, and Dallas-Fort Worth. All of these airports handle a broad spectrum of cargo from domestic and international locations, supply major metropolitan areas as well as neighboring states, and serve a breadth of freight operators.

¹² "Chicago Region Supply Chain Trends and Trading Partners," CMAP, December 2015, <http://cmap.is/2BtQRrM>.

¹³ "Air Freight Activity in the Chicago Metropolitan Region," CMAP, August 21, 2015, <http://cmap.is/1EdWN7e>.

¹⁴ "CY 2015 All-Cargo Landed Weights, Rank Order," Federal Aviation Administration, October 31, 2016, <http://cmap.is/2CW2Y1j>.



Table 1. Landed cargo weights, in pounds, for top 10 U.S. airports by volume, 2000 and 2015

Airport Name	2000	2015	% Change 2000-15
Memphis (MEM)	12,636,635,340	22,679,195,919	79%
Anchorage (ANC)	16,167,182,855	17,139,250,601	6%
Louisville (SDF)	7,973,435,125	12,057,543,654	51%
Chicago O'Hare (ORD)	4,123,267,738	9,063,649,529	120%
Miami (MIA)	5,858,478,455	7,630,761,702	30%
Los Angeles (LAX)	5,767,863,860	6,585,460,219	14%
Indianapolis (IND)	5,784,310,530	5,324,737,760	-8%
Cincinnati (CVG)	1,824,952,609	4,019,745,706	120%
Dallas-Fort Worth (DFW)	5,586,263,701	3,328,784,075	-40%
New York City John F Kennedy (JFK)	3,382,896,291	3,255,916,985	-4%

Source: Chicago Metropolitan Agency for Planning analysis of FAA data.

Virtually all of the region's air cargo is handled at O'Hare International Airport, which is in the midst of a decade-long, multibillion-dollar modernization program. These improvements include public investment to increase cargo operations. The Chicago Department of Aviation recently built a new cargo facility that will expand O'Hare's cargo capacity by more than 50 percent, with Phase I completed in 2016, Phase II in 2017, and Phase III expected by 2020.¹⁵ Development of the new cargo facility has progressed faster than originally envisioned due to demand.

Water

Chicago was originally settled at the portage between the Chicago River and the Des Plaines River, and its early growth was spurred by construction of the Illinois and Michigan Canal. Today, the Chicago Area Waterway System (CAWS) consists of more than 100 miles of waterway, several locks, and port facilities in northeastern Illinois and northwest Indiana. Via the Illinois River, the CAWS gives our region the only direct waterway connection between the Great Lakes and Mississippi River systems.¹⁶

As freight transportation has evolved, the mode's share of overall goods movement has declined significantly, now making up a very small percentage of the region's freight volume. According to estimates of 2007 truck, rail, and air and water movements, the waterway system carried only 5 percent of the total freight tonnage in the greater Chicago region, as

¹⁵ "Mayor Emanuel and aviation officials announce grand opening of major cargo center at O'Hare International Airport," City of Chicago, December 21, 2016, <http://cmap.is/2CACDEW>; "Chicago O'Hare opens second phase of new cargo facility," Air Cargo Facility, August 23, 2017, <http://www.aircargoweek.com/chicago-ohare-opens-phase-cargo-facility/>.

¹⁶ "Waterborne freight in the Chicago metropolitan region," CMAP, September 3, 2015, <http://cmap.is/1LePg9N>.



defined by the Bureau of Economic Analysis.¹⁷ Nevertheless, waterborne freight still plays an important role, particularly for transporting bulky materials over long distances. Transporting goods by water is significantly cheaper than other freight modes, making it attractive for shipments that are the highest in weight, lowest in value, and least time-sensitive.

The region's water infrastructure faces significant challenges. Many facilities are in poor condition due to inadequate funding, as the U.S. Army Corps of Engineers has deferred maintenance throughout the CAWS.¹⁸ The Port of Chicago -- also located within the CAWS system -- faces similar infrastructure challenges. The port district has not made significant capital investments since the opening of the Iroquois Landing terminal in 1981.¹⁹

Further, the region's locks generally were built in the 1930s and no longer meet modern shipping needs. For example, the lock chambers are too small: Modern tows are often 1,200 feet in length, but the lock chambers range between 600 and 1,000 feet. To make the passage, tows must first split in half to move through the lock, and then reassemble on the other side to continue their trips. This process significantly increases total lockage times, delaying traffic and increasing shipping time and cost.

Finally, the artificial connection between the Great Lakes and Mississippi River basins raises environmental concerns. There is a risk that aquatic nuisance species may travel from one basin to the other, leading to potentially severe consequences for the ecosystem and economy.²⁰ For example, many experts are concerned that aggressive Asian carp species may transfer from the Mississippi River basin to the Great Lakes, potentially threatening commercial and recreational fishing industries. Concerns over Asian carp have complicated regional projects such as the Brandon Road Lock and Dam in Joliet.²¹ The complex engineering of the CAWS also raises unique concerns related to stormwater management and water quality.

¹⁷ *Ibid.*

¹⁸ "Backlog of maintenance – major rehabilitation and major maintenance – Mississippi River and Illinois Waterway locks and dams," U.S. Army Corps of Engineers, August 30, 2016, <http://cmap.is/2yUbt9O>.

¹⁹ "Management audit: Illinois International Port District," Office of the Auditor General, State of Illinois, July 2013, <http://cmap.is/2BKbgLK>.

²⁰ "Great Lakes and Mississippi River Interbasin Study," U.S. Army Corps of Engineers, 2014, <http://glmris.anl.gov/documents/ans/>.

²¹ Mike Mallory, "Reaction mixed on Army Corps proposal for Brandon Road Asian carp defense system," *Morris Herald-News*, September 13, 2017, <http://cmap.is/2CyCKRe>.



Major freight facility development principles

Major freight facility developments -- such as large intermodal truck-rail facilities, the development of large new rail facilities, mergers and acquisitions among Class I railroads, and major new airport and seaport facilities -- have significant impacts on the region's transportation system and land use patterns. They can generate significant amounts of truck and rail traffic, affect multiple jurisdictions, induce major real estate developments, and require significant new public investments in infrastructure improvements.

Thus, proposals for major new freight facilities raise numerous planning questions. While a single county or municipality is responsible for permitting a proposed facility, neighboring and overlapping jurisdictions could also be affected by the change in land use and transportation demand caused by the facility. In fact, coordination with other units of government is critical to evaluate potential impacts of the proposed facility on adjacent communities.

CMAP is well positioned to provide both policy direction and technical guidance on major freight facility developments. CMAP's chief role is to plan for the regional transportation and land use system. In fulfilling this role, CMAP identifies regionally significant projects in the long-range transportation plan; programs federal transportation funding; coordinates investments across jurisdictions; provides research, data, and other technical resources to stakeholders; and designates freight highway facilities per federal law -- all of which are relevant to a regional analysis of major freight facility developments. CMAP has no authority over local land use, but does directly support local planning efforts through the Local Technical Assistance (LTA) program.

Recommendations

Given the agency's mandate for long-term comprehensive planning, it is reasonable for CMAP to study major freight facility development proposals. These studies would not represent an official agency decision but would instead provide objective analysis to inform the discussion among decision-makers and the public considering such developments. CMAP will prioritize projects for which communities have requested CMAP's assistance, but may pursue additional analysis of major facilities with the potential for broad impacts on the transportation network and development patterns.

The Regional Strategic Freight Direction cannot anticipate all potential major freight facility developments that may occur in northeastern Illinois. Instead, it establishes principles to guide any potential CMAP staff analysis of such proposals as they arise. These principles are well within CMAP's purview as a comprehensive planning agency. The Regional Strategic Freight Direction is making these principles transparent to assist private railroads and developers; federal, state, and local public agencies; and other stakeholders involved in a major freight facility development. The intent is for CMAP to provide independent analysis to inform the larger policy discussion in the region.



As the regional planning agency and federally designated metropolitan planning organization, CMAP's main concerns would be the proposal's transportation impacts, land use impacts, and other impacts, as demonstrated by the following series of planning questions:

- **Transportation impacts:** regionally significant projects and broader network impacts
 - Does the proposed major freight development materially affect an approved ON TO 2050 regionally significant project (RSP), including the CREATE program?
 - Considerations include traffic speeds and volumes, delay, and safety -- for both passenger and freight movements.
 - Does the proposed major freight development require a new RSP to be considered for amendment into the plan?
 - Considerations include traffic speeds and volumes, delay, and safety -- for both passenger and freight movements.
 - Does the proposed major freight development have convenient and adequate access to expressway facilities or the National Highway System (NHS)?
 - In providing access to expressway facilities or the NHS, will the facility require new roads or the expansion of existing roads or interchanges?
 - Would the proposal require regulatory or policy changes related to truck routing, parking, or permitting?
 - Are trucks routed away from sensitive areas such as local downtowns, high-quality natural areas, schools, parks, and/or residential neighborhoods?
 - Are trucks routed onto highway facilities with appropriate pavements and geometrics?
 - Is the permitting process transparent, efficient, and harmonized with neighboring and overlapping jurisdictions?
 - Is the proposal's funding plan reasonable and adequate?
 - What capital outlays will the facility and any ancillary development require?
 - What will be the long-term operations and maintenance outlays for these facilities?
 - For both initial and long-term funding requirements, how will costs be shared between the public and private sectors?
 - Which costs will be borne by the private sector?
 - Which costs will be borne by public agencies?
 - State agencies
 - County agencies
 - Township agencies
 - Municipal agencies
 - Do the relevant public sector entities have sufficient funding streams in place to meet these costs, both initial and ongoing?



- Are special accommodations necessary to ensure that an appropriate workforce can access the proposed major freight facility?
 - Are transit, bicycle, or pedestrian options available?
- **Land use impacts:** regional development patterns and natural resources
 - Does the proposed major freight development support investment in existing communities?
 - Does the local jurisdiction have appropriate zoning for the facility, particularly to avoid potential land use conflicts and potential nuisances such as vibration and noise?
 - Considerations include size, bulk, coverage, and orientation of buildings on site; minimum parking requirements; operational restrictions by time of day; landscaping and aesthetics; and stormwater management and other environmental concerns.
 - Does the local jurisdiction anticipate ancillary development related to the facility? Does the local jurisdiction seek to encourage or discourage ancillary development?
 - In either case, both long-term planning and zoning codes should be updated to reflect these preferences and to ensure consistency of future development with the expectations established by the initial proposal for the freight facility.
- **Other impacts:** economic development, equity, and the environment
 - Does the proposed major freight development support regional economic development goals?
 - Would the proposal create new jobs and economic development that would not be in the region otherwise? Would this development be in existing communities?
 - How would the proposal affect agricultural and natural resources, including those delineated as a high priority for conservation?
 - How would the proposal affect air and water quality, and stormwater management?
 - Does the proposed major freight development have a disproportionate impact on environmental justice communities?
 - Does the proposal incorporate innovative technologies?

To perform such analysis, the Regional Strategic Freight Direction stresses that is essential that appropriate data be publicly available to CMAP and other relevant public-sector stakeholders. The Regional Strategic Freight Direction recognizes the sensitivity of private data sources, but notes that appropriate protections can be established to provide access to this data for regional planning purposes. Access to information is a foundational issue; no objective, data-driven analysis is possible without it.



Key Implementers

- CMAP
- Counties
- Municipalities
- Private industry
- Townships

Intermodal growth case studies

In some areas, the rapid growth of intermodal shipments has required new infrastructure investments. For example, three Will County intermodal facilities -- BNSF's Logistics Park Chicago, Union Pacific's (UP) Joliet Intermodal Terminal, and Canadian National's (CN) Joliet Terminal -- together handle some 1.5 million intermodal lifts each year, or about 20 percent of the regional total.²² These facilities are fairly new, having opened between 2002-14, but have already generated investment in some 20 million square feet²³ of ancillary transportation, logistics, and distribution development.

Given the configuration of the road network in western Will County, several high-cost transportation improvements have been completed or proposed to improve access to the area, including the following:²⁴

- **Arsenal Road and Access Improvements (completed), at least \$13 million.** To accommodate intermodal terminal traffic, Will County and Elwood built additional lanes and a railroad grade separation on Arsenal Road between I-55 and Baseline Road and additional access improvements to the terminal.²⁵ Will County has since transferred the jurisdiction of Arsenal Road to the Illinois Department of Transportation (IDOT).
- **Arsenal Road Interchange (completed), \$84 million.** Opened in 2012, this IDOT project replaced the former interchange located next to the Des Plaines River with a new free-flow interchange about one mile to the south. The new design is more efficient compared with the old interchange, and resolves a major safety issue. The old interchange was also too close to a "high bridge" -- a bridge with a steep incline to allow ships to pass underneath -- over the Des Plaines River, and created a substantial safety issue because the incline prevented trucks from accelerating to highway speeds after entering I-55.
- **Houbolt Road Bridge (proposed), \$170-190 million.** In July 2016, IDOT announced a public-private partnership with CenterPoint Properties to develop a new toll bridge over the Des Plaines River, linking the intermodal facilities, particularly the Joliet Intermodal Terminal to the south, with Houbolt Road and I-80 to the north. CenterPoint will

²² "Chicago intermodal facility lift counts and regional TEU estimate," CMAP, February 2017, <http://cmap.is/2yTVYi7>.

²³ CenterPoint Intermodal Center, Key Park Statistics: <http://www.centerpoint-intermodal.com/>.

²⁴ Various data sources, including CMAP Transportation Improvement Program, <http://www.cmap.illinois.gov/programs/tip/tip-data>, and GO TO 2040, <http://www.cmap.illinois.gov/about/2040>. Houbolt Road project data from various news sources, including: Robert Channick, "Toll bridge to link I-80 to CenterPoint transportation hub," *Chicago Tribune*, July 11, 2016, <http://cmap.is/2kgeiO9>.

²⁵ IDOT, *For the Record* 2003.



provide the bulk of the funding and will be repaid through toll revenue; IDOT will provide a smaller amount of funding to improve local access roads and reconfigure the interchange between Houbolt Road and I-80 to accommodate greater truck traffic.

- **Illiana Expressway (proposed), \$1.03 billion.** The 47-mile, four-lane Illiana Expressway is envisioned as a bypass of I-80 for long-distance truck freight, as well as an alternative for heavy truck travel currently utilizing local roadways in Will County. The growing concentration of intermodal activity in Will County has increased truck traffic on local roads that often were not configured for heavy truck use. Significant implementation challenges for the project are planning for growth that supports reinvesting in existing communities; pursuing opportunities for more compact, walkable, and mixed-use development; protecting the environment and preserving open space; and providing a range of housing options. Both Illinois and Indiana have paused planning for the project. As with all GO TO 2040 Major Capital Projects, this facility is being analyzed for potential inclusion in the ON TO 2050 fiscally constrained projects list.

Multiple jurisdictions feel the transportation effects of major intermodal facilities. For example, direct access from I-55 to the BNSF Logistics Park Chicago facility originally included a mix of state (I-55), county (Arsenal Road), and municipal (Baseline Road) roads.²⁶ Arsenal Road was not built to sufficient standards to accommodate high-volume intermodal traffic, and needed improvements. In addition, the Will County Board in 2015 moved to temporarily increase the permitting weight limit for Arsenal Road, and later that year IDOT agreed to assume jurisdiction of Arsenal Road from Will County. The transfer to state jurisdiction should allow IDOT to streamline the permitting process for oversize and overweight (OS/OW) trucks.

In partnership with the Will County Center for Economic Development and other organizations, Will County has developed a Community Friendly Freight Mobility Plan.²⁷ The Plan incorporates not only freight mobility issues -- such as identifying key trucking corridors to reduce truck spillover onto neighborhood streets -- but also land use, workforce, and livability concerns. The plan's attention to workforce development and to transportation options that connect workers to emerging job opportunities is particularly innovative compared with other local freight plans. The Community Friendly Freight Mobility Plan also creates a ranking system for projects that embraces these and other transportation focus areas to assist policymakers in selecting projects for funding.

Impacts of rail industry acquisitions

EJ&E: To avoid congestion and to provide a fully controlled route through Chicago, CN purchased the Elgin, Joliet and Eastern Railway line (EJ&E) in 2009.²⁸ This acquisition has

²⁶ "Intermodal facilities and regional policy: Memorandum to the CMAP Freight Committee," CMAP, October 17, 2016, <http://cmap.is/2BbTZMg>.

²⁷ "2017 Will County Community Friendly Freight Mobility Plan," 2017, <http://www.willcountyfreight.org/>.

²⁸ "Update on freight rail activity," CMAP, 2015, <http://cmap.is/1OqcGtF>.



allowed CN to divert approximately 6,000 railcars per day out of the heavily congested downtown rail lines.

This rerouting may have benefitted communities along the original route through Chicago and the central part of the region by reducing motorist delay at highway-rail grade crossings, but it has increased rail volumes and motorist delay along the new route at the edge of the region. There are also concerns related to noise and safety.²⁹ Twenty-nine local governments along the corridor have signed voluntary mitigation agreements with CN, which pledged some \$23 million to provide additional mitigation measures, such as safety equipment at crossings, road closures, and noise mitigation measures.³⁰

Nevertheless, state and local governments have still needed to invest heavily in the corridor to reduce the community impacts of the increased rail traffic. For example, several grade separation projects are in design or under construction across the region. For two of these projects, US 34 in Aurora and US 30 in Lynwood, the federal Surface Transportation Board (STB) required CN to pay more than two-thirds of the cost of grade separation projects as part of its decision allowing the EJ&E acquisition.³¹ However, this funding arrangement is atypical; most grade separation projects are funded almost entirely by the public sector, including projects at Rollins Road in Round Lake Beach, US 14 in Barrington, IL 60/83 in Mundelein, and Washington Street in Grayslake. In fact, federal regulations cap the private railroad's share of a grade separation project funded with federal-aid highway dollars to 5 percent of the costs.³² A single grade separation project in the outer part of the region can easily cost more than \$25 million.³³

Elsdon Subdivision: In 2013, CSX Transportation acquired trackage rights from CN over the Elsdon Line, running from northwest Indiana through suburban Cook County and to the southwest side of Chicago.³⁴ This transaction allowed CSX to reroute trains from four other lines to the Elsdon Line. In reviewing the proposed transaction, the STB's Final Environmental Assessment identified two potential areas of concern related to emergency response, and noise and vibration, but concluded that the voluntary mitigation measures proposed by CSX would

²⁹ CN is required to report accidents and incidents, street crossing blockages exceeding 10 minutes, train volumes, and infrastructure projects to the Surface Transportation Board on a monthly basis:

<http://www.stbfinancedocket35087.com/html/monthlyreports.html>.

³⁰ "CN acquisition of EJE Railway," Illinois Commerce Commission, 2017, <https://www.icc.illinois.gov/railroad/cnacquisition.aspx>.

³¹ "STB Finance Docket No. 34087: Canadian National Railway Company and Grand Truck Corporation – Control – EJ&E West Company," Surface Transportation Board, December 24, 2008, <http://cmap.is/2A9TEo0>.

³² 23 USC 130; 23 CFR 646.210.

³³ Examples: approximately \$31 million in construction for Rollins Rd, <http://cmap.is/2lJkLAO>, \$27 million for US 30, <http://www.idot.illinois.gov/projects/US30EJE>, and \$27 million for US 34, <http://www.idot.illinois.gov/projects/us34>.

³⁴ "Docket No. FD 35522," Surface Transportation Board, February 7, 2013, [https://www.stb.gov/Decisions/readingroom.nsf/UNID/41A862BE6A12B84085257B0C00532BBD/\\$file/42823.pdf](https://www.stb.gov/Decisions/readingroom.nsf/UNID/41A862BE6A12B84085257B0C00532BBD/$file/42823.pdf).



be sufficient to avoid adverse environmental impacts.³⁵ Many of the voluntary mitigation measures focused on operational practices and improving the line's signaling systems.

However, train volumes along the line doubled after 2013, causing motorist delay at grade crossings in Chicago and suburban Evergreen Park, including many instances of delay greater than 10 minutes. Blocked crossings not only increase traffic congestion but also reduce reliable access to emergency vehicles. The latter is of particular concern, given the vicinity of two area hospitals, Advocate Christ Medical Center in Oak Lawn -- home to one of the few trauma centers in the region -- and Little Company of Mary Hospital in Evergreen Park.

Although CSX invested in improved signals and grade crossing infrastructure along the route, local concern over adverse community impacts continued. In 2016, the City of Chicago and Village of Evergreen Park petitioned the STB to reopen the docket and impose sanctions on CSX.³⁶ Later in 2016, the STB reopened the docket, required CSX to comply with the statements made in its original application -- namely, that CSX would not route a train through the Elsdon Line unless the line was clear -- and ordered 12 months of performance reporting on grade crossings along the line.³⁷ Recent reports show continued instances of excessive delay at grade crossings along the line, in some cases exceeding two hours.³⁸

³⁵ "Final Environmental Assessment: CSX Transportation, Inc., Acquisition of Operating Easement, Grand Trunk Western Railroad Company, Docket No. FD 35522," Surface Transportation Board, January 9, 2013,

[https://www.stb.gov/decisions/readingroom.nsf/UNID/AB98FF38EFC5511C85257AED0075ADA6/\\$file/42871.pdf](https://www.stb.gov/decisions/readingroom.nsf/UNID/AB98FF38EFC5511C85257AED0075ADA6/$file/42871.pdf).

³⁶ "STB Docket No. FD 35522: Petition of the City of Chicago and Village of Evergreen Park to Reopen and Impose Sanctions," February 12, 2016, <http://cmap.is/2DSjDT4>.

³⁷ "Docket No. FD 35522," Surface Transportation Board, June 22, 2016, [https://www.stb.gov/decisions/readingroom.nsf/UNID/D3C0B4ED40A3BAD585257FDA0056D1E0/\\$file/45126.pdf](https://www.stb.gov/decisions/readingroom.nsf/UNID/D3C0B4ED40A3BAD585257FDA0056D1E0/$file/45126.pdf).

³⁸ For example, CSX monthly data reporting filed September 2016: [https://www.stb.gov/Filings/all.nsf/d6ef3e0bc7fe3c6085256fe1004f61cb/8984755caf766d148525802f0075fbc9/\\$FILE/341509.pdf](https://www.stb.gov/Filings/all.nsf/d6ef3e0bc7fe3c6085256fe1004f61cb/8984755caf766d148525802f0075fbc9/$FILE/341509.pdf)



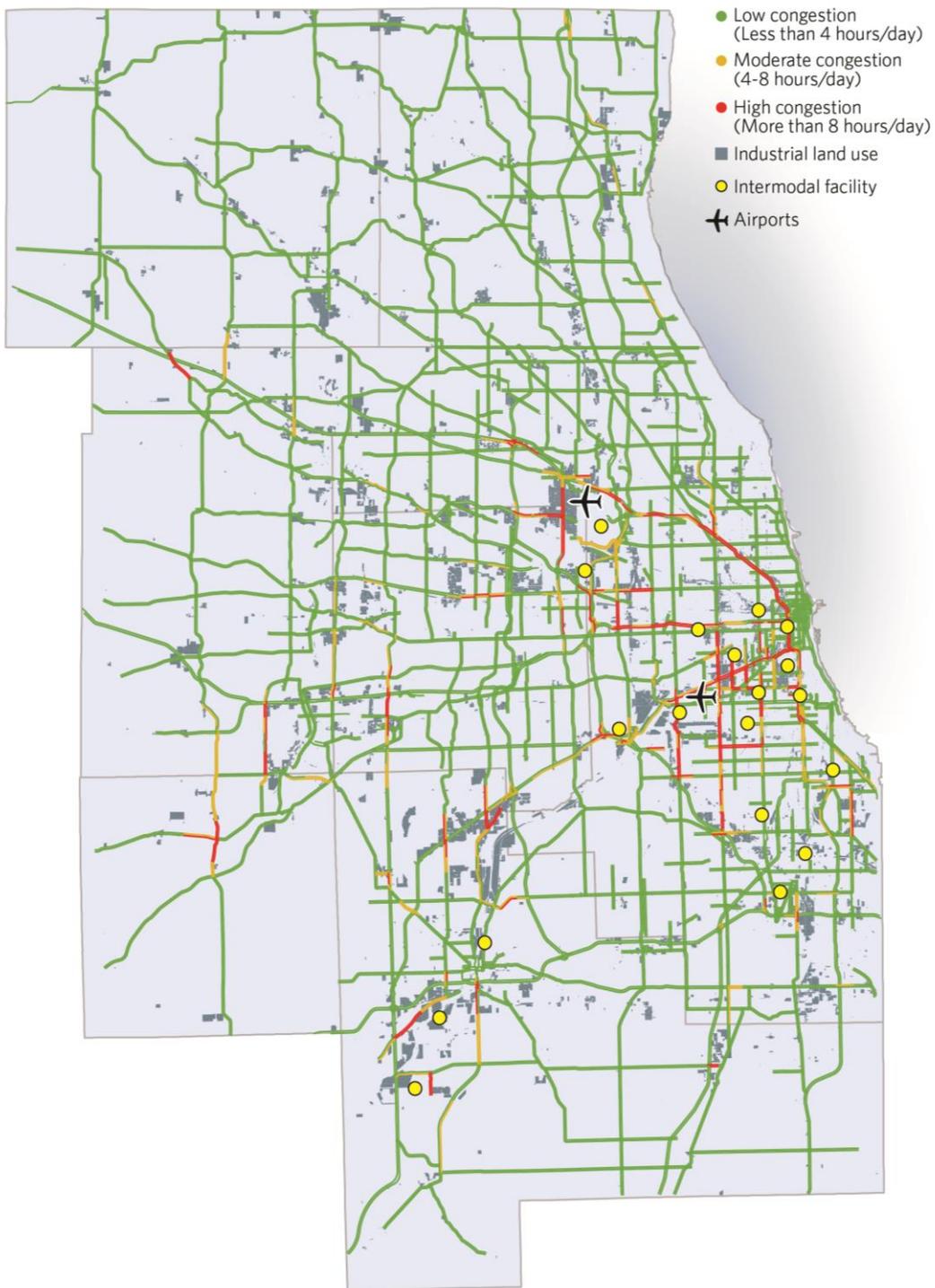
Truck policy

The Regional Strategic Freight Direction recognizes the great potential to improve the efficiency of the region's truck system through operational improvements, including routing, permitting, and various delivery management approaches. An overview of the truck bottlenecks in the region is shown in Figure 3. These policies support economic development by reducing costs for shippers, and help address public policy concerns such as local congestion, safety, and quality of life issues -- all without major capital expenditures.

ON TO 2050, the region's next comprehensive plan due for adoption in October 2018, will prioritize a list of major capital improvements called "regionally significant projects," or RSPs. To encourage the effective use of limited resources, these projects will be evaluated across multiple criteria, including impacts to goods movement, through a transparent, public process. Regionally significant projects are the most appropriate strategy for addressing the region's most severe and persistent trucking bottlenecks, and this report does not contain such evaluations.



Figure 3. Truck bottlenecks, 2015



Source: Chicago Metropolitan Agency for Planning analysis of 2015 National Performance Management Research dataset (NPMRDS) truck-only data.

Note: Congestion is defined as the average number of hours per weekday in which the speed on the link is at least 10% below the free-flow speed.



Truck routing

GO TO 2040 noted that the complex mix of state and local truck regulations can make it difficult for a normally loaded truck to navigate the region.³⁹ State laws restrict the size, weight, and load of trucks permitted to travel on state or locally designated truck routes. As discussed more extensively in the following section, trucks that exceed these size and weight restrictions may travel if they receive certain permits. In general, travel is highly restricted for trucks greater than 65 feet in length, moderately restricted for trucks between 55-65 feet in length, and unrestricted for trucks less than 55 feet in length.

While state law allows local governments to designate truck routes or determine locally preferred truck routes, many communities instead designate where trucks *cannot* go.⁴⁰ Some communities take a blanket approach to truck restrictions, generally prohibiting truck traffic within their jurisdictions, while others restrict trucks from individual roads. Local truck restrictions are based on truck type, weight, and dimensions, and often change at jurisdictional borders. These changes in restriction type add complexity to truck routes, generating turns and diversions to alternate routes as trucks move between municipalities. Drivers must individually verify each jurisdiction's truck restrictions, as these local restrictions are not reported to a centralized public or private database.

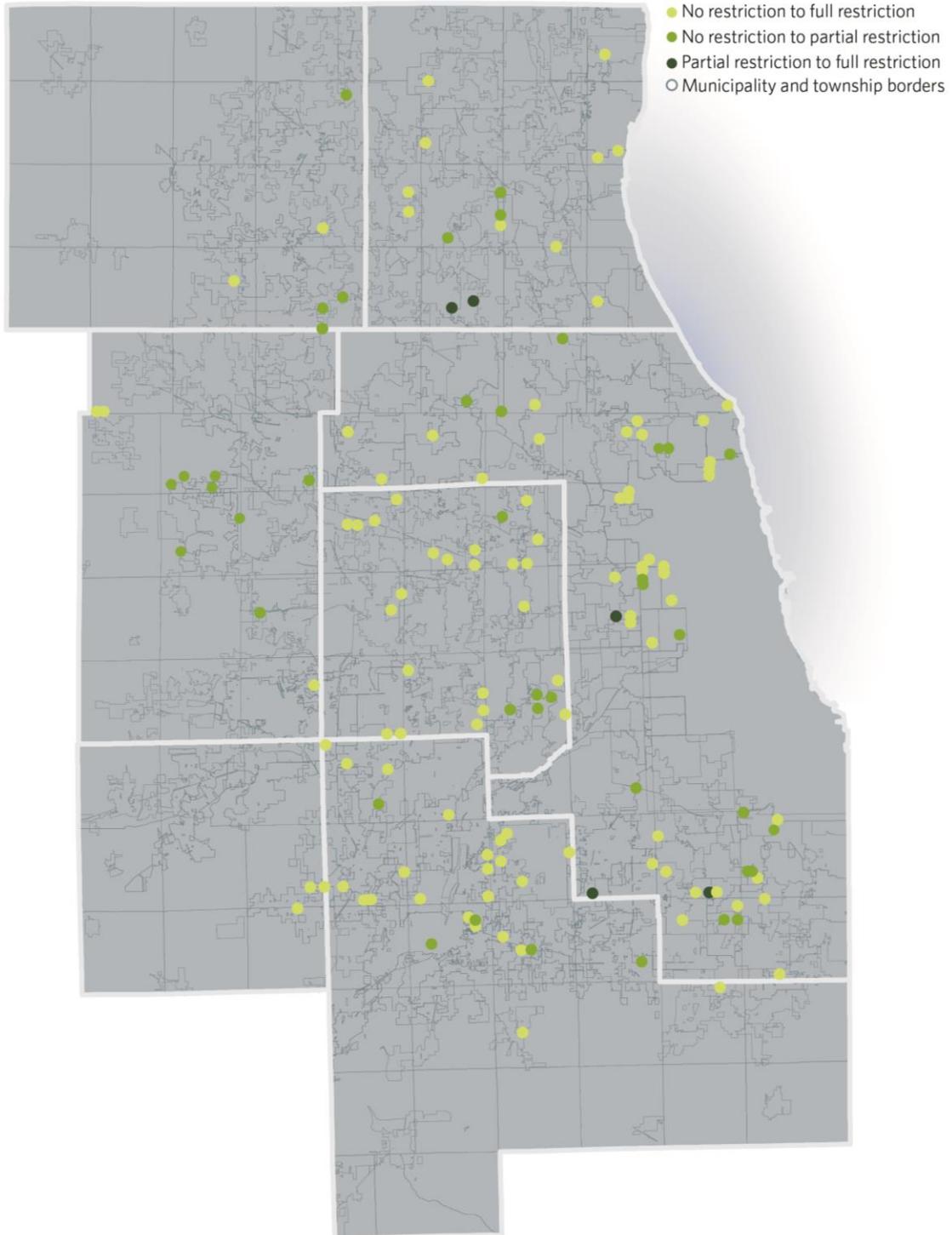
Because each local jurisdiction is able to establish its own truck routing restrictions, there are often changes to truck restrictions at jurisdictional borders. The following map (Figure 4) shows locations where various types of truck restrictions change at county, municipal, or township borders. Restrictions can change in many ways, including based on the type, length, or weight of the vehicle.

³⁹ "Regulatory environment of trucking: Memorandum to the CMAP Freight Committee," CMAP, January 25, 2016, <http://cmap.is/2yURrvY>.

⁴⁰ There are three primary classes of designated truck routes in Illinois: Class I, Class II, and Locally Preferred Truck Routes. Class I truck routes generally consist of the expressway system. Class II routes include major state highways as well as local roads that have been designated by local ordinance as a truck route. Class I and Class II truck routes are associated with certain restrictions on the size and weight of trucks. Finally, Locally Preferred Truck Routes include only truck routes administratively identified by local governments and are not considered a designated truck route; they have no effect on permitted truck size and weight. Illinois also has Class III truck routes, but the legal effect of these has been made mostly moot by recent legislation increasing legal loads to 80,000 pounds (PA 96-0034 and PA 96-0037).



Figure 4. Local restriction changes for truck routes



Source: Chicago Metropolitan Agency for Planning analysis of Illinois Department of Transportation data and Illinois municipal and county codes.



Recommendations

Well-designated truck routes and restrictions ensure that trucks use facilities with appropriate design standards to facilitate freight movement while avoiding sensitive areas with serious infrastructure limitations or safety concerns. Highway agencies -- including state, county, municipal, and township agencies -- should make a more proactive and collaborative effort to identify truck routes and restrictions for trucks within normal weight and dimension standards. IDOT could take a leadership role by reviewing truck-route designations for state-jurisdiction highways. The goal of this effort would be to provide a well-developed backbone of Class I and II truck routes that local governments can subsequently incorporate into their planning efforts. Today, many important state roads are not designated formally as truck routes per state law.

Once designated, both state and local routes and restrictions should be publicly available, centralized in IDOT's Getting Around Illinois website,⁴¹ and easily accessible by industry and other stakeholders. Agencies should also work with local jurisdictions to coordinate routes and restrictions across jurisdictions, aiding goods movement through the region. CMAP could prioritize LTA planning funds to support these efforts.

This type of coordinated planning across jurisdictions requires detailed technical work in concert with stakeholder involvement, such as CMAP's O'Hare Subregional Truck Routing Study, described below.⁴² That project developed a conceptual framework to guide the identification of high-, medium-, and low-priority truck routes, based on truck access and mobility needs, and the state statutory context. Future truck routing studies in the region should use this conceptual framework.

Further, these multijurisdictional planning efforts should also develop a list of capital investments, such as pavement upgrades, intersection improvements, or grade separations, necessary to accommodate truck traffic on desired routes. Future truck-routing studies should be prioritized for regional freight clusters, areas described in detail below, which have high concentrations of routing disconnects at jurisdiction boundaries, high truck volumes, and high concentration of industrial land uses.

Planned truck routes must be implemented through appropriate channels, including formal submission to IDOT to be classified as Class I, II, III or locally preferred truck routes, pursuant to state law and regulations. Local ordinances should be reviewed and updated to ensure that they correctly and consistently designate truck routes according to state law. Further, local governments should take consistent approaches to restricting truck access, including the types of restrictions imposed, and should revisit these restrictions regularly to ensure they are still warranted.

⁴¹ "Getting Around Illinois," IDOT, <https://gettingaroundillinois.com/gai.htm?mt=dtr>.

⁴² "O'Hare Subregion Truck Routing and Infrastructure Plan," CMAP, July 5, 2017, <http://cmap.is/2DRzQI1>.



Access to data is critical to complete truck routing studies. Up-to-date information on local ordinances, road and bridge condition, truck volumes and speeds, land use, railyard volumes, and motorist delay at highway-rail grade crossings, among other topics, is needed to adequately plan for truck routes across a subregion. CMAP has recently made strides in acquiring and analyzing new sources of truck data from private industry sources, and should build on this success.

Key Implementers

- CMAP
- Councils of government (COGs)
- Counties
- IDOT
- Illinois Tollway
- Municipalities

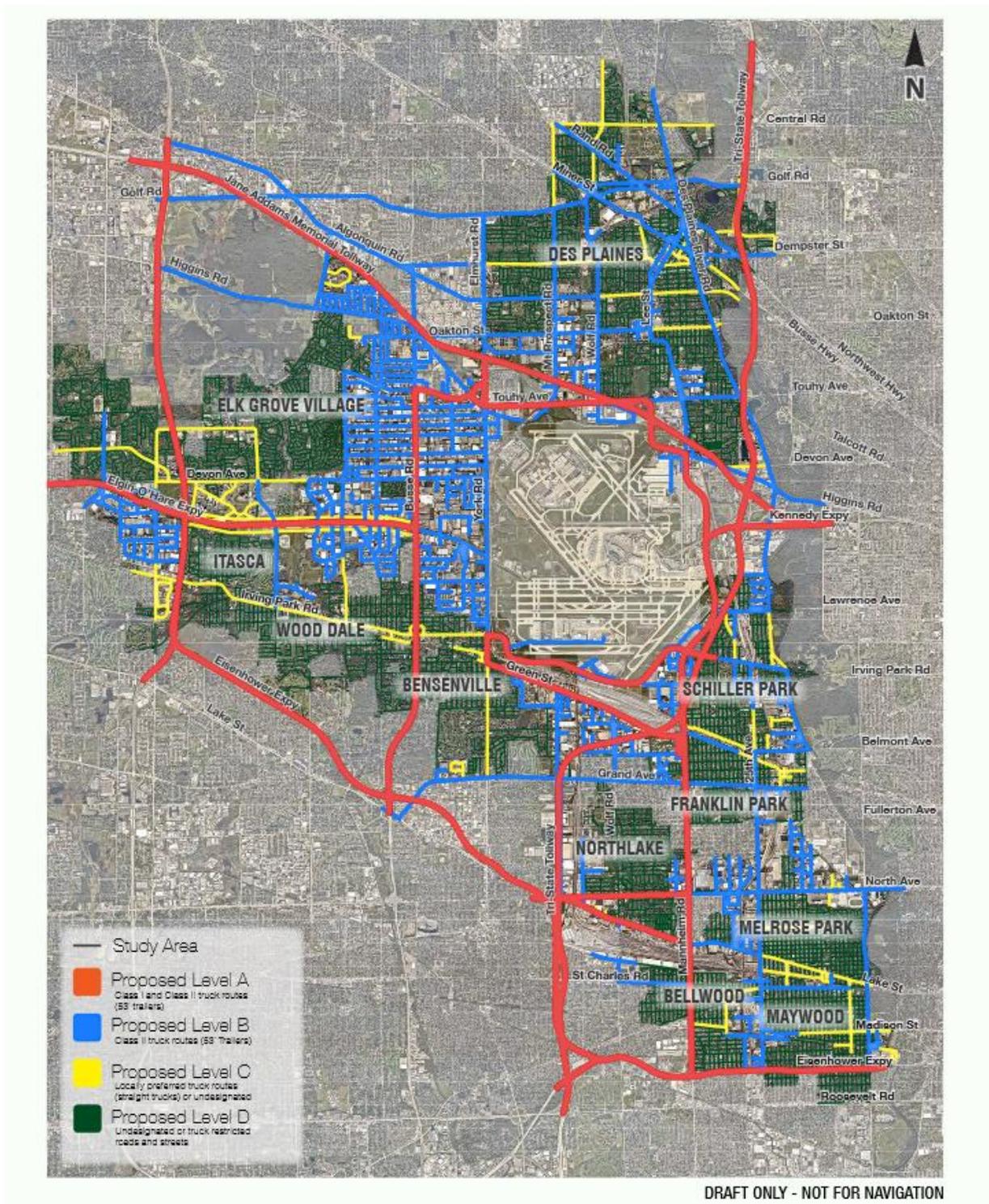
Truck routing case study

One example of a collaborative, interjurisdictional planning effort is the O'Hare Subregion Truck Routing and Infrastructure Plan.⁴³ Communities in the O'Hare area have struggled to provide adequate infrastructure for trucks, balance regulations controlling truck traffic with support for local logistics and manufacturing businesses, and collaborate to designate truck routes. As a result, trucks often must use complicated routes on roads that were not built to handle their weights, causing heavy wear-and-tear that requires intensive road maintenance and strains local governmental budgets. Through CMAP's LTA program, 11 communities in the O'Hare area collaborated to develop a coordinated truck routing network (Figure 5).

⁴³ *Ibid.*



Figure 5. Proposed truck route network



Source: Chicago Metropolitan Agency for Planning.



Oversize and overweight truck permitting

Trucking industry leaders have long suggested that improved and coordinated permitting processes and systems are needed for trucks that exceed legal size and weight restrictions. Many industries -- such as construction, agriculture, fabricated metals, and energy -- often require the transportation of goods that exceed the typical legal weights and/or dimensions for transportation on highways. Some of these industries are critical in providing the foundation for additional economic activity, and others represent a particular comparative advantage for the Chicago region. Regulation of OS/OW trucks is necessary: Public agencies conduct permitting because they have a responsibility for safety and infrastructure preservation, which they accomplish by directing very large trucks to the routes that are most appropriate for them to use.

Recommendations

Through their collaboration on economic growth initiatives, the leaders of the seven counties in northeastern Illinois and the City of Chicago identified truck permitting as a key opportunity. These regional leaders initiated the Regional Truck Permitting Study,⁴⁴ funded by numerous partners including each of the region's seven counties, City of Chicago, IDOT, and CMAP.

The study process involved interviews and workshops with industry leaders and permitting agencies, research, and identification of best practices, leading to development of the following vision statement for truck permitting in northeastern Illinois:

An effective vision for local permitting in northeastern Illinois should reduce industry's operational costs, make goods movement more efficient, and minimize inappropriate impacts on the region's infrastructure.

To implement this vision, the study considered various alternatives, ranging from a status quo approach to across-the-board consolidation of permitting systems at the state or county levels. Maintaining the status quo was rejected, as the current environment places substantial burden on industry and government alike. Outright consolidation also was rejected for being infeasible in the near term. Today, the region's permitting agencies vary tremendously in the scale and sophistication of their operations, which makes a one-size-fits-all solution impractical. Rather, the study identifies a set of recommendations to provide a common foundation for all permitting agencies, complemented with tailored recommendations on how best to apply technology and data management to low-volume, medium-volume, and high-volume permitting agencies. This study's recommendations will help set the stage for greater coordination of permitting activities in the future.

The study identifies nine recommendations to leverage the vision and begin the improvements needed to make northeastern Illinois' permitting processes harmonious. These recommendations, shown in Table 2, are arranged into action timeframes of six, 18, and 36

⁴⁴ "Regional Truck Permitting Plan," CMAP, <http://www.cmap.illinois.gov/programs-and-resources/Ita/regional-truck-permitting>.



months. Each recommendation includes an analysis of the potential champion(s) for that recommendation.

Table 2. Summary of recommendations from Regional Truck Permitting Study

Short Term (six months)	Medium Term (18 months)	Long Term (36 months)
<ul style="list-style-type: none"> • Set baseline customer communications protocols. • Establish response time service levels for routine permits. 	<ul style="list-style-type: none"> • Review and update permit-related ordinances. • Explore single permits spanning multiple jurisdictions. • Collect and publish jurisdictional maintenance agreements. • Invest in online permitting technology. 	<ul style="list-style-type: none"> • Collect and publish road closure information. • Develop municipal infrastructure costs study. • Develop regional OS/OW commodity flow study.

The report also identifies the need for additional technical resources, including a uniform permit application that local agencies could use, as well as technical assistance for drafting Requests for Proposals for technological solutions (Table 3). This topic suffers from a lack of readily available data, including baseline information on the total number of OS/OW permits processed in the region each year. For industry, the lack of basic data on jurisdictional ownership of the highway network and appropriate local points of contact complicates carriers' ability to comply with local permitting requirements.



Table 3. Operating scenarios and corresponding recommendations

OS/OW Permitting Recommendation	OS1: Low-volume agencies where industries involved in OS/OW goods movement are not prevalent and where resources are scarce	OS2: Mid-volume agencies where permitting is a routine part of the work week	OS3: High-volume agencies with dedicated staff and more complex engineering challenges	OS4: Agencies with disproportionately high volumes in containerized international freight	
Baseline Uniform Permit Application Tied to IDOT's Application	●	●	●	●	
Establishment of "Routine Load" Profiles and Procedures	○	○	●	●	
County Issuance of Township Permits	●	●	○	○	
Consistent Communications Baselines	●	●	●	●	
Scenario-Driven Service Levels	●	●	●	●	
Consistent Static Data Management	●	●	●	●	
Appropriate Adoption of Technology	◐	●	●	●	
Consistency of Functional Requirements for Permit System Technologies	○	●	●	●	
Scenario-Driven Bridge and Pavement Engineering Analysis	◐	◐	●	◐	
Fee Structures Correlated to Infrastructure and Administration	◐	●	●	●	
Integration with Municipal Planning and Zoning	●	●	●	●	
Applicability Measure:	Less applicable	○	◐	●	More applicable

Source: Chicago Metropolitan Agency for Planning.

Key Implementers

- CMAP
- COGs
- Counties
- IDOT
- Industry groups
- Municipalities
- Metropolitan Mayors' Caucus



Delivery management

In addition to routing and permitting concerns, multiple strategies can improve delivery management within the trucking industry.⁴⁵ This issue is especially prominent in urban areas, where the interplay between high volumes of cars, transit vehicles, pedestrians, and bicyclists -- along with street and building designs and local regulations that are often inconvenient for trucking -- makes for a complex operating environment.

The Regional Strategic Freight Direction recognizes that there are opportunities to make better use of existing infrastructure within the trucking system, offering both economic and quality-of-life benefits. More specifically, it encourages promising strategies such as off-hours delivery programs, improved parking and loading area management, and vehicle-related technologies that facilitate these improvements. Local governments such as municipalities and counties generally have authority to implement these types of improvements directly.

- **Off-hour deliveries.** There is great potential to reduce congestion by shifting a portion of truck deliveries to early morning or evening hours. Truckers would benefit from operating in uncongested conditions, and highway users in general would benefit from reduced traffic during peak periods. However, many local governments prohibit off-hour deliveries because of concerns over local traffic, noise, and other impacts. Further, many firms prefer not to receive shipments overnight due to staffing, security, and other concerns. Pilot programs involving both public and private sector stakeholders could identify strategies to overcome these issues, for example by leveraging emerging technologies that address nuisance and staffing concerns. Recent work completed by the University Transportation Center at the University of Illinois at Chicago compiles case studies and best practices in developing off-hours delivery pilot projects.⁴⁶
- **Improved parking and loading area management.** Trucks often cause local congestion when they cannot find appropriate parking or loading areas to make deliveries. There are best practices to better manage both on-street and off-street truck parking, for example by proactively identifying loading zones, establishing reservation systems for pick-ups or deliveries, and modernizing building codes to ensure appropriate loading facilities for industrial buildings. At a broader level, additional truck parking can be provided at key areas both inside and just beyond the region to allow for staging of truck deliveries.
- **Vehicle-related strategies.** Many local governments impose time-of-day delivery restrictions, along with parking and other operational restrictions on trucking, to address quality-of-life concerns. For example, neighbors may object to the noise caused by nighttime truck deliveries or the emissions caused by idling trucks. However, local governments could implement numerous strategies to address these concerns. For

⁴⁵ For example: "National Cooperative Freight Research Program Report 33: Improving Freight System Performance in Metropolitan Areas: A Planning Guide," Transportation Research Board, 2016, <http://www.trb.org/Publications/Blurbs/172487.aspx>.

⁴⁶ James LaBelle, Sheena Freve, and Ellen Gottschling, "Exploring the Potential for Off Peak Delivery in Metropolitan Chicago: Research Findings and Conclusions," August 2016, <http://cmap.is/2kIPP3n>.



example, a municipality could encourage trucks to pass certain emissions standards, incorporate cleaner and quieter trucks into their fleets, require their contractors to do the same, or restrict vehicle idling in sensitive areas. Further, the latest generations of trucks are cleaner and quieter, and older trucks can be retrofitted to reduce noise. Local policies could allow these sorts of vehicles to operate overnight or in sensitive areas.

These three approaches are illustrative (Figure 6). Other strategies, such as alternative delivery locations, have merit, and a growing body of literature documents innovative delivery and logistics management approaches.⁴⁷

⁴⁷ "National Cooperative Freight Research Program Report 33: Improving Freight System Performance in Metropolitan Areas: A Planning Guide," Transportation Research Board, 2016.



Figure 6. Summary of strategies to facilitate goods movement



Urban Design

- 1 Require and maintain alleys or backage roads to separate freight activity from mainline traffic, walkers, and cyclists.
- 2 Loading docks should be adequate in number and size for the anticipated trucks, and deliveries should be limited by these accommodations.
- 3 Adapt existing streets for improved truck parking and drop-off/pick-up loading area management.
- 4 Where possible, separate trucks from walkers and cyclists to improve safety and make everyone more comfortable.

Truck Routing

- 5 Consider combined truck/bus lanes to speed freight, reduce emissions, and improve mobility.
- 6 Review truck route and permit ordinances to ensure they are up to date. Adopt Class II truck routes where combination vehicles with 53-foot trailers are expected. Coordinate these routes with neighboring communities, and submit revised ordinances for inclusion in IDOT's truck maps.

Delivery Management

- 7 Encourage overnight deliveries to reduce peak-period congestion. In congested places, require enclosed areas for unattended overnight deliveries. Consider requiring that overnight deliveries be quiet and clean, rather than banning them.
- 8 Encourage or require centralized shipping/receiving points to reduce the number of delivery vehicles.
- 9 Provide adequate loading zones, balancing between loading and customer parking needs. Meter loading zones to encourage turnover, and vary their use by time of day to enable other uses.
- 10 Introduce pedestrian- and bicycle-friendly means of delivery.
- 11 Consolidate home deliveries by encouraging alternative residential delivery sites.



Recommendations

Through their ability to regulate development and local streets, municipalities and counties would be the key implementers of any delivery management policy recommendations. CMAP should take the lead in providing local technical assistance to municipalities and counties to update ordinances and regulations, as well as complete local truck-planning efforts. CMAP could also support research efforts to develop best practices, launch pilot projects, and disseminate these and other resources to the region's implementing agencies.

Key Implementers

- CMAP
- Counties
- Municipalities



Rail policy

Metropolitan Chicago's rail network plays a key role in moving goods and people throughout the nation and North America.⁴⁸ Approximately one-quarter of all freight trains and one-half of all intermodal trains in the nation pass through Chicago, which serves as the continent's main interchange point between western and eastern railroads. Rail is a key part of the regional economy, directly employing nearly 12,000 people in the seven-county CMAP region in 2014 and indirectly supporting an additional 26,000 jobs.

The Chicago region contains an extensive freight rail network, handling the movement of approximately 1,300 trains each day, including 500 freight trains carrying some 37,500 railcars and 800 passenger trains.⁴⁹ The region contains an estimated 3,865 track-miles of rail -- greater mileage than nearly 40 other states -- as well as both passenger and freight rail facilities, including more than 50 freight rail yards. Passenger and freight trains share nearly 1,400 of the region's track-miles. The density of the rail network in this region provides unparalleled opportunities to make connections among the railroads as well as to trucking and other modes, providing choices and access to markets for shippers in our region.

However, this concentration of rail activity presents some challenges to the region, such as motorist delay at highway-rail grade crossings, transit delays where freight and passenger trains share track, and a reduction in speeds and productivity as trains navigate the congested rail network (Figure 7).

Future of CREATE

The Chicago Region Environmental and Transportation Efficiency program (CREATE) is a public-private partnership between freight railroads, the U.S. Department of Transportation (U.S. DOT), IDOT, the City of Chicago, Metra, and Amtrak.⁵⁰ First announced in 2003 after several years of study, the CREATE program today consists of 70 projects spanning a range of rail infrastructure improvements. These projects are organized into four corridors -- the Passenger Corridor, East-West Corridor, Beltway Corridor, and Western Avenue Corridor -- along with tower projects and highway-rail grade separation projects. The CREATE program also includes operational improvements and a local viaduct improvement program in Chicago.

As of January 2017, 29 projects have been completed, and an additional five are under construction.⁵¹ Seventeen projects are in various design stages, and the remaining 19 projects will begin upon identification of funding resources. The Belt Corridor is almost completed, and

⁴⁸ "Update on freight rail activity," CMAP, October 9, 2015, <http://cmap.is/1GnYRe3>.

⁴⁹ "70 projects to CREATE Chicago's transportation future: achieving \$31.5 billion in economic benefits," CREATE, 2016, http://www.createprogram.org/linked_files/HO_Create_2016.pdf.

⁵⁰ "CREATE program status check," CMAP, February 20, 2015, <http://cmap.is/1JCKVha>.

⁵¹ "Status of CREATE projects (1/25/2017)," CREATE program, January 25, 2017, http://createprogram.org/linked_files/status_map.pdf.



much progress has been made on the Western Avenue Corridor. Completing both the Passenger Corridor projects and grade separations remain a high priority, although most of these projects have not moved beyond initial engineering.

CREATE's full benefits will be achieved when the program is complete, but each project has independent benefits. To illustrate, the Englewood Flyover opened to traffic in late 2014. This project provided a new railroad bridge to carry Metra's Rock Island District trains over a line used by Amtrak and freight rail. Doing so removed a point of conflict between nearly 80 Metra trains and about 60 freight and Amtrak trains daily, reducing delays for both passenger and freight trains.

Figure 7. Confluence of passenger and freight rail activity



Source: Norfolk Southern Railway, as published in: Jeff Stagl, "Freight and passenger railroads seek cooperation, compromise on jointly used lines," *Progressive Railroading*, May 2017, <http://cmap.is/2CdG1pm>.

Recommendations

The Regional Strategic Freight Direction supports the completion of the CREATE program, and recognizes that CREATE's full benefits will be achieved when the program is complete. The Regional Strategic Freight Direction further supports prioritizing the completion of the 75th Street Corridor Improvement Project (75th CIP), the largest, most complex, and most significant remaining component of the CREATE program.⁵² This project, a combination of four individual

⁵² "75th Street corridor improvement project," CREATE and IDOT, <http://www.75thcip.org/>.



CREATE projects, is still under study and will provide benefits to freight and passenger rail networks. (The before-after diagrams for the 75th CIP crossings are shown in Appendix A.) The funding structure for 75th CIP should strike a balance between public and private investment commensurate with the level of benefit received by each, also balancing federal, state, and local sources.

After the completion of the 75th CIP, the Regional Strategic Freight Direction supports prioritizing the remaining Passenger Corridors and grade separation projects. These projects provide direct benefit to the public via improved Metra and Amtrak rail services and reduced delay for motorists. As freight volumes increase over time, in part facilitated by the implementation of CREATE, it will be important to fund publicly oriented projects, minimizing the impact of increased volumes on communities. Most of the CREATE program's funding to date has come from the public sector, primarily the federal and state governments, and yet implementation of its most public-facing projects has lagged. Significant additional funding is needed for these projects.

After completion of the CREATE program, the Regional Strategic Freight Direction believes that passenger rail and grade crossing improvements should represent the top rail investment priority for the region. Further, a convincing case must be made to demonstrate sufficient public benefits before investing additional public dollars in private rail projects. Appropriate data from the freight rail industry -- including speeds, volumes, and reliability of freight trains along specific corridors and at key rail-rail crossings -- is necessary to perform this type of analysis. While CMAP has made progress in collecting new data on rail performance in recent years, this information is aggregated to a high level and would not allow the evaluation of individual rail projects.

Key Implementers

- CREATE partners



Grade crossings

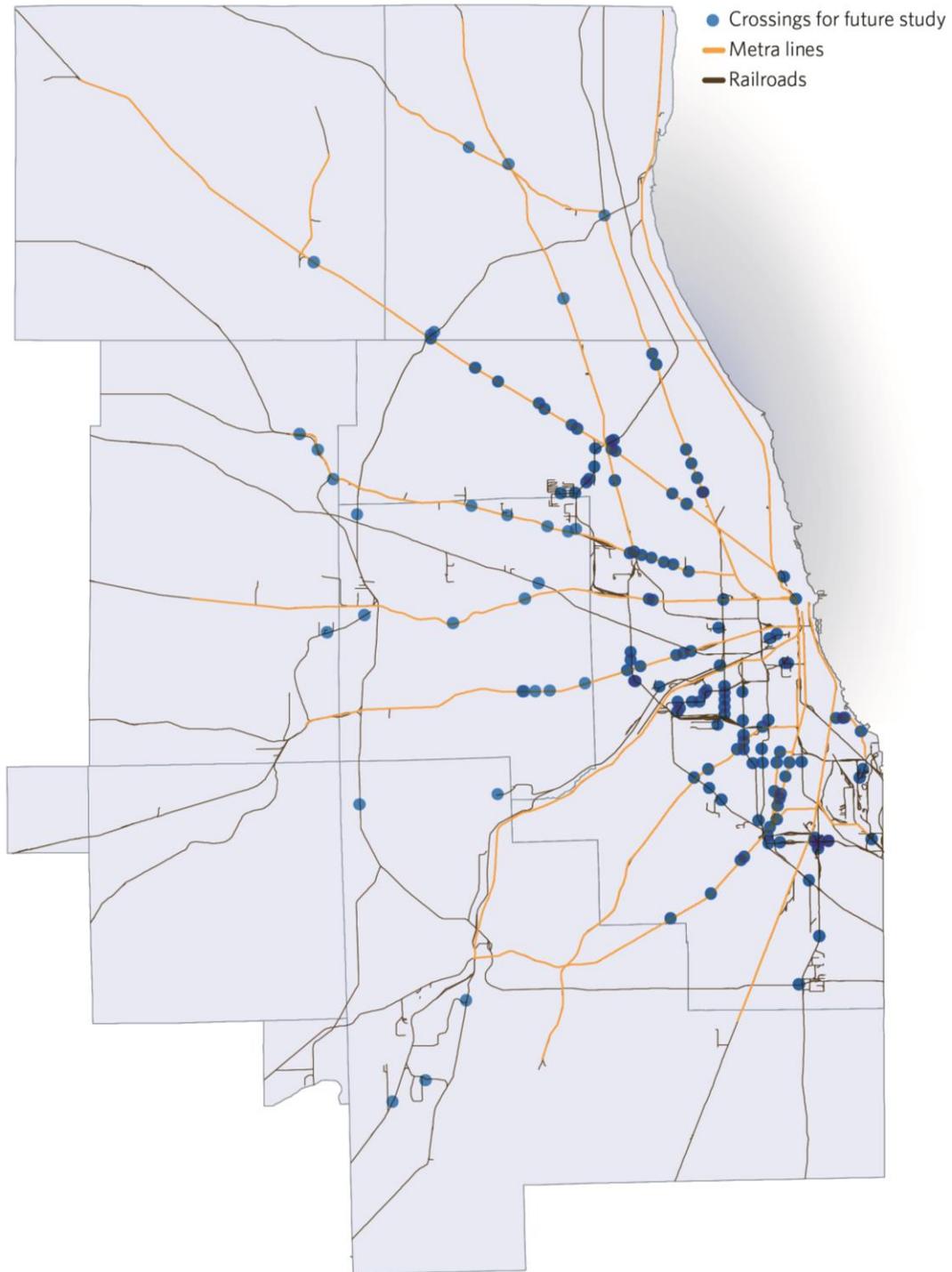
The region's dense rail network plays a key role in moving both goods and passengers, but it also imposes costs on local communities. One key type of conflict occurs at the region's nearly 1,500 highway-rail grade crossings.⁵³ Data from 2011 show that cars and trucks are delayed more than 7,800 hours each weekday at these locations, totaling more than 2 million hours of delay per year. Grade crossings are an important planning topic for a number of other reasons, including safety, traffic operations, and impacts on bus transit services.

Available data indicates that delay is highly concentrated among relatively few highway-rail grade crossings, suggesting that improvements at these locations could have significant regional benefits. The Regional Strategic Freight Direction identifies 150 locations that merit detailed study (see Appendix B and Figure 8 below). These locations were identified using a screening approach based on motorist delay, truck impacts, safety, and transit data. This information was collected from publicly available data sources published by the Illinois Commerce Commission (ICC), IDOT, and the Federal Railroad Administration (FRA). Further, any remaining CREATE grade crossing projects were also included, along with crossings located on the Elsdon Subdivision in Evergreen Park and Chicago, based on local stakeholder input.

⁵³ "Rail crossing delays in metropolitan Chicago," CMAP, February 20, 2015, <http://cmap.is/19LY7jB>.



Figure 8. Highway-rail grade crossings for future study



Source: Chicago Metropolitan Agency for Planning, 2016.



Recommendations

CMAP will work with regional stakeholders to prioritize these 150 crossings, with a goal of identifying a small subset of top locations for more detailed study. Proposed criteria to evaluate crossings in the next round include the following:

- Total daily trains, including both freight and passenger trains
- Safety, as measured by FRA's crash prediction value
- Average motorist delay, using updated data and improved methods
- Average annual daily traffic, as measured by IDOT
- Percent truck traffic, as measured by IDOT
- Transit use, as measured by the number of Chicago Transit Authority (CTA) and Pace buses
- Equity, as measured by percent economically disconnected population in associated census tracts
- Emergency access, as measured by designated CDOT 911 Crossings⁵⁴ and the number of emergency vehicle preemption actuations, i.e., instances when an emergency vehicle is able to preempt a traffic signal's normal operation in order to proceed through an intersection.

CMAP will work with stakeholders to vet criteria and results.

Although the initial prioritization relies on only eight criteria, it could require significant time and resources to complete. Namely, the calculation of average motorist delay requires more detailed data on the distribution of highway and rail traffic by time of day, which would require potentially extensive new data collection. Further, this calculation could incorporate a more sophisticated approach by using saturation flow rates, queue lengths, and delay when there is no train present (e.g., tankers and buses required to stop at the crossings, and motorists slowing down at crossings because of uneven pavement). Motorist delay is perhaps the most important evaluation criteria, which justifies this additional effort to secure better data and explore more sophisticated methodologies.

This necessary data collection could be a significant effort, requiring field data collection at a number of locations across the region, which would then be processed and applied to all crossings. In the meantime, the ICC should update its average motorist delay estimates for crossings in the region, taking advantage of more recent data reporting required of the private railroads by the FRA. CMAP and its planning partners widely use the most recent ICC dataset, which dates from 2011.

The goal of grade crossing prioritization recommended by the Regional Strategic Freight Direction is to arrive at a small number (e.g., 25) of top locations for detailed study. These locations will be evaluated based on a high-level analysis of construction feasibility, economic development potential, motorist delay, excessive gate-down time (i.e., greater than 10 minutes),

⁵⁴ A forthcoming planning-level list of highway-rail grade crossings in the city of Chicago that provide critical access for emergency vehicles.



and best fit among adjacent high-delay crossings. They could also include a benefit-cost analysis, potentially using publicly available tools from the FRA. At a future date, interested transportation implementing agencies could further this analysis on the small subset of grade crossings through the Phase I engineering process.

Key Implementers

- CDOT and other municipal stakeholders
- CMAP
- Counties
- ICC
- IDOT



Operations and communication

The Chicago region's rail network is among the densest and most complex in the nation, serving some 500 freight trains and 760 passenger trains each day across Metra, Amtrak, six Class I railroads, and various short line and regional railroads.⁵⁵ While communication among the railroads has improved in recent years, real-time information is necessary to efficiently move trains through the region. There are 10 separate dispatching centers -- some located hundreds of miles away -- governing the movement of trains in the region, and any individual train movement may be subject to several different dispatchers over the course of its journey through metropolitan Chicago.

At some locations, including many identified in the CREATE program, capital improvements are needed to improve speed, safety, and reliability of rail service. However, these improvements can be costly and slow to implement. Instead, communications and operations strategies can significantly reduce congestion or delay on the existing system, reducing the need for costly infrastructure expansion.

Recommendations

The Regional Strategic Freight Direction recognizes that there is significant potential to improve speed, safety, and reliability through operational changes, which also have the advantages of lower costs and quicker implementation compared with capital improvements. Operational changes could include greater coordination of dispatching across railroads and improved safety practices. Operational practices can also make freight rail a better neighbor for communities, for example by staging or cutting trains to avoid blocking at-grade highway crossings for excessive periods.

Railroads operating in the region have already taken some steps to improve day-to-day communication. The Chicago Transportation Coordination Office (CTCO) is a consortium of major railroads in the region, originally developed in tandem with the CREATE program.⁵⁶ Through CTCO, railroads can co-locate staff in order to improve coordination and communication among railroads. Recently, the railroads opened the Chicago Integrated Rail Operations Center (CIROC).⁵⁷ Housed within the CTCO, CIROC provides direct connections to each railroad's operational system and video surveillance of real-time track conditions. CIROC operates 24/7 and has great potential to deepen coordination of operations across railroads in the Chicago area. Combined with the eventual completion of the CREATE program, operational improvements such as these could deliver substantial increases in train speeds and reliability for passenger and freight traffic alike.

⁵⁵ "About CREATE," CREATE Program, <http://createprogram.org/about.htm>.

⁵⁶ "Final feasibility plan: Amendment 1," CREATE, January 2011, http://createprogram.org/linked_files/FFS_amend1_jan2011.pdf.

⁵⁷ "Freight rail industry improves train management in the Chicago region," Association of American Railroads, December 1, 2016, <http://cmap.is/2BH8qHj>.



While these recent steps toward greater cooperation by the railroads are promising, very little information on day-to-day operations is publicly available. As such, it is difficult for public agencies to understand the full benefits of improved communication and operations across the railroads, including perhaps a reduced need for significant capital improvements. The Regional Strategic Freight Direction calls for a closer working relationship, including expanded data sharing, between the railroads and public-sector agencies.

Key Implementers

- Amtrak
- Metra
- Private railroads



Intercity passenger rail

Intercity passenger rail is a safe, reliable, efficient, and high-capacity transportation mode, one in which the Chicago region plays a particularly unique and important role. Chicago Union Station is the hub of Amtrak's Midwest network, a chief origin and destination of long-distance, cross-country Amtrak routes, and also the busiest Amtrak station outside the dense Northeast Corridor.⁵⁸ The connections enabled by intercity passenger rail help to tie together the emerging Chicago-Milwaukee-Northwest Indiana tristate megaregion into a cohesive economic unit.⁵⁹

There is substantial conflict between freight and passenger rail in the Chicago region, particularly to the south and west of the city,⁶⁰ as well as just outside the CMAP region in northwest Indiana. Passenger trains tend to move radially between the edge of the region and the center, while freight trains tend to move from the southeast to the west or northwest, across the passenger flows. Passenger rail is entitled to operational priority, but this reduces freight speeds at locations where passenger and freight lines cross or share tracks. In addition, unplanned interference with freight trains can reduce on-time performance for passenger services.

For example, there is limited capacity for additional Metra service on the Heritage Corridor between downtown Chicago and Joliet because of high freight demand in the area. Amtrak is evaluating the potential to move high-speed Amtrak trains traveling between Chicago and St. Louis off this corridor and onto the publicly owned Rock Island corridor. Doing so would not only address some conflicts along busy rail lines, but also move some passenger train operations from Chicago Union Station to the less-congested LaSalle Street Station.

Recommendations

The Regional Strategic Freight Direction recognizes the contribution of intercity passenger rail, but also recognizes key challenges that limit its full potential. For one, intercity passenger rail terminals in the region need additional investment. Primarily, Chicago Union Station is nearing its current capacity and requires significant investments to accommodate future growth in rail service, improve passenger amenities, and strengthen connections to ground transportation. Redevelopment of Union Station was a key regional priority in GO TO 2040, and is being evaluated in the ON TO 2050 Regionally Significant Project process.

Another key challenge is that most intercity passenger rail service occurs on infrastructure owned by private freight railroads. While provisions are in place to allow passenger access to these facilities, conflict with freight trains often causes delay for passenger service. Some state-supported Amtrak services in Illinois have recently suffered from poor on-time performance,

⁵⁸ "Amtrak national facts," Amtrak, <http://cmap.is/2BadGnx>.

⁵⁹ The Alliance for Regional Development, <https://alliancerd.org/>, works toward this goal.

⁶⁰ "CREATE program status check," CMAP, February 20, 2015, <http://cmap.is/1JCKVha>.



including the Illini and Saluki services to central and southern Illinois, which have averaged a monthly on-time performance rate of 30-40 percent over the past year.⁶¹ Further, private ownership of rail facilities can limit growth in passenger rail service for some corridors. Addressing these challenges -- in part through completion of the remaining CREATE projects, particularly the 75th Street CIP, as well as other regionally significant projects to be prioritized in ON TO 2050 -- is key to an integrated, multimodal transportation network that connects northeastern Illinois to the nation.

Echoing previous recommendations, additional performance data is required to better understand where Amtrak's operational chokepoints are located and the impacts of these chokepoints on congestion and reliability. Without this sort of information, it is difficult to plan for improvements to Amtrak's operations or evaluate the potential benefits of proposed capital projects.

Key Implementers

- Amtrak
- IDOT
- Private railroads
- U.S. DOT

⁶¹ CMAP analysis of Amtrak monthly performance reports, measured as "all stations on-time performance:" <https://www.amtrak.com/servlet/ContentServer?c=Page&pagename=am%2FLayout&cid=1241245669222>.



Municipal support for freight

Freight has not only regional but also local transportation, land use, and economic impacts. Local governments -- particularly municipalities -- have important tools at their disposal to help support the efficient movement of freight and orderly development of freight facilities, and to harness the freight system to support local economic development.⁶² These same tools also help municipalities balance the local costs and benefits of freight activity, ensuring a high quality of life for local communities.

Past work at CMAP provides insight into local concerns related to freight, as well as local approaches to regulating freight movement. CMAP's 2014 Municipal Survey⁶³ included four topics related to freight: freight-related challenges, regulation of overnight deliveries, regulation of on-street truck parking, and other freight-related initiatives. Survey responses indicate that the region's municipalities view some freight challenges (e.g., pavement conditions, lack of on-street loading zones, inadequate off-street parking, and poor geometrics for trucks) as more pressing than others (e.g., lack of communication with local businesses), and that most municipalities employ the same approaches to the regulation of overnight deliveries and on-street parking for heavy trucks. In general, municipalities with larger shares of industrial lands, as well as older municipalities and those located in the core of the region, are more likely to view freight issues as more of a challenge.

There are many opportunities for local governments to plan for the freight system. Trucks can contribute to congestion and increased wear-and-tear on local streets; local governments can regulate the routing, parking, and local deliveries of trucks. Freight-related developments like warehouses and distribution centers have major footprints within communities; land use is an inherently local authority, and so local governments have wide latitude to plan, zone, and permit uses in context-sensitive ways. Freight facilities employ workers and generate tax revenues; local governments have economic development incentives and set local tax policies to encourage freight and freight-dependent users.

The Regional Strategic Freight Direction acknowledges the critical role of local communities in the regional freight system. It develops a planning framework to assist local planning in the region's most freight-heavy areas and offers comments on pursuing certain freight-related developments as a local economic development strategy.

Multijurisdictional planning in support of regional freight clusters

While the Chicago region as a whole is a premier freight hub, freight activity tends to occur in a relatively small number of locations in the region. Freight-intensive land uses tend to co-locate in order to take advantage of efficiencies derived from shared infrastructure and workforce.

⁶² "Freight land use topics: Memorandum to CMAP Freight Committee," CMAP, May 16, 2016, <http://cmap.is/2BEMpIt>.

⁶³ "Detailed review of freight items in 2014 Municipal Survey: Memorandum to CMAP Freight Committee," CMAP, November 17, 2014, <http://cmap.is/2BINNdO>.



Identifying regional clusters of dense, freight-supportive land uses will help to focus future research and recommendations based on their unique conditions. As such, taking a strategic look at the key planning issues in each of those areas -- and recommending investments or policies to address these concerns -- promises substantial benefits for local communities as well as the regional economy.

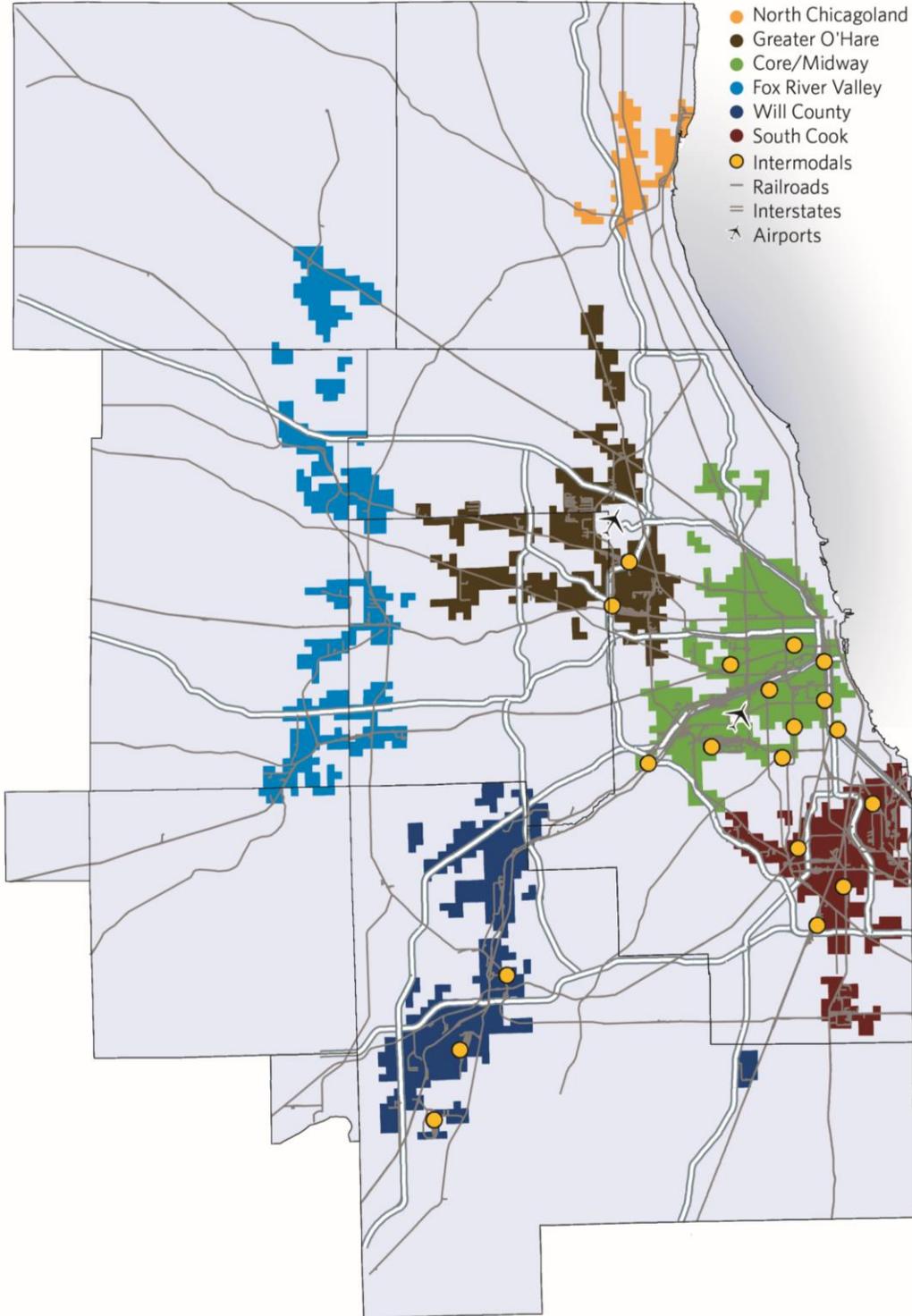
CMAP has identified six regional clusters through several iterations of a cluster analysis process, refined based on geography, statistical profile, and qualitative factors⁶⁴ (Figure 9). The cluster analysis relied on real estate and land use data, including the rentable building area (RBA) for warehouse, manufacturing/food processing, and distribution facilities, along with industrial land use area.

Three of the resulting clusters -- Core/Midway, Greater O'Hare, and South Cook -- are located near the center of the region, close to established transportation facilities and workforce. The other three -- North Chicagoland, Fox River Valley, and Will County -- lie further towards the edge of the region. Together, these six clusters contain 71 percent of the industrial land and 82 percent of freight-related building area in the region. Relevant statistics on land use, buildings characteristics, and transportation infrastructure for each of these clusters can be found in Appendix C.

⁶⁴ "Freight land use clusters in northeastern Illinois," CMAP, August 26, 2016, <http://cmap.is/2c9OjFC>.



Figure 9. Freight-supportive land use clusters



Source: Chicago Metropolitan Agency for Planning analysis of CoStar 2015 data and CMAP Land Use Inventory 2013 data.



Recommendations

Using this analysis as a starting place, the Regional Strategic Freight Direction recommends that future local freight studies be prioritized for the region's freight clusters. The boundaries and names of freight clusters presented here are not meant to be prescriptive; future planning efforts would, by necessity, further refine or subdivide these boundaries based on the interest and participation of various units of local government, as well as the specific topics to be studied. While these studies could apply general best practices for freight land use planning -- such as avoiding conflicts, using buffer approaches when conflicting land uses border each other, and revising building codes and other local regulations where nuisances cannot be avoided -- they should focus on issues of particular importance to each cluster.

For example, clusters located close to the center of the region tend to have older and smaller facilities, which are less conducive to modern manufacturing, warehousing, and distribution needs. At the same time, they are located near existing transportation infrastructure and have ready access to both workers and potential consumer markets. Taken together, their local planning issues could focus on land use preservation and redevelopment strategies to retain these areas as key nodes of regional economic activity. Some of these clusters also face a legacy of disinvestment, which may require different redevelopment strategies. The challenge of redeveloping vacant areas varies from community to community. For example, both the South Cook and Will County freight-supportive clusters have a significant percentage of industrial land that is vacant (18 percent and 20 percent, respectively).⁶⁵ However, the vacancy in South Cook is persistent and long-term, while the vacancy in Will County is mostly temporary and due to rapid development. Other broad challenges to redeveloping vacant industrial land include environmental remediation, site assembly, and unclear titles or liens.

In addition, local freight plans in central, developed areas should address the land use and transportation conflicts that may exist between freight uses and neighboring communities. As such, they could offer policy recommendations and proposed capital improvements to untangle and coordinate truck routes, harmonize truck permitting for OS/OW loads, facilitate truck loading and site access, address safety issues at critical locations, and reduce congestion. For land use, they may plan to preserve and buffer existing freight-intensive or industrial areas.

In contrast, clusters located farther from the center of the region tend to have newer and larger facilities, in line with modern industrial requirements. However, greenfield development at many sites suggests a different set of planning issues, such as ensuring appropriate transportation and utility infrastructure is developed, particularly to allow direct routing of trucks from industrial facilities to major highways. Further, access to workers should be considered, local plans and building codes should be updated to minimize potential conflicts between freight and the public, and appropriate measures taken to preserve high-quality natural areas, agricultural lands, and open spaces. For these clusters, local planning issues could focus on ensuring new developments are well integrated into existing communities.

⁶⁵ "Freight land use clusters in northeastern Illinois," CMAP, August 26, 2016, <http://cmap.is/2yTLsri>.



Local municipalities are the key implementers of development, local land use change, and local infrastructure improvements. The Regional Strategic Freight Direction encourages future local freight planning efforts to take a multijurisdictional, collaborative approach, and to include outreach to local private-sector stakeholders. Local freight studies could be supported through CMAP's LTA program, the Regional Transportation Authority's Community Planning Program, subregional COGs, or other venues.

Key Implementers

- CMAP
- COGs
- Counties
- Municipalities



Local economic development considerations

Some communities are attractive to freight-related development due to proximity to major transportation facilities and the availability of industrial-zoned land for development or redevelopment. As a result, many communities pursue freight or logistics-related businesses, particularly fast-growing components of the industry such as warehousing and distribution centers, as part of their local economic development strategies. Freight-related development is often anticipated to generate new jobs and tax revenues. However, these anticipated benefits should be evaluated carefully, especially for some components of the larger freight cluster.

First, technological trends suggest that employment growth at some freight-related facilities could slow or even decline over time (Table 4). Research finds that predictable, physical tasks have the potential to be undertaken by existing technologies.⁶⁶ This type of work is heavily represented among warehousing occupations, such as hand laborers and freight movers, stock clerks, and hand packers and packagers (Table 5). These occupations represent 50 percent of employment in the region’s warehousing and storage industry,⁶⁷ and can anticipate widespread changes as technology alters how workers use their time and conduct tasks.

Table 4. Employment change in the warehousing and storage industry (NAICS 493)

Geography	2001 Jobs	2016 Jobs	Change	% Change
CMAP Region	27,796	31,243	3,447	12.4%
Cook County	21,250	16,476	(4,774)	(22.5%)
DuPage County	4,375	4,503	128	2.9%
Kane County	609	1,214	605	99.3%
Kendall County	24	1,001	977	4070.8%
Lake County	726	1,190	464	63.9%
McHenry County	362	271	(91)	(25.1%)
Will County	450	6,587	6,137	1363.8%
Chicago MSA	28,949	38,439	9,490	33%

Source: Chicago Metropolitan Agency for Planning analysis of Economic Modeling Specialists International data (Emsi 2017.3).

⁶⁶ Michael Chui, James Manyika, and Mehdi Miremadi. "Where Machines Could Replace Humans--and Where They Can't (yet)," *McKinsey Quarterly*, July 2016. Web. 03 Jan. 2017. <http://cmap.is/2yTtxAY>.

⁶⁷ CMAP analysis of Economic Modeling Specialists International data (Emsi 2017.3).



Table 5. Occupations employed by the warehousing and storage industry (NAICS 493)

Description	Employed in industry (2016)	% of total jobs in industry (2016)
Laborers and freight, stock, and material movers, hand	9,599	30.7%
Packers and packagers, hand	3,696	11.8%
Industrial truck and tractor operators	3,446	11.0%
Stock clerks and order fillers	2,875	9.2%
Shipping, receiving, and traffic clerks	1,493	4.8%

Source: Chicago Metropolitan Agency for Planning analysis of Economic Modeling Specialists International data (EMSI 2017.3)

Second, some of these same freight and logistics jobs do not pay particularly well. The average annual wage for warehousing and storage jobs in the region is \$55,179, compared to the regional average of about \$70,530. Median wages for the largest occupations within the warehousing and storage industry -- such as laborers and freight movers, industrial truck and tractor operators, store clerks and order fillers, hand packers and packagers, and shipping, receiving, and traffic clerks -- fall between \$10-16/hour.⁶⁸ As such, some freight-related jobs may do relatively little to advance economic mobility in the region, contributing little to residents' ability to build wealth and move up the economic ladder. Research suggests that economic mobility improves inclusion and can have broad regional benefits.

Third, freight and logistics jobs may not generate much local tax revenue. CMAP's past research on the fiscal and economic impacts of local development decisions⁶⁹ illustrates the relatively modest fiscal return of industrial land uses to municipalities, particularly compared to other land uses like retail or office. Based on a set of case studies, the fiscal impact for industrial land can be near break-even levels. Municipalities can employ a number of strategies to accommodate freight uses. The Village of Romeoville, for example, implements development-specific tools, such as recapture agreements, to require industrial developers to cover the public infrastructure costs associated with their developments.⁷⁰ As online sales grow and some sales shift to distribution locations, industrial may generate more revenue, although the full impact of this trend is still unclear.

Recommendations

In total, the Regional Strategic Freight Direction recommends that local governments take a cautious approach to freight-related development as an economic development strategy, and have reasonable expectations of the number and type of jobs, as well as local tax revenues, that

⁶⁸ Assuming a 40-hour work week and 52-week year, median annual salaries for these occupations would range from \$22,500 to \$33,000.

⁶⁹ "Fiscal and Economic Impact Analysis of Local Development Decisions," CMAP, January 2014, <http://cmap.is/2CpGGlu>.

⁷⁰ "Tax Policies and Land Use Trends," CMAP, March 2017, <http://cmap.is/1M7zcZY>.



this development may generate. Each proposal is unique, and municipalities should carefully evaluate infrastructure costs, fiscal and economic benefits, and impacts on community goals.

Key Implementers

- Counties
- Economic development organizations
- Municipalities

Environmental justice

Federal mandates highlight the importance of addressing environmental justice -- which the U.S. Environmental Protection Agency defines as the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies”⁷¹ -- in all aspects of the transportation planning process, including freight planning. Federal law and regulations prohibit not only direct discrimination, but also the disparate impacts on protected groups such as minority populations or disabled persons.

The U.S. DOT outlines three principles on how to incorporate environmental justice into its planning, programming, and policies:⁷²

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

These three principles are implemented through specific actions and policies, such as the following specified by the Federal Highway Administration:⁷³

- Ensure any social impacts to environmental justice populations are identified early and continually throughout the planning process.
- Ensure participation from environmental justice communities in all programs or activities receiving financial assistance.
- Collect necessary data and conduct research to ameliorate any environmental justice concerns.

⁷¹ “Environmental Justice,” U.S. Environmental Protection Agency website: <https://www.epa.gov/environmentaljustice>.

⁷² U.S. Department of Transportation, Order 5610.2(a): <http://cmap.is/2IH7jh5>.

⁷³ Federal Highway Administration, Order 6640.23A: <http://www.fhwa.dot.gov/legsregs/directives/orders/664023a.cfm>.



- Identify and evaluate environmental, public health, and social and economic effects of programs and policies on low-income and minority communities.
- Propose measures to avoid, minimize, or mitigate disproportionately high and adverse impacts on public health and interrelated social and economic effects on environmental justice communities.

The Regional Strategic Freight Direction recognizes that freight activity can have adverse impacts on neighboring communities, and that these impacts are of particular concern in certain communities. As part of the ON TO 2050 process, CMAP has developed an Inclusive Growth Strategy Paper and worked extensively with stakeholders to identify “economically disconnected areas” in northeastern Illinois.⁷⁴ Economically disconnected areas are identified as census tracts that have a concentration of either (1) low-income and persons of color or (2) low-income and limited-English speaking populations. While economically disconnected areas are found across the seven-county region, there are particularly large concentrations in major freight activity centers such as the O’Hare area, the south and west sides of the city of Chicago, the south Cook suburbs, and the Joliet area in Will County (Figure 10).

The close correspondence of freight activity centers and economically disconnected areas is perhaps unsurprising. As described elsewhere in the Regional Strategic Freight Direction’s land use policies, freight is often a locally unwanted land use, due in large part to its negative externalities such as pollution and congestion. The result is often lower property values for neighboring residential areas, which in turn are more affordable to low-income populations.

There are many potential environmental justice concerns related to goods movement. Table 6 illustrates potential freight-related environmental justice concerns, as well as potential recommendations, for each topic area of the Regional Strategic Freight Direction. In practice, responding to these concerns would be a project- and community-specific effort.

⁷⁴ “Inclusive Growth,” CMAP, July 2017.

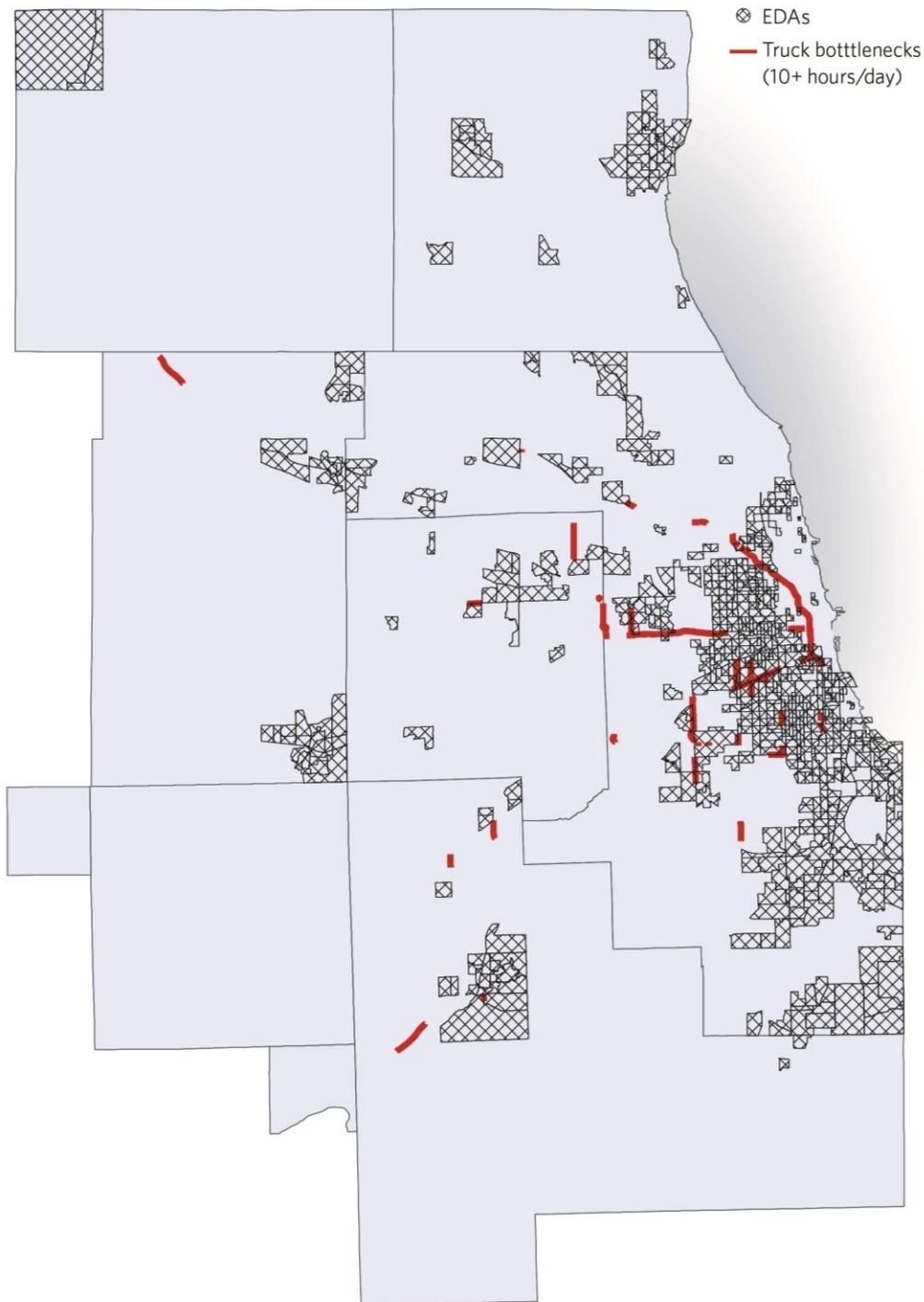


Table 6. Environmental justice concerns

	Potential environmental justice concerns
Major freight facility developments	Access to jobs; workforce training; traffic congestion; roadway condition; neighborhood connectivity; air and water quality; noise, vibrations, and other nuisances
Truck policy	Traffic congestion; roadway condition; safety; emissions; noise; vibration; truck routing; access to jobs and training; pedestrian and bike crossings and neighborhood connectivity
Rail policy	Grade crossing delay; safety; emissions; noise; vibration; access to jobs and training; pedestrian crossings and neighborhood connectivity
Municipal policy	Community participation; economic development; pollution and environmental remediation; access to workforce and affordable housing; traffic congestion and roadway conditions; health and safety; incompatible land uses; municipal resources
Transportation programming	Access to funding sources; ability to provide local match and administer funds



Figure 10. Economically Disconnected Areas (EDAs) and truck bottlenecks on National Highway System routes



Source: Chicago Metropolitan Agency for Planning, 2017.



Recommendations

The Regional Strategic Freight Direction recognizes that additional considerations are required for freight-related planning and development, given the high concentrations of low-income populations and persons of color in freight areas. At the local level, these additional considerations include greater outreach, analysis, and mitigation strategies.

- First, additional outreach and community engagement efforts are necessary to ensure full and fair participation in economically disconnected areas. This type of outreach may be somewhat unfamiliar to public agencies and private firms, which would require additional time and effort.
- Second, additional analysis above and beyond traditional transportation studies may be necessary to evaluate disparate or disproportionate impact in economically disconnected areas. For example, health impact assessments are an emerging planning tool to assess how proposals such as new projects or regulations broadly affect the health of local communities. CMAP has experience in conducting health impact assessments through its LTA program.⁷⁵
- Third, public agencies and private firms alike should consider additional mitigation activities that may be more appropriate in economically disconnected areas, given the confluence of negative externalities in those areas. Relatively low-cost approaches such as cleaner or quieter trucks and locomotives, noise walls, and landscaping may go a long way toward mitigating local concerns. Higher-cost approaches such as highway-rail grade separations may be more appropriate in some areas. Local hiring or training programs could also be an appropriate approach for some circumstances. For example, some major freight projects have established community benefits agreements, which are formal agreements establishing financial or environmental measures meant to benefit the community in which a project is located.

At the regional level, CMAP could further develop the above best practices as a toolkit, and widely disseminate this resource to local governments. In addition, CMAP could directly promote the implementation of these best practices and, more broadly, the importance of environmental justice in transportation planning and programming, namely through its management of three federal transportation funding programs: Congestion Mitigation and Air Quality Improvement Program (CMAQ), Transportation Alternatives Program (TAP), and the Surface Transportation Program (STP).

There are several opportunities to incorporate environmental justice concerns into the transportation programming process. Broadly, additional weight could be applied to any CMAQ, TAP, or STP project located in an economically disconnected community, or perhaps to certain types of transportation projects -- such as highway-rail grade crossing separations -- or

⁷⁵ "A Health Impact Assessment for Carpentersville's Washington/Main Streets Intersection," CMAP, May 11, 2016, <http://cmap.is/1rv4G0R>.



locations -- such as the region's main truck bottlenecks -- that are seen to provide particular benefit to environmental justice communities.

While CMAP has a role to play in helping to evaluate and prioritize transportation projects for federal funding, it does not directly initiate transportation projects, let alone build, operate, or maintain them. Nevertheless, CMAP could do more to work with the region's transportation implementing agencies to develop project proposals that tackle freight-related environmental justice concerns. Identifying major needs, such as acute trucking bottlenecks or locations of excessive motorist delay at highway-rail grade crossings, is an important first step in the project development process.

The Regional Strategic Freight Direction recommends that CMAP staff initiate a conversation with the Transportation Committee and MPO Policy Committee on how to best incorporate environmental justice concerns into the transportation programming process. Some of those conversations are already underway.

Today, the competitive CMAQ program incorporates environmental justice considerations into its evaluation of proposed direct emissions reduction projects.⁷⁶ Specifically, 20 points out of 100 total possible points are determined based on air quality benefits experienced by sensitive populations⁷⁷ and an additional five points are determined based on annual health benefits. This explicit consideration of sensitive populations could be broadened to other project types eligible for CMAQ funding.

Additionally, stakeholders from across the region are currently considering new approaches to the management of the STP, a longstanding federal program that can support a wide array of eligible transportation improvements. As of mid-2017, the proposed revised evaluation criteria would include special accommodation for regional priorities, including freight improvements and support for economically disconnected areas.

Key Implementers

- CMAP
- Counties
- Municipalities
- Transportation agencies

⁷⁶ "Congestion Mitigation and Air Quality Improvement Program and Transportation Alternatives Program Application Booklet, Federal Fiscal Years 2018-2022 (CMAQ) and 2018-2020 (TAP)," CMAP, <http://cmap.is/2rhe9PE>.

⁷⁷ Defined as those over 65 years or under 5 years of age, minority, and low-income status by Census tract.



Programming of freight funds

As the nation's preeminent freight hub, metropolitan Chicago needs a clear path to guide its investment in freight transportation infrastructure over the long term. To meet this need, the Regional Strategic Freight Direction establishes a programming framework defining how to best use limited capital funds to address freight issues. This framework is especially timely given the growing federal and state emphasis on freight investment needs. Enacted in late 2015, the current federal transportation law, the Fixing America's Surface Transportation (FAST) Act, provides first-ever dedicated funding for freight improvements.⁷⁸

The Regional Strategic Freight Direction intentionally does not provide a prioritized, detailed project list. Rather, it is the responsibility of the region's long-range transportation plan to prioritize a list of transportation projects -- including both freight and passenger -- against a limited source of funds. That effort involves the development of a socioeconomic forecast, travel demand modeling, and a financial plan for transportation. These activities are housed within ON TO 2050, the region's next comprehensive plan due for adoption in October 2018.

⁷⁸ "Congress passes transportation reauthorization bill," CMAP, December 4, 2015, <http://cmap.is/1IBWD16>.



Principles for use of federal funds

For the first time, FAST provides \$10.7 billion over five years for freight improvements.⁷⁹ While the FAST Act will expire in 2020 -- well before the planning horizon of 2050 -- it sets a valuable precedent in recognizing freight needs as a federal priority and providing dedicated funds to begin to address those needs. FAST establishes two funding programs, one distributed to the states by formula and the other awarded to a wide array of applicants on a competitive basis. The law establishes a national multimodal freight policy and includes provisions for multimodal freight planning at both the national and state levels.

The National Highway Freight Program (NHFP) is authorized at \$6.3 billion over five years, with an annual average of about \$1.25 billion dollars. These funds are divided among the states according to the same formulas governing the overall highway apportionments. As a result, Illinois is expected to receive 3.6 percent of the freight formula funds, which translates to a five-year total of about \$225 million, or about \$45 million annually. NHFP funds can be used on a wide array of highway projects that improve freight movement, and for all phases of project development. Up to 10 percent of NHFP funds may be used for freight intermodal or freight rail projects each year.

The competitive Nationally Significant Freight and Highways Program (NSFHP) would be funded at \$4.5 billion over five years, with an annual average of about \$900 million. This program is currently referred to by the U.S. DOT as the Infrastructure for Rebuilding America (INFRA) program. U.S. DOT selects projects for funding, with Congressional oversight. This program is designed to support larger, complex projects, with a minimum total project cost of \$100 million and a minimum award size of \$25 million. Ten percent of the NSFHP is set aside for smaller projects and 25 percent must be spent in rural areas. FAST provides for a wide range of eligible applicants to the NSFHP, including large metropolitan planning organizations like CMAP, and provides for up to \$500 million over a five-year period to be awarded to multimodal freight projects.

Recommendations

As discussed above, the FAST Act for the first time provides dedicated freight funds to the states via the NHFP. While the overall level of funding is somewhat modest, averaging only about \$45 million annually, NHFP leverages additional funds. These funds can be spent on a wide array of freight projects, including, to a limited extent, rail and intermodal projects.

The Regional Strategic Freight Direction finds that limited NHFP funds would be best managed using performance-based programming principles, including the evaluation and ranking of projects using accepted criteria and public data; a transparent process; and stakeholder involvement in project selection. In addition, the funds should be directed to the areas with the greatest freight needs, which are in large urban areas. Therefore, the Regional Strategic Freight

⁷⁹ "Congress passes transportation reauthorization bill," CMAP, December 4, 2015, <http://cmap.is/1IBWD16>.



Direction recommends that the state's major metropolitan planning organizations play a major role in assisting the region's many jurisdictions in targeting the NHFP funds allocated to Illinois to further regional priorities.

While the program's eligibility is broad, the funding is modest; the program's impact would be maximized by focusing on a relatively small subset of projects. For northeastern Illinois, the Regional Strategic Freight Direction recommends that NHFP funds be focused on the following types of freight improvements: projects that address truck bottlenecks on the NHFN; projects that allow for more direct access to the NHFN, particularly for intermodal facilities; projects that improve highway-rail grade crossings; and projects that separate rail chokepoints, particularly for conflicts between passenger rail and freight rail.

In contrast to the NHFP, which provides limited but stable funding, federal competitive programs are available for large-scale projects. The main competitive program is the new INFRA grant program established under the FAST Act, but the longstanding Transportation Investments Generating Economic Recovery (TIGER) program has also supported large-scale freight projects in the past. Unlike INFRA, which is supported by dedicated resources from the federal Highway Trust Fund, TIGER is subject to annual appropriations.

The Regional Strategic Freight Direction recognizes the importance of federal competitive programs to secure significant resources to support large, complex projects. These megaprojects have broad impact on speeds and volumes of goods movement, and transportation agencies struggle to pay for these types of projects out of their traditional resources. As such, INFRA and TIGER are best applied to big-ticket projects such as expressway improvements or rail flyovers.

The INFRA and TIGER programs are subject to keen competition from projects across the nation. To increase the region's chances at securing these competitive funds, the Regional Strategic Freight Direction recommends that the region focus on submitting a small number of applications from northeastern Illinois for each call for projects. The U.S. DOT looks favorably on projects with broad regional support, and limiting the number of projects submitted increases the chances that the prioritized projects would be successful. The Regional Strategic Freight Direction further recommends that CMAP coordinate the region's application process, working with transportation stakeholders to identify and reach a consensus on the prioritized project or projects consistent with the policies and principles of the Regional Strategic Freight Direction. Lastly, the Regional Strategic Freight Direction recommends that IDOT play a similar role in coordinating and limiting the number of projects submitted from downstate Illinois to each call for projects, ideally focusing on a small number of projects for each application.



Key Implementers

- CMAP
- Counties
- IDOT
- Municipalities
- Railroads
- Tollway



Moving forward

While the Regional Strategic Freight Direction is CMAP’s near-term freight policy agenda, many actors have a role in implementing its recommendations. The following matrix describes key action items and the most appropriate lead implementers for each (Table 7).

Table 7. Implementation action matrix

	Actions	Lead implementers
Truck policy	Take a proactive and collaborative effort to designate truck routes and restrictions.	Municipalities, counties, IDOT
	Implement recommendations of Regional Truck Permitting Study.	Municipalities, counties, IDOT, private industry
	Implement innovative delivery-management policies.	Municipalities, transportation agencies, private industry
Rail policy	Assess major rail proposals according to principles in the Regional Strategic Freight Direction.	CMAP
	Support completion of CREATE program, prioritizing 75 th CIP, and remaining Passenger Corridor and grade separation projects.	CREATE partners
	Conduct detailed study of region’s highway-rail grade crossings.	CMAP, IDOT, CDOT, Cook County, railroads, municipalities
	Implement improved railroad operations.	Private railroads, Metra, Amtrak
	Promote intercity passenger rail, particularly the redevelopment of Chicago Union Station.	Amtrak, private railroads, Metra, IDOT, CDOT
Land use policy	Share best practices for major freight facility development.	CMAP
	Assess major freight facility development according to principles in the Regional Strategic Freight Direction.	CMAP
	Approach environmental justice issues according to framework in the Regional Strategic Freight Direction.	Transportation agencies, counties, municipalities, private industry
	Prioritize local freight planning efforts in the freight clusters identified in the Regional Strategic Freight Direction.	CMAP, counties, municipalities
	Approach freight land use planning issues according to framework laid out in the Regional Strategic Freight Direction.	Counties, municipalities
	Approach freight as a local economic development tool with caution.	Counties, municipalities



Programming of federal freight funds	Suballocate National Highway Freight Program (NHFP) funds to MPOs.	IDOT, MPOs
	Focus NHFP funds to truck bottlenecks on NHFN; improve access to NHFN; and pursue grade crossing improvements.	IDOT, MPOs
	Submit a small number of regional project for competitive national programs such as TIGER and FASTLANE, coordinated by CMAP.	CMAP, transportation agencies



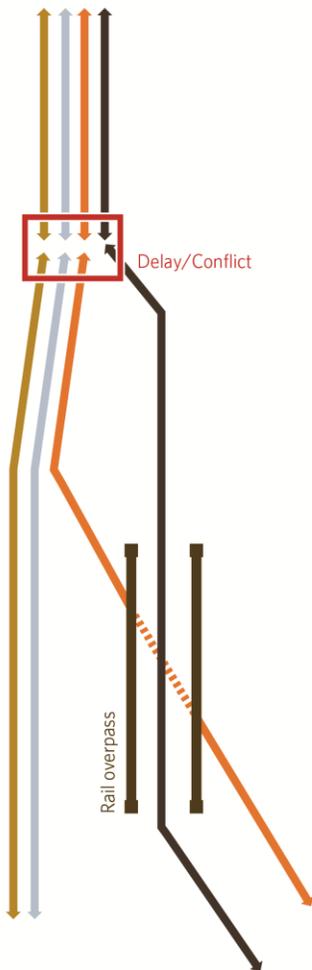
Appendix A: 75th CIP grade crossing project types

Figure 11. Added track to separate passenger and freight trains

- Norfolk Southern
- Union Pacific / CSX
- Amtrak
- Belt Railway of Chicago

Before

At 80th Avenue, four busy railroads merge onto just three tracks, leading to conflicts and delay.



After

Adding track and re-routing tracks over an existing bridge would reduce conflict and channelize traffic, reducing delay.

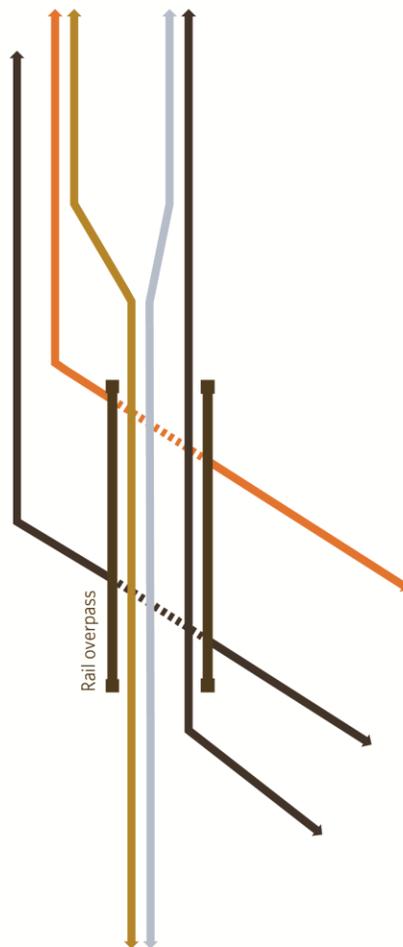
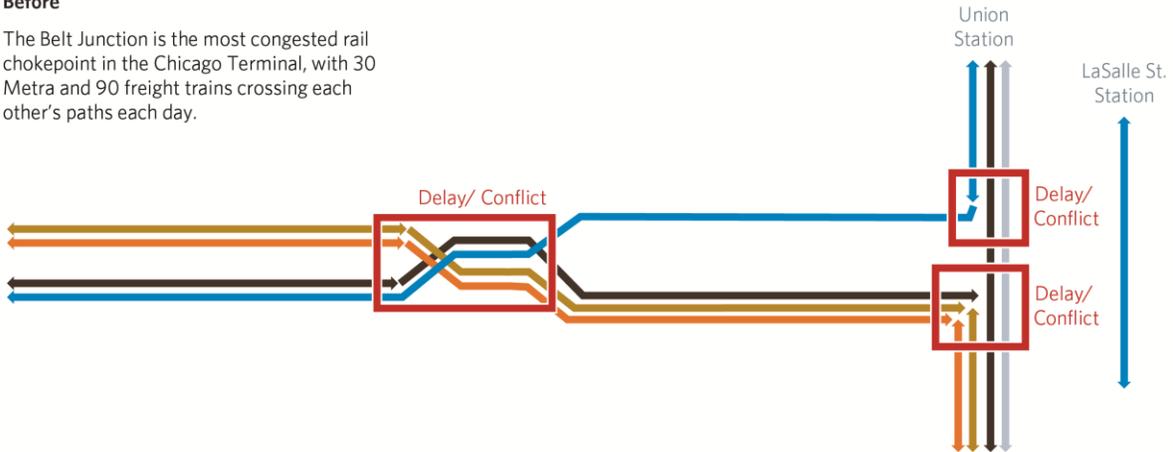


Figure 11. Rail-rail grade separation

- Norfolk Southern
- Union Pacific / CSX
- Amtrak
- Belt Railway of Chicago
- Metra

Before

The Belt Junction is the most congested rail chokepoint in the Chicago Terminal, with 30 Metra and 90 freight trains crossing each other's paths each day.



After

A new flyover would eliminate conflict between 30 SouthWest Service Metra trains and more than 50 freight trains per day. Constructing the Metra flyover would connect the SouthWest Service to LaSalle Street Station instead of Union Station, improving the SouthWest Service and reducing congestion at Union Station.

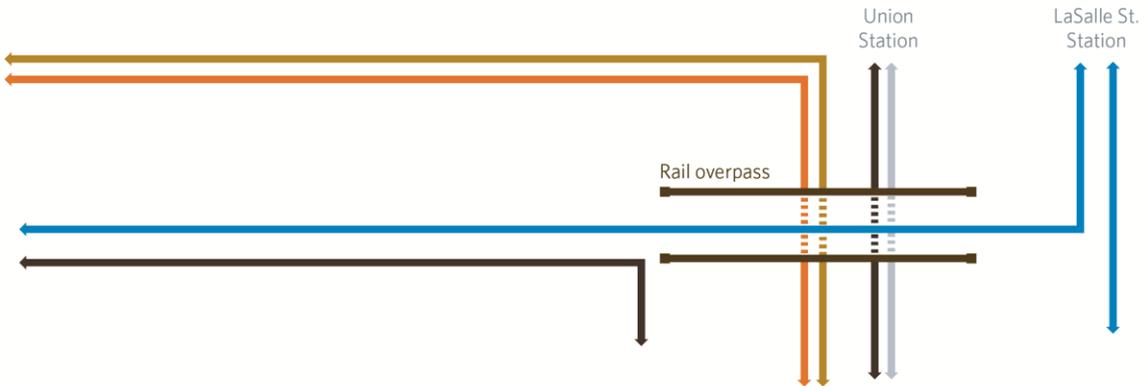
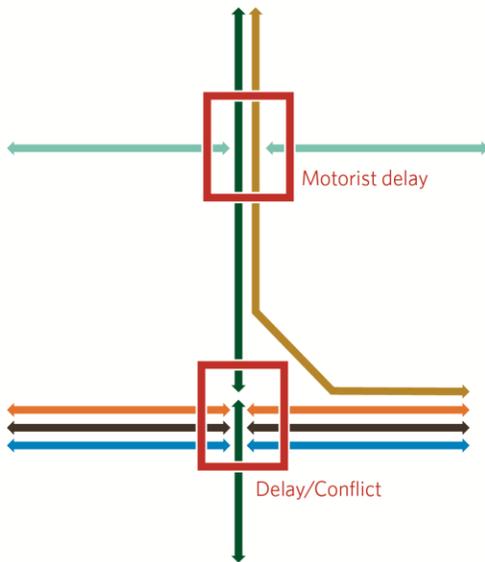


Figure 12. Rail-rail and road-rail grade separations

- Norfolk Southern
- Union Pacific / CSX
- Belt Railway of Chicago
- Metra
- CSX
- 71st Street

Before

At the Forest Hill junction, the north-south CSX railroad crosses 71st Street and three east-west railroads, including the Metra SouthWest Service line, causing delays and crash risks for motorists as well as freight and passenger trains.



After

The project would add a new flyover, eliminating delays for drivers, Metra, and freight trains.

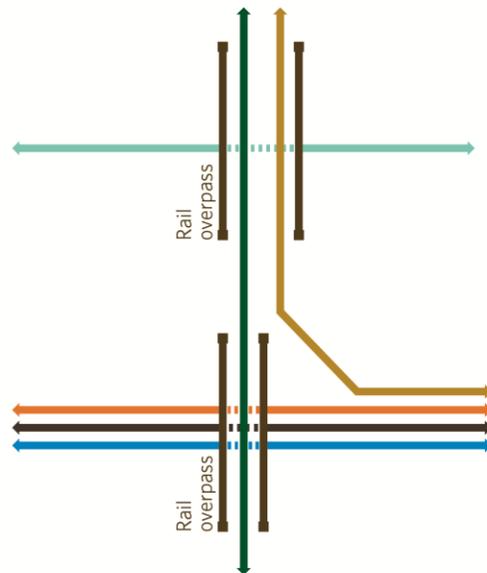


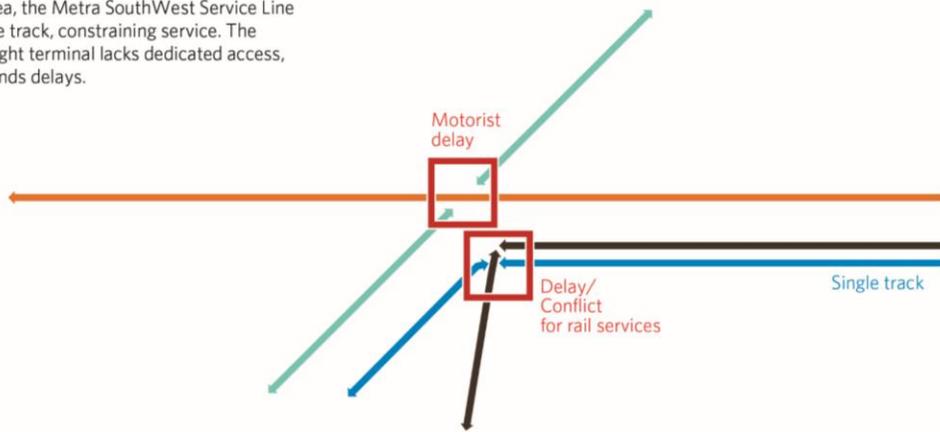
Figure 13. Road-rail grade separation

Note: The Columbus Avenue grade separation is being pursued as a separate project (GS-11).

- Norfolk Southern
- Belt Railway of Chicago
- Metra
- Columbus Avenue

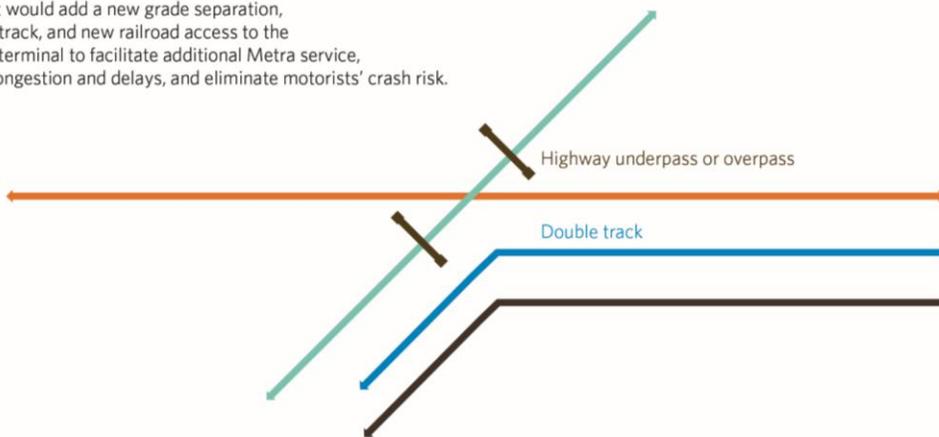
Before

Near the Landers Intermodal Terminal, the Belt Railway of Chicago crosses Columbus Avenue. In the same area, the Metra SouthWest Service Line runs on a single track, constraining service. The intermodal freight terminal lacks dedicated access, which compounds delays.



After

This project would add a new grade separation, new Metra track, and new railroad access to the intermodal terminal to facilitate additional Metra service, eliminate congestion and delays, and eliminate motorists' crash risk.



Appendix B: List of highway-rail grade crossings for future study

The following table lists the 150 highway-rail grade crossings identified for future study (Table 8). This set represents about 10 percent of all highway-rail grade crossings in the region. The 22 remaining locations for CREATE grade separations are listed first; the other 128 locations are listed based on a ranking score consisting of delay, crash risk, truck volumes, and bus ridership for routes using the crossing.

Table 8. Highway-rail grade crossings for future study

Crossing ID	RR	County	City	Street	CRE-ATE
869221F	BRC	Cook	Chicago	63rd St	Yes
869223U	BRC	Cook	Bedford Park	W 65th St	Yes
326918E	BRC	Cook	Chicago	Central Ave	Yes
243177N	NS	Cook	Chicago	Morgan St	Yes
163578S	IHB	Cook	Oak Lawn	Central Ave	Yes
173998Y	UP	Cook	Maywood	Fifth Ave	Yes
843806F	BRC	Cook	Chicago	S Archer Ave	Yes
326851A	IHB	Cook	La Grange	47th St	Yes
326850T	IHB	Cook	McCook	East Ave	Yes
843823W	BRC	Cook	Chicago	W Columbus Ave	Yes
173996K	UP	Cook	Maywood	S First Ave	Yes
326859E	IHB	Cook	La Grange Park	31st St	Yes
372159V	SOO	Du Page	Bensenville	Irving Park Rd	Yes
163415H	CSX	Cook	Blue Island	Western Ave	Yes
079493L	BNSF	Cook	Riverside	Harlem Ave	Yes
163446G	CSX	Cook	Chicago	71st St	Yes
163437H	CSX	Cook	Evergreen Park	W 87th St	Yes
867231E	UP	Cook	Chicago	95th St	Yes
163576D	IHB	Cook	Alsip	W 115th St	Yes
326886B	IHB	Cook	Dolton	Cottage Grove Ave	Yes
163613D	CSX	Cook	Dolton	Cottage Grove Ave	Yes
079503P	BNSF	Cook	Brookfield	Maple Ave	Yes
243205P	NS	Cook	Chicago	S Racine Ave	No
843807M	BRC	Cook	Chicago	W 55th St	No
326905D	IHB	Cook	Dixmoor	Western Ave	No
869192X	BRC	Cook	Chicago	100th St	No
079535V	BNSF	Du Page	Downers Grove	Main Street	No
163611P	CSX	Cook	Chicago	138th St	No



Crossing ID	RR	County	City	Street	CRE- ATE
326917X	BRC	Cook	Chicago	55th St	No
173908X	UP	Cook	Des Plaines	Des Plaines River	No
372126H	NIRC	Cook	Chicago	Harlem Ave	No
478752W	NIRC	Cook	Chicago	87th St	No
163612W	CSX	Cook	Dolton	Park Ave	No
372133T	NIRC	Cook	River Grove	Thatcher Ave	No
326901B	IHB	Cook	Dixmoor	Thornton Rd	No
609011A	NIRC	Cook	Chicago	W 95th St	No
167451S	UP	Cook	Dolton	144th St	No
372131E	NIRC	Cook	Elmwood Park	W Grand Ave	No
174087Y	UP	Cook	Des Plaines	W Touhy Ave	No
478708J	NS	Cook	Burnham	Burnham Ave	No
869201U	BRC	Cook	Chicago	Muskegon Ave	No
608311K	NIRC	Cook	Chicago	W 119th St	No
843808U	BRC	Cook	Chicago	W 59th St	No
843810V	BRC	Cook	Chicago	W 63rd St	No
004389J	BNSF	Will	Elwood	Blodgett Rd	No
167450K	UP	Cook	Dolton	142nd St	No
386378A	NIRC	Cook	Chicago	Caldwell Ave	No
176953C	UP	Lake	Barrington	N Hough St	No
289536G	NIRC	Cook	Chicago	Stony Island Ave	No
608843N	NIRC	Cook	Chicago	W 95th Street	No
372101M	NIRC	Cook	Chicago	Narragansett Ave	No
689718X	WC	Lake	Grays Lake	Ivanhoe Road	No
163580T	IHB	Cook	Chicago Ridge	Ridgeland Ave	No
289861D	CC	Du Page	Villa Park	W North Ave	No
386440H	NIRC	Lake	Round Lake Park	W Main St	No
386381H	NIRC	Cook	Niles	Touhy Ave	No
176939G	UP	Cook	Palatine	Plum Grove Rd	No
386379G	NIRC	Cook	Chicago	Devon Ave	No
174107H	UP	Cook	Des Plaines	Des Plaines River	No
840386T	IC	Cook	Chicago	Cicero Ave	No
478760N	NIRC	Cook	Oak Lawn	Central Ave	No
326894T	IHB	Cook	Riverdale	Indiana Ave	No
174106B	UP	Cook	Des Plaines	Rand Rd	No
608846J	NIRC	Cook	Blue Island	Vermont St	No
608942L	NIRC	Cook	Midlothian	Pulaski Rd/Crawford	No
608309J	NIRC	Cook	Chicago	W Monterey Ave	No
079522U	BNSF	Du Page	Hinsdale	S Garfield Ave	No



Crossing ID	RR	County	City	Street	CRE- ATE
326915J	BRC	Cook	Chicago	Narragansett Ave	No
372177T	NIRC	Du Page	Wood Dale	Irving Park Rd	No
372242W	NIRC	Kane	Elgin	Kimball St	No
608833H	NIRC	Cook	Chicago	Monterey Ave	No
289543S	NIRC	Cook	Chicago	S Jeffery Ave	No
388058G	NIRC	Lake	Green Oaks	Park Ave	No
326914C	IHB	Cook	Chicago	Harlem Ave	No
079508Y	BNSF	Cook	La Grange	La Grange Rd	No
260640R	WC	Cook	Chicago Heights	Chicago Rd	No
289771E	UP	Will	Joliet	W Laraway Rd	No
843811C	BRC	Cook	Chicago	W Marquette Rd	No
079530L	BNSF	Du Page	Westmont	Cass Ave	No
163433F	CSX	Cook	Evergreen Park	95th St	No
283144K	CSX	Cook	Chicago	79th St	No
863849D	ATK	Cook	Chicago	N Canal St	No
069710G	BNSF	Du Page	West Chicago	Roosevelt Rd	No
608953Y	NIRC	Cook	Tinley Park	80th Ave	No
174065Y	CTM	Cook	Elk Grove Village	Busse Rd	No
386399T	NIRC	Cook	Morton Grove	Dempster St	No
608853U	NIRC	Cook	Chicago	Ashland Ave	No
176913E	UP	Cook	Mount Prospect	W Central Rd	No
608310D	NIRC	Cook	Chicago	115th St	No
174957X	UP	Du Page	Wheaton	Main St	No
289620P	NIRC	Cook	Calumet Park	127th St	No
176912X	UP	Cook	Mount Prospect	S Main St	No
163541C	CSX	Cook	Cicero	Cicero Ave	No
372138C	NIRC	Cook	Franklin Park	25th Ave	No
372135G	NIRC	Cook	River Grove	Des Plaines River	No
173957U	UP	Cook	Chicago	N Kilbourn Ave	No
608941E	NIRC	Cook	Midlothian	147th St	No
283180F	CSX	Cook	South Holland	W 162nd St	No
372184D	NIRC	Du Page	Itasca	Rohlwing Rd	No
386417N	NIRC	Cook	Northbrook	Shermer Rd	No
372196X	NIRC	Du Page	Roselle	Roselle Rd	No
173887G	UP	Cook	Chicago	N Nagle Ave	No
174096X	UP	Cook	Des Plaines	Oakton St	No
079489W	BNSF	Cook	Berwyn	Oak Park Ave	No
079487H	BNSF	Cook	Berwyn	Ridgeland Ave	No
689651T	WC	Cook	Des Plaines	Touhy Ave	No



Crossing ID	RR	County	City	Street	CRE- ATE
388037N	NIRC	Cook	Northbrook	Dundee Rd	No
174053E	UP	Cook	Elk Grove Village	Elmhurst Rd	No
167462E	UP	Cook	Glenwood	W Main St	No
689693E	WC	Lake	Prairie View	Half Day Rd	No
260567V	WC	Will	Plainfield	W 111th St	No
608304A	NIRC	Cook	Chicago	W 103rd St	No
174103F	UP	Cook	Des Plaines	Wolf Rd	No
079536C	BNSF	Du Page	Downers Grove	Forest Ave	No
372217N	NIRC	Kane	Elgin	IL Rte 25	No
176945K	UP	Cook	Palatine	W Baldwin Rd	No
069708F	BNSF	Kane	Batavia	N Kirk Rd	No
372246Y	NIRC	Kane	Elgin	Mclean Blvd N	No
173893K	UP	Cook	Chicago	N Harlem Ave	No
176923K	UP	Cook	Arlington Heights	Arlington Heights	No
689638E	WC	Cook	Franklin Park	Belmont Ave	No
869262K	BRC	Cook	Bedford Park	73rd St	No
260533B	WC	Du Page	Bartlett	Stearns Rd	No
176927M	UP	Cook	Arlington Heights	Euclid Ave	No
080098Y	BNSF	Cook	Chicago	Ashland Ave	No
260515D	WC	Lake	Barrington	N Hough St	No
174939A	UP	Du Page	Lombard	Grace St	No
176969Y	UP	McHenry	Crystal Lake	Pingree Rd	No
289560H	NIRC	Cook	Chicago	79th St	No
004352U	BNSF	Will	Bolingbrook	S Joliet Rd	No
372174X	NIRC	Du Page	Bensenville	N Church Rd	No
326857R	IHB	Cook	La Grange Park	E Harding Ave	No
326916R	BRC	Cook	Chicago	Austin Ave	No
283131J	CSX	Cook	Chicago	55th St	No
080093P	BNSF	Cook	Chicago	Damen Ave	No
079532A	BNSF	Du Page	Downers Grove	Fairview Ave	No
173912M	UP	Cook	Des Plaines	Graceland Ave	No
608946N	NIRC	Cook	Tinley Park	167th St	No
919122X	BNSF	Will	Elwood	Baseline Rd	No
386395R	NIRC	Cook	Morton Grove	Oakton St	No
283147F	CSX	Cook	Chicago	87th St	No
004322C	BNSF	Cook	McCook	Lawndale Ave	No
260514W	WC	Lake	Barrington	E Northwest Hwy	No
289544Y	NIRC	Cook	Chicago	Chappel Ave	No
174088F	UP	Cook	Des Plaines	Mt Prospect Rd	No



Crossing ID	RR	County	City	Street	CRE- ATE
371890K	CTM	Cook	Chicago	W North Ave	No
283151V	CSX	Cook	Evergreen Park	95th St	No
283158T	CSX	Cook	Blue Island	127th St	No
283145S	CSX	Cook	Chicago	Columbus Ave	No
283143D	CSX	Cook	Chicago	71st St	No



Appendix C: Regional freight land use cluster profiles

Table 9. Land use by freight-supportive cluster

	Land area (sq. mi.)	Industrial land area (sq. mi.)	Medium utilized parcel size (sq. ft.)	Median vacant parcel size (sq. ft.)
Greater O'Hare	100.8	26.0	245,452	62,764
Core/Midway	132.8	21.8	49,322	12,551
Will County	103.9	30.9	421,386	228,111
Fox River Valley	101.6	22.5	258,360	115,834
South Cook	83.3	14.8	115,359	44,744
North Chicagoland	24.2	6.1	190,656	108,805

Source: Chicago Metropolitan Agency for Planning analysis of Land Use Inventory, 2013.

The land use statistics describe the total coverage of industrial land in each cluster (Table 9). Other important considerations include the availability of that industrial land (i.e., whether it is occupied or vacant) and the size of parcels in the cluster. The latter two metrics suggest the cluster's potential for growth and its ability to adapt to demands for all kinds of industrial facilities, whether ever-larger distribution centers, or smaller, more flexible manufacturing or warehouse spaces.



Table 10. Rentable building area (RBA) by freight-supportive cluster

	RBA all types	Warehouse RBA (% of cluster)	Manuf./ food process. RBA (% of cluster)	Distribution RBA (% of cluster)	Median year built	Median building RBA	Vacancy rate
Greater O'Hare	225.1 M	134.9 M 60%	64.1 M 28%	26.0 M 12%	1975	23,627	6.3%
Core/Midway	192.2 M	89.6 M 47%	87.4 M 45%	15.2 M 8%	1953	24,013	8.4%
Will County	113.3 M	59.8 M 53%	17.0 M 15%	36.5 M 32%	1996	48,841	8.1%
Fox River Valley	97.0 M	46.0 M 47%	36.5 M 38%	14.5 M 15%	1987	29,836	6.5%
South Cook	52.4 M	20.6 M 39%	27.3 M 52%	4.5 M 9%	1970	23,512	7.5%
North Chicagoland	27.2 M	8.9 M 33%	15.8 M 58%	2.5 M 9%	1983	26,625	7.6%

Source: Chicago Metropolitan Agency for Planning analysis of CoStar data, 2015.

RBA statistics indicate the intensity of freight-supportive uses in a cluster, as well as describe the industrial mix (Table 10). Median age and size of buildings in a cluster are also important indicators of divergent needs. Legacy areas filled with older, smaller buildings will have very different land use issues than emerging clusters with newer, larger buildings.



Table 11. Infrastructure and employment by freight-supportive cluster

	Rail Miles	National Highway Freight Network Miles	Truck Route Miles	Intermodal Lifts	Freight-Manufacturing Employment
Greater O'Hare	349.2	30.7	72.6	529,000	132,900
Core/Midway	817.2	80.2	71.2	4,641,000	108,700
Will County	197.9	28.2	65.9	1,463,000	23,400
Fox River Valley	171.4	12.6	42.6	N/A	57,100
South Cook	531.5	35.5	39.1	885,000	31,300
North Chicagoland	54.0	4.0	10.7	N/A	16,200

Source: Chicago Metropolitan Agency for Planning analysis of IDOT, FHWA, private railroad data (2014), and IDES data, 2015.

One of the most important infrastructure concerns for a freight cluster is access to a freight-suitable transportation network. This includes railroads, highways in the NHFN as initially designated by the U.S. DOT per the Fixing America's Surface Transportation (FAST) Act, and designated state and local truck routes. Also, intermodal rail-highway facilities are increasingly key pieces in the freight transportation system, having grown in prominence as long-distance shippers continue to shift toward containerization (Table 11).

Although access to water and air transportation is an important consideration for some shippers, those assets were not included in these statistical profiles due to the limited geography of air and water facilities in the region. Even without measuring this infrastructure directly, the region's major airports clearly serve as hubs of freight activity in metropolitan Chicago. CMAP has already evaluated workforce, stormwater, and land use issues in the O'Hare subregion.

Finally, these clusters house 62 percent of the region's freight and manufacturing employment. Employment totals and densities reflect the type of use -- manufacturing requires more employment than warehousing or distribution might. These totals are also directly related to the total amount of rentable building area in the freight land use cluster. Access to a well-trained workforce is critical, and prior CMAP analysis has found that the region's freight and manufacturing workers tend to live in areas that are somewhat proximate to freight and manufacturing employment centers.

Municipal planning within freight clusters

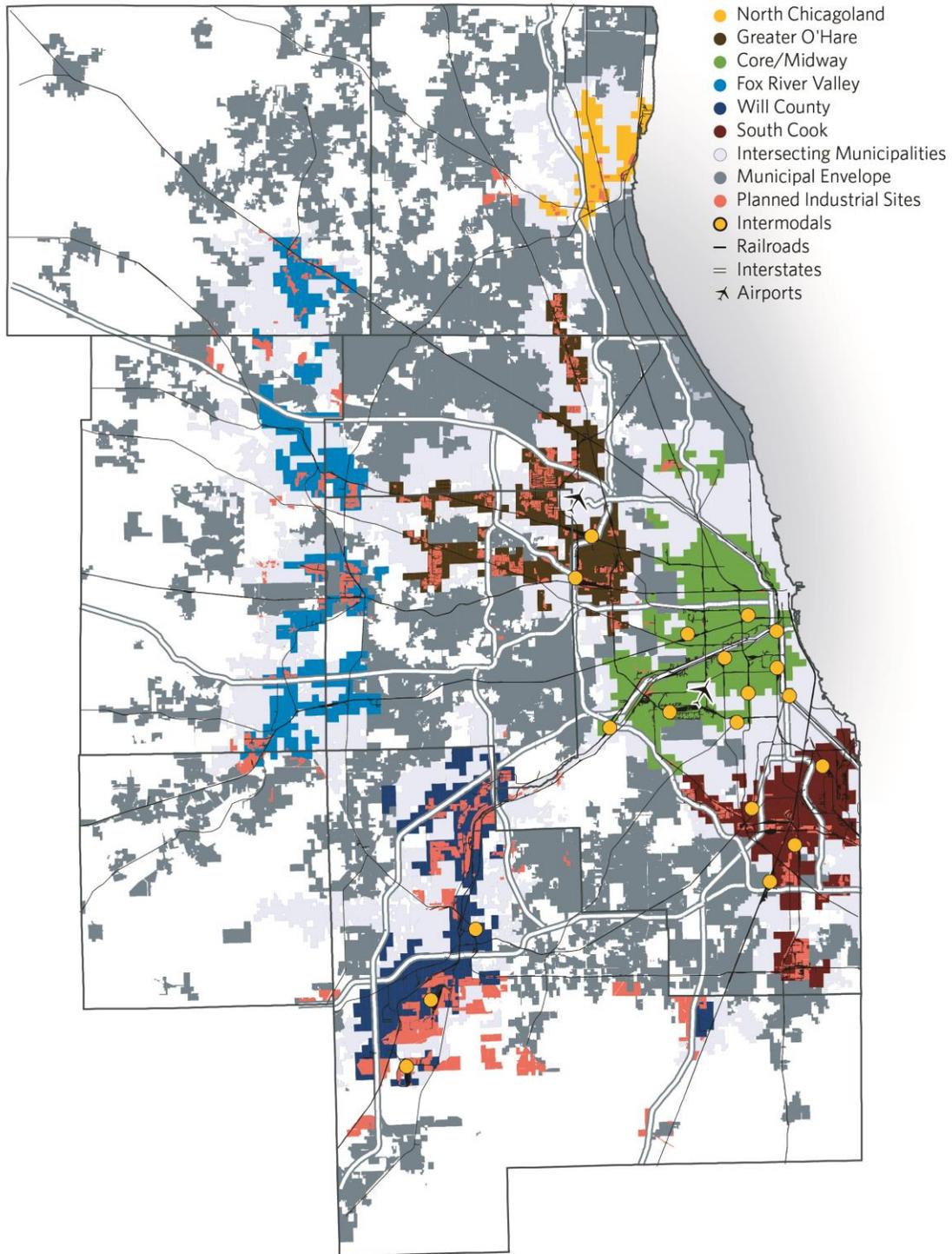
In early 2017, CMAP staff reviewed the planning documents of municipalities located within the freight clusters. The following tables and maps illustrate where planning is most active, and



the types of issues addressed in comprehensive, strategic, or other plans that addressed freight planning and/or industrial development (Figure 14). Within the clusters, 80 communities adopted 90 plans that identified specific areas for industrial development. In addition, 80 communities -- some overlapping -- adopted 88 plans discussing policy recommendations, tools, or strategies related to freight issues.



Figure 14. Planned industrial land use and freight clusters



Source: Chicago Metropolitan Agency for Planning.

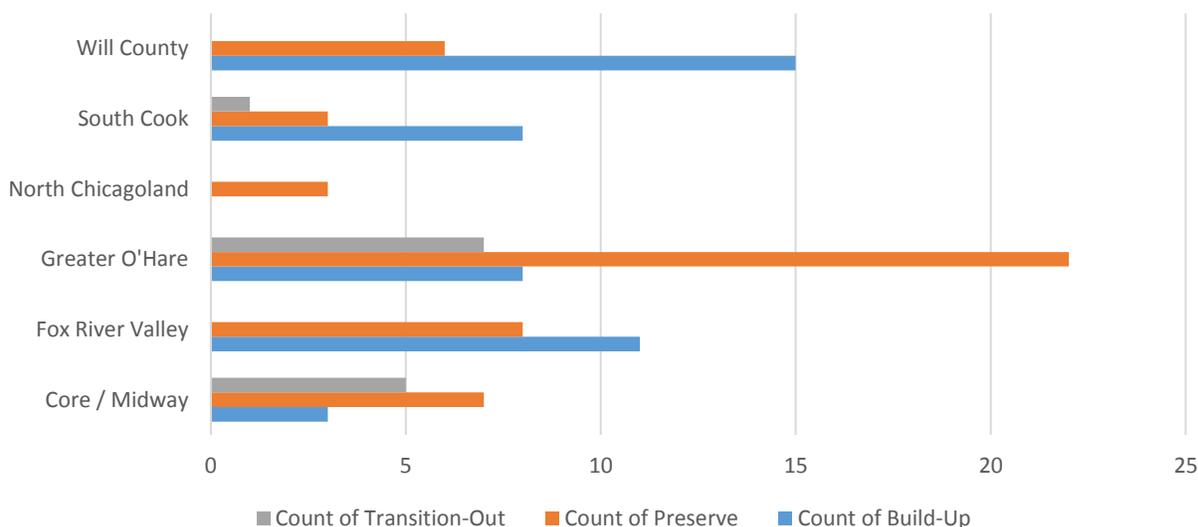


Land use goals

The local plans were reviewed for the overall direction of industrial development that they recommend: expansion, preservation, or transition to other uses. Note that some communities plan for multiple approaches, for example preserving industrial lands in already-developed areas but expanding industrial development into greenfield sites.

Across all plans reviewed, 45 communities, or just over half of those with plans, plan to build up their industrial land, and 50 communities, or just over 60 percent, plan to preserve their current industrial land uses (Figure 15). Many plans in the Will County and Fox River Valley clusters include expansion of industrial areas, with some municipalities in these clusters specifying an interest in developing warehouse, distribution, and logistics industries. The Greater O'Hare cluster has the highest count of plans to preserve industrial land use.

Figure 15. Industrial plans by freight cluster



Source: Chicago Metropolitan Agency for Planning analysis of municipal planning documents.

Only 13 communities, or about 18 percent of those with plans, plan to transition away from industrial land to commercial and mixed-use developments. Half of these communities lie in the Greater O'Hare cluster, and less than half lie in the Core/Midway cluster. Most of these communities also plan to maintain overall industrial land acreage by concentrating industry along currently developed corridors and transitioning out some industrial lands.

Improving freight movement and local quality of life

Industrial development depends heavily on reliable transportation infrastructure to ensure the fluid movement of goods. Among communities with plans, 29 -- just over one-third -- address truck routes or traffic in their plans. Many of these communities indicate a desire to improve access management to major highways, designate truck routes, or improve intersections.



Notably, in the Will County cluster and to a lesser extent the Greater O’Hare cluster, communities seek to widen highways and roads to accommodate increased traffic due to trucks. Communities across the region also point to traffic congestion from trucks as negatively affecting community residents and businesses.

About a fifth of communities included in the study (18 communities) address rail freight (Table 12). Many simply note projects that are slated as part of the longstanding CREATE program of rail improvements. Five communities plan to improve at-grade highway-rail crossings by installing signals or gates. Other common concerns include new rail spurs or upgrades, grade separation projects at key locations, and connections to intermodal facilities.

Table 12. Number of communities by freight cluster and planning topics

	Included in analysis	Truck issues	Rail issues	Community impacts/quality of life
Greater O’Hare	28	10	3	3
Will County	15	7	6	7
Core/Midway	12	1	1	2
Fox River Valley	13	6	5	6
South Cook	9	4	2	0
North Chicagoland	3	1	1	0
TOTAL	80	29	18	18

While freight-supportive development provides many benefits to the region’s residents, it can also negatively impact the quality of life for the communities that host it. About a fifth of communities discuss quality-of-life issues in their plans, including disruptive noise, views, and odors; increased traffic; and pollution. Most of these plans comment on negative externalities to communities and/or propose alternative zoning that requires screening and buffering of unappealing sites. Notably, communities in the Fox River Valley and Will County clusters, which have many local plans that identify new industrial expansion, have the strongest focus on quality-of-life factors.

Narrative descriptions of regional freight clusters

While sharing many common concerns, each subregional cluster has unique issues. Future planning efforts could explore these issues in more detail, working closely with local stakeholders to refine the geographic boundaries and specific issues to be studied in each of these freight-supportive areas.

With over 26 percent of the region's freight-supportive rentable building area (RBA) in only 2.5 percent of the land, the Greater O’Hare cluster is by far the largest and densest freight cluster in



metropolitan Chicago. That density stems in part from having a very high percentage of its land set aside for industrial uses, coupled with very low building vacancy and almost no land vacancy. While utilized parcels are quite large, vacant parcels are small; when combined with the cluster's low vacancy rates, this suggests that growth will likely occur via redevelopment rather than expansion. Other notable features of the cluster include a heavy concentration in warehouse uses, a very high density of truck routes, and easy access to O'Hare International Airport, the region's largest air cargo facility. This cluster contains 22 percent of the region's freight and manufacturing employment.

As the name suggests, the Core/Midway cluster is located in the center of the Chicago region, with extensive legacy infrastructure, the oldest median building age, smallest median parcel size, and highest building vacancy rate. There is some geographic variation within the cluster, as the industrial areas near Midway Airport are relatively newer and larger than the areas to the north and east. Among all the clusters, Core/Midway has the lowest percentage of industrial land, though that land is also more intensively built out than in other clusters. Despite being home to the largest intermodal facilities in the region, it has few of the new, large distribution facilities increasingly utilized for goods movement. Instead, this cluster hosts the largest concentration of manufacturing and food processing space in the region. Core/Midway faces significant variation in planning issues, with some areas undergoing a transition to residential and commercial uses, and others seeking public and private reinvestment to promote long-term industrial development.

In contrast to the older, established clusters, Will County is an emerging freight center with a median industrial building age of only 20 years. In addition to being new, industrial buildings in Will County are comparatively large, with median building RBA and parcel sizes nearly twice as large as any other cluster. It also has a strong specialization in modern distribution facilities and is home to several large and growing intermodal terminals. The Will County cluster has more total industrial land and more than twice as much vacant land as the next-largest cluster. There is a significant geographic split in the cluster between the developed northern half, which would be the second-densest in the region, and the relatively undeveloped southern half. This cluster has the lowest employment density, likely reflecting the lesser employment needs for distribution facilities as compared to some other types of manufacturing.

The remaining three clusters have less significant footprints of industrial land and freight-supportive buildings. Descriptive statistics for the Fox River Valley cluster are average in most dimensions and its most notable attribute is the relative lack of truck routes and rail mileage. South Cook is the least-dense identified cluster and features relatively high vacancy rates paired with small parcels and old buildings, potentially making redevelopment of existing industrial land a challenge. It does, however, have access to an extensive network of rail and truck infrastructure, as well as much of the region's water cargo system. Lastly, North Chicagoland is a very small cluster notable for its high industrial land vacancy and heavy concentration in advanced manufacturing and food processing.



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The Chicago Metropolitan Agency for Planning (CMAP) is our region's comprehensive planning organization. The agency and its partners are developing ON TO 2050, a new comprehensive regional plan to help the seven counties and 284 communities of northeastern Illinois implement strategies that address transportation, housing, economic development, open space, the environment, and other quality-of-life issues. See www.cmap.illinois.gov for more information.