Regional Freight System Planning Recommendations Study

Final Report

prepared for

Chicago Metropolitan Agency for Planning (CMAP)

prepared by

Cambridge Systematics, Inc.

with

Vicki W. Bretthauer
Carl D. Martland

June 30, 2010
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Executive Summary

Greater Chicago historically has played a major role as a freight hub within the U.S., and the built environment of the region is reflective of this history. Railroads, trucking companies, warehouse operators, large shippers, and express package carriers have all recognized the strategic location of the Chicago region as a national freight hub. Chicago is the nation’s rail crossroads with nearly 500 freight trains operating within the region daily. An excellent network of Interstate highways traverses the region and trucking in greater Chicago is essential to distributing goods throughout the Midwest and Canada. Chicago hosts an extensive waterway system which provides full connectivity between Chicago, the Great Lakes, and the Mississippi River. Chicago is home to O’Hare Airport, one of the largest U.S. foreign trade gateways.

The ability of Chicago’s rail network, port, roadways, and airports to carry freight efficiently will affect, positively or negatively, the overall competitiveness of the region’s and the nation’s economy. Greater Chicago’s transportation network and services must accommodate the mobility, logistics, and consumer needs of an increasing number of residents, workers, visitors, and businesses, and do so reliably, safely, and efficiently. As transportation capacity becomes more scarce, conflict between system users is inevitable. Freight and passenger traffic frequently compete for the same transportation supply, whether it is direct competition (e.g., on roadways) or indirect competition (e.g., at rail crossings). As a result, freight operators in the Chicago region must overcome significant transportation system deficiencies in order to conduct business efficiently.

This study provides freight planning recommendations for further consideration and adoption into CMAP’s GO TO 2040 Plan. The freight system recommendations focus on long-range operational, policy, and infrastructure programs and projects, which collectively assure that freight system development meets regional goals and is consistent with CMAP’s Regional Vision for Greater Chicago.

This report is broken into three major areas: Regional Framework Development, Research, and Recommendations.

Regional Framework Development

A Regional Framework was developed as part of this study, to complement the Regional Vision established as part of GO TO 2040. The Regional Framework Development Chapters cover how understanding the study goals and the Chicago region’s unique freight challenges help shape a Regional Framework for this study’s recommendations.

- Section 2.0 (Chicago Region Freight Challenge) covers the challenges facing the Greater Chicago region as population and employment grow,
industry evolves, freight movements increase, and land use conflicts with the freight industry become a greater quality-of-life issue.

- **Section 3.0 (Regional Framework)** presents the Regional Framework used to ensure recommendations align with the Regional Vision for Greater Chicago and cover the critical needs of the freight system. In this section, core freight planning principles are explained, overlaps between the Regional Vision and freight system goals are identified, and the six Framework Themes are described.

**Research**

The recommendations made as part of this study required extensive research. Data-driven evaluation was conducted with existing data, but to form recommendations this study also required an understanding of the challenges faced by those who use the system the most—trucking companies, railroads, port operators and shippers. The Research Sections cover three critical components needed to identify recommendations and ensure they support the Regional Framework.

- **Section 4.0 (Stakeholder Outreach)** includes comments of key freight stakeholders representing all modes and spanning both the private and public sectors. This section summarizes the results of a series of stakeholder interviews and an online freight survey, which provided critical input into the study’s recommendations.

- **Section 5.0 (Data Collection, Synthesis and Analysis)** covers the data-driven approach and methodology used to identify potential recommendations based on infrastructure usage and needs.

- **Section 6.0 (Performance Measures)** identifies the performance measures developed in partnership with CMAP as part of this study and used to ensure recommendations are productive towards moving the region forward.

**Recommendations**

Recommendations were made to cover three key types of opportunities the evaluation process uncovered—opportunities related to freight operations, freight policy, and freight infrastructure. Each of the policy and infrastructure recommendations underwent a data-driven evaluation process to validate their merits.

- **Section 7.0 (Freight Operation)** outlines the unique conditions and challenges that must be considered in planning for truck, rail, water, and air freight systems.

- **Section 8.0 (Policy Recommendations)** outlines the range of recommended policy options, priorities, and lead implementing agencies.
• Section 9.0 (Infrastructure Recommendations) outlines recommendations to improve the infrastructure for highway, rail, water, and air freight.

• Section 10.0 (Evaluation of Recommendations) explains the methodology used to validate the recommendations and via performance measurement and a sketch-planning tool.

Next Steps
The core objective of this study was to define a list of recommended infrastructure projects for the highway, railway, water and aviation freight systems. In total 67 freight infrastructure projects and 26 freight policy recommendations were identified. While this study is complete, there exist several next steps for the study products to ensure that this work continues to benefit the region. These next steps include:

Finalize GO TO 2040 Plan
Among the projects evaluated within the freight system context, several were included in one form or another in the draft CMAP GO TO 2040 fiscally constrained major capital recommendations.1 Highlights of such projects include:

• Major capital elements of the O'Hare Access bundle (including the O'Hare Bypass, I-190/Mannheim Road improvements, and the Elgin-O'Hare Expressway).

• The Illiana Expressway (Phase-I engineering).

• I-80 improvements (partial)

• I-290 additional lanes (endorsed a multi-modal corridor in support of ongoing project study)

• I-55 improvements, I-90/94 to Weber Road (endorsed managed lane concept)

• I-90 additional lanes, I-39 to I-294 (endorsed managed lane concept)

Further, the CREATE Program is included in the Plan as a recommended project within the “strategic improvements” category. Proposed truckways, truck parking, additional rail system improvements, and other strategic freight improvements have similarly been addressed in the draft GO TO 2040 plan recommendation to “Create a more efficient freight network.”

Inevitably, several freight system major capital recommendations were not included in the draft GO TO 2040 major capital recommendations. There is simply not enough funding to address all of the needed improvements in the transportation system.

**Incorporate performance measures in on-going regional freight planning**

The high correlation between freight performance measure rankings and GO TO 2040 major capital recommendations provide validation for each evaluation mechanism. Though, the freight performance measures were not the sole factor in major capital recommendations, the freight performance measures have been validated by the broader decision-making process. Further, it became understood through this process that such measures provide unique insight to goods movement issues and the applicability of these measures to projects and bundles of projects at scales not reaching those of major capital projects lends credence to future efforts to apply such measures to short-run multi-modal program project selection.

Freight-focused performance measures implemented at a regional level can be valuable tools, among others, in evaluating potential freight system improvements on transportation systems. The process outlined in this report could serve as a touchstone for future freight system performance measure development in the region. The freight performance measures could be useful for future refinements to the GO TO 2040 capital project recommendations and project programming activities, as well as the implementation phase of GO TO 2040, commencing in October, 2010.

**Continue dialog on the importance of freight planning**

A variety of public and private sector stakeholders representing all freight modes and community interests were engaged as part of this study, and constructive feedback was received. It is vital that the momentum of this dialog on freight infrastructure and policy issues continues. CMAP’s Freight Committee served as the general oversight body for this study and will continue to be engaged on freight issues in the region. It is recommended that as part of committee efforts that the recommendations contained within this report are actively discussed as part of regular meetings.

A first item for Freight Committee discussion could be this study’s policy-related recommendations. The 26 Policy Recommendations were evaluated and assigned a priority, timeframe for action and lead implementing agency in partnership with the Freight Committee. Each committee member voted on the importance of the polices selected for inclusion in this study and possesses the potential to take ownership of, and actively pursue, the next dialog required to turn these policies into action. It is up to the Freight Committee to ensure that recommendations are acted upon.
Quantify the economic benefits of investing in the freight system

Oftentimes public agencies struggle to justify transportation investment in projects with unknown benefits, or a project that may return a substantial number of economic benefits to the private sector in addition to the benefits returned to the public sector. While it is important for all projects to be evaluated in terms of project benefits compared to project cost, it is particularly vital to provide this comparison for freight infrastructure investment. A possible approach for evaluating whether freight infrastructure investments are warranted is to assess the “cost of doing nothing.”

It is recommended that the projects identified in this study be modeled in CMAP’s travel demand model and the model output be compared against a base “do nothing” alternative in the future. CMAP has procured a Transportation Economic Development Impact System (TREDIS) model that is essentially an economic benefits determinant. The outputs of the “do nothing” and freight scenarios runs can be inserted in the TREDIS model to essentially calculate the differential between the scenarios and the “cost of doing nothing.”
1.0 Introduction

Greater Chicago historically has played a major role as a freight hub within the U.S., and the built environment of the region is reflective of this history. Railroads, trucking companies, warehouse operators, large shippers, and express package carriers have all recognized the strategic location of the Chicago region as a national freight hub. Chicago is the nation’s rail crossroads with nearly 500 freight trains operating within the region daily. An excellent network of Interstate highways traverses the region and trucking in greater Chicago is essential to distributing goods throughout the Midwest and Canada. Chicago hosts an extensive waterway system which provides full connectivity between Chicago, the Great Lakes, and the Mississippi River. Chicago is home to O’Hare Airport, one of the largest U.S. foreign trade gateways.

The objective of this Regional Freight System Planning Recommendations study is to assess all modal components of the freight system and identify long term recommendations to ensure the systems continued safety and efficiency of operations. The ability of Chicago’s rail network, port, roadways, and airports to carry freight efficiently will affect, positively or negatively, the overall competitiveness of the region’s and the nation’s economy. However, its transportation infrastructure has deteriorated greatly over the past several decades and effects of this deterioration have become more noticeable in recent years as public and private funding sources have not provided adequate dollars to repair and replace aging infrastructure. Metropolitan Chicago’s long-term economic and population growth has placed pressure on the transportation system, as passenger vehicles compete with freight traffic for capacity on this system.

Greater Chicago’s transportation network and services must accommodate the mobility, logistics, and consumer needs of an increasing number of residents, workers, visitors, and businesses, and do so reliably, safely, and efficiently. As transportation capacity becomes more scarce, conflict between system users is inevitable. Freight and passenger traffic frequently compete for the same transportation supply, whether it is direct competition (e.g., on roadways) or indirect competition (e.g., at rail crossings). As a result, freight operators in the Chicago region must overcome significant transportation system deficiencies in order to conduct business efficiently.

The opportunities for responsible freight growth and accompanying economic prosperity are many. Greater Chicago’s status as a freight hub is in part due to its geographical position as a lynchpin between the U.S. coastal markets. It is also due to a lengthy tradition of long-range visioning, a recognition that investment in infrastructure will spur industry, and the belief that the Chicago region is now and will continue to be the heart of America.
1.1 **CMAP’S FREIGHT PLANNING EFFORTS**

The Chicago Metropolitan Agency for Planning (CMAP) has been active in regional planning for transportation and land use since it was formed in 2007 through the merger of the Northeastern Illinois Planning Commission (NIPC) and the Chicago Area Transportation Study (CATS). CMAP coordinates closely with citizens, businesses, and political organizations throughout the Chicago region in order to develop strategies for growth in the areas of transportation, housing, economic development, open space, the environment, and other quality-of-life issues. The CMAP region includes the northeastern Illinois counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will.

CMAP’s Freight Committee served as the advisory board for this study. The Committee is comprised of representatives from freight industry organizations, private railroads, trucking companies, consultants, researchers, planners as well as representatives of local, regional and state governments seeking to improve goods movement in metropolitan Chicago. Its charge is to identify, assess and respond to goods movement travel issues and opportunities and provide overall guidance for the development of the regional goods movement component of the GO TO 2040 Plan, of which this study is a key input. Examples of key issues explored by the Freight Committee in their meetings include safety, congestion relief, air quality, economic development, and community impacts.

Freight issues also are addressed at CMAP via the Transportation Committee. The Transportation Committee’s role is to promote a regional transportation system that is safe, efficient, and accessible while sustaining the region’s vision related to the natural environment, economic and community development, social equity, and public health. CMAP also has an economic development committee, and CMAP staff ensure coordination of freight planning with those efforts.

**GO TO 2040 Regional Plan**

**Vision**

CMAP’s GO TO 2040 Plan is currently under development, with a final plan expected by late 2010. Based on the input of the region’s residents, CMAP has defined a Regional Vision describing region’s desired future in terms of quality of life, natural environment, social systems, economy, infrastructure, and governance. The Vision will guide the recommendations of the GO TO 2040 Plan and its relationship with this study. The following statements are excerpts from the Regional Vision highlighting the importance of the freight system in achieving regional goals. Throughout all of the Vision themes, three cross-cutting issues recur: sustainability, equity, and innovation.

- “To address sustainability, we must meet the needs of the present without compromising the future. A high quality of life in the region will
be possible only if the leaders of today and the future take significant actions to ensure the sustainability of the region’s systems and activities. Between now and 2040, our leaders will weigh the environmental, economic, and social impacts of their decisions, both locally and globally, and will consider the needs of future generations.”

- “The region will be strengthened by taking an active approach to equity. The benefits and burdens caused by the region’s investments and policies will be fairly distributed to all parts of the region. In addition, these benefits and burdens will be shared between groups of people, regardless of age, gender, income, race, ethnicity, culture, religious beliefs, sexual orientation, or disability status. All residents will have the opportunity to access the region’s economic, educational, housing, and other assets. Also, the diversity of the region’s many cultures will be celebrated as one of our strengths.”

- “The region will embrace innovation and use creative strategies to meet our challenges and opportunities. Our innovation will drive economic growth and keep our region competitive in the changing global economy. It will also allow us to address environmental, energy, social, and infrastructure problems. The region will be on the forefront of developing new technologies, with innovative approaches to providing public services and increasing cooperation between public and private sectors.”

The following are three of the 5 vision statements in the Plan that have the most relevance to freight planning.

“In 2040, the northeastern Illinois region will be a magnet attracting new, diverse residents, businesses, and investments from all over the world. The region will be known for a high quality of life, based on its sustainable, equitable, innovative, and inclusive approaches to planning.

- Regional planning and development will be aimed at achieving the highest possible quality of life and well-being for all of its residents. The region will consist of attractive, interdependent communities with distinct identities. These identities will be built on their histories, natural and physical assets, architecture, and aesthetic preferences, reflecting the uniqueness of their residents and businesses. Northeastern Illinois will remain a global destination for tourism and culture because of its internationally-recognized architecture, arts institutions, entertainment options, and other cultural and natural amenities. Our communities will

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2 http://www.goto2040.org/ideazone/default.aspx?id=7718
have access to an abundance of art forms, our residents will enjoy the
opportunity to participate in various art forms, and our region will
continue to sustain world-class artistic and cultural institutions. The
region will have diverse housing, transportation, and recreation choices,
and its residents will have equitable access to employment, education,
health care, and other regional assets. Through appropriate infrastructure
investments, the region will remain connected to global networks of
commodities movement, energy, and information, all of which are
necessary to maintain a high quality of life.”

“In 2040, decision-making in northeastern Illinois will be informed by
considerations of environmental health, energy use, and water supply.

- The region will be a world leader in implementing innovative measures
to protect the environment, including air quality, biodiversity, natural
and human communities, water quality and supply, and the overall
ecological health and diversity of the region. The region’s nationally
recognized system of open space — including forest preserves,
conservation districts, and parks — will continue to shape regional
identity and contribute to the health of our residents. Especially along
sensitive waterways, open space will be preserved and expanded,
creating green infrastructure networks that enhance people’s connection
with nature and serve as habitat corridors. Lake Michigan and the
lakefront will be protected in a coordinated effort with other states,
regions, and countries as an irreplaceable natural resource for
biodiversity, health, recreation, tourism, and economic prosperity. The
region will actively minimize and mitigate the environmental effects of its
activities — including climate change — and will be prepared to adapt to
future environmental conditions.”

- Our region will consume less energy and fewer natural resources. The
region will remain an innovative leader in green building techniques and
conservation design, promoting energy efficiency and conservation of
water and other resources. The region will also take national leadership
in the research, development, and production of green energy. The
region’s residents and businesses will use energy conscientiously through
individual actions such as recycling and use of energy-efficient products.
Regional energy consumption for transportation will be reduced by
abundant transportation options that provide alternatives to driving
alone, by mixed-use infill development that allows many trips to be made
using alternative transportation modes, and by a balanced supply of jobs
and housing that limits the need to travel long distances for work. New
development and redevelopment will be designed to limit energy use and
minimize disturbance of sensitive environmental land.”
“In 2040, the economy of northeastern Illinois will enjoy a global status that ensures superior job opportunities throughout the region for all socioeconomic groups.

- The economic strengths of our region’s interdependent communities will complement each other, with the entire region benefiting from its international recognition as a diversified center of commerce and its location at the center of the nation. Long-term economic benefits will be created by making efficient use of resources and existing infrastructure and by enhancing our environment, public health, social equity, cultural amenities, education systems, and physical infrastructure. Investments in the region’s human capital will occur through workforce development programs or other training that prepares students and workers to excel in the diversified jobs of the future. The region will be a center of innovation across all disciplines and will encourage creativity and entrepreneurial activity. The importance of freight and intermodal systems to our economy will be recognized and supported through regional policies, investments, and infrastructure decisions. The region’s agriculture, which takes advantage of our fertile farmland, will be valued as an important regional resource because of the economic contribution it makes, the food and fuel it produces, the scenic value it provides, and the soil and water it protects.”

Regional Scenarios

Three Regional Scenarios\(^3\) were developed to guide input into the GO TO 2040 Preferred Scenario. They include:

- **Reinvest.** What if we reinvest in our existing communities, by rebuilding current infrastructure to support growth and development?
  - The “Reinvest” Scenario would keep our existing infrastructure and communities strong—but it will also be quite costly, and could change the character of our communities and neighborhoods as they accommodate new growth.

- **Preserve.** What if we preserve the best features of our communities and region for generations to come, trying to accommodate growth without changing what we value in the region?

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\(^3\) CMAP is in the process of determining the Regional Scenario which will ultimately be recommended for the Chicago region. This study relies on some data (population and employment projections) from the Reinvest Scenario. See [http://www.goto2040.org/scenarios/] for more details.
This future for our region would preserve our assets -- but it might be difficult to accommodate our region's growth between now and 2040.

- **Innovate.** What if we rely on innovation and technological improvements to make our region better?
  - This future for our region would let us continue to grow as we have been -- but it relies on the adoption of advanced technology that may or may not come to pass.

This Regional Freight System Planning Recommendations study was directed to use the “Reinvest” Scenario to guide recommendations, investing in rebuilding and improving roads, rail lines, and other infrastructure to support growth and overall economic development. These strategies could also reduce development pressure on natural and agricultural areas and encourage sustainable transportation options less harmful to the environment. One of the images used to aid visualization of Regional Scenarios is shown in Figure 1.1.

**Figure 1.1  Reinvest Regional Scenario Vision**

![Reinvest Regional Scenario Vision](image_url)

Source: Romero Cook Design Studio, prepared for CMAP

**Related Freight Plans**

In addition to CMAP’s past, present, and projected freight planning activities, several seminal Chicago area freight plans and planning activities serve as both models for and inputs into this study and ultimately the GO TO 2040 Plan.

Daniel Burnham and Edward Bennett’s *Plan of Chicago* provided a blueprint for the growth of Chicago, focusing on infrastructure and physical planning needs.
The Plan included many ideas to cement the Chicago region’s status as a freight hub, including improvements to rail and passenger freight, a systematic street system, an outer loop highway, Lower Wacker Drive, and developing a freight industry cluster in the southwestern suburbs (which proved to be excellent prediction, given recent developments such as Logistics Park Chicago in Elwood). The Plan, released in 1909, recently enjoyed a centennial celebration. The featured logo of the 100 Year Burnham Centennial Celebration was based on Burnham’s vision for the connectivity of the freight rail lines serving the Chicago region.

The Chicago Metropolis 2020 Freight Plan: Delivering the Goods, released in 2004, focused on the road and rail freight infrastructure deficits facing the Chicago region as freight movements were anticipated to increase dramatically over time. It expanded on the prior recommendations of the organization’s Metropolis Plan, which included housing, transit, and land use recommendations as well as calling for expanded air cargo capacity. The Chicago Metropolis 2020 Freight Plan also updated a prior regional freight plan, Critical Cargo, developed by the Metropolitan Planning Council, the Chicagoland Chamber of Commerce, and Chicago Metropolis 2020, which included freight policy recommendations encouraging public-private partnerships and infrastructure recommendations focused on intermodal connectors, highway-rail grade separations, and establishment of a joint use rail corridor.

Recommendations of the Chicago Metropolis 2020 Freight Plan: Delivering the Goods included changes to government structure (Chicago Metropolis 2020 supported the aforementioned combining of NIPC and CATS into CMAP), establishment of industrial corridors to preserve the region’s freight centers, more efficient truck routing, more user fees to finance investment in freight, and support for CREATE and other rail infrastructure investment. Chicago Metropolis 2020’s planning efforts are sponsored by the Commercial Club of Chicago, the same group that funded Daniel Burnham and Edward Bennett’s Plan of Chicago.

The Chicago Region Environmental and Transportation Efficiency Program (CREATE), active since June 2003, is a public-private partnership between several Federal, state, and local planning and transit public agencies, six Class I railroads, and two regional railroads. The CREATE Program has identified 71 projects to address existing and future freight and passenger rail congestion and to mitigate community impacts. CREATE is focused on Chicago region projects that have the potential for national benefits due to the considerable freight transfer and sharing of infrastructure that occurs in Chicago. CREATE has paved the way for public-private partnerships to improve freight infrastructure and the identification of rail infrastructure needs in the Chicago region.

The City of Chicago’s Downtown Freight Study was released in February 2008 and addressed congestion, inefficiencies, safety, and community problems associated with the delivery of freight to and within downtown Chicago. Chief among the study’s recommendations were new building design standards, adapted policies for use of public right-of-way, enforcement strategies, and use of intelligent
transportation systems (ITS) to streamline deliveries and limit downtown congestion.

The *South Suburban Freight Study*, prepared for the South Suburban Mayors and Managers Association, was released in June 2008 and identified opportunities for freight-related economic development in Chicago’s south suburbs. The report found significant opportunities for freight-related industry in South Cook County and Will Counties. It was recommended that stakeholders strengthen public sector freight planning (including giving freight stronger consideration in project selection processes); pursue private-public partnerships for highway, rail, and intermodal development; and build on workforce development programs.

In addition to freight and transportation plans specific to the Chicago region, several Federal documents provide guidance for freight planning efforts. A small sample of these include: *Action Strategy Paper: Goods Movement* and *Action Strategy Paper: Inter-Regional Transportation Planning* both developed for CMAP courtesy of U.S. DOTs Volpe Center; the National Cooperative Highway Research Program (NCHRP) 320: Integrating Freight Facilities and Operations with Community Goals; NCHRP 594: Guidebook for Integrating Freight Into Transportation Planning and Project Selection Processes; and the Association of American Railroads (AAR) National Rail Freight Infrastructure Capacity and Investment Study.

CMAP is also producing a series of regional snapshots as part of the *GO TO 2040 Plan*, including the *Regional Freight Snapshot Report* (currently in draft form) that have helped planners and citizens understand the opportunities for the Chicago region.

### 1.2 Study Overview

This study provides freight planning recommendations for further consideration and adoption into CMAP’s *GO TO 2040 Plan*. The freight system recommendations focus on long-range operational, policy, and infrastructure programs and projects, which collectively assure that freight system development meets regional goals and is consistent with CMAP’s Regional Vision for Greater Chicago.

This report is broken into three major areas: **Regional Framework Development, Research, and Recommendations**.

- **Regional Framework Development.** This section covers how understanding the study goals and the Chicago region’s unique freight challenges help shape a Regional Framework for this study’s recommendations.
  - **Section 2.0 (Chicago Region Freight Challenge)** covers the challenges facing the Greater Chicago region as population and employment grow, industry evolves, freight movements increase, and land use conflicts with the freight industry become a greater quality-of-life issue.
Section 3.0 (Regional Framework) presents the Regional Framework used to ensure recommendations align with the Regional Vision for Greater Chicago and cover the critical needs of the freight system. In this section, core freight planning principles are explained, overlaps between the Regional Vision and freight system goals are identified, and the six Framework Themes are described.

- **Research.** This section covers three critical components needed to identify recommendations and ensure they support the Regional Framework.
  
  - **Section 4.0 (Stakeholder Outreach)** includes comments of key freight stakeholders representing all modes and spanning both the private and public sectors. This section summarizes the results of a series of stakeholder interviews and an online freight survey, which provided critical input into the study’s recommendations.
  
  - **Section 5.0 (Data Collection, Synthesis and Analysis)** covers the data-driven approach and methodology used to identify potential recommendations based on infrastructure usage and needs.
  
  - **Section 6.0 (Performance Measures)** identifies the performance measures developed in partnership with CMAP as part of this study and used to ensure recommendations are productive towards moving the region forward.

- **Recommendations.** This section outlines the three key types of recommendations and the data-driven process used to evaluate whether recommendations are aligned with freight system needs.
  
  - **Section 7.0 (Freight Operation)** outlines the unique conditions and challenges that must be considered in planning for truck, rail, water, and air freight systems.
  
  - **Section 8.0 (Policy Recommendations)** outlines the range of recommended policy options, priorities, and lead implementing agencies.
  
  - **Section 9.0 (Infrastructure Recommendations)** outlines recommendations to improve the infrastructure for highway, rail, water, and air freight.
  
  - **Section 10.0 (Evaluation of Recommendations)** explains the methodology used to validate the recommendations and via performance measurement and a sketch-planning tool.

Supplemental information for each section is located in the accompanying appendices.
2.0 Chicago Region Freight Challenge

In order to identify the best possible strategy for the Chicago region to meet its freight-related goals, it is essential to understand the region’s economic growth, anticipated freight movement developments, and changing land use. Understanding these factors and recognizing the linkages between them can enable proactive planning to ensure an appropriate balance among these drivers for the future of the region’s freight industry.

Section 2.1 begins with an analysis of broad trends across familiar demographic and economic indicators (population and employment) and is followed by an analysis of the industry trends (and industry needs) that will place demands on the Chicago area’s freight transportation system.

Section 2.2 describes the existing and projected freight flows of the Greater Chicago area. Each mode is reviewed and trends are explored for 1) overall volumes, 2) the relationships between inbound, outbound, local, and through traffic, 3) major commodity types, and 4) trading partners.

Section 2.3 explores the land use trends that impact the freight system, highlighting where growth in freight movements can bring economic benefits but also create new conflict.

It is worth noting that this Section does not explore the inventory and profile of the freight supporting infrastructure within the Chicago region. Understanding infrastructure is essential in order to paint an accurate picture of the Chicago region’s freight challenges. This report does contain a review of infrastructure with a focus on identifying those areas of the system in need of investment. However, the baseline freight infrastructure of the Chicago region is explained in much greater depth and detail in CMAP’s Regional Freight Snapshot Report, which served as a valuable input into the recommendations of this study.

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4 In draft form as of 12/10/2009.
2.1 **DEMOGRAPHIC AND ECONOMIC TRENDS**

*Metropolitan-Level and National Trends Put Pressure on Metropolitan Chicago’s Freight Transportation System*

In recent decades, the Chicago area has exhibited moderate growth relative to the nation, whether measured by its population or jobs growth. Among Midwestern metropolitan areas, the Chicago region has been far outpacing the historically large Detroit and St. Louis areas, and is a nexus of much of the Midwest’s growth along with Minneapolis-St. Paul, Columbus, and Indianapolis. Metropolitan Chicago’s long-term economic and population growth puts pressure on its transportation system, as well as on all other aspects of its infrastructure: water and wastewater, schools, healthcare facilities, power generation, etc. Greater Chicago’s transportation network and services must accommodate the mobility, logistics, and consumer needs of an increasing number of residents, workers, visitors, and businesses, and do so reliably, safely, and efficiently.

*Economic Size – Chicago’s Gross Metropolitan Product*

Greater Chicago’s freight transportation system underpins the area’s $520 billion economy (an economy larger than Sweden’s; see Figure 2.1) and its four million jobs. Greater Chicago’s gross metropolitan product, the most common measure of economic size and activity, grew by 10 percent between 2001 and 2008 (adjusted for inflation), below the 17 percent increase in U.S. gross domestic product (GDP) posted over the same period. The Chicago region’s economy is also by far the largest among Midwest metropolitan areas (see Figure 2.2)—about 25 percent larger than Detroit and Minneapolis-St. Paul, combined.

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Figure 2.1 Economic Size Makes Chicago a Major Player in Global Commerce

Source: CIA World Handbook (Nominal Gross Domestic Product by Country, 2008), and Bureau of Economic Analysis

Figure 2.2 Chicago is the Economic Engine of the Midwest

Relative Economic Sizes of Midwest Metro Areas

Source: Bureau of Economic Analysis, Gross Metropolitan Product, 2007
Population growth has a direct impact on transportation demand. More people take more trips, require more services, and need more goods to sustain themselves. After a couple decades of strong population increases following World War II, metropolitan Chicago’s population growth slowed in the 1970s, but has since resumed more robust growth beginning in the 1990s (see Figure 2.3, 2010 through 2030 population is projected). As of 2008, the seven counties in the CMAP region were home to over 8.5 million residents, making it the third most populous metropolitan area in the country. According to state population projections, the CMAP counties are expected to add 1.5 million people during the next 22 years and will reach a population of just over 10.0 million by 2030 (this growth is nearly the equivalent to adding the combined populations of DuPage and Will counties to the area). The rate of metropolitan Chicago’s population growth is lower than the United States (see Figure 2.4) but higher than the average for the Midwest.

Figure 2.3  CMAP Historic and Forecast Population Growth

1970 to 2030

Sources: U.S. Census Bureau and Northern Illinois Planning Commission (September 2006 forecast adjusted by Cambridge Systematics to reflect slower recent growth).
**Employment**

From a jobs perspective, the Chicago area economy employed approximately 3.8 million people in 2008, accounting for 2.8 percent of all U.S. jobs. Between 1990 and 2008, total employment in metropolitan Chicago increased by 11 percent, compared to a U.S. growth rate of 25 percent, as the region added 370,000 new jobs (net). In general, the Chicago area is in line with national employment growth trends (see Figure 2.4). However, the impacts of the 2001-2002 recession resulted in a slowing of Chicago’s employment growth rate, which had been closer to the nation’s throughout most of the 1990s. Now approaching the end of the first decade of the 21st century, employment levels in the Chicago area, as in the rest of the nation, are declining due to a severe recession. Longer-term, however, Chicago and the country are expected to recover and again post jobs increases beginning as soon as the latter half of 2010. A pre-recession forecast by the Northern Illinois Planning Commission predicts job gains of about 40,000 per year through 2030.
Figure 2.5  Job Growth, Metropolitan Chicago versus United States
1990-2008

Changing Economic Structure

The growth of freight volumes in the Chicago region will be influenced by the interplay of a variety of factors with a bearing on transportation demand. These factors include changes in national and global logistics patterns, overall population and economic growth, and the evolution of Greater Chicago’s economic structure. Industries, ranging from business services and retail to manufacturing and distribution have specific transportation needs, and their growth will affect transportation demand and the need for freight-related services and infrastructure in metropolitan Chicago. The ability of Chicago’s rail network, port, roadways, and airports to carry freight efficiently will affect, positively or negatively, the overall competitiveness of the regional and national economy.

Figure 2.6	Metropolitan Chicago Economic Structure – Share of Jobs by Industry, 1980-2040

Sources: Woods & Poole based on Bureau of Economic Analysis historic data.

Figure 2.7	Concentration and Employment Growth of Clusters

A defining characteristic of the Chicago area economy is the relative growth of its business services, finance and healthcare sectors. The Chicago area’s strengths in these advanced services industries have contributed to the overall economic dynamism of the region and have helped to distinguish Chicago in the global economy. In 2007, business services and finance accounted for 31 percent of Chicago area jobs, up from 24 percent in 1980. During the same period healthcare increased its share of metropolitan Chicago jobs from 6 percent to 10 percent. Figure 2.6 illustrates the contribution of each major sector to total jobs in Greater Chicago, showing the prominence of the area’s business services and finance sector. A surge in tourism-related employment is also noteworthy over the period. Services-oriented industries tend to move smaller, more time-sensitive goods. Trucking and air have historically dominated these types of shipments.

Similar to the United States economy, the Chicago area is becoming less reliant on farms, mining, and manufacturing for jobs. However, these industries are becoming more productive, requiring less labor, and the Chicago area will continue to play a key strategic role within the U.S. economy supplying a range of manufactured goods, including food, machinery, metals, transportation equipment, and plastics products among many others. All of these industries rely on freight transportation, particularly truck and rail, to receive inputs and to ship products to domestic markets or to U.S. and Canadian gateways for shipment overseas. Looking into the future, the trends of the past 25 years are expected to continue, with services-related industries accounting for a larger share of the Chicago region’s economy.

Chicago region industry clusters are shown in Figure 2.7. Clusters are interdependent firms that are linked through the buyer-supplier relationship, share common resources and technologies, depend on a similar labor pool and institutions, and rely on specific infrastructure. When considering the transportation system needs of the Chicago region, it can be useful to plan to accommodate the largest, fastest growing, and most concentrated industry clusters, which include Business and Financial, Transportation and Logistics, and Biomed/Biotech. In CMAP’s Regional Snapshot: Industry Cluster report, one notable highlight is the high concentration of the Advanced Materials cluster and the prospect of the shift towards a “green economy” resulting in an invigorated sector with evolving supply chain needs. Increased manufacturing of alternative energy components, such as wind towers, would place additional needs on the transportation infrastructure while creating much needed job growth in the manufacturing sector.

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2.2 Freight Trends

Understanding the current and projected goods movements in the Chicago region can help identify where operations, infrastructure, and policy are successful in moving freight in the region. It can also help identify where freight needs will increase in the future and will require greater resources to support industry. Finally, the long-range trends in goods movement can help the Chicago region identify how effectively the region is optimizing usage of the multimodal network rather than developing policy and investment strategies that encourage one mode over another at the expense of the region as a whole.

Regional Movements by Weight

Nearly 1.5 billion tons of freight was moved in the greater Chicago business economic area (BEA) in 2007. Of the 2007 freight volumes in the Chicago region, trucks moved just over half, rail carried approximately 43 percent, five percent moved by water, and 0.07 percent was moved by air (less than one million tons). Approximately two percent of total freight in the region was moved by other modes, primarily pipeline.

Total tonnage moved by both truck and rail is expected to increase substantially over the next 30 years. Annual truck freight is expected to grow by over 500,000 tons by 2040 to a total of nearly 1.3 billion tons, amounting to approximately 53 percent of the region’s freight. Rail freight is also expected to exhibit strong growth during this period, climbing to over 1 billion tons in 2040. Volumes of waterborne and other freight are expected to increase slowly over this period but to carry a smaller portion of total regional freight. Air cargo is expected to exhibit the strongest growth during this period, more than doubling to 2.3 million tons annually in 2040 and carrying approximately one percent of total regional tonnage.

The total tonnage carried by each mode in 2007 and expected future volumes are shown in Figure 2.8.

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7 All figures in this Section are based on an analysis of the TRANSEARCH database. The TRANSEARCH database, maintained by IHS Global Insight, is an annually-updated dataset of U.S. county-level freight movement data by commodity type and mode of transportation. The Chicago BEA includes all counties within the CMAP region as well as the following Illinois counties: Kankakee, Iroquois, Boone, Winnebago, Stephenson, Grundy, DeKalb, Ogle, Lee, Carroll, Bureau, LaSalle, Putnam, Livingston, McLean and DeWitt; the following Indiana counties: Lake, Porter, LaPorte, Newton, and Jasper; and Kenosha County, Wisconsin.
Overall, freight movements by weight tell an interesting story for the Chicago region. The similar levels of truck and rail movements by ton shows how uniquely active Chicago’s rail network is. For most major metropolitan areas, truck movements would greatly outsize rail movements. The Chicago region’s rail activity reflects an advantage in critical mass for rail movements that the region could leverage to encourage additional freight development. The much lower comparative water tonnage shows that the maritime network may be underutilized, given the high amount of capacity for the region (both inland waterways and on the Great Lakes with access to the St. Lawrence Seaway) and the region’s reliance on heavier commodities such as steel manufacturing inputs, agricultural products and byproducts, and construction materials.

**Regional Movements by Value**

Table 2.1 details the total value carried by each mode in the region in 2007 and forecasted future values. Trucks carried approximately 75 percent of total regional freight by value in 2007 (over $2.8 trillion). Rail carried $918 billion in value in 2007, comprising 24 percent of the total value of freight in the region. Less than 1 percent of regional freight by value was moved by air, water, or other modes in 2007.

The value of freight carried by trucks in the region is expected to grow by over 160 percent by 2040, to a total of nearly $7.4 trillion, representing nearly 77 percent of total freight volume in the region. Rail volumes are also expected to increase substantially over the next three decades, growing by 135 percent to a total of $2.15 trillion in 2040, representing 22 percent of total regional freight volume. Air cargo is expected to exhibit the largest increases over the coming years, climbing 675 percent to a total of $66 billion in 2040. By 2040, tonnage
moved by water and other modes in the region is expected to increase by 48 and 66 percent from their 2007 levels.

Table 2.1  Mode Comparison by Value ($Millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Truck</th>
<th>Rail</th>
<th>Air</th>
<th>Water</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$2,822,000</td>
<td>$918,000</td>
<td>$9,000</td>
<td>$15,000</td>
<td>$11,000</td>
</tr>
<tr>
<td>2020</td>
<td>$3,590,000</td>
<td>$1,177,000</td>
<td>$14,000</td>
<td>$17,000</td>
<td>$13,000</td>
</tr>
<tr>
<td>2030</td>
<td>$4,969,000</td>
<td>$1,561,000</td>
<td>$27,000</td>
<td>$20,000</td>
<td>$15,000</td>
</tr>
<tr>
<td>2040</td>
<td>$7,372,000</td>
<td>$2,149,000</td>
<td>$66,000</td>
<td>$23,000</td>
<td>$18,000</td>
</tr>
</tbody>
</table>

Source: TRANSEARCH.

The trends in overall value highlight freight’s importance to Chicago’s economy. Anticipated increases in air freight are particularly notable despite the low overall value compared to truck or rail. Given that air freight haulers have faced capacity restriction at O’Hare and several operations have shifted outside of the Chicago region, such as to Rockford, it may be a priority for freight planners to accommodate air freight.

**Truck Freight**

Of four major trip types (inbound, outbound, local, and through), through trips represent the largest truck freight volumes at approximately 33 percent of all truck traffic in the region. This is likely due to the presence of a nexus of Interstate highways linking the east coast and west coast such as I-80, I-90, and I-94. Through trips are also expected to exhibit the most significant growth over the next three decades, more than doubling to over 510 million tons.

Local movements between points within the study region accounted for almost 200 million tons and are expected to grow by another 50 percent by 2040. These values are higher than the inbound and outbound traffic, showing dense supply chains as well as the influence of the drayage industry for intermodal movements within Chicago. Inbound volumes are slightly higher than outbound, with the gap anticipated to grow by 2040.

Secondary moves are the largest single commodity group moved by trucks and are projected to grow significantly. This is likely due to the drayage activities among intermodal yards supporting container exchanges between eastern and western railroads. This raises the specter of significantly increased truck traffic in the region, which planners will need to consider. Most other major commodities support the manufacturing and construction industries. All truck flows for top commodities are shown in Figure 2.9.
As shown in Figure 2.10 a review of the most active trading partners with the Chicago region in terms of truck freight tonnage shows a dispersed network of origins and destinations. The regions with the largest trade flows to and from Chicago include other large Midwest metro regions such as St. Louis, Milwaukee, and Indianapolis. No major shifts in trading partners are projected by the year 2040.
Rail Freight

Rail freight movements are expected to climb steadily over the next two decades in terms of both weight and value.

Through freight, at nearly 310 million tons, made up nearly half of the CMAP region’s total rail volume in 2007. Inbound freight comprised a nearly 30 percent share of total rail tonnage, with over 180 million tons. Outbound freight made up 20 percent of the region’s rail freight (130 million tons). Rail movements between points within the region accounted for less than 2 percent of total rail moves in the region.

Outbound freight is expected to exhibit the strongest growth over the next 30 years, growing by over 90 percent to a total of over 250 million tons in 2040. Inbound freight is expected to grow by over 80 percent to nearly 335 million tons. Local rail freight is expected to grow by only 3.3 million tons, to a total of 14.8 million tons. Through freight will maintain the largest share of rail movements in the region, growing nearly 40 percent, to a total of nearly 425 million tons in 2040, representing 41 percent of total rail tonnage.

As shown in Figure 2.11, coal is the largest single commodity moving on the rail network in the Chicago region. The bulk of coal movements are inbound. General freight, which includes intermodal containers, is the second largest commodity in total tonnage and is anticipated to have the greatest increase by the year 2040, growing by over 240 percent.
As shown in Figure 2.12, the top rail trading partners with the Chicago region include the coal-producing region of Casper, Wyoming and several international port regions including Los Angeles, New York, and Seattle. Rail trade with the Los Angeles region is anticipated to increase from about 10 percent to about 19 percent of all freight rail tonnage.

Source: TRANSEARCH.
Waterborne Freight

Waterborne freight tends to consist almost exclusively of relatively heavy, low value goods that are less time sensitive than freight carried by other modes. A total of nearly 73 million tons of waterborne freight moved in the Chicago region in 2007, of which more than 60 percent (45 million tons) was inbound to destinations in the area. 26 percent of these movements were outbound, while 12 percent of this waterborne tonnage was moving between points within the area. Over the next 30 years, inbound tonnage is projected to decline by approximately 25 percent while outbound tonnage is expected to grow by 70 percent, bringing inbound and outbound movements to 34 and 33 million tons respectively. Local movements are expected to grow slowly over this period, climbing 24 percent from their 2007 level to a total of 11 million tons in 2040.

As shown in Figure 2.13, coal is the largest commodity moved on the Chicago region waterborne freight system, followed by metallic ores and non-metallic minerals. Coal is predicted to have a minor decline while metallic ores has a significant decline. Large increases in the volumes of farm products, waste and scrap materials, and primary metal products are all predicted by 2040.
As shown in Figure 2.14, top waterborne freight trading partners include a mix of Great Lakes port regions, such as Duluth, MN; Green Bay, WI; Northern Michigan, MI; and trading partners along the Illinois River to Mississippi River waterway network, such as St. Louis, MO, and New Orleans and Baton Rouge, LA. Trade with Duluth is projected to decline from about 16 percent of all freight to about three percent. Likewise, trade with New Orleans is anticipated to decline as a percent of all waterborne freight. The largest growth by percentage is the “elsewhere” category, reflecting the possibility of a more diverse set of origins and destinations for waterborne freight trading with the Chicago region.
Air Cargo

While inbound and outbound tonnages of air cargo are predicted to remain at relative parity over the coming years, values are predicted to become increasingly disparate. In 2007, inbound air cargo was valued at $5.4 billion and outbound air cargo was valued at $3.2 billion. However, by 2040 the value of inbound air cargo is predicted to reach $59 billion, an increase of nearly 1,000 percent, while the value of outbound shipments will rise only 137 percent, to $7.5 billion.

As shown in Figure 2.15, air cargo represents a much more diverse set of commodities than either rail or waterborne freight. A wide variety of high value, low weight goods travel via air, ranging from mail to fresh fish. The major commodities by value moving on Chicago’s air cargo system include machinery (both electrical and non-electrical), transportation equipment, and precision instruments.

Electrical machinery is anticipated to have enormous growth in value. Given that much of this growth occurs in trade flows between Chicago and California, it can be assumed that personal computing equipment is one major component of this explosive growth.
As shown in Figure 2.16, the top trading partners with the Chicago region in air cargo (by value) are Anchorage, AK; New York, NY; San Francisco, CA; Los Angeles, CA; and Cleveland, OH. Much of the air cargo trade with Chicago is not concentrated in a single region and is likely from international trading partners. By 2040, trade with Anchorage is expected to be significantly exceeded by trade with California, with Los Angeles, San Francisco, and San Diego together comprising almost 50 percent of all air cargo trade by value. This is likely due to the rise in electrical machinery trade with these high-tech markets.

Source: TRANSEARCH.
Other Modes

The only other mode of significance in the Chicago region is the pipeline movement of crude petroleum, natural gas, and gasoline. These commodities form 98 percent of all “other mode” shipments by tonnage. This commodity mix for pipeline transportation is expected to remain stable through 2040.

2.3 Land Use Trends

The Chicago region, though heavily urbanized at the core, has significant amounts of low-density residential and agricultural land uses. Freight uses often conflict with residential uses due to increased volumes of trucks and trains that cause noise and traffic congestion, while impacting safety, and affect air quality. Significant residential development is often located adjacent to current freight routes such as Interstate highways and shared Class I/Metra rail lines. Given the large increases in population forecasted for the region overall and particularly in the South Cook County-Will County region, strong pressure to develop open land, especially agricultural land, will exist. Simultaneously, improvement of the freight network to support economic development is desired. Balancing these two conflicting needs will require careful management of land uses in key freight regions. Land use trends are discussed in greater detail in Section 5.0.
3.0 Regional Framework

The establishment of a Regional Freight Framework that explains common interests and unifying principles will help define when freight investments need to be made, where investments should be made, and who should make the investments. As an example, some partners in the south suburbs have actively pursued warehousing and distribution development. But the region must ask itself: Is infrastructure available to support this development? Is this the regionally agreed location for Greater Chicago’s freight and logistics industry growth? As the entire region and nation may benefit when the Chicago freight system develops, who needs to invest—just local agencies, or should consideration be given to other regional, national, and private funding sources?

Several important inputs that shaped development of the Regional Freight Framework are described in Section 2.0 (Freight Trends). In this Section 3.0, two more critical inputs for setting the Regional Framework are introduced: 1) core freight planning principles (explained in Section 3.1) are used as a method of organizing and understanding critical linkages; and 2) input from key regional transportation and policy stakeholders on how these principles can be applied to the Chicago region (summarized in Section 3.2).

3.1 Core Freight Planning Principles

The Regional Freight Framework in Greater Chicago should respond to current needs and create guiding principles for future development. It should address communities’ current transportation, social, economic, and environmental needs, but also should create a long-term framework for development and investment. An effective Framework must address:

- Roles of freight services in meeting the transportation needs of businesses, communities, and the state, regional, and international economies in the short and longer term (2040 and beyond);
- Local government interests in freight, and options for public participation in freight through actions such as direct investment, financial incentives, regulation, planning, and advocacy;
- Linkages between government actions on freight and the region’s environmental, energy, development, land use, social, and fiscal goals;
- Expected benefits, costs, and risks to rail transportation stakeholders;
- Key performance measures; and
- Procedures for updating recommendations as the Chicago region’s freight transportation system evolves.
Above all, a successful Framework must recognize the linkage between investment in the system and future social, economic, and environmental outcomes, as illustrated in Figure 3.1.

The Chicago area’s ability to compete goes beyond being industrious and having a strong work ethic, but also demands an efficient freight transportation system that can deliver products reliably. As one of the busiest hubs of the country, close to the geographical center of the nation’s economic activity, overall U.S. growth also has a direct bearing on the functioning of Chicago’s transportation system. The expansion of the U.S. economy translates to more goods being shipped through and handled in Chicago area transportation facilities. For these reasons, the decision-making process regarding the future of metropolitan Chicago’s freight-related infrastructure needs to incorporate and respond to the intrinsic growth conditions of the region, as well as to the significant transportation and economic roles it plays within the greater U.S. economy. Investments should improve travel time, cost, reliability, and connectivity.

The relationship between freight activity and the Chicago area’s economy is strong. For example, industries rely heavily on the efficient movement of goods, both for the outbound shipments of their products to reach worldwide markets, as well as for inbound shipments of intermediate goods required for production. In addition to freight transportation’s importance to metropolitan Chicago’s industries, efficient multimodal freight transportation systems can help to minimize the cost of consumer goods to residents of the region as well as for people in other parts of the country. The Chicago region’s economy directly benefits from transportation infrastructure improvements that reduce costs by either: 1) reducing systematic freight delay; or by 2) increasing the reliability of on-time shipments.
Done well, investment in the freight system will contribute to a more competitive economy and a society that makes best use of its capital, knowledge, and labor. And, in a world looking to reduce petroleum use and greenhouse gases, many investments in freight transportation can result in a more energy-efficient and lower-emission transportation system.

Freight is a derived demand. Freight volumes, origins, destinations, and commodity types reflect the interactions between and among populations and industries. Therefore, the Regional Freight Framework must be rooted in an understanding of freight movements in the Chicago region. The Regional Freight Framework must also be rooted an understanding of how demographic and industry trends impact the current conditions, future conditions, and performance of the freight transportation system.

The growth of freight volumes in the Chicago region will be influenced by transportation demand factors. These factors include socioeconomic factors such as overall population and employment growth, changes in national and global logistics patterns, and the evolution of the region’s industries. Industrial growth in areas ranging from manufacturing to business services and tourism will affect freight demand. On the supply side (i.e., the provision of freight transportation infrastructure and quality freight services), the condition of the Chicago region’s roadway and railway networks will affect, positively or negatively, the overall competitiveness of the regional and national economies.
Figure 3.2 details the critical elements that should be considered in Framework development. This illustration highlights the interconnected nature of the freight system. The importance of each element is described below.

**Figure 3.2  Freight Transportation System Elements**

- **Economic Structure.** Freight demand is driven by many economic factors, including business type, growth, and location, as well as population growth, income, and clustering. Understanding this information is critical to determining what freight is moved into, out of, through, and within the Chicago region. In addition, insightful projections for future economic and population characteristics can help determine the future regional freight demand.

- **Industry Logistics Patterns.** It is critical to understand key trading partners, logistics strategies, and supply chain and distribution patterns used by businesses in the Chicago region. In addition, it is important to understand what transportation system components they rely on, how their goods movements impact the system now, and how their transportation system needs may change in the future.

- **Freight Infrastructure.** Understanding the extent of the physical freight system – the highways, rail lines, airports, waterways, and intermodal connectors – will help the Chicago region freight stakeholders to determine how well the system is serving the shippers, receivers, and carriers that...
depend on it. It is also important to gauge the ability of the system to keep up with economic growth and evolving logistics strategies and needs.

- **Commodity/Vehicle Traffic Flows.** Understanding how commodities and vehicles use the freight transportation system is also an important step towards identifying needs, deficiencies, and bottlenecks.

- **Organization and Public Policy.** Organizational structure and public policy affect freight transportation in the Chicago region, and often affect the degree to which freight issues are addressed in transportation planning and investment activities. Public policy also addresses work to reduce the negative impacts of the freight system on local communities, advancing the quality of life and business environment for the region’s residents and businesses. In order to develop relevant recommendations that will dovetail with existing programs and policies, an understanding of public policy and organizational impacts is critical.

The Regional Freight Framework must recognize the linkages between the freight transportation system and the overall economic health of the Chicago region. Understanding and addressing goals for all of the system elements is a vital part of successful freight planning. These will be further explored in detail in Section 4.0 (stakeholder outreach) and Section 5.0 (data analysis).

### 3.2 Framework Charrette

During a Framework Charrette (held on August 11, 2009 at CMAP’s offices and with ten participants representing a diverse set of regional transportation and policy stakeholders), stakeholders discussed how the core freight planning principles could be applied in the Chicago region and shaped into Regional Freight Framework Themes. Several of the key findings of the Framework Charrette are summarized below. The topics of discussion mirror the interrelated categories of the freight system introduced in Figure 3.2.

**Economy**

- Economic trends indicate that Chicago is becoming a more service-oriented economy (shifting away from a manufacturing-dominated economy). Nevertheless, manufacturing will continue to play a critical role in Chicago’s economy. This trend follows a pattern similar to New York City.

- If Chicago’s economy will be highly service-oriented, we will need to handle high-value merchandise cost-effectively. There will be a need to maintain quality of life and get products to market cost-effectively.

- There is a great deal of uncertainty in the goods movement industry due to the current economic climate. It is difficult to pinpoint trends in Chicago amidst changing economic conditions.
• Processing of raw and agricultural goods appears to be an opportunity for economic growth in the Midwest.

• The significant growth in Will County jobs is mostly related to the warehousing and distribution industries.

• Chicago should work to retain rail in Chicago for the economic benefits, notably the access to global markets.

• The link between freight and economic development gets little publicity and should be further emphasized.

• Public sector decision-makers need to recognize that the proportion of public investment in the logistics/freight industry is small relative to private investment in the industry.

Industry Logistics Patterns

• While Chicago is a freight hub for transfer of goods, it is also the first or last mile for a significant portion of goods traveling in the region.

• Railroads have tried to use more unit trains to expedite loads but the market is not sufficient to support this option yet, resulting in stopped service.

• The future will rely more heavily on the Panama Canal due to water-route cost advantages and improvements now underway on the Canal and at east coast ports. However, the Panama Canal may not completely shift flows to the east coast seaports because an all-water route will still be more time-consuming and the biggest ships won’t fit in the expanded canal.

• Asian manufacturing may wane due to transportation costs. More manufacturing may be located in Mexico.

• Supply chains are tending to be longer – and Chicago is likely at the end of the chain, where products go to market.

• Investments are being made now (e.g., CREATE) to shore up Chicago’s position in the national/international supply chain. The railroads’ strategy is that Chicago will continue to be the most important national rail hub.

• Reducing or mitigating conflicts with local communities can bring mutual benefits.

Freight Infrastructure

• Infrastructure needs to fulfill carrier needs. Otherwise, products will not be shipped to Chicago for long-haul trips.
Roadways around intermodal hubs need to have increased capacity to accommodate freight needs in the future.

Systematic improvements to the trucking system, driven by a public-private effort to identify key chokepoints and problems, could be beneficial.

Warehousing and distribution increasingly use extensive tracts of land, most readily available in the south and southwest suburbs. Thus, warehousing/distribution will be more concentrated in the south and southwest parts of the region.

Rail investments in the southern portion of Chicago could benefit future freight flows.

The public sector must continue to partner with the private sector, recognizing that private decisions will drive system investment. These system investments will have public benefits and costs. The public sector must represent the needs of constituents, particularly in the areas of safety and quality of life.

**Commodity/Vehicle Traffic Flows**

- Rail capacity is an area of concern, raising questions of whether Chicago has the capacity to absorb future growth, how much of future rail capacity will go to passenger traffic, and how the intermodal traffic supply chains will shift.

- It is clear, however, that rail investments in the region are shoring up Chicago’s position as a transportation hub. The railroad strategy is to retain Chicago as an intermodal hub; rail is unlikely to abandon Chicago investments in facilities.

- It appears that most of the growth in freight tonnage will be by truck mode. The region needs to consider whether shifting some of this tonnage to rail will be beneficial. To improve efficiency for all transportation system users, off-peak truck travel should be facilitated by modifying the delivery-time restrictions or providing truck parking near areas with such restrictions.

**Organization and Public Policy**

- The Chicago region needs to be more proactive to ensure national congressional representatives’ support for the Chicago region as a critical inland freight hub.

- CMAP’s Developments of Regional Importance provides an opportunity to address freight needs. This process may benefit the freight industry in the future.

- Freight planning must address public quality of life issues, including:
Regional Freight System Planning Recommendations Study

- Intermodal facilities’ impact on local traffic;
- Delays and safety concerns at grade crossings;
- Lack of publicly accessible information on rail hazardous material transport; and
- Interest in lower-impact transportation modes, such as marine transport.

- The STB should consider quality-of-life impacts in addition to business impacts.

- Trucking delivery time restrictions are a major issue for truck efficiency. A lot of mitigation is already in place to prevent externalities – the perception of negative impacts of night deliveries may be greater than reality.

- Developing a mechanism to coordinate regional investments should be a priority.

3.3 **FRAMEWORK THEMES**

Framework themes have been developed within six key categories, reflecting five key elements of the freight transportation system, as well as a sixth category to address environmental and community concerns. These themes build on the core freight planning principles, input from key regional freight stakeholders, CMAP’s established Regional Vision for the GO TO 2040 Plan and the lessons learned throughout all areas of the Recommendations Study:

- **Economy** – Theme to reflect economic growth projections for the Chicago region’s economy and communities (2040 and beyond);

- **Industry Logistics Patterns** – Theme to reflect industry sectors and communities that could benefit from better freight services based on their current and anticipated freight logistics needs;

- **Freight Infrastructure** – Theme to reflect freight system components and corridors; how highway, rail, air and water are interlinked and support each other;

- **Commodity/Vehicle Traffic Flows** – Theme to reflect flows on the freight system, and the Chicago region’s ability to sustain them while supporting social, economic, and environmental goals;

- **Organization and Public Policy** – Theme to reflect policies, procedures, and key criteria for evaluating and programming specific freight programs and projects for public participation, whether directly through investment or indirectly through regulation; and

- **Environmental and Community Impacts** – Theme to reflect impacts freight has on the Chicago region’s environment and communities.
Theme #1: Economy

In 2040, the Chicago region’s freight system will contribute to the growth, productivity, and changing needs of business and industry by providing cost-effective and reliable access to resources, markets, and labor.

- The freight system will be developed to ensure the Chicago region is economically competitive.
- The freight system will be developed to ensure the Chicago region is a growth leader.
- Economic uncertainties will continue; the Chicago region will have flexibility to adapt to these uncertainties.

Theme #2: Industry Logistics Patterns

In 2040, the Chicago region will serve as an international hub for goods movement.

- The Chicago region will continue to grow as a hub for distribution of consumer goods as its population expands.
- The Chicago region will continue as a through and transfer hub for goods crossing between the east, west, and gulf coast ports; North America; and the world.
- The Chicago region’s freight system will provide options to shippers in terms of market access, modal access, and service.
- Industry logistics and supply chain patterns will change; the Chicago region’s freight system will adapt to continue serving as an international hub for goods movement.

Theme #3: Freight Infrastructure

In 2040, the Chicago region’s freight infrastructure will provide seamless, efficient connections to markets throughout North America and to the world.

- The Chicago region’s freight system will provide access between the east, west and gulf coast ports; North America and the world through seamless highway, rail, air, and water connections.
- The Chicago region’s freight system will provide “last mile” access for local delivery.
- The Chicago region’s freight system will offer alternatives to highways for freight transportation.
- The Chicago region’s freight infrastructure will be in good repair, particularly the most regionally and nationally significant facilities.
- The Chicago region will make efficient use of existing infrastructure making “biggest bang for the buck” investments.
Theme #4: Commodity/Vehicle Traffic Flows

In 2040, the Chicago region’s freight system will have operational capacity to accommodate highway, rail, water, and air freight commodity and vehicle flows.

- The Chicago region will encourage using the most efficient mode of freight for the trip purpose.
- The Chicago region will make efficient use of existing infrastructure through the use of travel demand management strategies.
- The Chicago region will make efficient use of existing infrastructure through the use of technology.

Theme #5: Organization and Public Policy

In 2040, the Chicago region’s public and private freight stakeholders will have shared goals and priorities on the process used for identifying the region’s freight system needs, priorities, and making investment decisions.

- The Chicago region’s public and private stakeholders will collaborate on freight planning; using key criteria for evaluating and programming specific freight programs and projects.
- The Chicago region’s public and private stakeholders will collaborate on freight financing decisions.
- The Chicago region’s public and private stakeholders will collaborate on freight policy and regulation decisions; all modes will be considered and decisions will not favor modes as a result of their institutional structure. Decisions will be directed towards achieving optimal outcomes for the region.
- The Chicago region will work with freight operators in an equitable, non-discriminatory manner on issues such as taxes, economic regulation, and other elements that affect modal competitiveness.

Theme #6: Environmental and Community Impacts

In 2040, public and private freight stakeholders will contribute positively to the quality of life in metropolitan Chicago.

- The Chicago region’s freight system will be developed to serve goods movement needs while supporting social, economic, and environmental goals.
- The Chicago region will mitigate the negative impacts of freight transportation.
- The Chicago region will explore how multimodal approaches to freight can reduce greenhouse gas emissions and make the best use of energy resources.
4.0 Stakeholder Outreach

Identifying the needs of the freight system was a two-part process. First, regional freight stakeholders were consulted in order to identify deficiencies from the perspective of the user. Second, a data analysis was conducted to identify deficiencies in a systematic and data-driven fashion. This section describes the stakeholder effort. The data analysis is described in Section 5.

In order to identify the needs of the freight system and the potential improvements that could be undertaken (through infrastructure projects, operational enhancements, and policy options), regional freight stakeholders were consulted. Representatives of the trucking, rail, maritime, and aviation modes were interviewed, along with community planners and key decision-makers, such as the CMAP Council of Mayors Executive Committee. In addition to individual and group interviews, an electronic survey was distributed widely to various private and public sector stakeholders. The 74 responses also contributed to identifying potential improvements. Detailed outreach summaries can be found in Appendix A.

Most stakeholders feel that Chicago will continue to be a major freight hub into the future. Chicago is the only U.S. location where all six Class I railroads intersect, which is one key driver of regional freight activity. O’Hare’s prominence as a major international and national air gateway is a critical factor. The network of major interstates (e.g., I-55, I-57, I-80, I-88, I-90, and I-94) through Chicago provides excellent access via highway throughout the region and to other North American locations for trucking carriers. The inland waterway network and Great Lakes provide options for river barge and short sea shipping.

Some of issues raised by the key stakeholder groups are summarized below:

- **Trucking stakeholders** felt the key issues on the highways include urban area congestion, construction and construction zone management, local restrictions on delivery times, and a lack of convenient truck parking options. They recommended solutions such as better advanced traveler information and travel demand management strategies, improved construction zone management, policies to encourage nighttime deliveries, and location of new truck parking facilities. Stakeholders showed strong opposition to increased tolling as a funding mechanism, feeling they already pay more than their share.

- **Railroad and intermodal stakeholders** anticipate significant growth in intermodal traffic, longer trains, and greater innovation in freight exchange coordination and tracking. This growth will be accompanied by increasing conflict between passenger and rail traffic, however, given the difficulty of expanding rail infrastructure in the heavily urbanized region. They showed strong support for CREATE and urge coordination.
among regional and local governments to address issues of potential conflict, such as quiet zones and highway-grade crossing delays and safety concerns. They also showed a high level of appreciation for CMAP’s inclusive rail planning efforts.

- **Maritime stakeholders** operating on inland waterways as well as Lake Michigan believe poor lock reliability, inadequate dredging, and restrictive land use ordinances are the key challenges facing their industry. There is significant concern over the fish barrier on the Chicago Sanitary and Ship Canal and stakeholders would like to see greater modal connectivity to take advantage of available maritime capacity.

- **Aviation stakeholders** are eager for improved access to Chicago O’Hare Airport and more streamlined and less burdensome security protocol. They would like to see projects which improve O’Hare access, such as an internal freightway or restricted perimeter roadways, and/or elimination of some of the critical bottlenecks surrounding O’Hare. The industry is anticipating increasing traffic at other airports as well as the possibility that a Peotone Airport may lead to an efficient air cargo cluster, taking advantage of available land, access to I-80, and nearby intermodal facilities.

- **Municipal and regional planners and decision-makers** showed concern over land use conflicts in smaller communities. The location of freight facilities on the outskirts of the region has profoundly impacted regional traffic patterns and drawn significant volumes of truck traffic to previously rural areas. Increasing rail volumes and anticipated changes in operation (such as the acquisition of the EJ&E rail line by CN) generate concern over delay and safety conflicts at highway-rail grade crossings. Stakeholders feel that greater attention to freight through community planning can be achieved.

The following section describes these findings and their sources in greater detail.

### 4.1 OUTREACH MECHANISMS

**Individual and Group Interviews**

This memorandum incorporates data collected via three group and 11 individual interviews between July and September 2009. Additionally, stakeholder input collected via 25 interviews for the South Suburban Freight Study in 2007 was considered. The three group interviews were with the Illinois Trucking Association members, Illinois Water Carriers Association members, and the Chicago Metropolitan Agency for Planning (CMAP) Council of Mayors Executive Committee. The remainder of interviews involved one or two representatives of each agency or organization. Interviewees were targeted to gather input from all four modes of freight transportation: truck, air, water, and
rail. While it is often challenging to receive input from private businesses, this study secured input from those that ship materials or products in Greater Chicago. Agencies interviewed are shown in Table 4.1.

Table 4.1  CMAP Regional Freight Planning Recommendations Study Interviewees

<table>
<thead>
<tr>
<th>Mode/Sector</th>
<th>Company/Agency</th>
<th>Participant/Industry Details</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>International Air Cargo Association President</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Air</td>
<td>Chicago Air Cargo Managers Association President</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Business</td>
<td>DeLong Corporation</td>
<td>Grain</td>
<td>1</td>
</tr>
<tr>
<td>Business</td>
<td>Prairie Creek</td>
<td>Grain</td>
<td>1</td>
</tr>
<tr>
<td>Business</td>
<td>Shure</td>
<td>Electronics</td>
<td>2</td>
</tr>
<tr>
<td>Business</td>
<td>LaFarge Cement</td>
<td>Aggregates</td>
<td>1</td>
</tr>
<tr>
<td>Local Government</td>
<td>Council of Mayors Executive Committee of Chicago Metropolitan Agency for Planning</td>
<td></td>
<td>16.0</td>
</tr>
<tr>
<td>Rail</td>
<td>Norfolk Southern</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Rail</td>
<td>Union Pacific</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Truck</td>
<td>Illinois Trucking Association –</td>
<td>Dominick’s, Edy-Brown, Superior Bulk Logistics, Packard Transport, Inc., Kingsway Logistics, Ideal Delivery Services</td>
<td>6</td>
</tr>
<tr>
<td>Water</td>
<td>Illinois International Port District</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Water</td>
<td>American River Transportation Company, subsidiary of Archer Daniels Midland</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Water</td>
<td>Illinois River Carriers Association</td>
<td>Ozinga, AEP River Operations, Florida Marine Transporters, Hanson Material Service, Calumet River Fleeting</td>
<td>6</td>
</tr>
<tr>
<td>Water</td>
<td>Lake Carriers Association</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Cambridge Systematics

**Electronic Survey Respondents**

Input from a wider audience of freight system users was collected via a user-friendly web-based survey between July and early October 2009. The electronic
survey was publicized via CMAP’s study website and weekly newsletter, as well as through distribution to regional freight-oriented groups and business and logistics professional organizations. Public- and private-sector survey participants were asked about system needs and deficiencies on the four modes, needed improvements, freight policies, funding options, workforce issues, and land use issues. Private sector respondents also were asked about shipping patterns and business trends. Public sector respondents also were asked about community planning for freight. The survey questions can be found in Appendix B.

Input was gathered via 74 electronic surveys. Of the respondents to the electronic survey, 43 percent were from the private sector, 38 percent were from the public sector, and 18 percent were from the non-profit sector.

Figure 4.1 shows the breakdown of the 11 private sector responses in terms of origins and destinations of goods. Nine of the respondents originate goods in Chicago and seven terminate goods in Chicago. Most ship in the Midwest and elsewhere in the U.S. Asia is another major origin and destination.

Twenty-five public sector representatives participated in the electronic survey. Nearly half of the public sector electronic survey respondents were transportation planners or engineers. Respondents also included community planners, elected or appointed officials, and economic development staff.
Respondents represented municipal, regional, state, and national organizations. See Appendix C for a detailed breakdown of respondent agencies and roles.

4.2 Needs and Deficiencies

Overall, survey respondents feel that Chicago’s freight system meets their needs moderately well, rating it an average of 6.1 out of 10. The average rating by 20 private sector respondents was slightly lower at 5.6. Public sector respondents view the system slightly more favorably, scoring it a 6.5 on a 10-point scale.

By mode, the air freight system fared the best and the roadway and water freight systems received the lowest ratings. Private sector respondents feel that air and roadway systems more effectively meet needs and that the water and roadway systems were less effective. Among public sector respondents, the modal systems were scored similarly, all rated between 5.7 and 6.8 out of 10 points. Figure 4.2 shows the average rating of the regional freight system by all survey respondents, as well as averages of the public and private sector responses.

Chicago Region Freight Strengths

Most stakeholders feel that Chicago will continue to be a major freight hub into the future. Chicago’s location as a historical hub, convergence of the Class I railroads, the interstate network, and the geography of Lake Michigan forcing freight through the area all point to the region’s sustained role in regional, national and international goods movement.

Chicago is the only U.S. location where all six Class I railroads intersect, which is one key driver of regional freight activity. The railroad hub status also limits the extent to which other regions can compete with Chicago, particularly in terms of the potential for rail freight transfers between the eastern (CSX, Norfolk Southern), western (Union Pacific, Burlington Northern Santa Fe Railway), and Canadian (Canadian National, Canadian Pacific) railroads.

O’Hare’s prominence as a major international and national air gateway is another critical factor supporting Chicago’s freight status. One strength is that air cargo representatives feel Customs Port Chicago is the most business-supportive customs port in the Midwest. It is viewed more positively by the air freight industry than other airports such as Cincinnati, Detroit, Miami and JFK. The air cargo industry feels customs in Chicago is very pro-business, responsive, and considers air cargo businesses to be customers.

Hundreds of freight forwarders and third-party logistics firms are clustered around O’Hare and depend on the high volumes of freight moving through the airport and the region to offer competitive rates to customers. Third-party logistics firms also ship customers’ freight via other modes in the region, using rail/intermodal centers in Will County and the extensive highway network.

The network of major interstates (e.g., I-55, I-57, I-80, I-88, I-90, and I-94) through Chicago provides excellent access via highway throughout the region and to
other North American locations for trucking carriers. The highways are also critical to transfers between modes within the region.

Stakeholders were asked to identify other cities they feel have freight systems that are competitive with that of Chicago. Cities identified as competitive with Chicago, in approximate order of number of mentions, include:

- Memphis;
- Los Angeles;
- New York;
- Atlanta;
- St. Louis;
- New Orleans;
- Long Beach;
- Philadelphia; and
- Seattle/Tacoma

Respondents were also asked to identify cities viewed as having freight systems superior to that of Chicago. Regions viewed as superior, in approximate order of the number of mentions, include:

- Dallas;
- Detroit;
- Atlanta;
- Kansas City;
- Columbus;
- Minneapolis;
- Memphis;
- Cincinnati;
- Long Beach; and
- Halifax, Nova Scotia.

**General Community Impacts**

Significant freight system development in the region has been underway in recent years, with much of the activity concentrated in South Cook and Will Counties. These developments include intermodal terminals and warehouse and distribution centers. While a fairly significant planning process is undertaken for each major intermodal facility (e.g., Logistics Park Chicago in Elwood),
development of ancillary warehouse and distribution facilities pursued by municipalities is not well coordinated.

The locations of these logistics centers on the outskirts of the region was chosen to avoid urban congestion. However these freight facility locations have profoundly impacted regional traffic patterns and drawn significant volumes of truck traffic to previously rural areas. Roadway circulation around these facilities is often not sufficiently considered. Planning for the large number of individual developments and transportation connections is not being coordinated regionally, which is resulting in concerns about the cumulative impacts of these developments.

Land use conflicts have resulted between freight-oriented and residential development. While mitigation efforts are generally planned as part of major intermodal facilities, residential areas may be located nearby such facilities resulting in impacts such as traffic congestion, noise, and light.

The Southland has strongly embraced freight and logistics-oriented development. However, some communities have expressed concern about whether the local economy will be sufficiently diversified if its economic development strategy is too closely tied only to this industry.

With the acquisition of the EJ&E rail line by CN, increased freight flows are anticipated along the EJ&E corridor. Communities along that corridor are concerned about increased freight train volumes and the impact particularly at highway-rail grade crossings. Additionally, communities struggle with the aesthetic appearance of rail viaducts and their impact on community livability.
Figure 4.2  Regional Freight System Adequacy

Note: Responses – 20 Private, 30 Public.
Trucking

Given the economic conditions in 2009 and the sharp decrease in shipment volumes, trucking companies are struggling and many have been going out of business. In 2008, 3,000 companies with five or more trucks went out of business nationwide, according to the Illinois Trucking Association (ITA). Challenges to trucking efficiency are brought into even greater relief when they may impact whether a company can remain in business during difficult economic times. Trucking needs and deficiencies are discussed below.

Delivery Time Restrictions

Restrictions on delivery times by municipalities are one of the most significant issues impacting efficiency of trucking in the region. Many municipalities restrict deliveries by trucks during the evening hours, (e.g., 10 p.m. to 6:30 a.m.) and curfews vary by municipality, severely impacting trucking schedules and cost. In many cases, truckers feel these curfews are unnecessary as many of the delivery locations (such as Dominick’s store locations) are not adjacent to residential development, or efforts have been made to mitigate noise from truck deliveries. For example, the trucking industry notes stores such as Target or Walgreens are open 24-hours per day to serve customers but restrict deliveries during one third of each 24-hour cycle.

Delivery time restrictions can have safety impacts in that they require trucks to operate during the most congested periods of the day, increasing the potential for conflict between trucks and autos. Trucks also are forced to conduct some of their heaviest operations when schools are in session. For example, delivery time restrictions force drivers to deliver to a Walgreens near a high school during early morning hours, so they must maneuver around heavy traffic and high school children crossing the street.

Delivery time restrictions lead to higher costs in tolls. When truckers are forced to operate on tolled roadways during peak periods when truck tolls are higher, this results in higher operating costs for trucking companies. While the tolling policies are intended to provide incentives for trucks to operate at off-peak hours, they are unable to do so due to local delivery time restrictions. ITA member Eby-Brown estimates their monthly toll cost at $11,000. Additionally, if trucking companies could make deliveries 24 hours per day, they could use fewer trucks and fewer staff more efficiently, which would reduce costs. Trucking companies indicate strong willingness to have drivers operate during nighttime hours. In addition to municipal delivery time restrictions, operating time restrictions are in place on some truck routes such as IL 47 (e.g., no vehicles over 54,000 pounds are permitted to operate between 11 p.m. and 3 a.m.) Such policies further complicate where and when trucks are able to operate.
Construction Zone Management

Construction zone management is a significant frustration for the trucking industry. During construction periods highway lanes are often blocked and speed limits are reduced (e.g., to 45 mph) even during periods when work is not being performed. If lane restrictions were limited only to periods of active construction, traffic congestion could be reduced. Additionally, construction often results in lane closures along long stretches of roadway while shorter closures might be sufficient. Truckers need better real-time information on construction delays, particularly in advance of bottlenecks so routing decisions can be adjusted.

Truck Parking

A lack of truck parking in the Chicago region is a significant problem. The truck parking deficit is particularly problematic when truckers face restrictions on delivery times but cannot find a place to stop near the delivery site. Lack of parking can result in forcing drivers to operate during congested periods and while fatigued. The most efficient process is for truckers to park and stage their deliveries near the final delivery location so they are sure to make their delivery window and can avoid driving during peak congestion. However, due to lack of facilities truckers often must park at the perimeter of the region and drive during peak congestion to meet delivery time windows. Truck parking was also mentioned as a need by the air cargo industry representative, as trucks provide a vital link between airports and warehousing and distribution centers. Truck parking is needed in the O’Hare area; no facilities currently exist.

ITA unsuccessfully advocated that the Illinois Tollway install a rest area before the first toll collection location (e.g., on I-94 near the WI/IL border) so drivers were not forced to pay peak-period tolls necessary to reach the Lake Forest rest area. Interviewees believe trucks are frequently viewed as undesirable by municipalities, and they face “Not In My Back Yard” (NIMBY) obstacles to locating new parking sites.

In areas around major intermodal facilities, facilities for truckers to do paperwork or repair equipment may not be considered, resulting in trucks parking along the roadside and tearing up the parkway. This is an issue around Logistics Park Chicago in Elwood. Also in areas with growing freight development, while municipalities are eager to attract warehouse and distribution facilities, they do not want the trucks that come with them and have made it more difficult to establish truck terminals. Terminals near the ramp allow drayage firms to offer lower rates than if based remotely.

Congestion

Delays due to congestion from incidents, excess traffic, and construction have multiple impacts on the cost of doing business for trucking companies. Freight system users note congestion is a major issue particularly on Interstate 55 and in
the Chicago Loop. Costs resulting from congestion delays include: fines for missing tight delivery windows, truckers running out of time they are permitted to drive before required rest under hours of service (HOS) regulations, and negative impacts on the supply chain (e.g., negative impacts on other businesses that need the materials or products they are delivering). Missed delivery times can significantly impact trucking companies through hefty fines and loss of contracts. For example, Eby-Brown is contractually bound to make deliveries within a two-hour window, and failure to meet this window 97 percent of the time within a given month results in financial penalties. Difficulty in predicting operating times can also impact oversize-overweight permits, which sometimes expire during a delayed trip.

Weight Restrictions

Local weight regulations are problematic for truckers as they impact routing and may result in longer routes. Truckers feel weight regulations should be a uniform 80,000 pounds for state highways. Interviewees felt it is unfair for municipalities to charge for local permits in addition to the State’s overweight permit costs. Truckers cited the example of law enforcement in Harvey ticketing truck drivers entering and exiting Union Pacific’s Gateway Intermodal Terminal due to trucks exceeding weight limits in that jurisdiction.

Local communities recognize variations in weight restrictions are a problematic issue. The variations among municipalities result in a “checkerboard” of regulation that truckers must navigate, resulting in some communities getting a disproportionate volumes of truck traffic. Communities without home rule must adhere to IDOT guidelines while those with home rule may enact their own ordinances.

Overweight permits are a significant issue for some shippers and carriers, particularly depending on where they operate in the region. The State overweight permit cost is $250 per truck per quarter, but Will County overweight permits required to enter Logistics Park Chicago (LPC) are more expensive ($20 per container) and the local permits required for Elwood Village are much more expensive ($750 per truck per month). According to DeLong Company, which ships grain via containers, the total cost averages out to $40-50 per container, 95 percent of which goes to local and county coffers. LPC is probably one of the largest inland intermodal centers in the world, but the cost of transporting goods there is sometimes prohibitive. Rochelle and Global II were cited as being much less expensive to enter as they are accessible via state roads and additional overweight permits are not needed. DeLong sees the costs of permits as a major inhibitor to agricultural business in Illinois.

Other Issues

The trucking industry feel trucks should be allowed on express lanes on the Dan Ryan Expressway given that they comprise through traffic. It does not seem productive to force truckers onto local lanes where more weaving and exiting
traffic movements occur, particularly when the trucks are operating as through traffic. Truckers feel that poor information exists about regulations, particularly where trucks can legally operate (i.e., express or local lanes), and travel conditions for over-the-road truckers.

Truckers are not supportive of differential speed limits, which allow cars to go higher speeds (e.g., 65 mph) while restricting trucks to lower speeds (e.g., 55 mph). While Illinois just passed a new 65 mph speed limit for trucks that will take effect on January 1, 2010, the higher speed limit will apply only on interstates in nonurban areas and not in Cook County or the five surrounding collar counties. It also will not be in effect on interstates with lower speed restrictions.

One respondent stated that dependence on diesel fuel is too high, and green fuel systems should be considered to power freight movement, e.g., natural gas.

Survey respondents indicated traffic safety is the greatest trucking factor needing improvement, as shown in Figure 4.3. Operating costs and highway system maintenance are also important issues. Interviewees noted that potholes and poorly maintained pavement can damage trucks and impact safety. Intersections that handle large volumes of truck traffic with poorly maintained pavement and potential safety issues include Arsenal Road at I-55.

Among the public sector survey respondents, the most significant issue was traffic congestion. Highway system condition and maintenance was also a major concern.
Figure 4.3  Trucking Improvement Needs

- Highway access (good connections between routes)
- Available truck parking facilities
- Infrastructure design to accommodate trucks
- Highway system condition/maintenance
- Highway system speed
- Highway system reliability/congestion
- Highway system safety
- Increased routing options (redundancy)
- Skilled labor force availability
- Effective government policies and regulations
- Low cost per trip
- Available data on current traffic conditions

Note: Responses – 7 Private, 26 Public.
Regional Freight System Planning Recommendations

Rail/Intermodal

Local Community Considerations

Freight rail traffic passes through many communities in the region, and more than 1,500 at-grade rail crossings exist. Train whistle-blowing has a negative impact on local communities. Because Federal Regulations govern whistle blowing by trains, local jurisdictions have no power to pass local ordinances. Because local jurisdictions that request this designation must pay for safety improvements at crossings, it is expensive to make quiet zones a reality. In the past, railroads have proposed medians to prevent cars from driving around gates and onto tracks when gates are down but these may create local access problems, particularly with driveways within 150 feet of crossings.

Viaduct maintenance is a concern of local jurisdictions. Viaduct aesthetics (e.g., peeling paint and visible deterioration) have an impact on community livability. While communities trust that railroads conduct inspections and that viaducts are operationally safe, to community residents they do not “look safe.” Narrow viaducts also can create bottlenecks on the roadways passing under them.

Truck congestion and roadway impacts need to be considered and mitigated around the Elwood Logistics Park Chicago and the future Joliet facility serving UP.

Rail impacts such as conflict at grade crossings are a major concern. This issue received the highest rating for improvement needs in the survey (see Figure 2.3) Metropolitan Mayors Caucus recently made the decision (September 2009) to begin identifying rail-related needs and deficiencies for a future “CREATE Phase II.” The goal is to develop a detailed inventory of rail issues throughout the 7-county region, beyond those in the current CREATE program, which is largely focused on Cook County.

Rail Operations Challenges

Chicago is a major hub for rail cargo transfer. Ability to move goods swiftly through the region on rail was one of the top needs expressed by survey respondents (see Figure 4.4). The rail carriers indicate that the most pressing infrastructure needs to improve rail operations have been identified via the CREATE Program. However, carriers note that exchange of traffic between rail lines is difficult, and scheduling problems and back-ups are frequent. The Belt Railway Company (BRC), which is owned by all Class I railroads, allows railroads to exchange whole trains, but railroads frequently run into issues of not having a crew prepared to receive a train. The BRC has recently instituted a policy that the receiver must have facilities and crew available before a train to be transferred to them is allowed to get on the BRC.

In response to this challenge, Union Pacific led development of the rail business exchange, put in place six months ago, which allows command centers to input
train and crew location and availability to coordinate cargo and train transfer. All Class I railroads participate and this has proven to be a significant help. Railroad stakeholders see this as reflective of a general shift in rail attitude towards increased coordination for mutual benefit.

**Urban Barriers to Growth**

Norfolk Southern facilities are primarily located within the City of Chicago, where limited land is available for growth. An additional restriction is that any new developments within Chicago need to be elevated as no new at-grade crossings are permitted. Therefore NS is increasing efficiency of operations by automating gates at its intermodal facilities to enable more trucks to be processed more quickly at those locations and to reduce staff costs. Truckers often race to meet cutoff times for train loads to maximize their loads, and one of the benefits of the automated gates is more assurance to shippers that their loads can enter the gate in a timely fashion. While maintenance of intermodal connectors is important, it is not a primary concern of rail companies, which tend to worry about freight once it arrives at the gate.

**Passenger/Freight Conflicts**

Conflicts between freight and passenger trains are a significant issue in Chicago, and have the potential to constrain freight growth. Most passenger trains (Metra commuter rail and Amtrak intercity rail) operate on rail lines owned by freight rail companies. The Midwest Regional Rail Initiative to add high-speed rail service throughout the Midwest, with Chicago as the hub, could generate additional freight/passenger conflicts unless needed infrastructure improvements are made. Event absent new passenger service implementation, passenger demand has been rising steadily. Until the economic downturn, freight rail demand also was rising, and is expected to recover in the future.

**Rail/Intermodal Reliability**

Travel time and reliability are key considerations for shippers, which impact the modes selected. For example Shure, which manufactures high-end electronics in Mexico and has a distribution facility in Wheeling, has considered shipping via intermodal (truck on rail) from El Paso to Chicago but shipment times and reliability are factors that can make trucking more competitive. Shure requires 48 hours for its high-value products to travel from El Paso to Chicago. The company currently uses team truck drivers who drive straight through. Via intermodal, the trip would take five days in transit plus recovery of cargo at the container yard and delivery. While pricing fluctuates due to market conditions, currently, the difference in price between truck and intermodal is not very great; (approximately 10 percent between truckload and intermodal).

Shure finds that rail offers fast service to the west coast but not fast service to the south. Shure has done intermodal shipments to Laredo that take 5 days and sometimes experience delays. From Los Angeles to Chicago on BNSF transit time
is four days. Currently, in the down economy, there are few delays. But in past years backlogs of 5 days have occurred in Kansas City, through which the route to Los Angeles passes. Rail stakeholders state, however, that when the rail mode is used “creatively” by shippers, rates can be reduced, service improved and carriers’ margins increased so all parties benefit.

*International Routing Considerations*

While “on paper” transport of goods from international origins through Canada is less expensive (savings of $200 per container), customs problems often result and cause costs to rise. Whenever merchandise on a potential high-alert list (e.g., electronics from the Philippines or China) is imported or exported, customs flags the containers. Even for a certified importer, customs still frequently flags containers. In the worst case, customs conducts an intense exam that takes two extra days or costs $1,000 in handling fees. Therefore, some companies find shipping through Canada more expensive.

*Regional Facility Location Impacts*

Significant intermodal facility development has occurred in Will County. Additional locations are planned. From the shipper’s perspective, the trend of intermodal facilities moving farther out from the urban center has added costs for shippers and adds lead time. For example, it takes a half day to retrieve a container from outlying intermodal facilities and transport it to the north side of Chicago.
Consideration of passenger rail needs
Increased routing options (redundancy)
Rail system speed (ability to move goods swiftly within/through Chicago)
Rail system reliability (limited chokepoints and delay-causing conflicts)
Rail system safety
Effective government policies and regulations
Skilled labor force availability
Limiting impacts on local communities (noise, delay, pollution)
Low cost per trip

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</tr>
<tr>
<td>Low cost per trip</td>
<td>6.9</td>
<td>7.8</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Note: Responses: 8 Private Sector, 25 public sector.
Water

Water freight carriers operate from the Great Lakes via the Port of Chicago, which has facilities at Iroquois Landing and Lake Calumet. Inland waterways include the Sanitary and Ship Canal; the Cal Sag Channel; and the Calumet and Chicago Rivers, which ultimately connect to the Mississippi River and the Gulf Coast.

City of Chicago Issues

The City of Chicago presents several barriers to water freight industry growth and success. A City ordinance requires a buffer zone of 30 feet at the water’s edge, which is designed to allow the city to develop riverwalks and other public amenities. However, this has a significant impact on water freight operations as cranes cannot operate with a 30-foot margin to the water. City of Chicago bridges have 19 to 20 foot clearance; barges operating within Chicago must have pilot houses that can lower from their standard operating height. There is an increase in the number of bridges that do not open in Chicago, partially to reduce impact on roadway congestion, which places further restrictions on industry. The city promotes residential development along waterways, which is often in conflict with industrial uses and goods movement.

Fish Barrier

On the Chicago Sanitary and Ship Canal, electrified fish barriers to prevent entry of invasive species (Asian Carp) into Lake Michigan have been installed and are in the testing stages. The barriers are located just north of Midwest Generation and south of the Romeo Road bridge in Romeoville. The U.S. Coast Guard (USCG) established a safety zone with regulated navigation in the area adjacent to and over the electrified fish barriers. (A temporary Final Rule was issued September 9, 2009 - see www.uscg.fishbarrierinfo.com) During Midwest Generation loading operations, vessels are required to be towed by a bow boat to ensure safe transit of the area and prevent contact with other vessels and potential sparking.

The U.S. Army Corps of Engineers (USACE) funded the use of bow boats to guide vessels through this area with the electrified fish barrier through September 2009, but future funding is undetermined and it is expected the industry will need to fund bow boats in FFY10 starting October 1, 2009. The cost of a bow boat is $700 per vessel tow. Approximately 7 vessels pass through this location per day currently, while under normal economic conditions traffic is usually 12-15 vessels per day through the nearby Lockport Lock. The cost to industry of $700 per vessel tow in this area, required due to USCG safety regulations, will place a major burden on industry when the USACE budget runs out to pay for this.
Lock Reliability

Decreasing reliability of locks is a significant issue for waterborne freight movement. The reliability of locks is decreasing as more failures are occurring due to deferred maintenance. Many river docks need just-in-time delivery. Delays that are many hours or even multiple days (e.g., those caused by the fish barrier) can result in a manufacturer running out of materials. For example, Ozingas cement operations at Armitage have materials for 24 hours and a delivery is required every day. Preventive maintenance of locks is a great need. The industry is moving toward developing a prioritized National Backlog of Maintenance list, given limited resources and the need to invest in projects of national and regional significance. Private sector survey respondents ranked maintenance as one of the top three needs for water freight (see Figure 4.5). While lock maintenance issues do not prevent connectivity to the Mississippi River and Gulf Coast, they can result in travel time delays.

Great Lakes Issues

The Lake Carriers Association states that the Great Lakes are facing a dredging crisis, stating that the USACE has not been properly funded for decades. On the Great Lakes more than 200 million cubic yards of sediment must be moved to get the system back to “project dimensions” (When Congress authorizes a Port or Waterway, and defines the width and depth of the navigation channel this is “project dimension.”) In FY10 there is a need to remove almost a million cubic yards of sediment from the Great Lakes. Vessels lose cargo capacity when they have to lighten up due to clearance issues.

A second large lock is needed at Sault St. Marie, Michigan. Ships pass through this location to move from Lake Superior to other Great Lakes. Seventy percent of U.S. flag carrying capacity is restricted to the existing Poe Lock and cannot go through the other lock at the Soo Locks. While it is currently well maintained by USACE, if there is a failure of the Poe Lock (built in 1969) no redundancy exists. Congress has authorized building a second lock at full Federal expense. There has been a groundbreaking on the first step in the process, building coffer dams. However, the total cost of the new lock is $490 million dollars, and Congress has not appropriated that money yet.

More Coast Guard icebreakers are needed on the Great Lakes. Ice season starts in December and can extend through April. During ice cover periods ships can move cargo only if the Coast Guard breaks the ice. The USCG has 8 icebreakers on the Great Lakes, but only one is a modern vessel (built in 2006). Two vessels built in 2003 are not built to be icebreakers and are not very effective. In the spring of 2008, Lake Carrier Association members lost $1.3 million due to ice damage to vessels. In 2009 some companies delayed sailing until ice conditions could ease to avoid more vessel damage.
Modal Connectivity

Little connectivity exists between water and rail. For example, no water dock is located near the Logistics Park Chicago intermodal facility in Elwood. However the private sector ranks connectivity between water and rail as among the top three issues in the survey. The Port of Chicago does not have issues with Intermodal Connectors, and they do not feel that highway congestion is a big issue.

Other Issues

Along the Calumet River, there is no vacant land for industrial development. No large parcels near waterways are available for industrial development in proximity to Chicago.

Fleeting (parking) areas for vessels are deficient. In Lemont there are 6-7 fleeting areas but no other fleeting areas north of Lemont.

Locks have 600 foot chambers but tows are 1,200 feet in length. There is a need to rebuild locks to accommodate longer tows; however, it has been determined that increasing lock size is not economically feasible north of Peoria.

The Lemont rail bridge over the Sanitary and Ship Canal owned by BNSF is not required to open and can be a barrier.

Stakeholders note that short sea service to Eastern Canada and the East Coast of the U.S. needs improvement.
Figure 4.5  Water Freight Needs

<table>
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<th>Rating Averages</th>
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<td>Connectivity between ports and highways</td>
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<td>Marine system speed (ability to move/transfer goods swiftly)</td>
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<tr>
<td>Low cost per trip</td>
<td>6.6</td>
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</tbody>
</table>

Note: Responses: 2 Private, 22 Public.
Air

O’Hare Facilities

The organization of infrastructure at O’Hare is challenging. Existing and planned cargo facilities are on the east of the airport while freight forwarders are located to the west. Limited west side access to O’Hare exists, which is an issue for freight forwarders. Additionally, cargo facilities are scattered in multiple locations, requiring multiple stops to consolidate freight.

Trucks must drive on public roads around the airport to access freight facilities and face delays due to traffic congestion and rail conflict. It can take one hour to drive all the way around O’Hare. Also, the York and Irving intersection has an at-grade rail crossing with trains that sometimes create up to 45 minutes of delay. Improved perimeter access for freight forwarders is needed.

Security

Better communication and the understanding of TSA protocol is needed. Air cargo carried on passenger flights has greater inspection requirements than cargo on freighters. Inspections are required for 100 percent of cargo on passenger planes, compared to much lower inspection requirements for cargo on freighters. Due to these requirements, loads for belly cargo must be delivered much earlier (arriving approximately four hours before lock-out). With passenger aircraft, the amount of freight that can fit on any given flight is determined immediately before the flight departs based on the weight of passenger baggage and mail, which are both given preference.

Survey respondents rated air freight system safety as the top issue in need of improvement (See Figure 4.6).

Customs

Overall, the air cargo industry finds Customs in Chicago to be very easy to work with. The one challenge is with the U.S. Department of Agriculture (USDA), which is part of Customs but does not have the same access to data as Customs. Cargo is put on hold more often just in case something falls under USDA authority.
Figure 4.6  Air Cargo Needs

<table>
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Note: Responses: 6 Private, 22 Public.
4.3 **NEEDED IMPROVEMENTS**

**Improvements to Benefit Local Communities**

Many local communities experience significant impacts from freight, particularly rail delays at highway-grade crossings, heavy truck volumes on state and local routes, and impacts on passenger rail due to freight rail conflicts. In the survey, public sector respondents rated the importance of limiting impacts on local communities as 7.7 on a scale of 10 (see Figure 4.7). Communities have expressed a desire for exploring ways to reroute freight around the Chicago region such as a truck bypass around the region, e.g., Prairie Parkway. Municipalities would like freight rail not terminating in the region to bypass the region as much as possible.

In areas where conflict will remain, communities desire improvements to smooth flow of through-traffic and minimize impacts. Communities along the EJ & E rail line, along which increases in freight rail traffic are anticipated, would like to be a priority for grade separation projects. This is listed as one of the top priorities for public sector respondents in the survey regarding rail/intermodal improvements (see Figure 4.8).

Communities feel that comprehensive planning processes should be used to direct truckers to the best regional roads for truck traffic and prevent damage to infrastructure. Truck congestion and roadway impacts need to be considered and mitigated around Logistics Park Chicago in Elwood and the future Joliet facility serving UP.

Mayors of local communities would like to see more funding sources for safety improvements at grade crossings to enable quiet zone designation, which is costly for communities.

**Truck**

The trucking industry seeks better construction management processes to reduce construction-related congestion. Operators would benefit from advanced traveler information to enable routing decisions to be modified in advance of bottlenecks. More centralized traffic information resources were one of the top two improvements listed by private sector survey respondents (see Figure 4.7). The trucking industry recommends travel demand management strategies to reduce highway demand and congestion to improve truck operations.

Truck parking locations are needed throughout the region, including near O’Hare to serve the air cargo industry. The Illinois Trucking Association has advanced several proposals to add truck parking at underutilized facilities (e.g., Soldier Field, U.S. Cellular Field, and Rosemont Horizon), but these proposals have not advanced. Consideration of these and other options for regional truck parking are desired.
Heavyweight highway corridors as in Indiana and Michigan, permitting the same weights as those states, would be beneficial for cargo from Indiana and Michigan to reach the Port of Chicago. Shippers of heavy cargo would like more designated truck routes.

The trucking industry showed a high level of interest in congestion management strategies that addressed demand for passenger vehicle travel. Transportation demand management (TDM) ideas offered included: providing better transit service to get passenger vehicles off the road; ride-share programs such as those for Federal employees in Baltimore-Washington-Virginia; expanding Pace’s vanpool program; and encouraging employers to stagger start times.

Additional infrastructure improvements to benefit trucking recommended by stakeholders (not prioritized) are:

- I-57/I-294 interchange;
- Beltway around O’Hare from I-90 eastbound to I-294 southbound;
- Improvements to I-290 interchange with I-294;
- Higher gross vehicle weights be permitted around intermodal facilities;
- Dedicated high gross vehicle weight routes;
- Reduction of congestion on I-55;
- Crosstown expressway;
- New western access to O’Hare Airport;
- Grade crossing separation at 130th and Torrence Streets;
- Illiana Expressway;
- New interchange at I-55 south of Arsenal (potentially truck-only);
- New lanes on I-55, I-80/94, and I-57;
- New interchange at I-57 and Manhattan-Monee Road;
- Expansion of IL-394 and conversion to limited-access;
- Widening of Routes 59 and 30;
- Improvement of Will County arterials such as Laraway Road, Cedar Road Wilmington-Peotone Road, and Weber Road;
- 130th street alignment at CN viaduct (turn is too tight for trucks);
- Implementation of the CREATE Program;
- Patterson and Brandon Road grade crossings in Joliet; and
- Viaduct clearance improvements in Joliet (old Rock Island-Metra, BNSF and UP).
Figure 4.7  Importance of Potential Trucking Improvements

- More emphasis on limiting impacts on local communities
- Public-private partnerships for capacity improvements
- Better enforcement of truck size, weight, speed, and safety regulations
- Changes to delivery time regulations
- More centralized traffic information resources
- Expanded congestion management strategies (such as tolls that vary based on time of day or level of demand)
- Better system maintenance
- Design of infrastructure to accommodate trucks
- Investment in additional truck parking
- Dedicated freight corridors (such as truck-only lanes)
- Capacity expansion (new lanes and roads)

Note: Responses – 7 Private, 26 Public.
**Rail/Intermodal**

The rail industry feels that projects in the CREATE Program address the major rail bottlenecks and capacity constraints in the region. The program should be fully funded and implemented to mitigate the most significant rail operations issues and rail-passenger conflict. The development of a Common Operational Picture for increased visibility of train operations is part of CREATE. This new technology and collaborative effort will improve operations by helping receivers see where traffic is coming from. Private-sector respondents to the survey indicated that public-private partnerships are one of the most important options for improving rail/intermodal transport (see Figure 4.8).

Stakeholders noted that Cook County rail yards should be revitalized to draw carriers back in, resulting in shorter drayage distances. Respondents stated rail projects should fit where the market demands with mitigations to avoid opposition. Federal law should provide support for competition and capacity expansion.

Stakeholders suggest that rail freight not destined for Chicago should be routed on new tracks outside the commuter-shed to Chicago to minimize regional impacts. Additionally, the impact of high speed rail and intercity rail service must consider long-term impacts to water and communities to ensure lowest possible impact and greatest benefits.

Stakeholders noted that the impact of the Panama Canal expansion by 2016 should be evaluated to determine what effect shipping cargo around Chicago to East Coast ports will have. This may also have an impact on expansion of high-speed and intercity rail, which typically shares freight tracks in the U.S.

Private sector respondents stated that trucking is the dominant freight transportation mode in part because trucking is the easiest mode to do business with; they feel more freight might move via rail/intermodal if conditions were more favorable. Providing grain loading facilities inside intermodal facilities to transfer it into cargo containers for rail transport would benefit the agricultural sector and reduce heavy trucks on roads.
Figure 4.8 Importance of Potential Rail/Intermodal Improvements

Note: Responses – 8 Private, 25 Public.
Water

The Illinois Water Carriers Association continually generates a list of needed improvements in the region, largely related to dredging, which is shared with the U.S. Army Corp of Engineers (USACE). USACE addresses this list with its ongoing dredging and maintenance program. Three waterways projects are being funded with American Recovery and Reinvestment Act (ARRA) money: Lockport Lock wall ($88 mil.), Dresden/Brandon Road Locks lighting replacement; replacement of work flats (barges) at 8 locks in Illinois. Stakeholders feel that water systems and locks that are not cost-effective due to limited traffic should consider increasing fees. In cases of underperforming locks, where the cost of maintenance outweighs usage, removal should be considered.

The industry is moving toward developing a prioritized National Backlog of Maintenance list, given limited resources and need to invest in projects of national and regional significance. Improvement to locks and inland waterways is the highest priority among private sector respondents (see Figure 4.9). More fleeting (parking) for vessels is needed, particularly at locations north of Lemont, IL.

The industry claims delays at railroad bridges have gotten worse, although currently documented levels of delays are low. If the boat calls for the railroad bridge to open and the rail company does not do so in time, it can be fined with a civil penalty. Barge operators need to do a better job of reporting delays in real time so that they can be documented. A Coast Guard reservist is assigned to civil penalties to facilitate this process. Plans for high-speed rail could affect drawbridges. Currently the regulation requires the train to stop for a drawbridge to open if needed. The Rock Island Bridge may handle high-speed rail traffic in the future, and balancing high-speed rail operations with water operations must be considered.

The Port of Chicago would like the St. Lawrence Seaway locks to be increased, which would increase shipments to Chicago and change the market on the Great Lakes. However, it is speculated that this is unlikely because it would not benefit other Great Lakes Ports as much as it would benefit Chicago.
Figure 4.9  Importance of Water Freight Improvements

Rating Averages

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Overall</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvements to lock system on inland waterways</td>
<td>7.7</td>
<td>8.0</td>
<td>7.6</td>
</tr>
<tr>
<td>Port facilities expansion</td>
<td>7.0</td>
<td>7.1</td>
<td>7.0</td>
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<tr>
<td>Better connections between ports and rail services</td>
<td>7.0</td>
<td>7.1</td>
<td>7.0</td>
</tr>
<tr>
<td>Better connections between ports and highways</td>
<td>6.9</td>
<td>7.2</td>
<td>7.2</td>
</tr>
<tr>
<td>Improved maintenance of waterborne freight system</td>
<td>7.2</td>
<td>7.2</td>
<td>7.2</td>
</tr>
<tr>
<td>Changes to taxation/fee structures</td>
<td>6.1</td>
<td>4.5</td>
<td>6.1</td>
</tr>
<tr>
<td>Regulatory policy changes</td>
<td>6.2</td>
<td>6.3</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Rating Averages:
- Overall
- Private
- Public

Note: Responses – 2 Private, 22 Public.
Air
In considering future options, stakeholders recommend considering the regional impact of Gary-Chicago, Milwaukee General Mitchell and Rockford airports.

Peotone
Some stakeholders feel that a South Suburban Airport in Peotone has the potential to present be a significant advance for the air cargo industry and freight forwarder community in the Chicago region. This is due to proximity to BNSF’s Logistics Park Chicago in Elwood as well as the planned UP intermodal facility in Joliet. The proximity of freeways to Peotone airport would be very beneficial, especially if the Illiana Corridor is developed as an alternative to I-80. The area has available inexpensive land for cargo handlers to develop. To accommodate freight successfully, Peotone would need to be designed with a 10,000 foot (2 mile) runway.

Others view the Peotone concept as no different than other alternative airports such as those in Rockford, St. Louis or Milwaukee. For Peotone to be a success it would need to have a critical mass of aircraft lift. It is hard to foresee how international passenger carriers with heavy jets and combination carriers, (e.g., Air France, and Lufthansa which have passenger and freighter service) would reach critical mass at Peotone. Passenger operations of major airlines would likely remain at O’Hare. Only freight carriers could easily move to Peotone or another airport because they are not tied to a passenger flow.

Even if freight moved to a new Peotone facility, there still would be a need to collect freight at O’Hare and transfer it down to Peotone if freight operations were there. For example, if belly freight came in on passenger flights, it would need to be trucked to Peotone. There is potential, however, if Peotone wants to become an airport serving freighters only. However freight from Peotone would still need to be trucked to O’Hare for the freight forwarders to handle.

Only if a major relocated would Peotone become an option for other passenger carriers. Peotone could work to provide domestic access to Chicago for a new airline entering the market.

O’Hare
The O’Hare Modernization Plan includes a proposed new North Cargo Plan, which would include in a new North Cargo complex including 18 freighter slots and 2 million square feet of cargo space. This location is on the old Air Guard area on the north side of the airport. It is currently awaiting financing. The air cargo community is glad to have new freighter parking slots but it will present some challenges. Freight forwarders will continue to have to deliver freight to a variety of cargo areas (primarily 3 locations)
The southwest area of the airport was not available for new cargo area development because of litigation (cemeteries and Bensenville issues) - the North Cargo area is the only space that was available. South Cargo area expansion is a possibility in the future, but it is located in DuPage County. Long term plans are for parking and other revenue generators associated with the Western Terminal.

The master lease with the airport for all existing cargo buildings is up on the same day in 2018. There is concern that the airport, in an effort to make the proposed North Cargo area viable, will require airlines to move there and free up the south side of the airport. It would be a concern to industry if ground lease costs were to increase sharply.

**O’Hare Ground Transportation**

The at-grade rail crossing at York and Irving Park is a priority as this is on the only route to the airport from the west and is the top issue for airport access. Better connections between airports and highways are ranked as a priority improvement by survey respondents (see Figure 4.10).

The airport must consider ground transport for the potential North Cargo Area. Every 747 freighter has 50 inbound truck movements and 50 outbound movements. If all freighter slots were used at least daily, potentially there could be 2,000 truck movements in and out of the North Cargo area every day mixing with vehicles at Touhy and Higgins.

A dedicated freight roadway on airport property is recommended once the North Cargo area is in use. From the new North Cargo area and two off-airport facilities on Touhy, no road exists to get to the passenger aircraft (a runway is in the way). If new North Cargo is built there will be a need to have a way for finished cargo to drive to passenger planes. An internal road from North Cargo to the passenger ramp without going outside the fence is under study.

A perimeter road around the airport for restricted traffic including trucks and public transit would be very beneficial. A separate freight truckway on Mannheim Road, outside the airport perimeter would allow traffic from W. Higgins on Mannheim to Irving Park without any stops and would speed freight movement.

**Other Issues**

The top airport improvement identified by both public and private respondents is improved system monitoring to improve safety and reliability, e.g., improved air traffic control. Figure 4.10 shows ratings of all potential air freight improvements.
Figure 4.10 Importance of Potential Air Cargo Improvements

- CMAP Freight Transportation Survey
- South Suburban Airport development
- Smaller/regional airport capacity increases
- Better connections between airports and highways
- Better connections between airports and rail services
- Refined system monitoring to reduce delay/improve safety and reliability
- Refinements to U.S. customs and government inspections
- Changes to air cargo policies

Rating Averages:
- Overall
- Private
- Public

Note: Responses – 6 Private, 23 Public.
4.4 TRENDS

Of the 12 private sector companies that responded to the survey question about expectations for the next five years, 75 percent anticipate expansion. However, given the current economic conditions, the freight industry is still waiting for volumes to return to normal levels.

Stakeholders state there a need for the shipping community to become more competitive in the future. Shippers struggle with the carriers’ level of willingness to understand shipper needs and react with improved service and pricing. Stakeholders anticipate future consolidation of facilities and services. Use of information technology is steadily increasing to manage business, supply chain, and personal transportation support systems.

Truck

The trucking industry sees continued growth in the Chicago region. Several trucking firms believe that intermodal transportation will be the major transportation growth area in the Chicago region, but they are supportive of the growth due to the demand for trucking services for support (first mile, last mile, and transfers). The industry expressed concern over the regulation of trucks and methods of addressing funding shortfalls by increasing taxation and usage fees on trucks, but overall they are optimistic for their industry’s future.

Rail

Rail companies foresee length of trains increasing (from 125 cars to 175 cars). The current limiting factor is tensile strain on drawbars. Railroads are getting better at operating locomotives at the middle of and end of the train (known as distributed power or DP), which allows them to operate longer trains because each drawbar doesn’t have to pull as much load. With longer trains, the limiting factor is fitting into the infrastructure (such as sidings for passing). Sidings are frequently designed for a maximum train length of 10,000 feet, which will soon be exceeded by future, longer trains.

In the future rail companies see increased potential for interline, coordinated service and more partnerships with other railroads, as they are able to identify opportunities for mutual profitability. Today, railroads are maximizing their own profit, frequently at the expense of efficiency, by trying to move loads the greatest distance on their own network to increase line haul revenue.

Rail operators see Chicago as remaining the number one rail gateway for years to come. Rail companies anticipate increased efficiency, particularly for traffic that does not have to stop in Chicago. Shippers want cars to go through Chicago because the route results in the shortest total mileage. For example, the NS Elkhart, IN facility (hump yard) classifies cars for BNSF before entering Chicago and handing off trains in order to increase efficiency. UP performs similar
service for NS. Growth potential exists for intermodal rail service, although intermodal has a much smaller profit margin than other types of rail traffic (e.g., tank cars).

Rail companies are exploring new markets. For example, UP has gotten more into the market for perishable goods, mainly agriculture from California, Oregon, and Washington. Time-sensitive goods have begun moving on high priority trains, which are tracked more closely and avoid delays due to reconfiguration. Goods can move from the west coast to the east coast in 3-4 days; UP and CSX offer priority “Blue Streak” Service.

The new UP intermodal yard in Joliet slated to open in June 2010 will shift UP traffic patterns in the Chicago region. This new facility was driven by significant demand for a facility in this location by UP customers. UP and BNSF compete for international service (e.g., Asia); and price is not the only criterion – location and convenience are critical. Railroads are contracting out land acquisition and land development more due to community issues. For example, UP used CenterPoint to develop the new Joliet location.

Container shipping lines seek goods to fill their backhaul to Asia. The containerized grain business to Asian markets is driven largely by this trend. Shippers estimate that less than 5 percent of backhauls are loaded.

**Water**

The Port of Chicago and barge operators see little potential for large-scale movement of intermodal containers on barges. The restrictions to Great Lakes growth and shipping containers on Great Lakes vessels are those posed by the St. Lawrence Seaway, whose locks are 800 feet long and 80 feet wide. Even the smallest containers ships do not fit through the seaway. However, it is possible to put containers in the hull of a ship. In the U.S. it is not the goal to get vessels as far inland as possible because it is usually faster to offload at seaports and rail or truck to the final destination. The shipment time may never be competitive-to transport a container by water on inland waterways - from New Orleans to Chicago takes 21 days on barge, versus 2-5 days on rail. Liquid tows from New Orleans to Chicago take 14 days.

Agriculture has moved outside the Chicago region – the closest grain elevator to Chicago is in Morris. More corn processing plants are in the area – 3 to 4 ethanol plants are on the Illinois River.

The Panama Canal may bring bigger vessels into the center Gulf. Now Panamax vessels are handled there. However New Orleans harbor has a 45 foot draft limit and it’s unlikely it would be dredged out much more to handle Post-Panamax vessels.

Environmental regulations have had a big impact on industry that ships via water, such as the steel industry. Often it is cheaper to ship materials from the other side of the globe than to buy locally.
Unions have affected the cost of operating plants in the Chicago region. Many plants are moving to the Southern U.S. due to labor cost issues.

Chicago is not an ideal location for water import/export businesses. It is much easier for businesses to locate near the deep water seaports. However, there is some volume of exports from the Great Lakes to Montreal, with transloading to ocean ships.

Currently water carriers are seeing more exports than imports, due to low domestic demand and a good crop year for grain. Generally when the economy is stronger there is more inbound than outbound barge traffic.

The Chicago market for barge traffic is closely tied to construction activity and steel mill operation, both of which are currently down. Today, the Chicago barge market is almost entirely asphalt and concrete.

**Air**

It has been noted by industry that these are worst times the air cargo business has seen in 20 years. For example, Air France and KLM operated ten 747 freighters per week in March 2009. As of September 2009 they are down to 4 freighters per week.

There are different opinions among industry experts as to trends with respect to use of freighters in the future. Some industry stakeholders feel there is a significant shift away from freighters (dedicated freight airplanes) toward carrying freight in the belly of passenger planes (which only allow freight in remaining space/weight after passengers and mail are loaded).

Several airlines are out of or getting out of the freight business (e.g., Northwest was absorbed by Delta which only does belly freight, American Airlines no longer is in the freighter business, Nippon Cargo Airlines is merging with passenger-focused Japan Airlines and it is unclear whose business model will dominate). There is general merging of carriers and downsizing of air freight operations. Large cargo airlines no longer exist. The only dedicated freighters now are charters. This represents a shift back to how the air cargo business was structured in the 1960s.

Another perspective is that the freighter business is anticipated to continue to grow, particularly given the upcoming security requirement to screen cargo on passenger planes 100 percent beginning in August 2010. Boeing and others project how air cargo will fly over the next 10 to 20 years and that the use of freighters will increase.

**Alternative Airports**

Freight forwarders are considering Rockford airport as an alternative to O’Hare but are hesitant because it is 90 miles away. Additionally, Rockford is less desirable from the perspective of 3PLs because there is no rail access. Rockford
markets itself as a place where freight is shipped out of after it is built in Chicago.

Mid-America Airport (St. Louis) is trying to draw perishables traffic from South America but has attracted just a couple planes, which is not enough to develop a new market.

International carriers are more likely to truck cargo to gateway airports (JFK, LAX) than to fly it there and transfer it to an international carrier. It takes only 18 hours to truck from Chicago to JFK. Five pallets of freight that could fit on the main deck of a freighter can fit on a truck. Costs are lower due to avoiding landing costs, better access to international carriers, fewer delays, lower crew and fuel costs.

One example of trucking as a substitute for air freight is Polar Air Cargo, which has shifted operations to Cincinnati and trucks goods between there and the Chicago region.

**New Business Models**

Future trends are likely to include true intermodal service in Chicago – greater coordination between trucking, rail, water, air. Growth in ocean shipping is even affecting the Chicago market as more trucks are doing drayage for the steamship lines, transportation containers from intermodal yards.

Given economic pressures, some new models are emerging, e.g., steamship lines were selling “door to door” service but having trouble with moving cargo “the last mile.” Some air freight trucking companies have started to work for steamship lines delivering cargo to the final destination.

**Potential Regulatory Issues**

Moving forward, noise issues could be a problem for the air cargo industry with respect to potential regulation. Cargo flights happen at night – this is the nature of the air cargo industry. Customers deliver to air cargo in the late afternoon and flights operate from 10 p.m. to 6 a.m. Most passenger traffic is during the day; night traffic is from freighters. When residents near the airport hear loud airplanes during the night some call their elected officials to complain. The industry would find nighttime noise restrictions very detrimental; such restrictions would dramatically alter the cargo business. A number of airports around the world have recently enacted such policies and have had to dramatically alter flight patterns, e.g., Frankfurt. New airplanes are more fuel efficient and are quieter. As time goes on, freighters will likely become quieter.

**Manufacturing**

Manufacturing operations are continuing to migrate to China and Mexico. This is largely due to the cost of labor, which is eight times more expensive in the U.S. than in developing countries. However, labor costs in China have gone up and
have gone down in Mexico due to the exchange rate, which will make transportation more of a factor now. For example, Shure is keeping both China and Mexico manufacturing plants in operation so they can be agile. Shure and other companies feel that they need to maintain manufacturing capacity in Asia given the huge market there.

4.5 **FUNDING OPTIONS**

Stakeholders emphasize that whatever funds are secured for improvements, it is important to be efficient with those funds and not to allow them to be redirected by the legislature to other purposes. Until there is trust that funds dedicated to transportation will be spent only on transportation, it will be difficult to secure new funding streams. Fees are perceived as a fraudulent “tax.” It is important for fees collected in an area to be spent in that area.

The fuel tax is desirable because it is easy to administer and to maintain as a dedicated funding source for transportation. Fuel taxes were ranked highest as a funding option in the survey, as shown in Figure 5.1. However, fuel tax funds are decreasing quickly and conversion to alternative fuel and electric vehicles is likely to accelerate this decrease.

Stakeholders commented that tolls should apply to all vehicles, not only passenger vehicles. Congestion pricing should be expanded to include the existing toll road system and other congested roadways. Support for tolls to fund highway improvements was ranked as less than 5 out of 10 among survey respondents. The trucking industry is strongly opposed to increased tolls. They feel trucks already cover a disproportionate share of the Illinois Tollway’s costs, given the significant peak-period tolls for trucks. Chicago is a very expensive region in which to operate. When tolls are increased, trucks shift to arterials and operate on less safe roadways.

To fund freight improvements, the greatest levels of support are among public-private partnerships and fuel taxes. Tolls on dedicated truck lanes also received fairly high levels of support by participants in the survey, as shown in Figure 4.12. Property taxes received the least support, as shown in Figure 4.11.
Figure 4.11 Highway Funding Options

- Property taxes: 3.5
- Fuel taxes: 7.6
- Tax on vehicle miles traveled (all vehicles): 5.3
- Tolls for passenger vehicles: 6.6
- Tolls – congestion pricing (higher toll rates during periods of higher demand): 6.4
- Tolls – cordon pricing (flat daily rate to enter Chicago Loop): 4.7
- Vehicle registration revenue: 5.1
- Impact fees: 6.6

Note: 31 responses, public and private.
Figure 4.12 Freight Funding Options

- Fuel taxes: 7.5
- Tax on vehicle miles traveled (all vehicles): 5.3
- Tolls on dedicated truck lanes: 7.2
- Operating taxes such as container or lift fees: 6.4
- Truck registration revenue: 6.4
- Municipal contributions to pooled funds for regional freight projects: 5.5
- Innovative public-private partnerships in financing: 7.7

Note: 32 Responses, public and private.
4.6 Policies Affecting Freight and Local Issues

Land Use

As shown in Figure 4.13, government incentives have the greatest impact on business. Businesses also note they are impacted by the NIMBY mentality. For example, location of intermodal facilities has become increasingly challenging due to local community resistance.

Local delivery time ordinances are very challenging for goods movement, particularly for trucking companies and those businesses receiving frequent deliveries such as supermarkets. Industry feels that often delivery time ordinances exist in areas not adjacent to residential development and unnecessarily restrict operations.

The location of major freight generators impacts regional transportation flows. Intermodal facilities could be organized better to cut down on the length of drayage.

Policies

Community Policies Impacting Freight

Local policies that affect freight include delivery time restrictions, overweight permitting, designated truck routes, and noise regulations. These are often determined independently by jurisdiction and can have significant impact on regional freight operations.

Communities would like to consider new policies to manage freight more effectively. Potential new policies include establishment of a regional port authority to coordinate investments, or possibly a port authority including Will County intermodal facilities. Additionally, communities are interested in considering methods to account for residents and businesses that pay the quality-of-life costs for cheap and efficient rail transportation. Improved coordination with passenger rail planning is desired. Communities would like increased consideration of transporting goods via barge to rail or truck. Stakeholders would like to consider development of a regional freight policy.

Better incorporation of safety in project planning and implementation. Inherent measure of project performance in attaining objectives that were stated in project’s original purpose and need. In other words, did the project actually meet the original objectives?

Business Barriers

Stakeholders note that government needs to understand freight, even though it does not vote. Historically, limited public investment has been made in freight infrastructure. No cohesive urban/suburban transportation strategy and
funding mechanism is in place. Some stakeholders feel Illinois is not a business-friendly state.

Several stakeholders expressed support for CREATE while one felt that it is not needed. One feels the EJ&E acquisition should not be legal.

Weight limits per TEU can result in significant empty space in containers when products are heavy, and stakeholders would like increased over-the-road weight limits. Access into freight areas needs improvement as many communities have differing overweight permits regulations that are difficult to manage.

Short sea shipping could work if the Harbor Maintenance Tax were discontinued – now this makes short-sea shipping cost prohibitive. There must be a financial incentive for shippers to use the water system.

**Freight Consideration in the Planning Process**

As shown in Figure 4.14, communities most strongly consider safety with respect to freight. Many other freight factors are important to communities as all factors received more than a 6 on a scale of 10 in the survey.

**Community Freight Planning**

As shown in Figure 4.15, stakeholders feel that greater attention to freight in community planning can be achieved. Most communities do consider freight in transportation planning, but half do not consider freight in land-use policies. A large proportion of communities do not coordinate freight planning with neighboring jurisdictions. Less than half coordinate freight transportation planning with local businesses.

Communities note that heavy truck volumes conflict with pedestrian and bicycle transportation and damage roads. The state agency responsible for highway-rail grade crossing safety would like to see more emphasis placed on safety and reducing delay at crossings. Drayage distances from intermodal facilities should be considered as part of regional freight planning.
Figure 4.13  Land Use Impacts on Business

- Available land for expansion: 5.1
- Zoning restrictions to expansion or construction: 5.0
- Local government resistance to expansion or construction: 6.1
- Government incentives/subsidies for development: 7.4
- Public resistance to expansion or construction: 5.9
- Availability of land near intermodal facilities warehouses, etc.,: 6.4
- Local ordinances restricting land uses (such as noise ordinances, delivery time restrictions, building codes): 6.7
Figure 4.14 Community Freight Considerations

- Traffic delays at at-grade highway-rail crossings: 7.8
- Safety: 8.4
- Noise impacts: 7.3
- Air quality impacts: 7.4
- Conflicts with other land uses: 6.8
- Redevelopment of brownfields for freight use: 6.2
- Freight as a driver of employment: 6.8
- Freight as an economic engine for local businesses: 7.6
- Freight volume increases as a result of new business locations: 7.7
Figure 4.15  Community Freight Planning

Which of the following actions does your community take regarding freight transportation?

Note: 20 Responses.
4.7 **WORKFORCE ISSUES**

The importance of freight-related jobs (manufacturing and transportation) needs to be balanced with the nuisance impacts on municipalities. Industry does face workforce issues, although they are closely associated with economic cycles. As shown in Figure 4.16, future availability of a skilled workforce is a major concern.

**Truck**

Truck labor issues are largely related to economic conditions. During the economic boom periods, truck driver shortages are common. Currently, with trucking companies closing due to business declines, driver shortages are not an issue.

**Rail**

Key issues for the rail industry are lack of communications skills and comprehension by potential employees. Other barriers are English proficiency, willingness to work nights/weekends/holidays, willingness to work outdoors, and the ability to work in a drug-free workplace. Railroads generally do most of their own training and hire many employees with only high school education. However technical positions such as diesel mechanics are difficult for the railroads to find and retain.

**Water**

Work schedules on barges are difficult and generate turnover -21 days on and 21 days off. (Lake Calumet staff work one week on and one week off). The time to move up from deckhand ($38K salary) to having a license to operate ($100K salary) used to be 4 years; now it is 10 years and is less of an incentive to retain staff. The lengthening of this time period is largely due to USCG regulations and tougher licensing rules. It is harder to maintain a license, especially since use of prescription drugs is now an issue.
Figure 4.16 Workforce Issues

- Poorly trained workers: 5.4
- Lack of education or training available that is specific to freight/logistics: 4.5
- Expense of training workers: 5.2
- Lack of transportation for workers to job sites: 4.6
- Communication difficulty with educational institutions on workforce training: 5.0
- Availability of a skilled workforce in near term (approximately 5-10 years): 6.6
- Availability of a skilled workforce in long term (up to 30 years into the future): 6.3
Air

The air cargo industry has been involved with the City Colleges and Chicagoland Chamber of Commerce initiative to train the air cargo workforce. Two years ago many warehouses were experiencing 80 to 100 percent turnover every year. One aspect of the problem was not finding the right people. The newly developed training certificate program at the City Colleges gives warehouse workers basic skills, and airlines are hiring graduates.

Another issue is local transportation deficiencies around O’Hare that are a barrier to workforce retention. Workers can get to O’Hare to work in passenger operations, but there is no way to get workers from the airport to cargo areas on transit. The last mile to the cargo areas is a problem. Before the economic downturn, even when wages were $11 per hour, with benefits such as 401Ks, airlines could not fill the jobs. Pace Bus is looking at some new options for O’Hare area transportation, which would be very helpful.

It is easier to find warehouse workers than to find computer trained workers that need to understand manifests and work with customers in the office. Training for office workers will be the next phase of the training program, once the economy rebounds and demand for employees increases.
5.0 Data Collection, Synthesis and Analysis

A comprehensive analysis of existing freight-related data was conducted to identify systems needs and deficiencies in a high-level, systematic approach. This data-driven effort complements the stakeholder outreach (Section 4.0), which was also used to identify problematic areas in the regional freight system. Both efforts are used as a starting point for identification of potential improvements for the region.

5.1 DATA COLLECTION AND SYNTHESIS

As new data collection was not part of the scope of this project, the focus of the data collection effort was on obtaining the most recent, accurate and comprehensive data available from a wide variety of existing sources that represent all modes of freight transport. Data were obtained from the following agencies and organizations, and are described in detail in Table 5.1:

- Center for Freight and Infrastructure Research and Education (CFIRE);
- Chicago Department of Transportation (CDOT);
- Chicago Metropolitan Agency for Planning (CMAP);
- Chicago Region Environmental and Transportation Efficiency Program (CREATE);
- Federal Aviation Administration (FAA);
- Federal Railroad Administration (FRA);
- Illinois Department of Transportation (IDOT);
- Illinois Institute of Technology (IIT);
- Chicago Metropolis 2020 (M2020); and
- United States Army Corps of Engineers (USACE).

While extensive data were located through public sector sources, the majority of freight systems are operated by the private sector and the ability to obtain private sector data for public study is always a challenge. Railroads, trucking companies, shippers and other freight-related businesses protect their interests in part by not disseminating information that may benefit their competitors. To supplement the available data, anecdotal information was collected during stakeholder interviews from private sector owners, operators, and users. This helped to create a complete picture of the greater Chicago freight transportation...
system for this study. For example, the assessment of aviation system needs and deficiencies was enhanced greatly using stakeholder interview information (which will be published as an addendum to this report).

Initial inspection of the available data revealed some opportunities for unique analyses as well as some data gaps that created some challenges for the project.

**Opportunities**

- **Freight Infrastructure Data:** Relatively detailed freight infrastructure information provided a solid base to aid the study team in analysis.

- **Illinois Roadway Information System (IRIS) Data:** IRIS roadway data from CMAP supported the analysis of roadway delays and potential congestion impacts of various policy recommendations including trade-off analyses between freight and passenger operations and investments.

- **Truck Parking Data:** Truck parking inventory is traditionally a challenging area for data collection, but recent studies from the Illinois Institute of Technology (IIT) and the Center for Freight and Infrastructure Research and Education (CFIRE) have improved data availability for the Chicago region.

- **Business Location Data:** Business location data provided a way to reflect private sector decision making regarding site selection and operations.

**Challenges**

- **Private Sector Data:** The freight system has been developed and is used primarily by private sector business, and as such, there are a variety of private sector data that drive business decisions (e.g. what, when and where improvements are made to railroad infrastructure). This information is closely guarded by private sector parties and mostly was unavailable for use in this study.

- **Drayage Data:** Limited data were available for drayage volumes. Therefore, the analysis uses overall truck traffic volumes, making isolation of the drayage market difficult.

- **Prohibited Truck Routes Data:** Comprehensive sources for truck-prohibited routes were not located.
### Table 5.1 Data Collection Matrix

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<td>Truck-prohibited lanes (limited), toll locations, signal interconnect locations</td>
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<tr>
<td>Construction Schedule</td>
<td>CDOT</td>
<td>Report</td>
<td>All construction projects (300-page document)</td>
<td>City of Chicago</td>
<td>Project name, description, location, cost</td>
</tr>
<tr>
<td>Construction Schedule (Roads/Spots/Structure)</td>
<td>IDOT</td>
<td>Shapefile</td>
<td>Planned roadway improvements</td>
<td>Statewide</td>
<td>Location, class, cost, years to complete, description of improvement, funding source</td>
</tr>
<tr>
<td>Container Terminals</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Container yards</td>
<td>CMAP region</td>
<td>Name, location, primary rail owner, type (depot versus ramp), address</td>
</tr>
<tr>
<td>CREATE Corridors and Projects</td>
<td>CREATE</td>
<td>Shapefile</td>
<td>CREATE project locations and corridors</td>
<td>CMAP region</td>
<td>Location, project type, can get estimates and benefit-cost findings from Stimulus Application</td>
</tr>
<tr>
<td>Designated Industrial Corridors</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Location of City of Chicago Industrial Corridors</td>
<td>City of Chicago</td>
<td>Name of corridor, area in acres/square miles</td>
</tr>
<tr>
<td>Freight Businesses</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Businesses in the region that move freight</td>
<td>CMAP region</td>
<td>NAICS, employment, sales volume</td>
</tr>
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### Table 5.1  Data Collection Matrix (continued)

<table>
<thead>
<tr>
<th>Name</th>
<th>Source</th>
<th>Data Format</th>
<th>Brief Description</th>
<th>Coverage</th>
<th>Important Data Fields</th>
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<tr>
<td>Intermodal Locations</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Location of intermodal facilities</td>
<td>CMAP region</td>
<td>Name of rail company (primary owner), address, can be linked with lift volumes</td>
</tr>
<tr>
<td>IRIS Roadway Data</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Detailed roadway information</td>
<td>CMAP region</td>
<td>Road name, ADT, HCV (and MU volume), functional class, lanes, county</td>
</tr>
<tr>
<td>IRIS Travel Time Index/Other Operational Data</td>
<td>CMAP</td>
<td>Spreadsheet</td>
<td>Detailed roadway information for link to shapefile</td>
<td>CMAP region</td>
<td>Midpoint pace speed – a.m. and p.m. peak, travel time index, speed percentiles</td>
</tr>
<tr>
<td>Land Use Survey</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Land use designations (2005)</td>
<td>CMAP region</td>
<td>Land use class (broken out by 50 classes), area</td>
</tr>
<tr>
<td>Lift Volumes</td>
<td>CMAP</td>
<td>Spreadsheet</td>
<td>Intermodal lift volumes</td>
<td>CMAP region</td>
<td>Annual lifts (2006 and 2000).</td>
</tr>
<tr>
<td>Lock Statistics</td>
<td>USACE</td>
<td>Shapefile</td>
<td>Volume and LOS data for locks</td>
<td>CMAP region</td>
<td>Average delay; average processing time; number of barges (empty and loaded), number of lockages, and number of vessels by category (commercial, noncommercial, recreational); tons locked by commodity type, unavailable times—both scheduled and unscheduled (number and duration of)</td>
</tr>
<tr>
<td>M2020 Freight Plan</td>
<td>M2020</td>
<td>Report</td>
<td>Data and recommendations</td>
<td>CMAP region</td>
<td>Freight recommendations</td>
</tr>
<tr>
<td>Municipality Boundaries</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Municipalities</td>
<td>CMAP region</td>
<td>Name and location</td>
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### Table 5.1  Data Collection Matrix (continued)

<table>
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<th>Important Data Fields</th>
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<tr>
<td>Port and Waterway Characteristics</td>
<td>USACE</td>
<td>Spreadsheet</td>
<td>Port and waterway characteristics in CMAP area</td>
<td>CMAP region</td>
<td>Location fields, waterway, port name, purpose, railway connections, commodities handled, depth, berthing distance</td>
</tr>
<tr>
<td>Rail Crossings</td>
<td>IDOT/FRA</td>
<td>Shapefile</td>
<td>All at-grade rail crossings from both IDOT and FRA</td>
<td>Illinois, national</td>
<td>IDOT: Crossing number, RR; FRA: Crossing number, RR, road fclass, AADT, signals, day thru, night thru, total trains/day, posted speed, safety info (predicted casualty and fatality rates)</td>
</tr>
<tr>
<td>Regional Rail Network</td>
<td>IDOT/FRA</td>
<td>Shapefile</td>
<td>Railroads (from both IDOT and FRA)</td>
<td>Illinois, national</td>
<td>IDOT: location, owner, Metra-operated code; FRA: location, owners, all track rights, density code, signal system type</td>
</tr>
<tr>
<td>Socioeconomic Data</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>SE data by subzone (QSEC)</td>
<td>CMAP region</td>
<td>Households and jobs by QSEC, 2010 and 2040 (Reinvest Scenario)</td>
</tr>
<tr>
<td>Structures</td>
<td>CMAP</td>
<td>Shapefile</td>
<td>Bridges from NBI</td>
<td>CMAP region</td>
<td>Roads, water crossing, owner, fclass, year built, ADT (various years), posting, operation code, truck ADT, future (2021) ADT</td>
</tr>
<tr>
<td>TRANSEARCH – Nonrail Modes</td>
<td>CMAP</td>
<td>Database</td>
<td>Truck, water, and air freight flows through CMAP region (base and future years)</td>
<td>Nationwide flows through CMAP region and intra-regional flows</td>
<td>Mode (truckload, less-than-truckload, private, NEC; Air; Water; Other; Pipeline), equipment (e.g., tanker), STCC, SIC, truck mapping tool (route name, lanes, functional class, truck tons), tons and value for air and water, regional entry and exit roads, origin and destination (Census region, BEA, Mexican state).</td>
</tr>
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</table>
### Table 5.1  Data Collection Matrix (continued)

<table>
<thead>
<tr>
<th>Name</th>
<th>Source</th>
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<th>Important Data Fields</th>
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<td>TRANSEARCH – Rail</td>
<td>CMAP</td>
<td>Database</td>
<td>Rail freight flows through CMAP region (base and future years)</td>
<td>Nationwide flows through CMAP region and intra-regional flows</td>
<td>Origin and destination (Census region, BEA, Mexican state, load (carload, intermodal, NEC), mapping tool (RRD owner, density, signal type, junction names), cars, tonnage, value, trade type (IB, through, etc.)</td>
</tr>
<tr>
<td>Transload Terminals</td>
<td>NTAD09</td>
<td>Shapefile</td>
<td>Terminals for transload</td>
<td>National</td>
<td>Facility name, primary mode, modes served, some commodity and shipment data</td>
</tr>
<tr>
<td>Transportation Firms</td>
<td>M2020</td>
<td>Shapefile</td>
<td>Businesses in transportation category</td>
<td>CMAP, some Indiana and Wisconsin</td>
<td>Company name, SIC, employee category</td>
</tr>
<tr>
<td>Truck Parking Dataset/Report</td>
<td>CFIRE</td>
<td>Report</td>
<td>Locations of truck parking deficiencies</td>
<td>Midwest</td>
<td>Maps of areas of truck parking shortage</td>
</tr>
<tr>
<td>Truck Parking Shapefile/Report</td>
<td>IIT</td>
<td>Shapefile/Report</td>
<td>Location of truck parking lots</td>
<td>Southern end of CMAP region around I-80</td>
<td>Locations, municipality, parking spaces (not comprehensive)</td>
</tr>
<tr>
<td>Truck Routes</td>
<td>IDOT</td>
<td>Shapefile</td>
<td>Truck routes (Class I,II,III)</td>
<td>Statewide</td>
<td>Name, fclass, AADT (07-08), length, tolled, truck route class</td>
</tr>
<tr>
<td>Vertical Clearance Deficiencies</td>
<td>M2020</td>
<td>Shapefile</td>
<td>Viaduct clearance locations in Chicago</td>
<td>Chicago</td>
<td>Location, viaduct owner (e.g., CTA)</td>
</tr>
<tr>
<td>Water Facility Events</td>
<td>USACE</td>
<td>Spreadsheet</td>
<td>List of events (collisions, etc.) at various facilities</td>
<td>Nationwide</td>
<td>Latitude/longitude, facility name, type of event, severity</td>
</tr>
<tr>
<td>Water Foreign Imports/Exports</td>
<td>USACE</td>
<td>Spreadsheet</td>
<td>Year 2007 imports</td>
<td>Nationwide</td>
<td>Year, port name, waterway, state, foreign port ID, tonnage, commodity code</td>
</tr>
</tbody>
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### Table 5.1  Data Collection Matrix (continued)

<table>
<thead>
<tr>
<th>Name</th>
<th>Source</th>
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<th>Brief Description</th>
<th>Coverage</th>
<th>Important Data Fields</th>
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<tbody>
<tr>
<td>Water Lock Characteristics</td>
<td>USACE</td>
<td>Shapefile</td>
<td>Characteristics of CMAP area locks</td>
<td>CMAP (nationwide available)</td>
<td>Chamber L x W x D, Channel L x W x D, operator info</td>
</tr>
<tr>
<td>Waterborne Freight Volumes</td>
<td>USACE</td>
<td>Shapefile</td>
<td>Year 2006 tons by link and commodity</td>
<td>CMAP (nationwide available)</td>
<td>LinkID, link name, river name, total tons up/down, tons up/down by commodity (coal, petro, chem, crmat, manu, farm, mach, waste, unknown)</td>
</tr>
<tr>
<td>Waybill data</td>
<td>CMAP</td>
<td>Spreadsheet</td>
<td>Sample of rail cars and their movements (about three percent of all cars nationwide)</td>
<td>Nationwide</td>
<td>Carloads, revenue, tonnage, commodity type, U.S./Mexico/Canada terminus, operator name, intermodal transfer info, short-line miles, transit charges, truck-for-rail substitutions, routing (line, state), physical car characteristics (axles, length, number of units, capacity, etc.), origin and destination (station, BEA, county, state, Census region), expansion factors, distance by railroad, distance traveled, freight rate area, grain inspection availability, auto ramp availability, water-rail movement, inter/intrastate</td>
</tr>
</tbody>
</table>

**Abbreviations:** AADT (Average Annual Daily Traffic), ADT (Average Daily Traffic), BEA (Bureau of Economic Analysis), CBD (Central Business District), HCV (Heavy Commercial Vehicles or Trucks), ID (Identification), IB (In Bound), LOS (Level of Service), LRS (Linear Referencing System), MU (Multi-Unit Truck), NAICS (North American Industry Classification System), NBI (National Bridge Inventory), NEC, NHPN (National Highway Planning Network), NTAD09 (National Transportation Atlas Database 2009), QSEC (Quarter Section), RRD (Railroad), SIC (Standard Industry Code), STCC (Standard Transportation Commodity Code)
5.2 **DATA ANALYSIS**

As presented in Section 5.1, data were obtained from several sources in a number of formats (e.g., shapefile, spreadsheet, database, etc.). Developing a common platform for the data was essential for analyzing the data concurrently, and for ultimately using the data as a tool to determine greater Chicago’s freight system needs and deficiencies. A GIS platform was designed to analyze the data, allowing a wide variety of mode-specific and multi-modal queries to be run.

Using the GIS tool, each of the four primary modes of freight transportation – trucking, rail, water, and air – was examined using a series of maps. Because of the presence of four modes and the role that greater Chicago plays as a goods movement hub, intermodal connectivity was also stressed in the analysis. Furthermore, land uses adjacent to freight infrastructure were reviewed to address the importance of the transportation-lane development connection. For each mode, the high-level discussion is structured as follows:

1. **Nationwide Analysis**: Freight flows or volumes are examined at the national level. The importance of greater Chicago to nationwide transport for each mode is demonstrated.

2. **Regional Analysis**: Freight flows or volumes are examined at the regional level. The purpose of this analysis is to highlight key facilities for freight transport within the region, providing an appropriate context to understand which deficiencies are most critical.

3. **Preliminary Identification of System Needs and Deficiencies**: Based on the nationwide and regional analyses for each mode, an initial set of freight system needs and deficiencies was formulated. These needs and deficiencies are discussed in general category groupings of system access, condition, congestion, and safety (as modally appropriate with the existing data).
Nationwide Freight Volumes

Truck

In the hierarchy of freight movement, trucking is used for higher-value, time-sensitive shipments. The last mile of nearly every freight move is carried by truck due to its flexibility and ability to provide door-to-door service. Because of this, it is not surprising to see in Figure 5.1 the highest concentration of truck movements typically are found on roadways in large urban areas (compared to roadways in smaller areas or between cities). This is in contrast with rail transportation, which is favorable for longer- rather than shorter-distance trips.

For freight transportation between states or over longer distances, the Chicago area is a regional trucking hub, but Figure 5.1 suggests that other major urban areas, such as Atlanta, demonstrate greater dominance as regional truck hubs. This could be attributable partly to the relative convenience of rail in the Chicago region compared to these other regions. Nevertheless, trucking in greater Chicago is essential to distributing goods throughout the Midwest and Canada.

Rail

At the national level, rail moves have historically consisted of lower-value, heavy and bulk goods transported over long distances. As containerization entered the scene, railroads shifted toward carrying higher-value goods on their intermodal routes and became more competitive with trucking in some markets. Today, the Chicago region is a rail hub for both carload and intermodal traffic. The Chicago region is on key transcontinental rail routes, allowing trains to meet and transfer goods. Additionally, because of greater Chicago’s population base, it will continue to be a hub for local goods distribution. Figure 5.2 shows that a substantial portion of national rail flows travel through greater Chicago.

Water

National-level waterborne freight typically consists of low-value, bulk goods that are not time sensitive. However, water transport is the most fuel-efficient way to move goods. As shown in Figure 5.3, greater Chicago is positioned geographically as a gateway between the Great Lakes and the Mississippi River. Upon visual inspection of these national flows, the Mississippi River has the highest waterborne freight flows on its segment between St. Louis and the Gulf of Mexico; however there is a substantial drop-off in tonnage flows in greater Chicago. This appears to indicate that despite its competitive geographical location for other modes of freight, and its seemingly high availability of port facilities, the region does not serve as a key hub for national waterborne freight.
Figure 5.1  Nationwide Truck Volumes

Source:  Freight Analysis Framework
Figure 5.2  Nationwide Rail Volumes

Source: Federal Railroad Administration
Figure 5.3  Nationwide Water Freight Tonnage

Source: USACE
Air

Air transportation is used to haul lightweight, high-value and time sensitive goods such as medical devices, pharmaceuticals, and electronics. Greater Chicago is served by two major airports with regular air cargo service: Chicago O’Hare International Airport and Chicago Midway Airport. The nearby Gary/Chicago International Airport also provides air cargo service. A fourth regional airport has been proposed to be built in the south Chicago suburbs. The proposed airport, which would be located in Will County at the current location of Bult Field, would be expected to handle a significant amount of air cargo.

Airports are critical to serving international goods movements. Table 5.2 shows the top U.S. airports by foreign trade cargo value. JFK International Airport is the top U.S. airport in this category, the combined Chicago-region airports come in second place, and the Los Angeles International Airport follows closely in third place. With the modernization of the Chicago O’Hare International Airport, the Chicago region will likely continue to be a top provider of international air shipments.

Table 5.2  Nationwide Air Volumes: Top U.S. Foreign Trade Airports by Cargo Value

<table>
<thead>
<tr>
<th>Gateway</th>
<th>Type</th>
<th>Exports</th>
<th>Imports</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>JFK International Airport</td>
<td>Air</td>
<td>59.3</td>
<td>75.6</td>
<td>134.9</td>
</tr>
<tr>
<td>Chicago Airports</td>
<td>Air</td>
<td>29.1</td>
<td>44.3</td>
<td>73.4</td>
</tr>
<tr>
<td>Los Angeles International Airport</td>
<td>Air</td>
<td>36.5</td>
<td>36.4</td>
<td>72.9</td>
</tr>
<tr>
<td>San Francisco International Airport</td>
<td>Air</td>
<td>25.2</td>
<td>32.0</td>
<td>57.2</td>
</tr>
<tr>
<td>Dallas-Fort Worth Airports</td>
<td>Air</td>
<td>15.4</td>
<td>19.7</td>
<td>35.1</td>
</tr>
<tr>
<td>Anchorage Airports</td>
<td>Air</td>
<td>8.7</td>
<td>26.0</td>
<td>34.7</td>
</tr>
<tr>
<td>Atlanta Airports</td>
<td>Air</td>
<td>11.6</td>
<td>18.3</td>
<td>29.9</td>
</tr>
<tr>
<td>New Orleans Airports</td>
<td>Air</td>
<td>11.8</td>
<td>17.9</td>
<td>29.7</td>
</tr>
<tr>
<td>Miami International Airport</td>
<td>Air</td>
<td>17.8</td>
<td>9.7</td>
<td>27.4</td>
</tr>
</tbody>
</table>


Note: These airports appear in BTS’s List of Top 25 U.S. Foreign Trade Freight Gateways by Value.
Table 5.3 shows the top U.S. airports in terms of landed weight for aircraft that carry cargo exclusively. As the data in Table 5.3 do not include all cargo that is handled at the airport, these data simply demonstrate the number of and size of cargo-only planes that utilize a given airport. These airports have developed into these roles over time in part because of geographic location, low passenger plane traffic, and availability of infrastructure that can accommodate cargo aircraft. Airports such as Memphis and Louisville, which serve as hubs for FedEx and UPS, dominate in terms of all-cargo operations. Anchorage ranks high on this list because it serves as a major refueling point on trans-Pacific cargo flights.

Table 5.3  Nationwide Air Volumes:  Top 10 U.S. Airports by Landed Weight of All-Cargo Operations

<table>
<thead>
<tr>
<th>Rank</th>
<th>ST</th>
<th>City</th>
<th>Airport Name</th>
<th>Preliminary CY 2008 Landed Weight</th>
<th>CY 2007 Landed Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TN</td>
<td>Memphis</td>
<td>Memphis International</td>
<td>19,392,933,674</td>
<td>19,543,815,307</td>
</tr>
<tr>
<td>2</td>
<td>AK</td>
<td>Anchorage</td>
<td>Ted Stevens Anchorage International</td>
<td>17,951,597,580</td>
<td>21,124,325,138</td>
</tr>
<tr>
<td>3</td>
<td>KY</td>
<td>Louisville</td>
<td>Louisville International-Standiford Field</td>
<td>10,445,498,827</td>
<td>10,431,225,402</td>
</tr>
<tr>
<td>4</td>
<td>FL</td>
<td>Miami</td>
<td>Miami International</td>
<td>6,988,513,672</td>
<td>7,430,213,907</td>
</tr>
<tr>
<td>5</td>
<td>CA</td>
<td>Los Angeles</td>
<td>Los Angeles International</td>
<td>6,205,242,277</td>
<td>6,861,236,224</td>
</tr>
<tr>
<td>6</td>
<td>IN</td>
<td>Indianapolis</td>
<td>Indianapolis International</td>
<td>5,128,484,161</td>
<td>5,304,551,447</td>
</tr>
<tr>
<td>7</td>
<td>NY</td>
<td>New York</td>
<td>John F Kennedy International</td>
<td>4,429,992,500</td>
<td>5,113,997,320</td>
</tr>
<tr>
<td>8</td>
<td>IL</td>
<td>Chicago</td>
<td>Chicago O’Hare International</td>
<td>3,668,314,900</td>
<td>4,401,472,100</td>
</tr>
<tr>
<td>9</td>
<td>CA</td>
<td>Oakland</td>
<td>Metropolitan Oakland International</td>
<td>3,479,843,950</td>
<td>3,622,968,767</td>
</tr>
<tr>
<td>10</td>
<td>NJ</td>
<td>Newark</td>
<td>Newark Liberty International</td>
<td>3,374,287,125</td>
<td>3,746,803,900</td>
</tr>
</tbody>
</table>

Source: CMAP and FAA.

Note: “All-Cargo operations” describe operations by aircraft that are dedicated to the exclusive transportation of cargo. Aircraft that carry both passengers and cargo are not included. Aircraft landed weight is the certificated maximum gross landed weight of the aircraft as specified by the aircraft manufacturers.
Regional Freight Volumes

Trucks
In greater Chicago, interstate highways carry the greatest volumes of trucks, as shown in Figure 5.4. Other roadways with very high truck volumes are found in areas with significant amounts of industrial or intermodal activity, such as Chicago's southwest side. Congestion on these high-volume roadways was identified to determine deficiencies in the roadway network. Other deficiencies that were examined include availability and quality of truck-related amenities such as truck parking.

Rail
Given Chicago’s traditional role as a major terminus for both eastern and western railroads, high rail traffic volumes in the region are found along rail lines that serve the trans-continental rail system, as shown in Figure 5.5. Many of these lines serve as inter-city and commuter rail corridors as well. These lines are Class I railroads that are owned by national rail companies and that approach the region from the north, west, southwest, south, and east. Goods destined to the coasts for distribution are hauled into the region on these lines and redirected to their final destination at one of many transload or intermodal facilities. As such, freight traffic is intense along these major rail thoroughfares. Moreover, high density rail traffic exists along lines which connect the Class I railroads, such as the belt railways which operate west of downtown Chicago. Another belt railway expected to play a major role in the flow of rail freight through the region is the Elgin, Joliet, and Eastern line, which begins near Waukegan and arcs across the area through Aurora and Joliet into Indiana. Purchased by CN, a Class I railroad, rail volumes on the EJ&E are expected – and have begun – to increase. This shift of trains onto the near-dormant EJ&E is expected to relieve the flows on several currently congested rail lines, especially the belt railways.

Water
In the Great Lakes region, as shown in Figure 5.6, watercraft such as barges carry substantial amounts of freight on the Great Lakes, on the Mississippi River, and on the Illinois River west of the Chicago region. However, there is a noticeable decline in freight tonnage on waterways within the Chicago region. This decline suggests that waterways in the Chicago region may be underutilized at the present time. There are many potential reasons for this. For example, the level of service (e.g., lock delays or navigable depth) on the waterways in the region may deter shippers from using these waterways. Alternatively, there may be little demand to ship commodities in this geographic area. As a result, this issue may warrant a more comprehensive exploration.
Figure 5.4 Regional Truck Volumes

Source: IRIS Roadway Data
Source: Federal Railroad Administration  Note: Many of the railroads listed as “lowest volumes” are now abandoned or are in interim use as trails.
Figure 5.6  Regional Water Freight Tonnage

Source: USACE
Air

Chicago O’Hare International Airport

The bulk of the region’s air cargo is handled at the Chicago O’Hare International Airport. About 1.4 million tons were handled in 2008\(^1\) with roughly one-third being domestic shipments and two-thirds being international shipments. The airport is located at the intersection of several rail lines, which is an added convenience for businesses located in the area that have the need to ship different types of goods via multiple modes. More importantly, O’Hare is accessible by several interstates, and the airport itself has substantial cargo-handling capabilities (especially compared to capabilities of other airports in the region). As a result, O’Hare plays a major part in regional truck-air intermodalism. Numerous freight forwarders located near O’Hare play a significant role in air cargo operations. Freight is often trucked significant distances so that it can be consolidated for air shipments from O’Hare.

Surface transportation conditions in the region can affect O’Hare’s competitiveness for shipping of time-sensitive freight. Traffic congestion can cause trucks to miss cut-off times for flights, which may depart only once per day, resulting in significant delays for high-value, time-sensitive freight, such as pharmaceuticals, and negatively impacting the national competitiveness of the airport and the region. O’Hare is in the midst of the O’Hare Modernization Program; it has acquired 433 additional acres and is constructing two additional runways at an estimated cost of $6.6 billion. The program includes a new western terminal and will significantly increase the air cargo capacity of O’Hare.

Chicago Midway Airport

Chicago Midway Airport carries less freight than O’Hare (only 14,254 tons in 2008\(^2\)), but still plays an important role in the region’s freight system. Similar to O’Hare, Midway is located at a rail node with significant traffic and is in close proximity to major highway corridors such as the I-88 and Cicero Corridors as shown in Figure 5.8. While goods are rarely transferred between air and rail service, the adjacent facilities offer businesses in the area easy access to a variety of shipping methods depending on their need.

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\(^2\) FAA.
Planned South Suburban Airport

A major new airport is currently in the early stages of development, including environmental analysis and land acquisition, in the vicinity of Peotone in Will County, Illinois. The South Suburban Airport is planned to eventually include six parallel runways in an east-west configuration east of I-57. The Inaugural Airport Program includes one runway, a passenger facility, and a cargo facility. IDOT projects that cargo activity at the airport will range up to 73,300 tons handled in the first year after opening to between 35,700 and 180,100 tons after five years3.

Other Airports

Several other airports near the Chicago region accommodate significant air cargo operations. The Chicago/Rockford International Airport (RFD), with the second largest UPS air parcel sorting facility, ranked 19th of all domestic airports in landed weight based on preliminary 2008 estimates4. The Indianapolis International Airport (IND), with the second largest FedEx air parcel sorting facility, ranked 6th in landed weight with approximately 5.1 million tons landed5. The smaller Chicago/Gary International Airport falls outside of CMAP’s region, but still plays a role in the Chicago region’s air cargo network. It handles mainly small amounts of cargo by small, independent freight carriers. There is no regularly scheduled passenger freight service and therefore no belly cargo handled at Gary/Chicago Airport.

Figure 5.7  Chicago O’Hare International Airport and Surroundings

Source:  CMAP, Various Sources – see Table 5.1
Figure 5.8  Chicago Midway Airport and Surroundings

Source:  CMAP, Various Sources – see Table 5.1
5.3 **PRELIMINARY IDENTIFICATION OF SYSTEM NEEDS AND DEFICIENCIES**

Based on the nationwide and regional analyses for each mode, a preliminary set of high-level freight system needs and deficiencies was formulated. These needs and deficiencies are discussed in general category groupings of system access, condition, congestion, and safety and are based on readily available existing data. A comprehensive set of needs and deficiencies will be determined later in this study by augmenting this data synthesis effort with stakeholder interview results and Transearch data analysis.

**Trucks**

*Pavement Condition*

CMAP is in the process of completing a study that evaluates pavement quality on key roads in the region, including truck routes. It is recommended that the results from that study will be evaluated against the recommendations made in this study.

*Regional Roadway Congestion*

Figure 5.9 shows the Travel Time Index (TTI) for peak period travel on roadways throughout the region. The TTI is computed by dividing the peak period travel time by the free-flow travel time. For this figure, a.m. and p.m. peak TTI were compared and the more severely congested index of the two periods is displayed. For this analysis, a TTI of less than or equal to 1.20, which suggests that travel times are only slightly longer than free-flow travel times, is considered to represent a low level of congestion. Congestion is considered to be moderate when TTI is between 1.20 and 1.40 (i.e., when travel times are 20 to 40 percent longer than free-flow travel times). TTI values of 1.41-1.60 and 1.61-1.80 represent “high” and “very high” congestion, respectively, while anything above 1.80 is considered “severe.”

Most of the roadways in Chicago are at least moderately congested during the peak periods. These areas that may warrant further exploration include:

- Traffic congestion on the regional interstate system is generally severe, particularly in the peak travel periods. Freeways and tollways that exhibit severe peak congestion include:
  - The Kennedy;
  - The Eisenhower;
  - The Edens; and
  - The portion of I-55 that is west of I-294.
• Several other freeways and tollways exhibit relatively high peak congestion, include:
  » The Eisenhower extension and IL-53;
  » The portion of I-55 that lies in Cook County; and
  » The Tri-State Tollway (I-294).

• In Chicago:
  » Far north and northwest areas of Chicago;
  » Far south and far west areas of Chicago; and
  » The Chicago Central Business District (CBD) the worst peak period congestion is in the east-west direction. Traffic flows in the CBD face levels of congestion that are similar to the rest of Chicago during the a.m. and p.m. peak periods.

• Scattered areas throughout suburban Cook County, including:
  » I-55/I-294 junction in southern area; and
  » Lake Street and various roadways near O’Hare in northern Cook.

• Scattered locations of moderate to severe congestion are found throughout McHenry, Kane, Kendall and Will Counties, but there generally are no areas of systematic congestion in these areas outside of southeast McHenry County.

• In contrast with the other collar counties, Lake County shows more areas of higher TTI, overall. Congestion in Lake County appears to be more severe in the north-south direction with some moderately severe congestion in the east-west direction as well.

**Truck Parking**

According to a recent study by IIT,\(^6\) truck parking in the Chicago region generally “works very well, but a small fraction of the trucks generate nuisance parking problems,” such as parking on highway ramps or shoulders due to lack of available spaces at formal lots. Figure 5.10 shows the location and size of

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existing parking facilities. Truck parking is most problematic in the southern area of the region, particularly along I-294 and I-80.
Figure 5.9   2007 PM Peak Travel Time Index

Source: CMAP, Travel Time Index. Note: Dan Ryan, Kingery, Bishop Ford, and Tri-State facilities were unavailable because of construction.
Figure 5.10  Truck Parking Facilities

Source: Truck Parking Studies conducted by CFIRE and IIT
Roadway Vertical Clearances

The Chicago region has dozens of locations where vertical clearance limitations interfere with truck movements, limiting accessibility and causing circuitous detours. These clearance issues may warrant further study or potential improvements in the future, particularly in the following locations:

- On roadways that serve as truck routes or intermodal connectors;
- On roadways where there are several consecutive clearance conflicts that force significant route diversions by trucks, such as the Skyway in southern Cook County; and
- In areas of concentrated industrial land use, such as Chicago’s near West Side.

Rail

Rail Congestion

Greater Chicago is the nation’s rail crossroads. Congestion on its rail lines reflects this position. Nearly 500 freight trains operate within the region daily on constricted infrastructure, creating high densities shown in Figure 5.11. To help alleviate the region’s rail needs, the U.S. Department of Transportation, Illinois Department of Transportation (IDOT), City of Chicago, Metra, Amtrak, and the nation’s freight railroads entered into a partnership aimed at improving the region’s rail efficiency through infrastructure and other improvements. The Chicago Region Environmental and Transportation Efficiency project, known as CREATE, is underway and seeks to upgrade four critical corridors, mostly in Cook County. These upgrades include the construction of flyovers, grade separations, improved signalization, and modernization of equipment. CREATE has completed 10 of 71 projects and a number of other projects are in the early phases of environmental and design.

Many of the region’s rail bottlenecks occur on railways with high freight rail density in proximity to freight facilities (Figure 5.11). Most of these are being addressed directly through CREATE, but some bottlenecks are present along the transcontinental railroads leading west and southwest, specifically BNSF’s lines through Aurora and Joliet and UP’s line through West Chicago, all locations where junctions with the EJ&E exist along with rail yard operations. These bottlenecks may need further evaluation to determine their impact on regional rail flows.

Grade crossings are another potential source of congestion. Grade crossings at which a large number of trucks cross rail lines with high rail volumes and slow maximum train speeds, as shown in Figure 5.12, are especially problematic. In addition to being a safety hazard, these crossings present challenges for both truck freight and rail traffic with the potential for delay.
Figure 5.11 Regional Rail Density

Source: CMAP, Various Sources – see Table 5.1
Figure 5.12 Major Truck-Rail Delays

Source: CMAP, Various Sources – see Table 5.1
Rail Access

Greater Chicago’s status as a national freight rail hub depends partially upon the direct access to the transcontinental system provided by the Class I railroads in the area. Approximately one-half of all intermodal facilities are within one half-mile of such lines as shown in Figure 5.13. There may exist connectivity issues with the other intermodal facilities which spur systemic delays.

The issue of spatial access requires further investigation, as described in Section 9.0 (Infrastructure Recommendations). It is recognized that operational issues have substantial impact on the practical access a terminal enjoys. In addition, belt rail systems also provide substantial access benefits for rail terminals.

Rail Safety

In addition to easing congestion, the improvements slated under the CREATE project also enhance rail safety throughout the region. Beyond the CREATE project, however, several safety concerns and opportunities for improvement exist.

Spatial analysis was used to evaluate crossings containing high volumes of both trains and vehicles, which generate a very high rate of exposure to collisions (see Figure 5.14). The analysis highlights crossings where both vehicle volumes and train volumes are one standard deviation above the means for their respective categories. The analysis shows a clustering around Metra lines. This finding is logical given the nearly 800 daily Metra trains in the region. Nevertheless, crossings where vehicle volumes and train volumes are both one standard deviation above the mean also appear in places critical to rail freight traffic, such as the Hawthorne Yard in Cicero. Mitigating these high-volume crossings should be a regional goal given the dangers and costs associated with train-vehicle collisions.
Figure 5.13  Access to Transcontinental Rail Lines

Source: CMAP, Various Sources – see Table 5.1
Figure 5.14  Major Truck-Rail Safety Conflicts

Source: CMAP, Various Sources – see Table 5.1
Water

Lock Condition

Waterborne movements dominated freight transportation in greater Chicago before rail freight transportation became prominent. An extensive waterway system was developed to provide full connectivity between Chicago, the Great Lakes, and the Mississippi River. However, like much of the U.S. transportation system, water infrastructure (e.g., locks) in the region was built many decades ago and may be presenting level of service deficiencies to freight operators today.

Lock Delay

Watercraft that use the Chicago Harbor or Thomas J. O’Brien Locks face average delays of less than 10 minutes at these locks, as shown in Figure 5.15. However, watercraft that use the locks in Will County and beyond face average delays of at least 50 minutes per lock. Compared to the Cook County locks, demand for the Will County locks appears to be relatively substantial (about 12 to 16 million annual tons per lock in Will compared to eight million or less in Cook). As a result, for these high volumes of freight, delays at the Will County locks quickly add up for even relatively short-distance trips. For example, a trip from northern Will County to adjacent Grundy County can incur several hours of delay.

Delays at these outer locks may warrant improvement; however, more study should be undertaken to substantiate this recommendation based on acceptable standards for water freight operators.
Figure 5.15  Water Freight Tonnage and Delay at Locks in Chicago Region

Source: USACE
Land Use and Intermodal Connectivity

Land use designation and appropriateness of freight facility siting can be significant factors in how the freight system performs. Successful examples of intermodal connections and appropriate levels of modal accessibility have emerged in corridors that have historically served freight-related purposes. In particular, the original dominance of water and rail in the Chicago region set a precedent for significant freight-related land use, and freight facilities in general, to be located along waterways and in rail corridors. As Figures 5.16 through 5.18 show, this trend is particularly true today along the region’s freight waterways, in southern Cook County, and on the southwest side of Chicago. Other “newer” modes also have created concentrated clusters of freight-related facilities, such as around O’Hare International Airport.

Convenient intermodal connections and modal accessibility have degraded in recent years and continue to be threatened today, in part due to how land use is designated and developed. Figures 5.19 through 5.21 demonstrate that today residential, office, and retail land uses dominate the regional landscape in comparison to industrial or freight-related land uses. This is due to the fact that over the last several decades the surrounding suburban population has grown to about five million. In addition, the U.S. generally is shifting to a service-based economy, and as a result freight-related land use designation and development has not kept pace with designation of other types of land uses.

This situation presents tremendous conflict to the operational efficiency of greater Chicago’s freight transportation, as well as the passenger system where services share infrastructure. Freight volumes have grown significantly in recent years and existing central city freight facilities have been jury-rigged to serve the increased flows; primarily operational changes have been made to accommodate flows within existing site footprints. However, as these older, smaller sites reach their capacity, new options are being explored in suburban areas where greenfields are ample, allowing design of the most appropriate facilities for given operations. While construction of these new suburban facilities seems an obvious solution to freight industry infrastructure needs, they create new situations for the communities where facilities are sited including increased truck traffic, increased rail traffic, wear and tear on infrastructure, noise and air quality concerns as well as overall safety concerns and other issues. Thus, it is crucial to consider the most appropriate locations to designate freight-related land use for both industry and community benefits.

Additional intermodal connectivity and land use issues specific to each mode are presented below.

Rail: The rail system today faces a complex set of land use challenges that are being addressed largely by the Chicago Rail Economic Opportunities Plan (CREOP) programs. The CREOP program is an intensive, multi-party effort to preserve and establish rail-related land use in designated areas. Many freight-heavy rail lines have fallen into disuse or are currently underutilized. Preserving
these corridors for freight rail could be important in the future in the event that rail should experience a significant resurgence. For example, if gas prices increase dramatically, it is possible that fuel-efficient modes such as rail and water may face heavily increased volumes.

**Trucks:** As trucks have a ubiquitous transportation network in the Chicago region, trucks that require intermodal services generally have great flexibility in controlling their service locations and operations. As such, it does not appear that trucks face particularly unique issues related to land use or intermodal accessibility beyond highway network accessibility issues related to cost and placement of tolls, truck restrictions, low clearances, weight restrictions, congestion, and other network issues described in previous sections.

**Water:** Water freight facilities such as ports historically have been located along the major rivers and channels of the region, including the Chicago River, the Chicago Sanitary and Ship Canal, the Calumet River, the Calumet-Sag Channel, and the Illinois River, as shown in Figures 5.16 through 5.18. Information about the ports that are shown in these figures was obtained from an Army Corps of Engineers survey that was last conducted for the area in 1995. As a result, while a number of these ports are still active, many of the hundreds of ports that are pictured either are no longer used or are no longer in existence. Reasons for their decline include:

- A decrease in manufacturing in the region over the past several decades that has created less demand for water ports;
- The increase in feasibility of other modes (especially truck), which has led to diminished use of water freight shipping in general; and
- Land use conversions.

In many cases land parcels that were occupied by an unused or underutilized port were, in many cases, converted to other land uses (such as residential or office) and were subsequently converted to dwellings, office buildings, and other uses. Likewise, with decline in manufacturing overall, parcels that are located near ports and that were formerly used for industrial purposes have, in many cases, been converted to other land uses such as residential or office. Many areas, in particular the City of Chicago, have sought to redevelop the waterfront and created regulations to enable development of pedestrian ways along waterways, resulting in incompatibility with industrial uses. The diminishing availability of industrial land in close proximity of ports affects viability of ports for freight operations at a fundamental level. For example, if a port is surrounded by warehouses, then that port is well positioned to accept goods and store them. But if these warehouses have been converted to residential lofts, then the port may have trouble expanding its operations to include a storage component.

Part of the conflict between port and other uses in Chicago is a legacy of the former structure of the port industry. The former convergence of rail, water, and
industrial uses worked to the benefit of all three uses in the past. The locational shift of water terminals away from the vicinity of major rail and industrial operations and to Calumet Harbor may have weakened the water transportation industry’s access.

Air: O’Hare International Airport has good intermodal access due to its location in the midst of a largely industrial area, as shown in Figures 5.16 and 5.19. Canadian National’s Schiller Park intermodal facility lies to the east. Canadian Pacific’s Bensenville intermodal facility lies to the south. Union Pacific’s Elk Grove Village rail yard is just west of the airport. There are numerous freight trucking firms located in the area as well as transload and warehousing facilities. The I-190 spur offers freeway access directly to the airport with connections to I-294 and I-90, and I-290 is just to the west and south.
Figure 5.16  Intermodal Freight Facilities in the Chicago Region

Source:  CMAP, Various Sources – see Table 5.1
Figure 5.17  Intermodal Freight Facilities in Southern Cook and DuPage Counties

Source:  CMAP, Various Sources – see Table 5.1
Figure 5.18 Intermodal Freight Facilities in Will and Kendall Counties

Source: CMAP, Various Sources – see Table 5.1
Figure 5.19  Land Use in the Chicago Region

Source: CMAP, Various Sources – see Table 5.1
Figure 5.20  Land Use in Southern Cook and DuPage Counties

Source:  CMAP, Various Sources – see Table 5.1
Figure 5.21  Land Use in Will and Kendall Counties

Source: CMAP, Various Sources – see Table 5.1
6.0 Performance Measures

Performance measures are being developed for this project to help guide investment strategies and the region’s understanding of the tradeoffs associated with different alternatives. These performance measures aid in assessing policies, programs, and projects. Data synthesized in Section 5.0 will be used to conduct high-level analysis (quantitative and qualitative) resulting in an initial list of deficiencies that, individually or collectively, are impacting the performance and efficiency of the Greater Chicago freight system and various system improvements relate to each other and to stakeholder user groups. The relationship among them will allow us to identify system-level needs and deficiencies. Taking a system-level approach is critical when developing solution strategies, as in many cases, alleviating one bottleneck simply pushes the problem “downstream.”

6.1 National Performance Measure Perspective

The basic performance management principles that can be integrated into some or all of the critical functions and operations of a transportation agency are illustrated by the “performance management framework” shown in Figure 6.1. Performance-based resource allocation decisions are anchored in a set of policy goals and objectives which identify an organization’s desired direction and reflect the environment within which its business is conducted. This direction is usually best defined by a combination of members within the organization, stakeholders, and the public.

Figure 6.1 Performance Management Framework
Performance measures are a set of metrics used by organizations to monitor progress toward achieving these goals or objectives. The criteria for selecting measures often include:

- Feasibility;
- Policy sensitivity;
- Ease of understanding; and
- Usefulness in actual decision-making.

Over the long term, an organization may set a target for a measure after the system performance for that measure, and the mechanisms for improving performance for that measure, are better understood. Actually using performance to drive resource allocation, such as budgeting or project prioritization, is the lynchpin of actual performance management. Finally, the data for each performance measure should be collected and analyzed to indicate how close the organization is to achieving its targets and identify the actions necessary to improve results (e.g., a change in the types of projects or policies being prioritized).

Goal areas were recently suggested by AASHTO and separately by FHWA to be included as part of a national performance measurement framework, potentially stemming from upcoming Federal reauthorization of transportation legislation.¹

### 6.2 REGIONAL FREIGHT PERFORMANCE MEASURE DEVELOPMENT

Prior to identifying recommendations and concurrently with stakeholder outreach and data acquisition system performance measures were developed for use in the project. First, a set of “goal areas” were developed as a means of categorizing the measures, ensuring that all areas of importance to all stakeholders are addressed. The following goals are based on the proposed national goals for consistency, adapted slightly for direct application to this study:

- **System Preservation.** Condition of existing infrastructure, e.g., pavement and bridges, relative to a state of good repair.
- **Mobility.** The operating characteristics of the system and existing or potential demand on the system.

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¹ For examples of how these are being considered at the national level, see [http://www.transportation.org/sites/aashto/docs/Kane-2010-04-12.pdf](http://www.transportation.org/sites/aashto/docs/Kane-2010-04-12.pdf).
- **Connectivity/Accessibility.** Population and businesses served by existing or expanded freight system and the impact of investments on the larger multimodal transportation network.

- **Safety.** Ability of freight system investments to enhance safety (reduced crashes, injuries, and fatalities) and security.

- **Environment and Community.** Impact of investments on the natural and built environments, overall quality of life, and consistency with community land use plans.

- **Economic Growth.** Estimated cost, revenue generating potential, and economic benefits resulting from investments in the freight system.

A literature review was conducted to identify freight-specific performance measures that address each of these areas. All of the measures related to freight transportation in CMAP’s on-going Regional Indicators Project were included in this study (Table 6.1).

A wide range of additional measures were also investigated based on a scan of domestic and international freight and logistics-related performance measures, actually in use in established performance-based planning systems or applied within specific studies. Previous studies that included an examination of varied freight performance measures from around the country and the world include NCFRP 3: Performance Measures for Freight Transportation and NCHRP Report 606: Methods for Forecasting Statewide Freight Movements and Related Performance Measures. Through examination of these two documents, as well as other sources, the scan examined relevant measures from numerous agencies, such as:

- USDOT
- FHWA
- Minnesota DOT
- Washington State DOT
- Austroads
- Western Australia Department for Planning and Infrastructure
- Victoria Department of Infrastructure
- Queensland Main Roads
- Queensland Transport
- British Columbia Ministry of Transportation
- Transport Canada
- Japan Ministry of Land, Infrastructure, and Transport
- Tokyo Metropolitan Road Council
- Yamaguchi Prefecture Road Administration Management Council
Table 6.2 presents the “world” of measures ultimately shortlisted for consideration in this study, and a qualitative assessment of the degree to which each measure could address multiple policy concerns and stakeholder perspectives (see Section 6.3).

The types of analyses for which the measures would be used were considered in shortlisting the measures. The evaluation of system performance based on these measures is part of the process used for identifying “hot spots”, or those corridors or areas that fare the worst for the selected measures. The strategy packages that address these hot spots and other identified problem areas will be evaluated using the selected performance measures; the technical evaluation is used to support a relative comparison of the effectiveness of each project.
### Table 6.1 Performance Measures from CMAP Sources

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Goal Areas</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Regional Product</td>
<td>Economic Growth</td>
<td>CMAP Regional Indicators Project</td>
</tr>
<tr>
<td>Value of goods exported annually vs. value of goods imported</td>
<td>Economic Growth</td>
<td>CMAP Regional Indicators Project</td>
</tr>
<tr>
<td>Condition rating for National Highway System Intermodal Connectors</td>
<td>System Preservation, Connectivity</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
<tr>
<td>Vehicle-miles of delay for at-grade crossings/length of time for traffic to recover</td>
<td>Mobility</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
<tr>
<td>Vehicle classification by time of day; percent of trucks off-peak</td>
<td>Mobility</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
<tr>
<td>Planning time index (ratio of the total time needed to ensure 95% on-time arrival as compared to free-flow travel time)</td>
<td>Mobility</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
<tr>
<td>Congested hours (average number of hours per day during which at least 20% of vehicle miles traveled on the highway network or corridor are operating at less than 50 mph.)</td>
<td>Mobility</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
<tr>
<td>Rail system travel time averages and variations across the region for intermodal containers;</td>
<td>Mobility</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
<tr>
<td>Peak and off-peak travel times for trucks in freight-significant corridors</td>
<td>Mobility</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
<tr>
<td>Travel time index (ratio of the average peak-period travel time to the free-flow travel time for a selected highway or network)</td>
<td>Mobility</td>
<td>CMAP Regional Indicators Project / Congestion Management</td>
</tr>
</tbody>
</table>
### Table 6.2 Evaluation of Potential Performance Measures

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Used for</th>
<th>Policy Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial road network accessible to all freight vehicles</td>
<td>Accessibility</td>
<td>Government</td>
</tr>
<tr>
<td>Intermodal facilities with WMTs, roadway, and access</td>
<td>Accessibility</td>
<td>Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Major intersections within 3 miles of interstates, freeways, highways, or intermodal facilities</td>
<td>Accessibility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Percent of goods moved with option of more than one modal choice</td>
<td>Accessibility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Truck miles with 100,000-pound truck capacity rating</td>
<td>Accessibility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Consensus rating for NDE intermodal connectors</td>
<td>Accessibility, System Reinvestment</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Dollar losses due to freight delays</td>
<td>Economic Development</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Geographic market share</td>
<td>Economic Development</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Cross-Regional Product (CRP)</td>
<td>Economic Development</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Value of goods imported annually versus value of goods imported</td>
<td>Economic Development</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Regional truck VMT or TMT per unit of regional economic activity/output</td>
<td>Economic Development, Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Tonnage per truck/truckload</td>
<td>Bar, Census</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Tonnage per vehicle/truckload</td>
<td>Bar, Census</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Average number of hours with 25% of VMT congested</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Delay per ton-mile traveled</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Lift capacity (annual volume)</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Mobility index (annual, truck vehicle miles, travel times, average speed)</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Mode share (annual and value)</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Truck VMT vs TMT at LOS D or above</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Blending Time Index: “wonder” time as compared to free-flow travel time</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Travel time averages and variance</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Tonnage of commodity-underlying intermodal transport</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Vehicle classification by lane of day: % trucks/sedans</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Vehicles miles of delay for at-grade crossings</td>
<td>Mobility</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Degree (break VMT and daily volume) factor for real congestion</td>
<td>Mobility, Safety</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Average urban and rural VMT or TMT</td>
<td>Safety</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Pedestrian and bicycle accident safety</td>
<td>Safety</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Grade crossing accidents (urban/rural)</td>
<td>Safety</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Number of heavy truck-related fatalities (ten-year average)</td>
<td>Safety</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Rail-related fatalities per trains miles</td>
<td>Safety</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
<tr>
<td>Percentage of trucks VMT exceeds with parcelmen worst than X</td>
<td>System Reinvestment</td>
<td>Government, Carrier, Other Business, Public, Other, End Use, Freight</td>
</tr>
</tbody>
</table>

- Little or No Relationship
- Some Relationship
- Moderate Relationship
- Strong Relationship
- Very Strong Relationship

* Measures from CMAQ GO To 2040
* Organizations and Public Policy strategies encompass and promote all other strategies, and therefore have no “explicit” performance measures.
6.3 SELECTED FREIGHT PERFORMANCE MEASURES

Measures were moved forward for consideration for this study for their ability to cover performance “goal areas” not addressed by CMAP measures, to address specific problem areas identified through stakeholder outreach, to be calculated with available data or qualitatively, to both describe the existing freight transportation system and evaluate the relative effectiveness of potential policy and infrastructure strategies, and to address various stakeholder perspectives. Two of these factors were given high consideration in determining which measures moved forward as a tool for infrastructure and policy project ranking.

Data Availability. The intent of this study was not only to develop a set of performance measures for potential GO TO 2040 Plan applicability, but also to provide CMAP with a tool to continue to conduct trade-off analyses, project evaluation and prioritization after the study was complete. Therefore measures were selected based on data availability and the ease by which CMAP could recreate or re-evaluate projects over the next several years.

Stakeholder Reach. Each stakeholder in the freight system has different key performance measures. Consideration was given for the measures that would be most appropriate to evaluate the system from a variety of user perspectives. For government measures can vary between system preservation, safety, mobility, and environment/quality of life. For a carrier, the key measures may be driver, vehicle and fuel costs, service frequency, speed and reliability, and market share. For businesses, the measures may be delivery cost and reliability, market access and scale, operating productivity, and profitability/competitiveness. And for the public, the key measures typically are jobs and income, safety/security, environmental quality, and cost of living. For this effort, special focus was placed on public-sector decision-making since freight performance measures are less well developed for public-sector decision-makers than for individual firm and industry-sector decision-makers.

The final set of performance measures selected for infrastructure-related projects is shown in Table 6.3.
### Table 6.3 Selected Freight Performance Measures - Infrastructure

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Goal Areas</th>
<th>CMAP Regional Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermodal Facilities with National Highway System roadway or rail access</td>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Major generators near Interstate highways, four-lane highways, or intermodal terminal</td>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Gross Regional Product</td>
<td>Economic Development</td>
<td>Yes</td>
</tr>
<tr>
<td>Value of goods exported annually vs. value of goods imported</td>
<td>Economic Development</td>
<td>Yes</td>
</tr>
<tr>
<td>Congested hours (average number of hours per day during which at least 20% of vehicle miles traveled on the highway network or corridor are operating at less than 50 mph.)</td>
<td>Mobility</td>
<td>Yes</td>
</tr>
<tr>
<td>Planning Time Index (PTI) (ratio of the total time needed to ensure 95% on-time arrival as compared to free-flow travel time)</td>
<td>Mobility</td>
<td>Yes</td>
</tr>
<tr>
<td>Travel time averages and variations</td>
<td>Mobility</td>
<td>Yes</td>
</tr>
<tr>
<td>Travel Time Index (TTI) (ratio of the average peak-period travel time to the free-flow travel time for a selected highway or network)</td>
<td>Mobility</td>
<td></td>
</tr>
<tr>
<td>Vehicle classification by time of day; % of trucks off-peak</td>
<td>Mobility</td>
<td>Yes</td>
</tr>
<tr>
<td>Vehicle-miles of delay for at-grade crossings</td>
<td>Mobility</td>
<td>Yes</td>
</tr>
<tr>
<td>Exposure (heavy-vehicle AADT and the number of daily trains) factor for at-grade rail crossings</td>
<td>Safety</td>
<td></td>
</tr>
</tbody>
</table>

For infrastructure project evaluation the data are available for measuring geographically, enabling geographically-defined project bundles to be evaluated in their geographic context.

**Policy Evaluation**

While infrastructure projects could be evaluated in geographically-defined project bundles, this approach will not be possible for evaluating policy proposals. Thus, alternative evaluation measures were defined for policy evaluation within each goal area. These measures were necessarily subjective, but showed the relative types of effects of various policy options. The final set of performance measures selected for policy analysis are shown in Table 6.4.
### Table 6.4  Selected Freight Performance Measures - Policy

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Goal Areas</th>
<th>CMAP Regional Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average length of haul by carrier type</td>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Modal options for goods movement</td>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Gross Regional Product</td>
<td>Economic Development</td>
<td>Yes</td>
</tr>
<tr>
<td>Environmental and Community Impacts</td>
<td>Economic Development</td>
<td></td>
</tr>
<tr>
<td>Ton-miles per emissions output</td>
<td>Economic Development</td>
<td></td>
</tr>
<tr>
<td>Quality of Life</td>
<td>Economic Development</td>
<td></td>
</tr>
<tr>
<td>Freight Mobility</td>
<td>Mobility</td>
<td></td>
</tr>
<tr>
<td>System Mobility</td>
<td>Mobility</td>
<td></td>
</tr>
<tr>
<td>Reduction of Crash Rates</td>
<td>Safety</td>
<td></td>
</tr>
</tbody>
</table>
7.0 Freight Operations

Understanding how the goods movement industry operates is essential to applying effective long-range planning principles and strategies. Freight operations are affected by a range of factors, including regulation, security, technology, infrastructure investment, and demand. The expectation of growing freight demand over the coming years means that enhancements to the existing system must steadily be made to maintain and improve upon current efficiency levels. In recent years the share of product costs attributed to transportation and logistics has been rising, which is an indication of strain on the system and reduced efficiency. Given the recent economic conditions, which have placed limitations on the funds available for infrastructure investment, the ability to achieve significant operational improvements in the near term may be limited. However, on the positive side, new technological advances such as those presented through intelligent transportation systems are relatively low in cost and can result in significant operational improvements. Additionally environmental considerations may play a role in mode shifts, which will affect overall system operations. The following section considers those factors that contribute to the current freight operations in the region and those factors that may affect operations for each mode over the next 30 years.

7.1 Truck

Trucking is the backbone of the U.S. freight system. While rail, water and air freight modes are used extensively in greater Chicago, it is trucking that provides first mile, last mile and transfer connectivity for all freight modes. Because of the nature of trucking it is the most flexible of freight modes, providing the ability for door-to-door connections and to quickly change operations based on market conditions. Trucking also faces unique challenges, as a portion of the trucking system’s operational efficiency relies on public infrastructure and the other demands placed upon it, e.g. trucks and passenger vehicles share many roadways. – whether physical or regulation related. In addition, trucking has perhaps been the freight mode hit hardest by the on-going recession and the drop in demand for goods, if only due to the sheer number of trucking operators, many of which are small businesses. The American Transportation Research Institute (ATRI)\(^2\), part of the American Trucking Associations Federation, annually conducts a survey of over 4,000 carriers to understand top challenges the trucking industry faces. ATRI’s observations and stakeholder input provide the basis for trucking operational considerations. Additional observations come

\(^{2}\) http://www.atri-online.org/
from recent regional freight studies such as the *South Suburban Freight Study* and studies of neighboring state truck operations such as the *Wisconsin Truck Size and Weight Study*.

**Impact of the Economy**

Recent economic hardship and the reduced demand for trucking services resulted in 5,500 trucking companies going bankrupt in 2008³. Increasing transportation costs, especially with respect to fluctuating diesel prices, multimodal capacity constraints, international competition, changes in rail services, and a shift to containerized shipments are among the many challenges facing trucking companies. The unprecedented rise in diesel fuel prices in 2008 appears to have leveled off, but prices are expected to rise again as demand for goods increases. While the economy shows signs of improvement, bankruptcies in the U.S. trucking industry are expected to reach 3,000 in 2010⁴, as higher fuel prices and excess capacity continue to squeeze operating margins. At the end of 2009, the U.S.‘s largest trucking firm narrowly escaped bankruptcy, indicating that challenges are faced by large and small, owner operator firms alike.

In these times of uncertainty, a true challenge facing trucking firms on the brink of bankruptcy is to strike a balance between holding steady and reinvesting. While most firms have trimmed their excess workload and equipment to weather the current storm, even with small indications of improvement freight activity it is difficult for trucking firms to make investments without the certainly of recovery and sustained operations – that is if firms are even in a position to receive credit for expansion. While many firms have held off bankruptcy by using their un-utilized fleets as collateral, the used truck market is weak due to low freight volumes. Should banks decide to force bankruptcy on a company, its assets would show a reduced return as competitors are not adding to their fleets.

**Emerging Technologies**

Heavy truck equipment and technology trends such as safety enhancing technologies; infrastructure protection devices for pavement, bridges and roadway design; and enforcement and compliance systems are areas that have improved safety and mobility for commercial vehicles and will continue to drive efficiency in freight operations.

Although new technologies and equipment are being introduced in the industry every year there are some limitations. Typically market penetration is a slow process, since small regional carriers are less likely to invest in and deploy innovative technologies. Benefits to pavement and bridge condition, safety, and

³ Trucking failures to accelerate this year, Reuters, February 18, 2010.
⁴ Trucking failures to accelerate this year, Reuters, February 18, 2010.
compliance will not occur quickly for most technologies unless improvements to vehicles are mandated. Absent a regulation requiring adoption of these technologies, the applications that hold greatest promise for rapid deployment are relatively inexpensive technologies, such as self-steering axles, that immediately begin to show a return on investment in the form of ability to carry greater payload. The primary focus of equipment manufacturers is currently on fuel efficiency and fuel economy systems.

Additionally, advanced traveler information for commercial (and non-commercial) drivers is becoming far more prevalent. It is much easier for drivers to learn about congestion or construction within their route through in-vehicle technologies such as GPS units and make real-time routing decisions. Commercial vehicles will operate more efficiently with these technologies. For public sector planners, the increase in available data via infrastructure and probe sensors (such as GPS units) will make it easier to identify roadway bottlenecks and address recurring congestion issues.

Public Infrastructure Challenges

Trucking faces unique challenges, as a large part of trucking company operational efficiency relies on the public infrastructure and the other non-freight demands placed upon it. Congestion continues to be a major challenge for the trucking mode. Although freight volumes are currently down, trucks in the Chicago region still face significant delays as they share limited infrastructure capacity with high volumes of passenger vehicles.

As trucks provide first and last mile connectivity, they interface with local delivery ordinances, truck parking restrictions, and roadway geometric design that are not always truck-friendly, particularly in urban areas. Additionally, often roadways are not designed with truck traffic in mind, and roadway condition suffers due to high volumes of unplanned for truck traffic, not only making travel difficult for trucks but also damaging to vehicles.

For long-distance trucking, another set of operational issues exist. Long-distance trucks, typically traveling over 500 miles for delivery, often cross one or more state lines and negotiate multiple state and local standards regarding truck size, weight, and permitting. The trucking industry notes that a lack of uniform vehicle size and weight mandates creates confusion and makes compliance difficult and costly, and that uniform regulations should be put in place for states and local governments. However, what the standard should be is up for debate between the trucking industry and the public; the trucking industry generally favors uniform increases to size and weight provisions as an important strategy to mitigate congestion, thereby reducing the number of trucks needed to haul freight. The use of higher-productivity vehicles, which either increase gross vehicle weight or the maximum length of combination vehicles, could also provide a means of reducing fuel consumption and truck emissions.
Truck size and weight increases are a topic under much current debate. Starting January 1, 2010, Illinois applied a uniform 80,000 pound weight limit on state highways, removing the previous 73,280 pound limit on non-truck routes. Several states have advocated for greater allowance of higher-productivity vehicles on the Interstate highway system. The long-range trend appears to be towards highly regulated higher-productivity vehicles with additional safety equipment and standards, escort requirements, and driver training.

Part of increasing truck size and weight relates to the routes on which trucks are allowed to travel, as all trucks will not be allowed to travel on all routes in the future. Truck routing is a challenge for the industry as state and local routes differ and information is often not easy for the trucking industry to locate and use. This is particularly true in smaller communities where trucks are often required to make first- and last-mile deliveries.

A truck routing concept that is currently undergoing extensive research for multi-state corridors is truck-only lanes (TOLs). A recent example of a TOL study is that of I-70 through Ohio, Indiana, Illinois and Missouri. This concept of providing exclusive travel lanes and interchanges for trucks is being investigated as a means to both increase truck productivity and enhance overall safety for passengers and trucks alike. The trucking industry is supportive of the TOL concept and the research being conducted, but has noted it is not supportive of mandated or fee-based use. However it remains to be seen if travel time and reliability were significantly improved on TOLs if trucking companies would find the benefit to exceed the costs.

While the trucking industry stance is firm on no-fee for use of TOLs, or new tolling on existing infrastructure, the user fee debate has just begun. As the Highway Trust Fund is bankrupt and each state in the Union is facing its own fiscal challenges, each has begun anew to review potential funding sources and strategies to recoup additional cost from both freight and passenger users. Options for capturing revenue directly from users include a vehicle-miles-traveled (VMT) based cost recovery tax, congestion pricing, and increased permits and tolls for trucks. At the other end of the spectrum, budget shortfalls may result in privatization or leasing of infrastructure, as in the case of the Chicago Skyway Bridge, which could result in additional uncertainty for the trucking industry (and all users) as the user fees collected may not necessarily be re-invested in the roadway to improve operations.

Regulation

Regulating safety is the primary function of the Federal Motor Carrier Safety Administration (FMCSA), and since its inception FMCSA has implemented changes impacting how hazardous materials are transported and international cargo is secured, and have instituted measures that provide benefits to users that share the road with truckers, such as established methods to assist trucking companies to pre-screen their employees and most recently, banning texting. Possibly the subject of the most debate recently in the industry relates to truck
hours of service (HOS), which place limits on when and how long commercial motor vehicle drivers may drive. Currently a property-carrying driver may drive a maximum of 11 hours after 10 consecutive hours off duty\(^5\). While the HOS requirements are currently undergoing review by FMCSA, and the trucking industry has noted an interest in increased flexibility in the rules, since the regulations have been in place truck crashes have decreased.

In addition to safety regulations, increasingly environmental regulations like anti-idling and other emission reduction initiatives are being required by state and local governments. While these regulations improve community quality of life, and in the long run may reduce oil dependence, they are costly unfunded mandates to trucking that likely will continue to increase in the future. Examples of this type of regulation are EPA’s engine emission standards and equipment aerodynamic standards mandated by the State of California.

**Workforce**

While the economic downturn saw trucking companies trimming their workforces, driver shortages have only temporarily been put on the back burner due to the recession. Shortages that were prevalent before the economic downturn are beginning to occur again, and credentialing of new drivers may become more stringent in the future. This is in part due to CSA 2010, FMCSA’s new Comprehensive Safety Analysis program, and also due to the limited pool of available applicants. Baby Boomer drivers will be retiring in the coming five years and trucking is not attracting sufficient new labor to the workforce to meet future predicted demands. Trucking companies will also face challenges in training the sheer number of drivers that will be required to transport the expected volumes of good in the future. In addition to driver training and education, compensation, working conditions and other issues create new difficulties in attracting new driver entrants and reducing driver turnover.

### 7.2 **RAIL**

Rail operations have evolved significantly over recent decades. Many operations and technology considerations could affect rail infrastructure needs and operations in and around Chicago over the next 30 years. Rail infrastructure investments and operations reflect numerous factors. A variety of considerations will impact future performance of the system and the improvements needed to handle demand. These considerations include:

- The structure, condition, and capacity of the existing rail system in the region;

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\(^5\) Other restrictions apply - http://www.fmcsa.dot.gov/rules-regulations/topics/hos/
• Expected growth in traffic, by type of traffic, based upon trends in the global economy as well as the relative competitiveness of rail and other modes;

• Advances in railroad technology, including car design (i.e., gross vehicle weight and length of freight cars), terminal design, communications & control, durability of track components, and capabilities for track inspection and maintenance;

• Trends in key operating parameters, including limits on train length and train tonnage, load/empty ratios, and blocking policy; and

• Interactions among freight, commuter, and intercity passenger operations.

Trends in Railroad Operations and Technology, 1980-2010

Many changes may occur in the rail industry by 2040, as is evidenced by the changes that occurred over the past 30 years. From 1980 to 2010, the North American rail system experienced continued rationalization. Dozens of railroads were consolidated (in 1980 there were 40 Class I railroads; today there are only seven). Short line and regional railroads have expanded significantly. In 1980, short and regional railroads accounted for six percent of mileage and eight percent of employees, while today they account for more than 30 percent of the mileage and 10 percent of the employees. Light density lines were eliminated, resulting in a 40 percent reduction in total rail mileage in the U.S. since 1980.

Technological advances in track technology have enabled heavy haul railroading. Axle load limits increased from 33 to 36 tons, allowing the widespread introduction of cars with gross vehicle weight of 286,000 pounds. Much heavier trains are now in operation using higher-horsepower locomotives and, more recently, distributed power (locomotive units that are placed in the middle of the train that can be controlled from the lead unit). Track maintenance expense per net ton-mile has decreased by approximately 50 percent.

Technological advances in equipment technology have allowed much higher loading density (net tons per unit of train length). Steel/aluminum cars with 286,000-pound load limits can carry 120 tons of coal, an increase of 20 percent over what could be carried in a 100-ton car in 1980. Double-stack container trains carry approximately double the number of containers with very little increase in total cost, thereby halving the cost per container handled by double-stack trains. Similar changes have occurred for other types of trains that allowed higher loading density.

Dramatic changes in rail traffic volume and mix have occurred over the past thirty years. Volumes have increased substantially, with tonnage originated increasing by more than 30 percent, carloads increasing by more than 40 percent, and ton-miles nearly doubling. Intermodal container volumes have risen sharply, from less than 2 million intermodal containers and trailers in 1980 to
more than 12 million annually. National concerns about air quality led to sharp increases in the transport of low-sulfur coal from the Powder River Basin in Wyoming to power plants throughout the middle of the country. General freight traffic, which is other than unit train or intermodal, declined, which reduced the demand for classification yard capacity and allowed many yards to be closed or converted to intermodal operations. There has been strong growth in commuter rail services and increased interest in intercity passenger services sharing freight track.

Factors outside the control of railroads have had a significant impact on the competitiveness of the industry over the past 30 years. Deregulation of rail and trucking put extreme downward pressure on rail prices, which fell almost every year from 1982 until 2005. The railroads were forced to focus nearly all of their efforts on down-sizing and improving productivity. Deregulation also boosted the growth of truckload carriers that could compete directly with rail for general freight, while declining fuel prices favored trucks over rail until very recently. Other factors led to sharp increases in rail traffic, notably the demand for low-sulfur coal and the burgeoning flow of exports to the U.S. from countries along the Pacific Rim. These macro-economic factors, coupled with the introduction of the double-stack train and the critical advances in heavy haul technology, allowed railroads to build upon their dominance in coal transport and establish new markets for intermodal.

In the last ten years, concerns about global warming, the use of imported oil, increasing energy costs, and highway congestion have all helped to enhance public interest in and financial support for rail service. Various Federal studies have recommended greater public investment in rail freight and high speed rail passenger service. Potential exists for significant changes in rail traffic, rail technology, and rail operations over the next 30 years.

**Trends in Rail Operations and Technology for the Next 30 Years**

The outlook for the rail industry is much different today than it was 30 years ago. With regard to rail network structure, the focus will be on expanding capacity, whereas in 1980 the focus was on rationalizing the network and consolidating the Class I railroads. In 1980, the railroads were emerging from a decade of generally dismal financial performance, and they had to cut cost. Today, the railroads are emerging from a period of solid financial performance, and they have been able to make substantial investments in capacity.

Intermodal is now firmly established as a key, profitable commodity. The industry will undoubtedly seek ways to become more efficient, such as by making better use of the space within trains, operating longer trains, and perhaps by introducing wider containers.

The industry will continue to introduce new technologies that reduce the costs and increase the capabilities of heavy haul operations. Distributed power and electronically-controlled pneumatic brakes (ECP brakes) will improve the ability
to handle longer, heavier trains. New equipment designs will increase the loading density of trains, either by allowing heavier axle loads or by introducing shorter cars with the existing 286,000-pound GVW.

Over the last three decades, a great deal of investment in signals allowed railroads to consolidate much more traffic on single track lines. Over the next 30 years, some form of positive train control (PTC) is likely to become widespread. PTC will reduce risks by preventing crashes related to signal overruns and excessive train speed. PTC may also provide modest benefits for line capacity, but these benefits will be most apparent on main lines and least likely within congested terminals.

A revival of shipping general freight by rail could occur if fuel prices, congestion, and labor shortages continue to cause higher costs for trucking. In 1980, the question was how to downsize and how to deal with a general purpose fleet of cars that was far too large for the business. In the future, the question could be how to provide the capacity for significant growth in this type of traffic. In the last 30 years, the performance of rail terminals generally declined, as railroads reduced train and block frequency; in the future, there could be renewed interest in operating more frequency trains and blocks so as to reduce terminal dwell times and to improve service reliability for this freight.

The pressure for the country to provide much more and much better intercity rail service is likely to grow. This could result in European-style high-speed rail on separate rights-of-way or higher-speed passenger services operating on routes shared with freight trains. With increased passenger service over shared tracks, infrastructure upgrades will be needed and could improve performance of freight and passenger service, but increased frequency of both types of trains could also result in the potential for increased passenger/freight conflict.

Implications for Railroad Investment in Chicago Terminal

Investments within any large terminal area such as Chicago could address a number of elements. Improvements could be designed to:

- Enhance the capacity of main lines into the region;
- Eliminate bottlenecks within the terminal, such as single-track bridges, short sections of single-track that connect multi-track main lines, or low-capacity interlocking;
- Provide additional buffers (sidings or small yards) between main lines and terminals;
- Increase capacity of yards (intermodal yards, classification yards, block swap facilities, interchanges, and locations for crew changes);
- Rationalize the terminal structure to allow more efficient interchange among carriers, better service to local customers, and less interference in moving trains in and out of yards;
- Increase routes where it is possible to use heavier cars, larger cars or longer trains (i.e., improve clearances, lengthen sidings, lengthen yard receiving and departure tracks, or upgrade the track structure);

- Eliminate rail/rail and rail/highway grade crossings; and

- Provide additional capacity to allow better passenger services with less interference among freight trains and passenger trains.

Whether or not any these investments will be needed will depend upon the ability of the existing Chicago terminal including main lines, yards, and other lines, to handle the projected traffic mix and volume. Some of the trends in operations outlined previously will help to defer the need for capacity investment. The key aspects of operating performance are those that determine the number and type of trains that move through the terminal, namely train length and net tons per train. Within each class of train service --, bulk, intermodal, and general freight-- the trend for many years has been toward heavier cars that move in longer trains. These trends are very likely to continue, as any increase in net tons per train will increase the capacity of rail lines even if the number of trains per day remains unchanged. These changes can even provide an increment of capacity while reducing rail costs, as has been the case with the introduction of the 286,000-pound car.

Issues Specifically Related to Chicago

As the largest rail hub in North America, the Chicago terminal faces the greatest challenges with respect to ensuring capacity will be sufficient for future operations. With the six largest railroads all serving Chicago, the complexity of interchanges, yard facilities and through routes is greater than that in any other terminal area. With so much of the region’s economy dependent upon having good access to excellent rail and intermodal services, the future capability of the region’s rail infrastructure is very directly tied to the ability of the region to grow. Because the rail system is already so heavily utilized, little slack is available to absorb anticipated growth. Indeed the rail improvements planned in the CREATE Program discussed in earlier sections were designed to address the most pressing operational issues for rail in the present timeframe with current demand, and were not planned to address future demand, although they will be helpful in accommodating future growth.

A number of specific concerns with the rail system in and around Chicago have been identified in discussions with rail officials. The main line routes into the region are generally high-capacity, high-speed routes, but movement of trains through the region is increasingly difficult as volumes of freight and passenger railcars increases. While it may be possible to develop new routes that bypass Chicago (or that skirt the edges of the region), the railroads prefer to maintain and expand the existing infrastructure simply because all of the major railroads already have invested so much in facilities that are conveniently located at the center of the region.
Intermodal traffic is expected to grow sharply over the next 30 years, and therefore the capacity of the region’s intermodal infrastructure will need to be expanded. Public support of intermodal transportation is based upon the ability of that service to move trucks off the highways. For this reason, it is important to have intermodal terminals located conveniently for customers. While railroads have in some instances located intermodal terminals 50 or more miles away, such as Union Pacific’s facility in Rochelle, IL, those terminals poorly serve customers located in the center of the region, and the drayage to and from such terminals remains on the highways. To better serve customer demand, Union Pacific has invested in an intermodal facility in Joliet, Illinois scheduled to open in the summer of 2010, not far from the BNSF Logistics Park Chicago facility in Elwood, Illinois.

To the extent feasible, railroads will attempt to have more steel-wheel interchange for through intermodal traffic, so as to avoid delays and drayage on city streets. However, with so many carriers interchanging traffic in Chicago, rubber tire interchange will continue to be the quickest and cheapest way to transfer containers and trailers among carriers. Therefore, it is desirable to consider ways to increase the efficiency of rubber tire interchanges, perhaps by using existing rail rights-of-way as drayage routes or by developing dedicated truck-only routes. Additionally, Chicago has an opportunity to be the site of significant railroad investment in freight tracking and data-sharing technologies, given the many Class I railroads exchanging goods via common infrastructure, both steel wheel and rubber tire.

Ports achieve much higher utilization of terminal space by using larger cranes and more stacked storage than is commonly used in rail intermodal terminals. Greater throughput can therefore be achieved within existing terminals by operating those terminals more intensively, perhaps by using more or larger lift equipment, operating more hours per week, or by using more stacked storage.

Grade crossing delays are a major concern for residents of the region, so completion of CREATE’s 25 grade crossing separations and consideration of other grade separation projects will be an important concern for residents and local governments.

The region’s yards are not well-structured for handling long trains, nor do they have sufficient receiving and departure tracks to provide adequate capacity for handling surges in traffic without disrupting main line operations. If there is substantial growth in general freight, then additional classification yard capacity may be needed within the region. However, if train and block frequencies are increased, existing terminals will be able to handle more freight. Also, since general freight is typically classified at three or more intermediate points, classification would not necessarily have to occur in Chicago.

CN’s acquisition of the EJ&E route will result in upgrading what could become an important bypass route that would enable diversion of through trains from the congested center of the region. This route will also allow CN to move more
traffic without the need for interchanges, which could have an impact on rail/truck competition.

Train operations along some important routes are limited by slow orders on aging, single-track bridges. Replacing these bridges would eliminate bottlenecks, but would be a major expense.

Chicago is a major passenger hub, not only a freight hub. The rail infrastructure handles a great deal of commuter rail traffic, and Chicago it is the logical center for high speed rail passenger services in the Midwest. Since passenger demand is likely to grow, there will be increasing interference among freight and passenger services - and increasing opportunities for public/private projects that go beyond CREATE to improve the performance for both freight and passenger.

In summary, if Chicago is to retain its position as the pre-eminent rail hub in North America, it will be necessary to upgrade the rail infrastructure within the region. Industry trends toward longer, heavier trains are very likely to continue, thereby providing substantial boosts to rail capacity, but the region’s yards and lines may need to be upgraded in order to be able to handle the types of trains that the railroads will be operating. Increasing volumes of both passenger and freight trains will require cooperative efforts to enhance capacity and coordinate operations.

**Figure 7.1  Factors Influencing Performance of the Chicago Rail Terminal**
Figure 7.1 illustrates some of the major factors that influence the performance of the Chicago Terminal and therefore the need for investment in terminal capacity. Macroeconomic factors will determine the types of freight that are moving to, from, and through the region, and competitive comparisons will determine how much of that freight moves by rail or intermodal. Railroad operating and technological capabilities and decisions will determine average train length and loading density, which are the key parameters linking rail tonnage to trains per day. Regional economic conditions, regional transportation policy, fuel costs, and other factors will determine passenger demand for commuter and intercity services. Traffic flows will also be limited by the performance of the system, as capacity limits or sufficient deterioration in service could cause railroads to divert trains around the region or shippers to reduce their use of rail. Investment in the rail system, whether by the railroads or by public agencies, will depend upon the expected demand for the system and the need to enhance capacity or improve service.

7.3 WATER

Chicago is the only location where the Mississippi River System (MRS) connects to the Great Lakes and Saint Lawrence Seaway system. Although the two systems were not connected as a navigable system until 1848 when the Illinois and Canal was completed, the proximity of the Illinois River and Lake Michigan drove the early settlement of the region and established its importance as a crossroads even prior to the arrival of the railroads. While the subsequent development of the region into the transportation hub of the Midwest was driven by the construction of the rail network, there has been a significant commercial maritime presence in the region, largely through the confluence of the Great Lakes and the MRS. The region’s access to the Mississippi River is provided through the Illinois Waterway, which flows for a distance of 327 miles from the O’Brien Lock in Chicago to the Mississippi River at Grafton, Illinois.6

In order to consider the operational issues facing waterborne trade in the CMAP region, a brief examination of recent and projected traffic trends from IHS-Global Insight TRANSEARCH is beneficial. The top ten commodities moving via water are summarized in Table 7.1. Traffic has been divided into three categories, based on whether it is moving on the MRS, the Great Lakes, or within the region. For intra-region freight, the TRANSEARCH data does not permit classification by MRS or Great Lakes, or a combination of the two, although a significant portion of this volume does indeed travel on both systems.

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6 Although the Illinois River makes up the largest section of the Illinois Waterway, it also includes segments of the Des Plaines River, Chicago Sanitary and Ship Canal, Cal-Sag Channel, Little Calumet River and Calumet River.
Table 7.1  Top 10 Marine Commodities, 2007 and 2010

<table>
<thead>
<tr>
<th>STCC</th>
<th>Description</th>
<th>Great Lakes 2007</th>
<th>Great Lakes 2040</th>
<th>Intra-Region 2007</th>
<th>Intra-Region 2040</th>
<th>MRS 2007</th>
<th>MRS 2040</th>
<th>% of Total Tons 2007</th>
<th>% of Total Tons 2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Coal</td>
<td>1.37</td>
<td>1.44</td>
<td>5.89</td>
<td>7.68</td>
<td>15.61</td>
<td>10.92</td>
<td>31%</td>
<td>26%</td>
</tr>
<tr>
<td>10</td>
<td>Metallic Ores</td>
<td>15.02</td>
<td>6.80</td>
<td>0.11</td>
<td>0.03</td>
<td>0.71</td>
<td>0.30</td>
<td>22%</td>
<td>9%</td>
</tr>
<tr>
<td>14</td>
<td>Non-Metal Minerals</td>
<td>5.12</td>
<td>4.04</td>
<td>1.88</td>
<td>2.82</td>
<td>5.45</td>
<td>8.93</td>
<td>17%</td>
<td>20%</td>
</tr>
<tr>
<td>1</td>
<td>Farm Products</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>5.56</td>
<td>9.57</td>
<td>8%</td>
<td>12%</td>
</tr>
<tr>
<td>29</td>
<td>Petro/Coal Products</td>
<td>0.29</td>
<td>0.34</td>
<td>0.95</td>
<td>0.39</td>
<td>3.34</td>
<td>3.96</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>40</td>
<td>Waste/Scrap</td>
<td>1.62</td>
<td>2.55</td>
<td>0.06</td>
<td>0.21</td>
<td>2.37</td>
<td>6.65</td>
<td>6%</td>
<td>12%</td>
</tr>
<tr>
<td>28</td>
<td>Chemicals</td>
<td>0.13</td>
<td>0.14</td>
<td>0.06</td>
<td>0.02</td>
<td>2.20</td>
<td>2.34</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>20</td>
<td>Food/Kindred</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.49</td>
<td>2.73</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>33</td>
<td>Primary Metals</td>
<td>0.23</td>
<td>0.39</td>
<td></td>
<td></td>
<td>1.03</td>
<td>2.20</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>32</td>
<td>Concrete/Glass etc.</td>
<td>0.68</td>
<td>0.75</td>
<td>0.01</td>
<td>0.01</td>
<td>0.45</td>
<td>0.13</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>All Other Commodities</td>
<td>0.02</td>
<td>0.03</td>
<td>0.13</td>
<td>0.07</td>
<td>1.16</td>
<td>1.95</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td><strong>Total Tons</strong> (millions)</td>
<td><strong>24.48</strong></td>
<td><strong>16.50</strong></td>
<td><strong>9.10</strong></td>
<td><strong>11.25</strong></td>
<td><strong>39.38</strong></td>
<td><strong>49.68</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: TRANSEARCH

The vast majority of Great Lakes volume has been driven by metallic and non-metallic minerals, while a broader mix of commodities has been present on the MRS. Although coal dominates, with 40 percent of MRS traffic in 2007, the remaining volume is distributed over a broad range of products, which signifies the value of barge shipping to a range of high-volume bulk freight shippers in the CMAP region. Commodity diversity is anticipated to increase through 2040, with the top two commodities, coal and metallic ores declining from more than 50 percent to 35 percent of all marine traffic. The largest categories of tonnage growth are expected to be waste/scrap and farm products, with the former increasing by 181 percent, the fastest rate of growth for any major commodity. Other commodities with substantial prospects for growth are farm products, food products, and primary metals.

Overall marine volumes are expected to increase modestly, from 73 to 77 million tons through 2040. While MRS traffic is expected to gain over 25 percent, Great Lakes shipping will drop by 33 percent. This is a continuation of a long-standing trend, which has been primarily caused by the decline of domestic heavy industry (particularly steel), seasonal closures, and size limitations to ocean going vessels in the St. Lawrence Seaway. It is unlikely that much, if any, of the traditional traffic will come back, but there may be potential opportunities for new uses, which are not indicated in the TRANSEARCH data. However, realizing
them would necessitate some fundamental changes in longstanding laws and regulations.

Fundamental trends in the industrial economy establish the underlying demand for marine shipping in the CMAP region. However, use of this mode will be substantially influenced by conditions of the infrastructure and service availability, all of which add up to fundamental economic considerations. Through the stakeholder interviews and other data collection, a number of key issues were identified as being particularly influential on the future viability of waterborne trade in the Chicago region.

**Condition of the Waterway Infrastructure**

Several of the facilities managed by the Army Corps of Engineers along the Illinois Waterway are in poor physical condition, and will eventually require substantial rehabilitation and/or replacement. The Army Corps’ 2004 plan for navigation improvements along the Upper Mississippi River System called for replacement of the LaGrange and Peoria Lock and Dam with modern 1,200 foot facilities. Construction of these new locks will help to ensure continued viability of the Illinois Waterway, by reducing maintenance-related delays and the most severe capacity bottlenecks along this route. Although the needs elsewhere are not as pressing, navigation facilities farther upstream in the CMAP region also require continued maintenance to ensure their efficient use.

**Controlling the Invasion of Non-Native Asian Carp**

As a result of global trade, a variety of non-native flora and fauna have appeared in the MRS and the Great Lakes. In some cases these have wholly displaced native species, and effected substantial changes in the ecosystem. The Great Lakes, which collectively form the largest body of fresh water in the world, are highly susceptible to environmental damage from non-native species. Most notably, the opening of the St. Lawrence Seaway brought zebra mussels into the Great Lakes, which substantially altered water conditions, displaced native species, and clogged facilities that rely on lake water for various purposes. More recently, the arrival of Asian carp in the MRS has raised grave concerns about their potential threat to the Great Lakes’ ecosystem and the economies that are sustained by it, including a $7 billion fishing industry. Asian carp now comprise as much as nine out of every ten pounds of living material found in infested sections of the Illinois River, with devastating effects on the native ecosystem.

Given the likelihood of similarly severe effects from an Asian carp infestation on the ecosystem of the Great Lakes, strenuous efforts have been underway for

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some time to prevent their migration from the Illinois Waterway into Lake Michigan. A key element of this initiative has been the construction of a $9 million electric fish barrier in Romeoville (along the Chicago Sanitary and Ship Canal) that was completed in April 2009, following a multi-year test of a smaller facility. If effective, this barrier would allow continued commercial and recreational use of the river and the connection between the MRS and the Great Lakes, albeit with some restrictions. Operations require an advance “bow boat” to ensure safe transit through the barrier. Although the USACE budget has covered the approximate $700 cost per tow of this service during the initial phases of operation, waterway users had to pick up the cost when the USACE budget ceased to cover this expense, a significant cost to industry.

Whether the fish barrier is actually a viable solution to preventing Asian carp from entering Lake Michigan has increasingly come into question. The reliability of the barrier has not been assured, and regular maintenance requires a complete shutdown. In December 2009, a fish kill conducted in conjunction with a maintenance shutdown revealed the presence of Asian carp beyond the barrier, and within only six miles of Lake Michigan. If the electric barrier proves to be ineffective, other alternatives will require stronger action, up to and including restoration of the natural separation between Lake Michigan and the MRS. Not only would such an action greatly impact the marine trade and its users in the region, it would also have substantial effects on Chicago’s waste and fresh water systems. Nevertheless, political and legal pressure from the Great Lakes states and provinces will require at least serious consideration of this alternative. In February 2010, the Federal government issued a control strategy for preventing entrance of Asian carp into the Great Lakes water system.

Support the Operational and Service Needs of Marine System Users

Fleeting (storage of barges) and other operational and service needs (such as cleaning, tug and barge repair) have to be satisfactorily accommodated in the region. Although some might consider these activities eyesores, they are a necessary part of marine operations. Operators have identified fleeting as a need in the region. Without the available space and permission for conducting these functions, the viability of marine services, particularly along the MRS will be diminished.

Loss of Waterside Real Estate to Non-Commercial Uses

The conversion of waterside real estate to uses that are not compatible with freight shipping affects the vitality of the sector, and may result in industries moving away from using the river for transport, and perhaps relocating within or even beyond the region. This is particularly the case with dockage that can

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accommodate deep draft ocean going vessels, which require far greater drafts than the typical nine foot channel depth available along the Illinois Waterway.

Minimize Operational Interference

Although less critical than other issues cited previously, operational interferences, such as lift bridge conditions, and their timely operation in accordance with Coast Guard regulations are an increasing irritant, as they increase travel times and reduce service reliability.

Maintain Intermodal Connectivity

The critical importance of intermodal connectivity to rail and truck goes without saying. Chicago has had great connectivity, particularly around the Calumet area, but it is slowly disappearing in other locations. This connectivity must be preserved.

7.4 AIR

Chicago is the premier gateway for freight in the Midwest. All modes converge to have access to major industry, manufacturing and agriculture. Although rail, water, and trucking are much more cost effective than air for moving freight, high value and time sensitive goods are moved via air through Chicago. The concentrated population in Chicago along with access to all the other modes of transportation continues to make Chicago the optimum location for a Midwest air hub.

The major driver for shipping freight via air is just-in-time inventory. Companies want to warehouse inventory for as little time as possible, especially when high-value products are concerned. The growth of the Internet has also created the demand for a supply chain that can get high-priced items delivered in 24 hours by using air and trucking. Many air shippers converge at O’Hare daily to provide just-in-time inventory to the companies in the Chicago area, including UPS, a shipping company with an airline; FedEx, an airline with a trucking company; and a range of freight and combination (freight and passenger) carriers.

Air freight is forecasted to grow 130 percent by weight between 2007 and 2040, according to TRANSEARCH data. The value of goods is anticipated to increase significantly over the next three decades as shown in Table 7.2 by the value per ton increasing by 229 percent and the total value of products shipped increasing more than sevenfold.
### Table 7.2  Air Freight Forecast, 2007 and 2040

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2040</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight – millions of tons</td>
<td>1.0</td>
<td>2.3</td>
<td>130</td>
</tr>
<tr>
<td>Value – billions of dollars</td>
<td>8.6</td>
<td>66.4</td>
<td>672</td>
</tr>
<tr>
<td>Value per ton – dollars per ton</td>
<td>8,869</td>
<td>29,142</td>
<td>229</td>
</tr>
</tbody>
</table>

Source: TRANSEARCH.

**Security Procedures**

Air freight operations will face major obstacles in the future largely related to new Transportation Security Administration (TSA) security procedures. The requirements for passenger airline cargo screening are set to increase dramatically, with 100 percent screening of cargo required by August 2010. Since February 2009, 50 percent cargo screening for passenger flights has been required.

The Coalition on Air Cargo Screening met in April 2009 to discuss issues faced in the industry. The Coalition’s major findings and recommendations were that three areas require immediate action to achieve the air cargo screening mandate:

1. Rapidly enlarge the number Certified Cargo Screening Facilities at large shippers, manufacturers, freight forwarders and other TSA-certified Indirect Air Carriers;
2. Provide for additional Federal funding or incentives (e.g., tax relief for privately purchased screening equipment) for all TSA-certified shippers, indirect air carriers and other qualified CCSP participants. This will enable small and medium-size companies to participate in the CCSP, and enable large companies to continue to invest in screening equipment and chain-of-custody protective measures; and
3. Swiftly expand the use of TSA-certified explosive-detection canines to screen large air cargo consolidations transported on passenger aircraft, and direct additional funding to the TSA proprietary canine cargo-screening program.

While meeting the passenger carrier air freight cargo deadline of August 2010 is the current focus, security for all air cargo will also be an issue for TSA moving forward.

**Fuel Prices and Operational Costs**

Another issue for air freight is fuel prices and operational costs. Major air carriers – passenger and cargo – use aircraft that are efficient in terms of the number of crew required and fuel consumption. However, many of the smaller carriers convert less efficient passenger aircraft to cargo aircraft. These older
aircraft burn more fuel and often need more crew members (three pilots vs. two pilots) than the more efficient aircraft. The volatility of fuel prices is a significant issue for air carriers. With oil prices exceeding $80 per barrel and showing no signs of decreasing, increasingly only high-value or perishable goods will be cost effective for shipment via air.

**New South Suburban Airport at Peotone**

One of the major constraints on air freight in the region is the lack of room for expansion at O’Hare. Peotone is not considered a prime location for passenger carriers to operate as they would not want to split their operations into two locations. However, movement of air cargo to a potential new location in Peotone could be an opportunity worth consideration for the region. Land is readily available for creating a state-of-the-art air cargo facility in the vicinity of the proposed Peotone Airport. Development of a new facility would provide the opportunity to incorporate elements to address security considerations as well as for processing and holding freight.

Noise abatement is always a key issue for air freight operations since flights usually depart late in the evening and arrive well before dawn. With so much land available and the ability to have a lower impact on residential areas than at O’Hare, location of a new air freight hub in Peotone could be beneficial for the region. Peotone also is a good location based on the existing and proposed intermodal yards in the Joliet area and the discussion of potential dedicated truck routes in the I-80 corridor or on a new Illiana corridor. Air traffic control issues also affect growth of air freight. Freight forwarders might embrace the new option due to the potential for more efficient operations away from O’Hare congestion. For example, UPS is operating a mini-hub out of Rockford, Illinois very successfully.

Given current economic conditions, air will not be the mode experiencing highest growth in the near term. However, given the number of freight forwarders in the region who depend on Chicago airports for high-value and time-sensitive products, air will continue to be an important option for goods movement.
8.0 Range of Policy Recommendations

8.1 POLICY NEEDS RELATED TO FRAMEWORK AND RESEARCH

A major component of the Regional Freight System Planning Recommendations Study has been the development of policy-level improvements that would work hand-in-hand with the operational and infrastructure improvements in addressing the freight system needs of the Chicago region. The policy-level recommendations, which are listed in Table 8.1, were developed to address the system needs and deficiencies that have been identified through the stakeholder outreach (Section 4.0) and data analysis (Section 5.0) components of the project. In addition, in some instances, implementation of the policy recommendations will facilitate operational and infrastructure improvements. Many of these recommendations are based on best practices that have been implemented to address similar freight system needs.

The proposed policies are targeted at addressing the vision of the region’s freight stakeholders in terms of planning for freight mobility. While the cost of implementing the policy recommendations may be considerably lower in comparison to their complementary operational and infrastructure improvement counterparts, the impacts are likely to be much broader. Timeframes for accomplishing the policy changes will vary significantly.

Pending reauthorization of a new transportation bill will likely have an impact on policies at the Federal level that regulate freight mobility. The new bill’s impacts could affect funding programs, as well as the planning and programming processes, which guide transportation investments across the nation. This reauthorization should be viewed as an opportunity to address national freight policy issues of particular interest to the Chicago region, and which the Chicago-area congressional delegation can support.

The follow sections summarize policy related needs that were identified through the stakeholder outreach and data analysis components of the project. These needs are grouped within the Regional Freight Framework Themes that are discussed in Section 3.0, including Economy, Industry Logistics Patterns, Freight Infrastructure, Commodity/Vehicle Traffic Flows, Organization and Public Policy. While overlapping with the Organization and Public Policy Theme, a sixth category, Environmental and Community Impacts, was added to highlight its importance.
Policy Needs: Economy

The Chicago metropolitan area has established itself as a national freight hub. The hub features six of the nation’s Class I railroads converging in the region, an extensive network of interstate highways supported by a complementary grid of arterial roadways, two major international airports, and water access to the Great Lakes and the Mississippi River system. While the Chicago region is taking advantage of its freight hub status to attract and retain business and industry, the region’s freight system must respond to the changing needs of these sectors as well as to the region’s changing demographics. Currently a significant portion of the cargo movements within the region simply pass through, without having an origin or destination in the Chicago metropolitan area. The region could more readily take advantage of its freight hub status by identifying and promoting value-added industries that would enable additional cargo movements to more clearly benefit the region’s economy.

Also of key importance to the region’s freight-related economic vitality is the availability of a logistics-skilled workforce. In order for the freight industry to prosper in the region, the labor force with interest in and the appropriate skills for logistics-related careers must be readily accessible. A major concern expressed by stakeholders was the lack of a trained workforce with these skills. This issue is common across several of the modes, including truck driver shortages (which occur more frequently during better economic times), as well as technically trained railroad employees. For the air cargo mode, which experienced a high turnover rate in recent years, the issue has recently been addressed through a training program for the air cargo workforce now offered by Chicago’s City Colleges.

Policy Needs: Industry Logistics Patterns

While the Chicago region already serves as a national hub for goods movement, it is likely that this trend will continue and intensify in the future. It is important that the region is able to adapt to this expanded role. With the growing volume of cargo movements within the region, it is essential that logistics patterns are conducive to providing better freight services that are responsive to the needs of both the industry sectors and the communities which they serve.

In recent years, there has been widespread development of ancillary warehouse and distribution facilities in the Chicago region, likely due to growing containerized imports and the region’s favorable linkages via rail and highway to the nation’s seaports. This concept was discussed in an article in the Journal of Real Estate Portfolio Management. A major concern expressed by stakeholders is that much of this development is currently being pursued by individual

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municipalities in a somewhat ad hoc manner, with a lack of regional coordination. Opportunities exist for more focused planning at the regional level, which could help minimize the cumulative impacts of these types of developments, resulting in benefits to shippers, haulers and an enhanced quality of life in the adjacent neighborhoods.

The Chicago region has also experienced significant growth in intermodal activities in recent years with the development of a number of intermodal facilities located primarily in the south and southwest suburbs. Most of these have been developed outside of the urban center on the fringes of the metropolitan area. While these fringe locations have allowed for expansion and the accompanying warehouse and distribution center development, they have resulted in increased drayage distances, a concern expressed by some stakeholders who favored revitalization of the Cook County rail yards as opposed to developments at the urban fringe.

Policy Needs: Freight Infrastructure

As the region’s freight hub status continues to grow, it will be essential for its freight-supporting infrastructure to keep pace. While the region is well served by a comprehensive highway network that includes nine Interstate highways, most of these highways are operating under congested conditions during peak periods of the day, and most are carrying very high truck volumes. The resulting delay therefore not only affects passenger vehicles, but also causes increased costs for doing business in Chicago, affecting the region’s economic competitiveness.

On the rail side, while the region is traversed by six of the nation’s seven Class I Railroads, the region’s rail network is plagued with numerous chokepoints resulting in significant delays to both passenger and freight rail movements. While the region’s CREATE program, when fully funded and implemented, will alleviate many of these chokepoints, additional improvements will still be necessary in order to ensure that the rail system can efficiently handle future projected rail volumes.

In regard to marine freight movements, while the Chicago region has marine access to both the Great Lakes and Mississippi River system, growth in the water freight industry is hindered by a number of infrastructure issues in the region. The most significant of these water freight infrastructure issues is related to maintenance of the region’s locks. The poor condition of these locks often results in significant delays in the movement of marine cargo through the region.

In addition to the infrastructure investments that are needed to maintain and increase capacity for the individual modes discussed above, investments are also needed to enhance the linkages between modes. In the Chicago region, these linkages are critical to the efficient movement of freight not only at the local level, but due to its hub status, at the national level, as well. In particular, stakeholders have identified the poor level of connectivity between rail lines and
marine ports as a deterrent to intermodal shipments between these two modes. In addition, stakeholders also expressed concern about the lack of connectivity between air and highway modes at O'Hare International Airport. Cargo facilities are concentrated on the west side of the airport, while major highway access is on the east side.

**Policy Needs: Commodity/Vehicle Traffic Flows**

Congestion is currently a significant cause of delay for both passenger and freight movements through the region. As population and goods movements are expected to increase, alleviating this congestion constitutes a great challenge for the region. On the highways, congestion may be of a recurring nature (resulting from traffic volumes exceeding capacity) or of a non-recurring nature (resulting from incidents, construction or other isolated events). On the rail lines, delays frequently result from conflicts between passenger and freight trains or grade crossing conflicts (at both rail-to-rail and highway-to-rail grade crossings). In particular, stakeholders expressed concern regarding rail delays entering intermodal facilities and yards, which frequently cascade into highway delays when grade crossings are blocked by trains waiting to enter these facilities.

From a motorist perspective, delays result in increased travel time, lost productivity, and general frustration. From a freight mobility perspective, in addition to the impacts faced by motorists, delays are also a significant hindrance to on-time deliveries. With increasing emphasis on just-in-time deliveries, it is difficult for haulers to predict delivery times when traveling on the area’s congested roadways.

Stakeholders recommended a variety of strategies that would help alleviate the impacts of the region’s congested roadways for both motorists and freight movements. In particular, an expanded advanced traveler information system, reporting area delays would enable routing decisions to be modified well in advance of reaching a potential bottleneck. Stakeholders also suggested the implementation of both congestion management strategies and travel demand management strategies as a means of reducing congestion and improving freight operations.

**Policy Needs: Organization & Public Policy**

Encompassing an area of 4,071 square miles, the seven-county Chicago region is diverse in nature, with the City of Chicago as its urban core. While this area is large and diverse, it is necessary for the region’s freight stakeholders to speak with a unified voice and plan for the good of the region. The Chicago Metropolitan Agency for Planning (CMAP) has an established Freight Committee, an important facilitator for addressing freight-related issues. This committee brings together the region’s freight stakeholders from the public and private sectors to discuss issues related to freight movement by all modes within the region and to make recommendations to CMAP’s Policy Committee. In taking the regional planning and coordination responsibility a step further,
stakeholders have suggested the possible establishment of regional Freight Authority within an established agency to coordinate freight-related investments and community impacts, in conjunction with supporting the regional freight policy. Among the charges of such an Authority would be addressing potential funding sources for freight-related improvements, such as fuel taxes, tolling or public-private partnerships. In addition, stakeholders expressed a desire for a better method of measuring performance of proposed freight projects in order to have more consideration of freight factors in the planning process.

During the stakeholder interview process, a number of cross-jurisdictional issues surfaced. One of those issues discussed in the past involves municipal delivery time restrictions which limit the time of day when truck deliveries are allowed in certain areas, prohibiting deliveries during the nighttime and early morning hours. This restriction forces deliveries to a number of locations (particularly grocery stores and other retail establishments) to the morning rush hour, in order to restock their shelves before the peak shopping hours begin. Due to a lack of truck parking close to these delivery locations, truck drivers are required to be on the highway during peak commuting periods, contributing to and being impacted by congestion, and in some cases (on the Tollway) paying higher tolls. There are also safety implications when truck deliveries are being made during the time period when school children are walking to school.

An issue related to the delivery time restriction issue mentioned above is the region’s truck parking deficit. Parking around delivery locations is often limited, leading to the congestion and safety issues mentioned above. With the new regulations that limit hours of service that commercial drivers are allowed to operate their vehicles, drivers are often forced to park in unsafe locations, such as along highway shoulders and ramps, in order to avoid driving while fatigued. Areas in particular need of truck parking are located around intermodal facilities, where truckers need a place to do paperwork, or layover prior to entering the facility. There is also a need for amenities at the truck parking areas, such as electrical hookups to avoid idling engines and their environmental impacts.

Trucking industry stakeholders also mentioned their concerns for truck lane restrictions on many of the region’s highways, specifically the express lanes on the Dan Ryan Expressway, as well as differential speed limits for trucks on many roadways. In addition, they requested construction zone management technique to reduce freight delay. And, finally, the inconsistencies in weight restrictions and permitting policies among states and in some cases among adjoining communities result in circuitous routing and inefficiencies for truck drivers.

On the rail side, stakeholders see a strong need for regional support of the CREATE program since this addresses many of the major rail bottlenecks and capacity constraints in the region.
Policy Needs: Environmental & Community Impacts

While the freight industry continues to grow in the Chicago region, it is becoming more and more important to plan proactively to minimize potential conflicts between freight-oriented development and the quality of life within the communities. By addressing potential issues through proactive and comprehensive planning at the regional level, such community concerns as conflicting land uses and environmental impacts can be minimized. Public and private stakeholders should be a part of the region’s freight-planning process in order to ensure that all voices are heard.

As the region’s intermodal facilities continue to develop and expand, stakeholders have identified a need for more coordinated planning efforts to address potential impacts not only within the communities where these facilities are located, but more importantly to the surrounding communities, as well. Concerns were raised regarding increased wear and tear on the roadways serving the intermodal facilities, due to the increased heavy truck traffic, as well as congestion issues from the increased volumes of traffic. In addition, trains awaiting entrance into these facilities often block at-grade crossings, tying up traffic and hindering access by emergency response vehicles.

With the heavy volumes of train traffic in the region, communities have expressed concern regarding noise, the dangers of hazardous materials being transported through their neighborhoods, and grade-crossing safety, as well as conflicts with commuter trains. A particular concern has been raised due to the increased train volumes on the CN following acquisition of the EJ&E. While the noise issue can be addressed through the implementation of “quiet zones”, the required safety mitigation to compensate for the absence of train whistles is often an expense that is difficult for the municipalities to bear.

The noise concern expressed by stakeholders was not limited to train noise. The communities surrounding O’Hare International Airport also expressed noise concerns related to air cargo flights, since most of these flights occur during the nighttime hours.

Addressing truck noise is an important component of any strategy to increase night-time truck operations. Communities must be assured that truck noise can and will be controlled before allowing trucks to operate overnight in areas near residential areas.

Another important issue that needs to be addressed is the air pollution from freight vehicles. Many freight vehicles are diesel-powered, and result in a high level of particulate pollution. While new engines are required to emit lower levels of particulates, many older, dirtier engines will remain in service for decades and may need to be addressed.
8.2 METHODOLOGY FOR SELECTION

The list of policy options that have been developed for this study are grouped within the study’s six “Regional Freight Framework Themes”: Economy; Industry and Logistics Patterns; Freight Infrastructure; Commodity and Vehicle Traffic Flows; Organization and Public Policy; and Environmental and Community Impacts, based on the needs which each would address. While many of the policy options could easily fit into more than one of these themes, to avoid redundancy, only the one with the apparent strongest match was identified.

The policy options shown in Table 8.1 were evaluated in accordance with a set of performance measures which included the following: Accessibility, Economic Development, Mobility, Safety, and Environment/Community. Each recommended policy was evaluated on its ability to address each of these measures. The results of this exercise were then presented to the Freight Committee. In an exercise at the Freight Committee meeting on 11/16/09, members and other stakeholders in attendance were asked to prioritize the policy recommendations on a scale of low, medium, or high priority. During the same exercise, participants were asked to phase the recommendations (short-, mid-, and long-term), based on the most optimistic timeframe in which it could be implemented. Finally, the participants were charged with identifying a recommended lead agency who would serve as the “champion” in overseeing its implementation. However, most of the policy options will require the collaborative work of numerous agencies and stakeholders seeing them through to fruition. The results of this exercise are shown in Section 8.3 which discusses each of the individual policy recommendations.
### Table 8.1  Index of Policy Recommendations by Theme

<table>
<thead>
<tr>
<th>Ref</th>
<th>Policy Recommendation</th>
<th>Pg. No.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Policy Theme Bundle:  Economy</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Through partner agencies, implement projects and operations strategies that address the freight infrastructure and operations needs and deficiencies for growing and strong industries in metropolitan Chicago to facilitate industrial retention and expansion</td>
<td>8-10</td>
</tr>
<tr>
<td>2</td>
<td>Identify and publish information about the region’s freight transportation system that would attract manufacturers, distributors, service providers, and freight handlers who might be interested in locating in the Chicago region.</td>
<td>8-10</td>
</tr>
<tr>
<td>3</td>
<td>Identify and enhance existing logistics-related training &amp; education opportunities and encourage additional programs, as appropriate for developing and sustaining logistics related workforce</td>
<td>8-11</td>
</tr>
<tr>
<td></td>
<td><strong>Policy Theme Bundle:  Industry Logistics Patterns</strong></td>
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<td>4</td>
<td>Identify, assess and implement freight corridors &amp; facilities of regional significance, including clustering of warehousing, distribution and other freight-related centers, based on freight O-D patterns</td>
<td>8-12</td>
</tr>
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<td>5</td>
<td>Identify, assess and implement opportunities for corridor preservation</td>
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<td>6</td>
<td>Identify and promote good practices to facilitate freight movements and mitigate impacts in a variety of land use and development environments</td>
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<tr>
<td></td>
<td><strong>Policy Theme Bundle:  Freight Infrastructure</strong></td>
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<td>7</td>
<td>Identify opportunities for dedicated freight corridor systems (truckways, truck-only lanes, dedicated NHS connectors, Illiana Expressway, rail linkages)</td>
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<td>8</td>
<td>Identify investment options in alternative modes and intermodal facilities to encourage diversion from congested highway freight corridors</td>
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<tr>
<td>9</td>
<td>As CREATE Program implementation moves toward completion, work toward a CREATE II program based on the vision of continuing to enhance the main-line rail system so that it has the capacity to efficiently handle potential future traffic loads and meshes with an efficient system for local pick-up and delivery</td>
<td>8-17</td>
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<td></td>
<td><strong>Policy Theme Bundle:  Commodity / Vehicle Traffic Flows</strong></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Reduce empty container moves</td>
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<tr>
<td>11</td>
<td>Manage the travel demand of passenger vehicles to facilitate freight movements, as well as incorporating designs that are conducive to more efficient freight and passenger movements (traffic management)</td>
<td>8-18</td>
</tr>
<tr>
<td>12</td>
<td>Identify opportunities for reducing tractor (bobtail) and chassis vehicle miles traveled per container move</td>
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</tbody>
</table>
Table 8.1  Policy Recommendations by Theme (continued)

<table>
<thead>
<tr>
<th>Ref</th>
<th>Policy Recommendation</th>
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<tbody>
<tr>
<td></td>
<td><strong>Policy Theme Bundle: Organization and Public Policy</strong></td>
<td>8-20</td>
</tr>
<tr>
<td>13</td>
<td>Establish CREATE counterpart for trucking industry which could include policy options to enhance the movement of cargo by truck</td>
<td>8-20</td>
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<tr>
<td>14</td>
<td>Establish a governance structure, such as a Freight Authority, to identify issues, guide investments and advocate on behalf of the region through public outreach and education, promoting the Chicago economy and protecting the public interest</td>
<td>8-21</td>
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<tr>
<td>15</td>
<td>Promote the Chicago region as a development center for freight tracking and freight data-sharing technologies, encourage private sector innovation</td>
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<td>16</td>
<td>Include freight-related performance measures in project evaluation process to ensure the consideration of freight enhancing projects in the programming process</td>
<td>8-23</td>
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<tr>
<td>17</td>
<td>Adopt innovative strategies to better match new and available funds with freight system needs</td>
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</tr>
<tr>
<td>18</td>
<td>Implement the CREATE Program</td>
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<td></td>
<td><strong>Policy Theme Bundle: Environmental and Community Impacts</strong></td>
<td>8-26</td>
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<tr>
<td>19</td>
<td>Promote lower-emission freight modes and technologies (e.g. GenSet locomotives)</td>
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<td>20</td>
<td>Identify and implement design features to control freight-related noise</td>
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<td>21</td>
<td>Develop a process for identifying development opportunities, brownfield re-use</td>
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<td>22</td>
<td>Support City of Chicago industrial corridor designations of Planned Manufacturing Districts</td>
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<tr>
<td>23</td>
<td>Promote safety programs such as “Operation Lifesaver” and “No Zone”</td>
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<tr>
<td>24</td>
<td>Address the higher wear and tear on freight-impacted road surfaces with increased maintenance efforts</td>
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</tr>
<tr>
<td>25</td>
<td>Improve both rail and truck access into intermodal facilities to reduce community impacts</td>
<td>8-31</td>
</tr>
<tr>
<td>26</td>
<td>Accommodate freight in ways conducive to intermodal passenger transportation, such as pedestrian, bicycle, passenger vehicle, commuter rail, and inter-city passenger rail, including crossings and shared-use corridors</td>
<td>8-32</td>
</tr>
</tbody>
</table>
8.3 **POLICY BUNDLES**

*Regional Framework Theme: Economy*

**Policy Recommendation #1**

*Through partner agencies, implement projects and operations strategies that address the freight infrastructure and operations needs and deficiencies for growing and strong industries in metropolitan Chicago to facilitate industrial retention and expansion.*

The goal of this recommendation is to foster economic growth in the metropolitan area through the retention and expansion of existing freight-dependent industries by addressing their transportation, logistics and distribution needs. This will be done by taking advantage of the region’s existing transportation systems and expanding and/or enhancing them to address the needs of these industries.

- Priority: High
- Timeframe: Short-term
- Implementing Agency: CMAP (Facilitator for all partner agencies)
- Action Items:
  - Work with EDCs and CMAP Freight Committee to identify and monitor on an ongoing basis specific infrastructure and operational needs of the region’s freight dependent industries.
  - Incorporate the freight-related needs of existing industries into the project identification and selection process.

**Policy Recommendation #2**

*Identify and publish information about the region’s freight transportation system that would attract manufacturers, distributors, service providers, and freight handlers who might be interested in locating in the Chicago region.*

The Chicago region has a rich transportation system with global access across multiple transportation modes. This system is attractive to many companies in need of such access. The region can benefit from identifying and publishing summary information about the transportation system that might convince many companies to locate here. This recommendation leverages our transportation system strengths into increased economic development and prosperity.

- Priority: High
- Timeframe: Short-term
- Implementing Agency: CMAP, EDCs
• Action Items:
  - CMAP should work with EDCs to identify transportation system data and information important to various industries.
  - CMAP should gather and publish such data, including within the Regional Freight Snapshot project, and make it available to EDCs.
  - Information about the strengths of our freight system should be distributed in brochure format and on the Web for use on demand by EDCs and economic development prospects.

Policy Recommendation #3

*Identify and enhance existing logistics-related training & education opportunities and encourage additional programs, as appropriate for developing and sustaining logistics related workforce.*

In order to sustain the freight-related businesses and industries that currently exist in the region, while encouraging new ones to locate within the region, it is essential that employers have access to a large pool of potential employees who have an interest in these types of careers. At the same time it is important for these employees to be appropriately trained in the skills required for freight-industry jobs. For example, the shortage of truck drivers has been consistently ranked by the American Transportation Research Institute as one of the top ten issues for that industry. In addition, stakeholders have expressed a concern regarding the shortage of technically trained railroad employees. With the anticipated growth in both of the modes, the need for skilled employees can be expected to increase in the near future.

• Priority: High
• Timeframe: Short-term
• Implementing Agencies: State, University/IDOT link, CMAP, tradeshow, Federal Transportation Bill

• Action Items:
  - Colleges and Universities should work together with freight-related industries (railroads, trucking, air cargo, and marine freight industries) to match training needs to existing educational programs, identifying gaps that exist, and develop training programs to fill these gaps.
  - Freight industries should market freight-related careers by sponsoring activities at high school and college career fairs and other recruiting events. Establish a Speakers’ Bureau to provide presentations at these activities.
  - Take advantage of existing freight-related training programs offered by Federal Highway Administration, National Highway Institute, National
Cooperative Highway Research Program, National Cooperative Freight Research Program and Transportation Research Board.

- Owing to its relationships across many disciplines and industries, CMAP should assure that various stakeholders convene, and should adopt a role facilitating this process.

Regional Framework Theme: Industry Logistics Patterns

Policy Recommendation #4

**Identify, assess and implement freight corridors & facilities of regional significance, including clustering of warehousing, distribution and other freight-related centers, based on freight O-D patterns.**

There are numerous advantages of clustering freight corridors and facilities, to both the public and private sectors, including shippers, haulers, freight-dependent industries, and communities. The Center for Neighborhood Technology (CNT) has done significant research on this concept, known as cargo-oriented development. From an industry perspective, there are benefits of scale and proximity, such as the advantages of having similar freight-dependent businesses close by, having access to multiple freight modes, and having access to a large labor pool.\(^{10}\) On the public sector side, the CNT has identified such benefits as maximizing freight movements by train (less polluting and more energy-efficient), reducing the length of intraregional truck movements, reducing congestion and air pollution, and helping target investment and job growth to those communities with an available skilled labor force.\(^{11}\) Toward this goal of clustering freight-related developments, the South Suburban Mayors & Managers Association (SSMMA) and the Chicago Southland Economic Development Corporation (CSEDC) have identified and are currently promoting the I-80 East Logistics Corridor which traverses southern Cook and northern Will Counties between I-55 and the Illinois/Indiana State Line.

- Priority: High
- Timeframe: Short, Mid and Long-term
- Implementing Agencies: Freight Authority, Local EDCs, MMAs
- Action Items:


\(^{11}\) Center for Neighborhood Technology.
- Continue to promote the I-80 East Logistics Corridor as a key regional logistics corridor.
- Expand and implement the CNT cargo-oriented development tool to identify and promote other potential logistics corridors for development in the Chicago region.

Policy Recommendation #5

**Identify, assess and implement opportunities for corridor preservation.**

The State of Illinois currently has in place a Corridor Protection Statute which may be utilized as a means of preventing the further development of parcels within an identified right-of-way for a transportation improvement. The statute requires property owners to notify the DOT of any improvements to land or structures and give the DOT an opportunity to purchase or acquire the land. The Corridor Protection Statute is a powerful tool for preserving threatened right-of-way for a project until a point in time when construction is ready to commence and project funding has been secured.

- Priority: High
- Timeframe: Short to Mid-term
- Implementing Agencies: CMAP, IDOT
- Action Items:
  - Take advantage of the State of Illinois’ Corridor Protection Statute to preserve rights-of-way for projects that are identified to have significant future freight-related benefits and for which the project’s development has progressed to a point where the right-of-way needs have been identified. For example, begin to identify and preserve right-of-way to provide a by-pass route south of the City of Chicago that could be used for traffic moving through the region.

Policy Recommendation #6

**Identify and promote good practices to facilitate freight movements and mitigate impacts in a variety of land use and development environments.**

As freight-related industries continue to develop in various portions of the region, it is essential that potential land use conflicts be minimized. The development of commercial and industrial land uses (which are generally freight dependent) is usually accompanied by a need for related industries such as terminals, repair facilities and warehousing /storage locations. But as these types of land uses continue to grow in a particular area, there is often a conflict with existing residential communities, particularly related to noise, truck traffic, safety, aesthetics, and other quality of life issues. In order to minimize and
mitigate these potential impacts, it is important to plan proactively at the local and regional levels through cross-jurisdictional land-use planning and coordination, as well as developing partnerships between the public and private sectors. An example of existing efforts toward this goal in the region is the Will County Model Ordinance Regulating the Location and Use of Cargo Container Facilities for Governmental Units within Will County. This model ordinance was prepared as a best practices guideline for jurisdictions within Will County for ensuring compatibility between cargo container facilities, related developments and other land uses within the county to minimize potential negative impacts.

CMAP currently has in place a process for identifying and reviewing Developments of Regional Importance (DRI) which was enabled by the Illinois General Assembly, Public Act 095-0677. The process is in place for a two year trial period when ends on July 31, 2011. The purpose of the DRI initiative is to foster regional coordination in planning for and implementing large-scale developments with the potential to create both benefits and impacts at the regional level. The review process is focused on ensuring that these developments occur in a manner that is consistent with regional goals.

- Priority: High
- Timeframe: Short to Mid-term
- Implementing Agencies: CMAP, IDOT, Municipalities
- Action Items:
  - Encourage involvement and support by local jurisdictions of the CMAP process for identifying and reviewing freight-related Developments of Regional Importance (DRI). The DRI review process establishes a framework for reviewing proposed large-scale developments from a regional perspective, providing an opportunity for coordination among jurisdictions to assess the impacts on regional goals.
  - Using the Will County Model Ordinance as an example, work through Mayors & Managers Associations and Councils of Government to develop similar ordinances to encourage the incorporation of freight-related impact mitigation measures into land use plans.
  - Encourage multi-jurisdictional coordination and review process for development and expansion of proposed intermodal facilities, to ensure that benefits and impacts are addressed from a regional perspective.
Regional Framework Theme: Freight Infrastructure

Policy Recommendation #7

Identify opportunities for dedicated freight corridor systems (truckways, truck-only lanes, dedicated NHS connectors, Illiana Expressway, rail linkages).

This policy recommendation focuses on providing freight-dedicated facilities in the region, resulting in the separation of freight and passenger movements. A number of potential dedicated facilities have been studied in the past, including the Mid-City Freightway and dedicated truck-only lanes on the proposed Illiana Expressway. Advantages of these separated facilities would include safety enhancements through separating large trucks and passenger vehicles, efficiency in moving cargo by avoiding certain corridors that are congested due to peak hour passenger vehicle congestion, and maintenance considerations which would allow the specific infrastructure enhancements (such as pavement design, geometrics, sight distance and land widths) that are required for large trucks to be focused on these dedicated facilities. In addressing the dedicated freight facilities, it will be important to garner support from local agencies in localities where arterials join one of the designated facilities in order to address potential impacts to both local infrastructure and quality of life.

A specific area for potential dedicated freight corridors would be the linkages between the region’s intermodal facilities. Stakeholders have indicated that steel-wheel transfers are often not feasible for cross-town moves. Truck route connections on rail or public property between these facilities would facilitate drayage movements while limiting increased truck traffic on local streets.

In addition to the dedicated truck facilities that have been mentioned, the region could also benefit from direct rail linkages between railroad lines to facilitate connections between eastern, western, Canadian and short-line carriers within the Chicago region, thus alleviating the need for rubber-tire transfers of cargo between rail lines.

- Priority: High
- Timeframe: Short-term
- Implementing Agencies: CMAP, Freight Authority, CDOT, IDOT, FHWA, ISTHA with involvement from railroads/FRA, counties, and local supporting agencies, especially where local arterials meet the facility
- Action Items:
  - Identify opportunities to incorporate dedicated freight components into ongoing corridor studies, such as the Illiana Expressway, I-55, Mid-City Freightway and other future studies.
  - Promote better coordination among rail carriers by creating truck routes on rail or public property that would be used for drayage between...
neighboring intermodal terminals so as to limit such movements on local streets.

- Begin a dialogue between railroads, local and regional agencies and private entities to identify potential opportunities for rail linkages between carriers.

**Policy Recommendation #8**

*Identify investment options in alternative modes and intermodal facilities to encourage diversion from congested highway freight corridors.*

As the volume of cargo increases both at the national and regional level, an increased burden will be placed on freight-carrying infrastructure across all modes. In fact, freight tonnages are expected to nearly double in the United States between 2004 and 2035, which will certainly be felt in the Chicago region due to its hub location. A recent study for the Association of American Railroads has indicated that in order for the nation’s Class I Railroads to maintain their market share while operating at current service levels over the next 30 years, an investment of over $148 billion in existing infrastructure will be required. Any growth that cannot be handled by the railroads or other non-highway modes will fall upon the roadways, where trucks are already competing with passenger vehicles for limited capacity. This policy recommendation is targeted at diverting freight movements from the congested roadways through investments in alternative modes and intermodal facilities.

- Priority: Medium
- Timeframe: Long-term
- Implementing Agencies: Port Authority, or City/State/Maritime/AAR/Airport Authority
- Action Items:
  - Identify potential opportunities for diversion of truck cargo to rail, water and air modes.
  - In conjunction with opportunities for diversion to non-highway modes, identify required infrastructure investments for increasing capacity on these modes and potential funding sources.
Policy Recommendation #9

As CREATE Program implementation moves toward completion, work toward a CREATE II program based on the vision of continuing to enhance the main-line rail system so that it has the capacity to efficiently handle potential future traffic loads and meshes with an efficient system for local pick-up and delivery.

The Chicago Region Environmental and Transportation Efficiency Program (CREATE), when completed, will make significant progress toward increasing the efficiency of the freight rail system in the Chicago region, relieving numerous conflicts between freight and commuter rail (resulting in significant time savings for the region’s commuters), and improving the quality of life for those who live and work in the metropolitan area. CREATE II would take advantage of the existing framework that has been established for CREATE in continuing to identify and implement rail system improvements to ensure that the efficiency of the rail system continues to improve while carrying the increased cargo tonnages that are projected for the future.

- Priority: Medium
- Timeframe: Mid to Long-term
- Implementing Agencies: CMAP, CDOT, IDOT, Railroads
- Action Items:
  - Bring all major mainline routes traversing the Chicago region up to higher operating standards in order to improve operating speeds, including: multi-tracking lines, eliminating clearance or axle load restrictions (on the lines or the bridges); limiting grade-crossings; enhancing easy, unrestricted access to the region’s major terminals; and ensuring sufficient siding tracks and buffer storage facilities to allow trains to move off the mainline with minimal disruption to highway traffic or to other rail traffic in the event of rail congestion, accidents, severe weather, or other conditions that prevent trains from entering terminals.
  - Increase terminal capacity: maintain sufficient terminal capacity to handle potential increases in traffic volume, including sufficient facilities for traffic originating or terminating in the region as well as sufficient facilities for traffic that must be classified or interchanged as it moves through the region.
  - Expand use of information technology to better coordinate movements through the region.
  - Reduce road user delay at highway-rail grade crossings, through separations (in addition to CREATE projects), if necessary.
Regional Framework Theme: Commodity/Vehicle Traffic Flows

Policy Recommendation #10

Reduce empty container moves.

Historically, managing containers has been a major challenge for the railroad industry. Some of this problem has been alleviated for containers suitable for food shipments, the extent of the problem remaining is unclear. This policy recommendation focuses on identifying ways to balance inbound and outbound container movements within the Chicago region, which in turn will have an impact at the national level.

- Priority: Low
- Timeframe: Long-term
- Implementing Agencies: CMAP, Federal Transportation Bill, private railroads, EDCs
- Action Items:
  - Improve regional data collection and modeling of the freight system to better understand this issue.
  - Identify locations in the region where inbound or outbound empty container moves are occurring.
  - Facilitate collaboration between shippers and logistics providers to minimize empty container moves by coordinating needs and better utilizing empty container capacity.
  - Establish regional database for tracking empty container locations and availability.

Policy Recommendation #11

Manage the travel demand of passenger vehicles to facilitate freight movements, as well as incorporating designs that are conducive to more efficient freight and passenger movements (traffic management).

With the volumes of both passenger vehicles and freight carriers on the region’s highways projected to grow significantly in the future, there will be increased competition between trucks and cars for limited capacity on the region’s highways. And if any of the other modes are unable to maintain their market share, the excess burden will likely fall onto the highway mode, increasing the number of freight-hauling trucks even more. The focus of this policy recommendation is to begin identifying options for managing the demand of passenger vehicles, in addition to identifying a more efficient means of managing the shared use of the roadways by trucks and autos.

- Priority: High
- Timeframe: Mid to Long-term
- Implementing Agencies: CMAP, IDOT
- Action Items:
  - Reduce passenger vehicle demand by promoting the use of transit and carpooling throughout the region.
  - Identify potential roadways in the Chicago region where truck-only lanes could be considered, both as an enhancement to existing roadways and for new roadways, such as the Illiana Expressway. Explore the feasibility of implementing this option.
  - Explore the feasibility of implementing congestion pricing strategies to reduce the peak hour demand by passenger vehicles. (Because many delivery vehicles are on the roadways during peak hours, they often compete with peak hour commuting traffic for capacity on the roadways.)
  - Promote ITS strategies to provide real-time traveler information as a means of encouraging and facilitating diversion to alternate routes during congested periods, or during non-recurring incidents.

**Policy Recommendation #12**

*Identify opportunities for reducing tractor (bobtail) and chassis vehicle miles traveled per container move.*

In addition to being inefficient, the movement of single tractors (bobtails) and chassis without having loaded trailers attached is also more difficult from a commercial driver’s perspective. Bobtail movements result when a trailer is delivered (or is transferred to another mode) and another one is not available for pick-up from the same location. This policy recommendation is focused on identifying a means of balancing trailer deliveries with pick-ups in order to avoid having a tractor or chassis dead-head without a trailer to another facility.

- Priority: Low
- Timeframe: Long-term
- Implementing Agencies: CMAP, Federal Transportation Bill, EDCs
- Action Items:
  - Improve regional data collection and modeling of the freight system to better understand this issue.
  - Facilitate collaboration between shippers and trucking companies to minimize bobtail movements by coordinating trailer pick-ups and deliveries in order to more efficiently utilize tractor and chassis capacity.
  - Establish regional database for matching container pick-ups and deliveries.
Regional Framework Theme: Organization and Public Policy

Policy Recommendation #13

Establish CREATE counterpart for trucking industry which could include policy options to enhance the movement of cargo by truck.

The Chicago Region Environmental and Transportation Efficiency Program (CREATE) is a public-private partnership between the railroads and numerous public agencies, established with the goal of increasing the efficiency of the region’s freight and commuter railroads, reducing conflicts between them, while at the same time improving the quality of life within the Chicago region. The goal of this policy recommendation is to create a similar program for the trucking industry. This new entity would use the example of the existing CREATE program, bringing together public and private sector stakeholders to identify operational and capacity improvements that would benefit the trucking industry and reduce conflicts between passenger and cargo vehicles. Like its rail counterpart, this program would benefit not only local commerce, but would also have a positive impact on commerce at the national level by helping to alleviate bottlenecks on the region’s highway network. In addition, community benefits would include reduced congestion on the area’s roadways, safety benefits, emissions reductions, and more efficient deliveries to local suppliers. Also following the model of its rail counterpart, this program could benefit through public-private funding partnerships and the establishment of a Freight Authority.

- Priority: High
- Timeframe: Short-term
- Implementing Agencies: CMAP, Freight Authority, with PPPs among city, state, trucking association, etc.
- Action Items:
  - Establish regional transportation operations coalition with freight system participation.
  - Identify potential locations and funding sources for expanded truck parking/rest areas with appropriate amenities to enable compatibility with surrounding land uses. An initial task for this action item might include a study to determine where current truck parking deficiencies exist in the region.
  - Manage truck delivery times for regional efficiency.
  - Establish centralized CBD freight distribution nodes to limit the number and size of delivery trucks within the CBD.
  - Explore changes to TS&W limits, allowing higher productivity vehicles on Illinois highways, weighing economics & safety.
Expand and enhance the truck route system in the metro area, integrating other aspects of the regional truck system planning program to optimize the system.

Develop a broadly available freight planning geodatabase for use by public and private stakeholders to identify regional freight system needs and to coordinate action through information sharing and mutual cooperation. The planning geodatabase would include such items as local and state truck routes, clearance issues, weight restrictions, traffic generators, congestion, parking, and rest areas.

Develop and apply Intelligent Transportation Systems infrastructure on freight system facilities to improve system performance and improve freight handling efficiency.

Review the necessity and utility of truck lane restrictions; implement modifications, as appropriate.

Policy Recommendation #14

Establish governance structure, such as a Freight Authority, to identify issues, guide investments and advocate on behalf of the region through public outreach and education, promoting the Chicago economy and protecting the public interest. The Freight Authority would be housed within an existing agency.

The governance structure proposed in this policy recommendation would serve as an oversight agency for coordinating freight issues and investments in the Chicago region, bringing together the public and private sectors, working together toward accomplishing goals of mutual interest and benefit to the region. In its oversight capacity, the proposed body would have the authority to collect revenue (such as user fees or tolls) and issue bonds. The agency’s oversight responsibilities would include all freight modes, as well as freight-related economic development opportunities within the region.

- Priority: High
- Timeframe: Short to Mid-term
- Implementing Agencies: CMAP (facilitator for all partner agencies)
- Action Items:
  - Explore legislative requirements for creating a regional freight governance structure, such as a Freight Authority for the Chicago region.
  - Define responsibilities and governance.
  - Form a committee to work with legislators to garner support for creating the regional Freight Authority, providing assistance with drafting proposed legislation.
Policy Recommendation #15

Promote the Chicago region as a development center for freight tracking and freight data-sharing technologies, encourage private sector innovation.

The Chicago region’s national freight hub status brings with it opportunities for collecting and sharing freight-related data, which can then be used to market the region to industry, developers and freight providers. A number of activities have already been initiated toward accomplishing this recommendation, including the Center for Neighborhood Technology’s Cargo-Oriented Development Tool\(^\text{12}\) (see Policy Recommendation #4) which is currently under development to facilitate the clustering of freight-dependent industries within easy access to a variety of freight transportation options and within close proximity to related businesses and an available workforce. In addition, CMAP’s Full Circle Mapping Program promotes data collection, technology and mapping by the region’s planning partners so that this information can be shared and exchanged throughout the region.

- Priority: High
- Timeframe: Short-term
- Implementing Agencies: CMAP, IDOT, CDOT, Trucking Industry, Port Authority
- Action Items:
  - Promote CMAP’s Full Circle Program to additional regional planning partners, to be used for compiling freight-related data that can be used to market the region’s freight assets.
  - Support the use and expansion of the Center for Neighborhood Technology’s Cargo-Oriented Development Tool for identifying potential industrial sites within the region.
  - Develop a broadly available freight planning geodatabase for use by public and private stakeholders to identify regional freight system needs and to coordinate action through information sharing and mutual cooperation. The planning geodatabase would include such items as local and state truck routes, clearance issues, weight restrictions, traffic generators, congestion, parking, and rest areas. (See Policy Recommendation #13)

\(^{12}\) Center for Neighborhood Technology.
Policy Recommendation #16

Include freight-related performance measures in project evaluation process to ensure the consideration of freight enhancing projects in the programming process.

Most transportation agencies have more transportation needs than funding, so agencies must make tough decisions regarding which projects to fund. While CMAP is currently in the process of enhancing their prioritization methodology for evaluating projects to be included in their updated long-range plan, this policy recommendation suggests the inclusion of measures that take into account freight-related benefits to identify freight needs and deficiencies. This performance-based approach is consistent with a national trend among transportation agencies working to implement a more transparent and quantitative means of project evaluation, and instill more accountability into the project selection process. It combines benefit/cost analysis with an assessment of how well each potential project supports stated policy goals and objectives. The intent of this approach is NOT to create a purely mechanical system, devoid of public input and policy decisions. Rather it is intended to support planning and project decisions with freight data integration.

The methodology for performance-based planning is organized around four building blocks of project prioritization:

1. Evaluation criteria - Develop a series of criteria that will be used to evaluate projects.
2. Weights - Assign weights to the criteria.
3. Benefit/cost - Consider benefit/cost ratio (B/C) as a stand-alone metric, separate from the criteria described above.
4. Results - Develop an approach for combing the criteria, weights, and b/c analysis described above and communicating the results in a manner that enables decision makers to incorporate them into their decision-making process.

- Priority: High
- Timeframe: Short-term
- Implementing Agencies: CMAP, IDOT/ISTHA
- Action Items:
  - Identify performance measures that relate to existing freight-related regional goals and objectives.
  - Use performance measures to identify freight needs and deficiencies.
  - Incorporate freight-related performance measures into project evaluation process for short- and long-range plan development.
Policy Recommendation #17

*Adopt innovative strategies to better match new and available funds with freight system needs.*

Essential to the planning and implementation of the freight-related projects and strategies identified herein is the identification of applicable funding and financing sources for the improvements. The funding and financing programs identified on the following pages are categorized into six areas including: 1) Federal Formula Highway Programs; 2) Special US DOT Funding Programs; 3) Special Non-DOT Funding Programs; 4) Other Funding Options; and 5) Special Financing Programs. Within each of these categories a number of funding and/or financing options are listed, along with a brief description of each. Earmark programs have not been included in this list, since commitments beyond 2009 are not known at this time.

- **Priority:** High
- **Timeframe:** Short-term
- **Implementing Agency:** CMAP
- **Action Items:**
  - On a case-by-case basis, match freight project needs with above funding options and others that may become available through upcoming new Federal Transportation Bill.

<table>
<thead>
<tr>
<th>Table 8.2   Federal Formula Highway Programs</th>
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<tr>
<td><strong>Federal Formula Highway Programs</strong></td>
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<td>Interstate Maintenance (IM)</td>
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<td>National Highway System (NHS)</td>
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<td>Surface Transportation Program (STP)</td>
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<th>Table 8.3   Special DOT Funding Programs</th>
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<td>Congestion Mitigation and Air Quality (CMAQ)</td>
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<td>Highway Bridge Program</td>
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<td>Railroad Grade Crossing Program</td>
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<td>Truck Parking Facilities</td>
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<td>FTA Fixed Guideway Modernization Program</td>
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<td>Rail Line Relocation Program</td>
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<td>FAA Airport Improvement Program</td>
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<td>American Recovery &amp; Reinvestment Act (ARRA)</td>
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Table 8.4   Non-DOT Special Funding Programs

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<td>USACE Harbor Maintenance Trust Fund</td>
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<td>U.S. Department of Commerce - Economic Development Administration Funds</td>
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<td>Environmental Protection Agency – Brownfield Revitalization Program</td>
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Table 8.5   Additional Funding Options

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<td>Public-Private Partnerships (PPPs)</td>
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<td>Special Taxing</td>
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Table 8.6   Special Financing Programs

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<td>Transportation Infrastructure Finance and Innovation Act (TIFIA)</td>
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<td>Rail Rehabilitation and Improvement Financing (RRIF)</td>
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<td>Private Activity Bonds (PAB)</td>
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<td>Grant Anticipation Revenue Vehicle (GARVEE) Bonds</td>
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Policy Recommendation #18

Implement the CREATE Program.

The Chicago Region Environmental and Transportation Efficiency Program (CREATE) is a public-private partnership between the US DOT, the State of Illinois, the City of Chicago, Amtrak, Metra, and the nation’s freight railroads, charged with identifying and implementing infrastructure improvements that will enhance the efficiency of the rail network in the Chicago region, while at the same time improving the quality-of-life for the area’s residents. The CREATE Program includes 71 projects on five rail corridors, including roadway grade separations; railroad grade separations; viaduct improvements; safety enhancements at grade crossings; and track, switching and signal system upgrades. While a portion of the required funding has been allocated for the 71 CREATE projects, approximately $2 billion in additional funding still needs to be secured.
• Priority: High
• Timeframe: Short-term
• Implementing Agencies: CREATE partners
• Action Items:
  – Identify funding sources for continuing implementation of the CREATE Program infrastructure improvements.

Regional Framework Theme: Environmental and Community Impacts

Policy Recommendation #19

Promote lower-emission freight modes and technologies (e.g. GenSet locomotives).

In consideration of the region’s overall goal of enhancing the environment and improving the quality of life, this policy recommendation focuses on reducing freight-related emissions, thus resulting in improvements to air quality, and increased sustainability, through greater fuel efficiency. This could be accomplished by promoting the most energy efficient and lowest-emission freight modes, as well as encouraging technologies that help achieve these goals. A recent technology that has been developed to provide greater fuel efficiency and lower emissions for the railroad mode is the GenSet locomotive. This new technology is based on the use of two or three smaller engines per locomotive, instead of the traditional single-engine locomotives. According to the National Railway Equipment Company, GenSet locomotives are more efficient than the single-engine locomotives, while reducing noise by more than 85%, reducing NOx and PM emissions by 85%-90% and resulting in fuel savings of 35%-70%.13

• Priority: High
• Timeframe: Short-term
• Implementing Agencies: USEPA, US Ports and Maritime Administration, Metra, private railroads
• Action Items:
  – Encourage the use of more energy-efficient and lower-emission locomotives by railroads.

13 http://www.nationalrailway.com/nviro.asp
- Where practical and economically viable, provide incentives to encourage diversion to lower-emission non-highway freight modes.
- Reduce truck-related vehicle emissions.

Policy Recommendation #20

Identify and implement design features to control freight-related noise.

A major community impact associated with existing and potential increases in freight movements within the Chicago region is the increase in freight-related noise. For the rail mode, in addition to the actual noise and vibration that results from the actual movement of the train down the tracks, there is also a significant amount of noise associated with the sounding of the train horn as a warning measure as the train is approaching an at-grade crossing. Recent Federal guidelines have enabled the establishment of Railroad Quiet Zones where train horns are allowed to be silenced in exchange for implementing Supplemental Safety Measures at the crossings to compensate for not sounding the horn, without decreasing overall safety.

Truck related noise has also been identified as a concern by some communities, including the potential noise associated with nighttime deliveries (which are banned in many communities due to the noise issue), as well as the noise generated by heavy volumes of trucks on many of the region’s Interstate Highways and major arterials. Potential noise mitigation measures for these types of noise would include the construction of noise walls or in some instances berms to serve as buffers between the highways (or other freight-related facilities) and the residential communities through which they pass.

In addition to the freight-related noise associated with truck and rail modes, there is also an impact on communities surrounding the region’s airports (particularly O’Hare). Over and above the daytime noise which results primarily from passenger flights, since most air cargo flights occur during the nighttime hours, there is an additional impact to surrounding communities during these hours.

- Priority: High
- Timeframe: Mid to Long-term
- Implementing Agencies: CMAP, Individual communities, IDOT, PPPs
- Action Items:
  - Work with developers in identifying potential noise mitigation measures surrounding freight facilities and associated funding sources for implementing these measures.
  - Assist communities by developing a model noise mitigation ordinance for freight-related developments.
- Promote use of quieter technology locomotives by Metra and private railroads (see Policy Recommendation #19).

- Assist communities in performing railroad quiet zone studies, and in identifying funding sources for implementing Supplemental Safety Measures at grade crossings to enable the establishment of quiet zones.

- Identify funding sources and Federal programs for airport noise mitigation (such as noise insulation of public buildings, for which $5M was approved in Chicago through ARRA funding.)

Policy Recommendation #21

Develop process for identifying development opportunities, brownfield re-use.

In order to market the region’s freight assets, a database should be developed to identify potentially developable sites, in particular the re-use of brownfield redevelopment locations. This recommendation is consistent with an integrated approach to the development of freight-related activities and land use planning. In addition, the redevelopment of brownfield sites with industrial uses will encourage freight-dependent developments in areas that are able to support them from an infrastructure perspective. At the same time, many of the potential brownfield redevelopment sites are located within the region’s urban center, which would likely result in reduced drayage costs, addressing a concern raised by stakeholders who favored development within the urban core, as opposed to fringe developments for freight-dependent industries.

- Priority: Medium
- Timeframe: Short-term
- Implementing Agencies: CMAP, IDOT, IEPA, DCEO, local governments
- Action Items:
  - Develop database and GIS mapping of brownfield redevelopment sites, highlighting transportation assets and proximity to related industrial developments. Use this database to market potential developers of industrial properties who are interested in locating within the Chicago region.
  - Promote infrastructure improvements to brownfield sites to enhance their desirability.
  - Encourage tax increment financing for brownfield site redevelopment.
Policy Recommendation #22

Support City of Chicago industrial corridor designations of Planned Manufacturing Districts.

The City of Chicago currently has a total of 15 Planned Manufacturing Districts within its 24 designated industrial corridors. The purpose of these Planned Manufacturing Districts is to preserve land for industrial development and related land uses within the City through special zoning designations, to promote industrial development and prevent the designated areas from being used for other purposes. These areas then become marketable to potential manufacturing companies looking to locate within the area.

- Priority: Medium
- Timeframe: Short-term
- Implementing Agencies: CMAP, local governments
- Action Items:
  - Assist in marketing the City of Chicago’s Planned Manufacturing Districts in order to attract and retain manufacturing industries within the City.
  - Identify potential areas outside the City of Chicago for establishing similar Planned Manufacturing Districts.

Policy Recommendation #23

Promote safety programs such as “Operation Lifesaver” and “No Zone”.

“Operation Lifesaver” is an international program focused on increasing awareness of the potential dangers associated with highway-railroad grade crossings as well as other safety issues within railroad right-of-way. The non-profit organization, Operation Lifesaver, Inc. (OLI), oversees the program, with the cooperation of numerous public and private sector stakeholders, including the railroads, highway safety organizations, and government agencies at the Federal, state and local levels. Each of the 50 states and the District of Columbia has a statewide program, including a state coordinator to oversee and promote the state’s training and other outreach activities.

“No-Zone” is a highway focused safety program, established in 1994 by the Federal Motor Carrier Safety Administration (FMCSA), to educate motorists on how to safely share the road with trucks and buses (commercial motor vehicles, or CMVs). The term “no-zone” actually refers to the blind spots around trucks and buses, or areas around the vehicles in which the commercial vehicle driver loses sight of passing or approaching vehicles. The “No-Zone” program promotes educational activities to create driver awareness of the dangers of driving in a commercial vehicle’s “No-Zone”, in an effort to reduce the number of crashes that occur in this area. The activities associated with the “No-Zone”
program have been sponsored by the combined efforts of public and private stakeholders, similar to Operation Lifesaver.

- Priority: Medium
- Timeframe: Short-term
- Implementing Agencies: Metra, private railroads, trucking industry, general public, CMAP
- Action Items:
  - Take advantage of the educational resource materials that are provided by “Operation Lifesaver” and “No-Zone” programs, in developing enhanced regional outreach programs. This could be done through working with the Illinois Statewide Coordinator for Operation Lifesaver and the FMCSA.
  - Develop a Speakers’ Bureau, providing pre-prepared age appropriate presentation materials for volunteer trainers to provide training programs at schools, driver education programs, etc.
  - Take advantage of appropriate local fairs, and other venues to sponsor “safety booths” for distributing promotional materials.

**Policy Recommendation #24**

*Address the higher wear and tear on freight-impacted road surfaces with increased maintenance efforts.*

With the clustering of freight-dependent industries in certain subareas of the Chicago region, the roadways which provide access to these areas carry significant volumes of heavy trucks resulting in substantial wear and tear on these roadways. Stakeholders have identified this as a concern which crosses municipal boundaries, as the roadways that are experiencing the most significant impacts often pass through multiple jurisdictions. The focus of this policy recommendation is to foster multi-jurisdictional and private sector cooperation in identifying the freight-impacted roadways and developing a process for addressing the required increased maintenance. An example of such a process is one which is currently being used by the Delaware Valley Regional Planning Commission (DVRPC), known as the Freight Forward Improvement Program. Through this program, the region’s freight stakeholders are able to identify and submit for consideration small-scale “quick fix” types of projects that facilitate freight movements. Because this program involves both public and private sector stakeholders, it fosters cooperation and trust between these two sectors.

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14 [http://www.dvrpc.org/Freight/FreightForward.htm](http://www.dvrpc.org/Freight/FreightForward.htm)
• Priority: Medium
• Timeframe: Mid-term
• Implementing Agencies: IDOT, counties, local governments, townships
• Action Items:
  – Develop a process for identifying needed freight-related improvement projects, similar to the DVRPC Freight Forward Improvement Program.
  – Identify candidate freight-impacted roadways for special consideration of enhanced design standards for heavy truck volumes. Include evaluation criteria that will enable these types of improvements to receive “points” based on the freight-related benefits that will result from their implementation.
  – Identify non-traditional funding sources, such as public-private partnerships for funding the increased maintenance needs on freight-impacted roadways.

Policy Recommendation #25

Improve both rail and truck access into intermodal facilities to reduce community impacts.

As brought out during the stakeholder interviews, the development of intermodal facilities has impacts that reach beyond the borders of the actual facility and even the municipalities in which they are located. Of particular concern to the surrounding municipalities is the impact on roadways which provide access to the facility. In some cases, these impacts are a result of the wear and tear on the roadways due to heavy truck traffic, or delays to passenger vehicles due to the high percentage of trucks. In other instances, the impacts result from blocked highway-rail at-grade crossings which may be blocked when trains are awaiting clearance into the facility. In addition to causing delay to passenger vehicles at these blocked crossings, this can also become a safety concern when emergency vehicles are delayed at the crossing. The focus of this policy recommendation is to encourage coordinated planning in the development and expansion of intermodal facilities in the Chicago region in order to minimize these types of community impacts.

• Priority: High
• Timeframe: Short-term
• Implementing Agencies: CMAP, IDOT, counties, local governments, townships
• Action Items:
- Restructure existing yards and/or intermodal facilities to allow easier movement of trains onto and off of the mainline by lengthening receiving and departure tracks or increasing the number of such tracks.

- Promote multi-jurisdictional coordination and cooperation in the planning process for intermodal facility development, including not only the facility design itself, but also the impacts on surrounding communities that may result from the freight hauling vehicles that are accessing the facility.

- Identify opportunities for non-traditional funding (such as public-private partnerships) for improvements to roadways providing access to intermodal facilities.

Policy Recommendation #26

Accommodate freight in ways conducive to intermodal passenger transportation, such as pedestrian, bicycle, passenger vehicle, commuter rail, and inter-city passenger rail, including crossings and shared-use corridors.

As the demand for capacity continues to increase for all modes of passenger travel and goods movement, it will become increasingly important to ensure compatibility between freight and passenger modes, as well as ensuring linkages between the modes. From a freight mobility perspective, this means continuing to support efficient intermodal operations. On the rail side, this includes the most efficient shared use of rail corridors by commuter trains, intercity passenger trains, and freight trains, in addition to ensuring that at-grade crossings are functioning safely and efficiently for the movement of trains, cars, pedestrians and bicyclists. From a land use perspective, it translates into coordinating land use and transportation plans, including the movement of both people and goods by all modes through multi-jurisdictional planning efforts.

- Priority: High
- Timeframe: Short to Mid-term
- Implementing Agencies: CMAP, IDOT, Metra, Amtrak, local governments
- Action Items:
  - Support the City of Chicago’s Complete Streets Program and encourage similar programs in other parts of the region.
  - Support the CREATE Program (see Policy Recommendation #18) which promotes cooperation between freight and passenger railroads in shared-use corridors.
  - Identify opportunities for shared-use in corridors being considered for infrastructure capacity expansion projects.
9.0 Infrastructure Recommendations

The core objective of this study was to define a list of recommended infrastructure projects for the highway, railway, water and aviation freight systems. The intent was for these projects to then undergo further scrutiny by CMAP staff to determine if they would then be moved on for inclusion in GO TO 2040, the region’s 30 year long-range plan.

The content of this report was used to determine the initial list of projects for consideration. As part of Stakeholder Outreach (Section 3.0) respondents were prompted to reveal their ideas for project investment. As part of Data Analysis (Section 4.0) raw data was examined to understand system chokepoints and areas of high-intensity freight activity. Additionally, the existing 2030 Regional Transportation Plan and Fiscal Year 2007-12 Transportation Improvement Program, and other on-going project studies were consulted to determine what projects “on the books” had merit, from a freight perspective, to be considered as part of this recommendations effort.

Through these methods, a 67 freight infrastructure projects were identified. Figure 9.1 illustrates all freight infrastructure recommendations made as part of this study. The following sections break down each freight mode in a bit more detail to explain the rationale for including specific projects. A listing of each project and accompanying map can be found in the appropriate modal section.
Figure 9.1. Combined Infrastructure Recommendations
9.1 **Highway Infrastructure Recommendations**

To identify potential projects and policies for evaluation, consultants and CMAP staff combed through the existing 2030 Regional Transportation Plan and Fiscal Year 2007-12 Transportation Improvement Program, on-going project studies, various technical evaluations of freight data, and a specific public involvement effort that included outreach to local communities and freight industry stakeholders. Through these methods a total of approximately 150 freight capital projects were identified. An evaluation of such a large number of projects was seen as unwieldy, and probably not useful. Therefore, to the extent practical, like projects and policies were bundled together for evaluation together.

Capital projects were bundled for evaluation by general functionality within a geographic area. For example, “O’Hare Access” was a bundle of projects consisting of seven distinct improvements to improve truck access in the area of Chicago O’Hare International Airport, including additional capacity on existing highways, new highways, truck access to airport cargo areas, and truck parking facilities. Similarly, the I-355/North Will County East-West bundle included the Caton-Bruce strategic regional arterial (including a new bridge over the Des Plaines River near Lockport) and additional lanes on Cedar Road, 143rd Street, Il 7, and US 45, a bundle designed to link freight-intensive areas of northern Will and southern Cook Counties. Altogether, 25 highway projects were included in six bundles. Six additional highway projects were evaluated separately.

The bundling worked well to the extent that the planning project was high-level and conceptual. However, since there were specific projects identified for improvement, and since these were identified for later travel demand modeling, staff and consultants needed to confer frequently about the details of the bundles and, indeed, the project definitions for stand-alone projects. Further scrutiny as the bundles were later coded resulted in questions about the bundle elements, and their redefinition. For example, as noted above, the improvements to 143rd Street were an initial element of the I-355/North Will County East-West bundle. However, additional scrutiny didn’t support a freight justification for such a project, given low truck volumes and limited truck utility, even with a new Caton-Bruce bridge over the Des Plaines River, and the 143rd Street project was not considered further. Similar scrutiny, sifting, and winnowing of projects and policies continued throughout the project.

A listing of each highway infrastructure project and accompanying map can be found in Table 9.1 and Figure 9.2, respectively.
## Table 9.1. Highway Infrastructure Recommendations

<table>
<thead>
<tr>
<th>Projects/Project Bundles</th>
<th>Intermodal Connector</th>
<th>Aviation</th>
<th>Trucking</th>
<th>Water</th>
<th>Rail</th>
<th>Stakeholder Outreach</th>
<th>Data Analysis</th>
<th>CMAP 2030 RTP</th>
<th>CMAP 2007-12 TIP</th>
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<td>Elgin-O’Hare – add lanes</td>
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<td>I-90/Mannheim Road add lanes, O’Hare Landside Improvements</td>
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<td>Trucking</td>
<td>Water</td>
<td>Rail</td>
<td>Stakeholder Outreach</td>
<td>Data Analysis</td>
<td>CMAP 2030 RTP</td>
<td>CMAP 2007-12 TIP</td>
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<td><strong>I-290 Bottleneck</strong></td>
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<tr>
<td>I-290 add lanes from Street Charles Road to IL 50</td>
<td>I</td>
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<td>I-294/I-290 interchange improvements</td>
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<tr>
<td><strong>Southern Access</strong></td>
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<tr>
<td>IL 394 improvements, I-80/94 to IL 1, conversion to limited access</td>
<td>A</td>
<td>T</td>
<td>R</td>
<td>●</td>
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<td></td>
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<tr>
<td>I-57 improvement, I-80 to Wilmington-Peotone Road</td>
<td>A</td>
<td>T</td>
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<td>IL 43 from US30 to Steger Road</td>
<td>T</td>
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<td>●</td>
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<td><strong>Other Individual Highway Projects</strong></td>
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<tr>
<td>I-55 improvements, I-90/94 to Weber Road</td>
<td>I</td>
<td>T</td>
<td>W</td>
<td>R</td>
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<td>IL 59 add lanes, I-88 to New York Street</td>
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<tr>
<td>I-90 additional lanes, I-39 to I-294</td>
<td>I</td>
<td>A</td>
<td>T</td>
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<tr>
<td>MidCity Freeway</td>
<td>I</td>
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<tr>
<td>I-90/I-190 Kennedy Expressway – WB Truck Capacity</td>
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<td>●</td>
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<td></td>
<td>●</td>
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<tr>
<td>Central Avenue connector across Clearing Yard, 63rd–79th</td>
<td>I</td>
<td>T</td>
<td></td>
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</tbody>
</table>
Figure 9.2. Highway Infrastructure Recommendations
9.2 **RAILROAD INFRASTRUCTURE RECOMMENDATIONS**

Unlike highway infrastructure recommendations, the evaluation of rail infrastructure began with a blank slate, allowing the data to drive the initial stages of the project identification process. This approach limited assumption and bias within the analysis and provided the ability to logically check results against the known realities of rail freight movement in the region. Analysts evaluated all rail infrastructure equally and key infrastructure were identified in a three-step process, with each step eliminating or refining potential improvements. Focus was placed on projects beyond those already identified through the Chicago Region Environmental and Transportation Efficiency Program (CREATE) efforts. Essentially, the rail recommendations found in this study amount to CREATE II; those rail projects that should be implemented after all other CREATE projects have been completed.

From all regional rail infrastructure, 14 improvement areas were recognized through this process as potential investments, including improvements for 11 specific rail corridors. Additionally, 21 at-grade crossings and four road-rail viaducts were identified for consideration for investment. See table 9.2 for a list of all potential freight infrastructure improvements. As the analysis progressed, three classes of rail infrastructure improvements emerged - Rail Capacity Improvements, Recommended Rail Corridors for Capacity Studies, and Increased Utilization. Figure 9.3 contains a map of these projects. Following is the methodology used to identify rail infrastructure projects.

### Regional Freight Rail Findings

Prior to the identification of critical infrastructure investments, a baseline understanding of rail was needed by analysts. To understand the fundamentals of the region’s rail freight network, a data-driven process was undertaken using available data resources and Geographic Information System (GIS) tools. This analysis sought to ascertain how rail freight moved within the region and accessed local intermodal facilities. Once these elements were understood, potential infrastructure improvements were evaluated for their importance to the freight flow patterns revealed in the process. Notable findings from this process include:

- Rail density clustering around transcontinental rail lines and belt lines
- A general pattern of east-west freight movement
- A tight clustering of intermodal facilities near transcontinental rail lines and belt lines, thus, in high rail density areas
- A spatial distribution of intermodal facilities beginning in central Cook County and spreading southwestward along the Chicago Sanitary and Ship Canal.
The first analysis concerned understanding regional rail congestion. Assessing the rail line data from the Federal Railroad Administration (FRA), rail lines were located with the highest density, which is defined as million gross-ton miles (MGTM) and is used as a proxy for train traffic volumes. Rail densities of 4 MGTM or higher, were considered significant and found to be clustered in spatial patterns. Transcontinental rail lines operated by the national Class I railroads and regional belt lines linking the “transcons” demonstrated the highest densities generally. The influence and primacy of these high-density rail lines to the regional rail system is so profound that, according to a GIS “hot spot” analysis, most of the region is encased in rail congestion. A GIS process linked rail line density to the densities of adjacent and intersecting lines and created hot spot clusters. High-density clusters were concentrated along the UP and BNSF east-west transcontinental lines and along Lake Michigan. Low-density clusters existed in the Elgin area and near the Joliet Arsenal. These low-density clusters are likely to change or shift based on the re-implementation of the EJ&E line by CN and the introduction of more intermodal facilities in the vicinity of the former arsenal. Nevertheless, these results corroborated evidence suggesting the Chicago region is a congested rail hub. Profound congestion in the city of Chicago and Cook County led to the advent of the CREATE project and the results of these GIS analyses demonstrate the further need to alleviate regional rail congestion.

Additional spatial analyses determined how rail freight moves within the region by investigating the directionality of rail freight flows. By examining each rail line segment’s directionality and weighing its rail density, a general east-west flow of rail freight was detected. Lines with higher densities had more influence through the weighting process on the regional directional aspect of freight movement. Thus, the high-density, east-west trending transcontinental lines carried more weight in the directionality analyses than lesser-density north-south lines. These findings confirmed the suspected primacy of Chicago as a national rail hub, a location where the nation’s eastern and western transcontinental railroads meet, where freight is exchanged at intermodal facilities from rail to truck or water and vice versa for trips to the coasts or the interior.

A final series baseline geospatial analyses concerned how the rail freight network serves local intermodal facilities— and thus the local economy. Earlier investigations identified the location of the transcontinental rail lines, which ferry goods across the continent, and belt lines, which provide crucial connectivity between all transcons. Invariably, most regional intermodal facilities have immediate or near-immediate access to transcontinental rail lines or belt lines. Approximately half of all intermodal facilities have access within one-half mile of a transcon or belt line. Nearly all of the remainder are within three miles. This confirmed the importance of these lines to the regional economy, as transcons and belt lines represent the delivery method for rail freight into, out of, within, and through the region.
Further intermodal facility analysis revealed a geographic clustering of sites within areas with high rail density, specifically within the city of Chicago, near O’Hare Airport, along the Chicago Sanitary and Ship Canal, and generally throughout Cook County. A GIS “hot spot” cluster analysis which weighted 2006 lifts at each facility detected a southwest-northeast trending cluster extending from near the lakeshore in central Chicago along the canal to near Lemont. The hot spot epicenter, as determined through another GIS process, occurs nearly atop BNSF’s Corwith Yard. All of these analyses suggest a clustered distribution of intermodal facilities in the areas with the highest rail density, highest concentration of freight generators, and notable industrial land use areas.

**Infrastructure Evaluation**

With an understanding how rail freight moves within the region, critical rail infrastructure could be identified by analysts and recommended for investment. Infrastructure was subjected to a three-step process in which the list of recommended improvements was whittled to 14. All pieces of infrastructure were considered initially, evaluated individually in each phase, then either removed from consideration or carried forward in the process based on a set of consistent spatial criteria.

The first phase of evaluations involved removing infrastructure which did not relieve congestion on high-density rail freight lines critical to the general east-west trending movement of freight. Infrastructure not experiencing high density levels or serving a general east-west flow of freight were removed from consideration. Some lines with low densities were retained if deemed to be of value to the flow of rail freight, including the CN Elsdon and Freeport subdivisions, and could be utilized to relieve rail densities on adjacent lines. Additional infrastructure were removed if currently being upgraded through CREATE or other improvements. This process removed all but 22 infrastructure corridors.

The second phase of the infrastructure identification process evaluated the remaining 22 corridors on their importance to intermodal facilities. GIS tools were used to assess the corridors on their proximity to these facilities and their significance to intermodal traffic. Data considered in this evaluation included spatial proximity of rail lines to intermodal facility clusters, access to high-volume intermodal sites, and the rail density around intermodal centers, among other data. After initial corridor appraisals, analysts presented the preliminary results to CMAP staff for continued refinement. From the list of 22 potential corridor investments, 17 were selected for continued evaluation based on this data analysis.

The third and final evaluation phase examined the remaining 17 infrastructure improvements on a battery of performance measures using GIS tools. The performance measures regarding rail freight concentrated on regional economic development and access to freight facilities. Three performance measures were
of particular importance: 1) Intermodal facilities with NHS roadway/rail access; 2) Major generators near interstate, four-lane highway, or intermodal facility; and 3) Value of goods exported annually vs. value of goods imported. To determine the relationship between infrastructure and each measure, analysts developed an evaluation scheme involving five grades ranging from “Very Strong Relationship” to “Little or No Relationship.” Infrastructure segments demonstrating through data analysis a strong performance to a particular measure received a higher grade. The results of these analyses are presented in Section 10.0 (Evaluation of Recommendations).

For the intermodal facility/rail access performance measure, potential improvements were graded by developing a series of spatial buffers surrounding facilities. This process developed a more detailed correlation between infrastructures and particular intermodal facilities than the analysis discussed above in phase two. To determine the relationship between infrastructure and major freight generators, sales and employment figures for any business generating freight traffic were examined. Hot spot clusters were developed using both sales figures and the numbers of employees as weights in the analysis. From these clusters, GIS analysts created spatial buffers to ascertain the grades for infrastructure improvements. And finally, the grading method regarding the value of goods exported was conducted by creating clusters and buffers around manufacturing business, industrial land use areas, and industrial and enterprise zones.

Grades for the remaining 17 infrastructure investments were generated and low performing projects were discarded. As the final list of improvements matured, feedback from stakeholders, primarily representatives of the railroad industry, was solicited. Based on conversations with these stakeholders, the list of infrastructure improvements was refined. Stakeholders assisted in better defining the extents of identified projects and suggested adding a few projects not identified previously. The stakeholders validated the initial results of the three-phase evaluation process and provided confidence in the final results. The resulting list of recommended improvements included three rail capacity investments, nine corridors needing capacity studies, and two corridors which were under-capacity, for a total of 14.

**Evaluation of At-Grade Crossings and Viaducts**

Poor performing at-grade rail crossings have the potential to delay freight traffic on roads and rail. Some of these rail crossings are even dangerous, not only for train crews and truck drivers, but also freight facility employees and the general public. Similarly, antiquated rail viaducts are barriers to the efficient routing of freight in the region. Height, weight, and speed restrictions underscore the delays and dangers associated with deteriorating or outmoded viaducts. Poor performing at-grade crossings and viaducts are a drag on the regional freight network. Thus, criteria was developed to evaluate which – if any – crossings and viaducts needed investment.
There exist hundreds of problematic at-grade rail crossings in the region, places where delay potential is high and casualty prediction rates are above the mean. Identifying which problematic at-grade rail crossings are critical to freight involved a thorough examination of rail crossing data – and data methodology – from the FRA Office of Safety Analysis and other sources. The first set of analyses focused on distilling the nearly 4,000 regional rail crossings into a dataset containing crossings with the potential for very high-delays. Database queries located crossings which had high vehicle volumes, high train counts, and low maximum train speeds. Crossings with very high casualty prediction were also examined. From these queries, a working list of over 100 at-grade rail crossings were developed and served as a baseline. A series of analyses were performed on these crossings, flagging those crossing on freight intermodal connectors, truck routes, or highways. Crossings were also evaluated against five CMAP-recommended performance evaluations. The final list of crossings underwent stakeholder reviews by local freight groups, representatives of area railroads, and CMAP staff. Ultimately, 21 at-grade crossings were selected for study. While this analytical process identified problematic at-grade rail crossings, analysts made no recommendations for mitigation. Not all problematic at-grade rail crossings require grade separation. This list of 21 at-grade crossings provides policy-makers and stakeholders with a starting point from which to craft appropriate, individualized measures for each site.

For viaducts, the Metropolis 2020 team provided a list of height-restricted and decaying structures. The viaducts selected for evaluation included road-rail viaducts with a posted height of less than 14 feet. Viaducts with a height of less than 13.5 feet were flagged for special consideration. To determine which viaducts are most critical to the regional freight network, analysts identified structures on freight-oriented roads and rail, specifically those serving freight intermodal connectors, truck routes, or other roads with high truck volumes. Additionally, viaducts carrying rail lines which primarily serve freight concerns were flagged during evaluation. Since many viaducts used by Metra are slated for improvement in the latest TIP, Metra viaducts generally were avoided in the analysis. One Metra viaduct was retained – on Irving Park Road at the UP Harvard subdivision – due to the road’s elevated truck volume and crucial role in the movement of freight on Chicago’s North Side. Once the list of important viaducts was established, analysts compared them against four CMAP-generated performance measures. Poor performers were eliminated, resulting in the identification of four problematic viaducts critical to the regional movement of freight.

A listing of all rail infrastructure projects and accompanying map can be found in Table 9.2 and Figure 9.3, respectively.
### Table 9.2. Rail Infrastructure Recommendations

<table>
<thead>
<tr>
<th>Projects/Project Bundles</th>
<th>Sectors</th>
<th>Project Source</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td><strong>Rail Capacity Projects</strong></td>
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<tr>
<td>CREATE Program</td>
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<tr>
<td>BNSF Chillicothe Subdivision – Joliet Arsenal to Nerska</td>
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<tr>
<td>BRC – 59th Street Subdivision from Clearing Yard to Kenton Line</td>
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<td>BRC – Kenton Line from Hayford to Hawthorne</td>
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<tr>
<td>CSXT Barr Subdivision – Blue Island to Indiana border (segments)</td>
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<td>CSXT Blue Island Subdivision – Blue Island to Forest Hill Yard</td>
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<tr>
<td>UP Geneva Subdivision – A-2 to Maple Park</td>
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<tr>
<td>UP Milwaukee Subdivision – Proviso Yard to Shermer</td>
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<tr>
<td><strong>Improve at-Grade Rail Crossing</strong></td>
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<tr>
<td>119th Street (Intermodal Connector)-CN Joliet Subdivision crossing</td>
<td>I</td>
<td>T</td>
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<tr>
<td>25th Avenue/Rose Street-CP Elgin Subdivision crossing</td>
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<td>A</td>
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<tr>
<td>Cass Avenue - BNSF Chicago Subdivision crossing</td>
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<tr>
<td>Crawford Avenue-CTA Yellow Line</td>
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<tr>
<td>Des Plaines River Road-CP Elgin Subdivision crossing</td>
<td>A</td>
<td>T</td>
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<tr>
<td>Fairview Avenue-BNSF Chicago Subdivision crossing</td>
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<tr>
<td>Gilbert Avenue-BNSF Chicago Subdivision crossing</td>
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<td>IL 171-CP Elgin Subdivision crossing</td>
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<td>IL 43-CP Elgin Subdivision crossing</td>
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<tr>
<td>IL 50-CTA Pink Line</td>
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<td>A</td>
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<tr>
<td>IL 68–CP C&amp;M Subdivision crossing</td>
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<tr>
<td>Main Street (Downers Grove)-BNSF Chicago Subdivision</td>
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<td>Oakton Street-CTA Yellow Line</td>
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<tr>
<td><strong>Improve at-Grade Rail Crossing (continued)</strong></td>
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<td>Roselle Road-CP Elgin Subdivision crossing</td>
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<td>Projects/Project Bundles</td>
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<td>Aviation</td>
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<tr>
<td>Touhy Avenue – CPRS C&amp;M Subdivision crossing</td>
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<tr>
<td>U.S. 12 (LaGrange) - BNSF Chicago Subdivision crossing</td>
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<tr>
<td>U.S. 12 (95th St.) - CN Joliet Subdivision crossing</td>
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<tr>
<td>U.S. 14 (Dempster)– CP C&amp;M Subdivision crossing</td>
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<td>T</td>
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<tr>
<td>Vermont Street-CN Joliet Subdivision crossing</td>
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<td>T</td>
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<tr>
<td>Wolf Road-CN Joliet Subdivision crossing</td>
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<td>T</td>
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<tr>
<td>York Road-CP Elgin Subdivision crossing</td>
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</table>

**Increase Utilization**

|                                              |                     |          |          |      |      |                      |               |     |
| CN Elsdon Subdivision                       |                     |          |          | R    |      |                      |               |     |
| CN Freeport Subdivision                     |                     |          |          | R    |      |                      |               |     |

**Viaduct Improvements**

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<tr>
<th></th>
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<th>Trucking</th>
<th>Water</th>
<th>Rail</th>
<th>Stakeholder Outreach</th>
<th>Data Analysis</th>
<th>TIP</th>
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<tr>
<td>79th St. at CSXT Blue Island Subdivision (Near Oakley)</td>
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<td>T</td>
<td>R</td>
<td></td>
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</tr>
<tr>
<td>Cermak Rd. at CN Freeport Subdivision (Near Archer)</td>
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<td>W</td>
<td>R</td>
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<tr>
<td>Irving Park Rd. at UP Harvard (near I-90/94)</td>
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<td>T</td>
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<tr>
<td>Western Ave. at BNSF Chillicothe/CN Freeport (near 32nd St.)</td>
<td>I</td>
<td>T</td>
<td>W</td>
<td>R</td>
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</tbody>
</table>
Figure 9.3. Rail Infrastructure Recommendations
9.3 Water and Aviation Infrastructure Project Recommendations

Recommendations to the water and air freight systems were primarily stakeholder driven, as these areas historically have not been analyzed as part of regional planning, and typically CMAP funding does not go towards these modes. The approach for both of these modal systems was to propose improvements that CMAP could invest in based on current funding limitations. Additionally, the improvements were made to stress multi-modal connectivity and stakeholder need.

For the aviation system, as presented in Section 9.1, highway project recommendations were bundled to serve access and circulation at O’Hare, understanding that “outside the gate” improvements would benefit both air freight and logistics company operations stationed at O’Hare, as well as those businesses that are dropping off or picking up goods from a wider area.

Based on stakeholder outreach and the interest in moving containers on barges via under-utilized waterway, a new post facility is recommended to have connectivity with the rail system.

Table 9.3. Water and Aviation Infrastructure Recommendations

<table>
<thead>
<tr>
<th>Projects/Project Bundles</th>
<th>Sectors</th>
<th>Project Source</th>
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<td>Intermodal Connector</td>
<td>Aviation</td>
</tr>
<tr>
<td>O’Hare Access</td>
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<tr>
<td>Elgin-O’Hare – add lanes</td>
<td>A</td>
<td>T</td>
</tr>
<tr>
<td>I-90/Mannheim Road add lanes, O’Hare Landside Improvements</td>
<td>A</td>
<td>T</td>
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<tr>
<td>Dedicated truckway around O’Hare (Mannheim Road)</td>
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<td>T</td>
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<tr>
<td>Elgin-O’Hare – West Extension</td>
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<td>T</td>
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<td>Elgin-O’Hare East Extension, O’Hare Bypass</td>
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<tr>
<td>O’Hare New North Cargo Area</td>
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<tr>
<td>O’Hare Truck Parking</td>
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<td>T</td>
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<tr>
<td>Other Modes</td>
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<td></td>
</tr>
<tr>
<td>New port facility near Logistics Park Chicago</td>
<td>W</td>
<td>R</td>
</tr>
</tbody>
</table>
10.0 Evaluation of Recommendations

Infrastructure project and policy recommendations were defined based on a data-driven process that included detailed GIS-spatial analysis. While many projects were confirmed as needs based on stakeholder comments and through on-going long range planning processes at CMAP and other Greater Chicago transportation agencies, this study takes recommendations one step further and validates them in two ways.

First, the performance measures developed and described in Section 6.0 of the report were used as a quantitative and qualitative means to validate recommendations’ impact and benefit to the region. And second, a sketch-planning tool based on CMAPs travel demand model was developed to confirm that roadway recommendations were being targeted in the areas of highest truck activity and overall system congestion.

This section describes both of these methods.

10.1 PERFORMANCE MEASURES EVALUATION

Methodology

The overall purpose of the performance evaluation was to develop a relative ranking of each project and project bundle within each project category, and then group the projects into three tiers of projects. The first step in this process involved evaluating each measure individually for each project, including projects within a bundle. For a particular measure, the performance results were compared across a single project category and assigned a relative value on a five-point scale, ranging from “little or no relationship” (i.e., a value of 1) between the project and measure to “very strong relationship” (i.e., a value of 5). Individual project scores for each measure within a bundle were rolled up into a single score per measure.

Not all evaluation measures could be applied to every type of project. For example, selected measures of mobility could not be applied to capacity projects; the travel time index is not applicable to rail projects. Thus, measures were applied where appropriate for capital projects.

For each project and bundle, scores were added together across measures and divided by the number of applicable measures to get an average score. Additional points were added to the average score if the project addressed multiple modes and if the project was identified as critical by stakeholders (see
Projects and project bundles were ranked relative to each other within each project category according to these average scores, allowing the grouping of the projects and bundles into three tiers. Projects from the highest tier were developed into a project short-list; projects from the second tier were considered for the short-list, with some higher-scoring projects within the tier added to the short-list after CMAP and stakeholder input.

Ultimately, all individual performance measure scores for each project, total average scores, and relative rankings were reviewed using engineering judgment, local knowledge, and experience from previous studies by the consultant team, CMAP staff, and the CMAP Freight Advisory Committee.

**Data Sources and Calculations**

Within the timeframe of the study, it was necessary to use available data without additional data collection or creation and implementation of complex models. Data for the evaluation was primarily from CMAP, supplemented by other national, state, and local data sources.

The level of detail varied for the available data from measure to measure. Some allowed for detailed calculation and analysis using GIS, with values being grouped in five tiers within a particular project category for relative ranking on the five-point scale.

For example, for the “intermodal facilities with NHS roadway/rail access” performance measure, analysts graded potential improvements by developing a series of spatial buffers surrounding facilities. Data considered in this evaluation included spatial proximity of projects to intermodal facility clusters, access to high-volume intermodal sites, and the traffic volumes or rail density around intermodal centers, among other data. To determine the relationship between infrastructure and major freight generators (for the measure “major generators near interstate, four-lane highway, or intermodal facility”), sales and employment figures for any business generating freight traffic were examined. Hot spot clusters were developed using both sales figures and the numbers of employees as weights in the analysis. From these clusters, GIS analysts created spatial buffers to ascertain the grades for infrastructure improvements. For “value of goods exported annually vs. value of goods imported”, a proxy was developed by assuming that improving access to major industrial areas, as well as areas slated for potential industrial development, would ultimately improve this measure. Therefore, clusters and buffers around manufacturing business, industrial land use areas, and industrial and enterprise zones were created and projects within the greatest densities of clusters were given the highest scores.

In other cases, with limited data to evaluate a measure, the general conditions in corridors with proposed projects were evaluated. Projects that would improve a given measure that were geographically located within corridors exhibiting the worst performance for a particular measure were scored highly; projects in corridors generally exhibiting good performance already were given lower
scores. For example, peak period travel time index (TTI) data were available for the region, but not on every roadway. The TTI is defined as the ratio of the average peak period travel time to a free-flow travel time. A roadway expansion project in a corridor in which most facilities were operating under highly congested conditions according to the TTI was assigned a high score. A similar level of analysis was performed for “vehicle classification by time of day/percent trucks off-peak”.

Projects that did not address a particular measure were not evaluated as stated above.

**Performance Evaluation Results**

*Infrastructure*

Table 10.1 provides the results of the performance evaluation. Projects and project bundles are in the first column of the table. Performance measures by goal area are listed across the top on the left half of the table; the sectors to which each project applies and the source of the project are listed on the right. For the performance evaluation, an empty circle indicates “little or no relationship” of a project to a measure, and a completely filled circle indicates a “very strong relationship”.

The table presents an initial shortlist of projects: these projects and bundles represent the highest tier from the performance evaluation and those higher scoring projects from the second tier that were deemed critical for inclusion in the short-list. Overall, these projects and bundles constitute about half the projects evaluated. As projects within each category were evaluated against other projects within the same category, a relatively even percentage of projects from each category made the cut.

*Policies*

The policy recommendation performance ranking is provided in Table 10.2. Performance measures by goal area are listed across the top of the table. For the performance evaluation, a completely filled circle indicates a “strong relationship”. A goal of this validation process was to ensure that polices were recommended to meet all of CMAP’s defined goal areas.
### Table 10.1. Infrastructure Recommendation Performance Ranking

<table>
<thead>
<tr>
<th>Projects/Project Bundles</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Mobility Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>O'Hare Access</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Elgin-O’Hare - add lanes</td>
<td><img src="image" alt="Little No Relationship" /></td>
<td><img src="image" alt="Some Relationship" /></td>
<td><img src="image" alt="Moderate Relationship" /></td>
<td><img src="image" alt="Strong Relationship" /></td>
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<tr>
<td>I-90/Mannheim Road add lanes, O’Hare Landside Improvements</td>
<td><img src="image" alt="Little No Relationship" /></td>
<td><img src="image" alt="Some Relationship" /></td>
<td><img src="image" alt="Moderate Relationship" /></td>
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<tr>
<td>Dedicated truckway around O’Hare (Mannheim Road)</td>
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<td><img src="image" alt="Some Relationship" /></td>
<td><img src="image" alt="Moderate Relationship" /></td>
<td><img src="image" alt="Strong Relationship" /></td>
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<tr>
<td>Elgin-O’Hare - West Extension</td>
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<tr>
<td>Elgin-O’Hare East Extension, O’Hare Bypass</td>
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<td>O’Hare New North Cargo Area</td>
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<tr>
<td>O’Hare Truck Parking</td>
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<td><img src="image" alt="Some Relationship" /></td>
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<tr>
<td><strong>South Will County East-West</strong></td>
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<tr>
<td>Illiana Expressway 1-65 to I-55</td>
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<tr>
<td>Manhattan Road add lanes from Baseline Road to IL 53</td>
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<td><img src="image" alt="Moderate Relationship" /></td>
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<tr>
<td>U.S. 30 add lanes, Williams Street to IL 43</td>
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<td><img src="image" alt="Moderate Relationship" /></td>
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<tr>
<td>Wilmington-Peotone Road improvements, IL 53 to I-57</td>
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<td><img src="image" alt="Moderate Relationship" /></td>
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<tr>
<td>Laneway Road from U.S. 52 to IL 43</td>
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<td><img src="image" alt="Moderate Relationship" /></td>
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<tr>
<td>Arsenal Road interchange relocation</td>
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<tr>
<td><strong>Joliet North-South Access</strong></td>
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<tr>
<td>I-55 widening, I-80 to Coal City Road</td>
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<td><img src="image" alt="Moderate Relationship" /></td>
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<td>Weber Road improvements, Rodeo Road to Romeo Road</td>
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<td><strong>I-355/North Will County East-West</strong></td>
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<tr>
<td>I-80 add lanes, US 45 to Grundy County line</td>
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<tr>
<td>Catoe Farm Road – Bruce Road Corridor Improvements</td>
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<tr>
<td>Cedar Road improvements, IL 7 to US 52</td>
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<td><img src="image" alt="Some Relationship" /></td>
<td><img src="image" alt="Moderate Relationship" /></td>
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<tr>
<td>IL 7 add lanes, I-355 to U.S. 45</td>
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<tr>
<td>U.S. 45 add lanes, 143rd Street to 183rd Street</td>
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<tr>
<td><strong>I-290 Bottleneck</strong></td>
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<tr>
<td>I-290 add lanes from Street Charles Road to IL 50</td>
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<tr>
<td>I-294/I-290 interchange improvements</td>
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</table>

- Little or No Relationship • Some Relationship ![Moderate Relationship](image) • Strong Relationship ![Very Strong Relationship](image)

* Measures from CMAP GO TO 2040.

Organization and Public Policy strategies encompass and promote all other strategies, and therefore have no “explicit” performance measures.
### Table 10.1. Infrastructure Recommendation Performance Ranking (cont’d)

<table>
<thead>
<tr>
<th>Projects/Project Bundles</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Mobility Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Southern Access</strong></td>
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<tr>
<td>IL 794 improvements, I-80/94 to IL 290 conversion to limited access</td>
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<td>![Strong Relationship]</td>
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<tr>
<td>I-57 improvement, I-80 to Wilmington-Pecora Road</td>
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<td>IL 43 from US 30 to Steger Road</td>
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<td>![Strong Relationship]</td>
<td>![Strong Relationship]</td>
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<tr>
<td><strong>Other Individual Highway Projects</strong></td>
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<tr>
<td>I-55 improvements, I-90/94 to Weber Road</td>
<td>![Little or No Relationship]</td>
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<td>IL 39 add lanes, 188 to New York Street</td>
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<td>I-90 additional lanes, I-39 to I-294</td>
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<tr>
<td>MidCity Freeway</td>
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<td>I-80/I-190 Kennedy Expressway - WB Truck Capacity</td>
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<td>Central Avenue connector across Clearing Yard, 65th-79th</td>
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<tr>
<td><strong>Rail Capacity Projects</strong></td>
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<tr>
<td>CREATE Program</td>
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<tr>
<td>RNSF Chillicothe Subdivision – Joliet Arsenal to Neresa</td>
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<tr>
<td>BRC - 59th Street Subdivision from Bedford Yard to Kenson Line</td>
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<tr>
<td>BRC - Kenson Line from 59th Street Subdivision to Hawthorne</td>
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<tr>
<td>CSXT Barr Subdivision – Blue Island to Indiana border (segments)</td>
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<tr>
<td>CSXT Blue Island Subdivision – Blue Island to Forest Hill Yard</td>
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<td>![Strong Relationship]</td>
<td>![Strong Relationship]</td>
<td>![Strong Relationship]</td>
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<tr>
<td>UP Geneva Subdivision – A-2 to Wheeler</td>
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<tr>
<td><strong>Improve at-Grade Rail Crossing</strong></td>
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<tr>
<td>119th Street (Intermodal Connector)-CN Joliet Subdivision crossing</td>
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<tr>
<td>25th Avenue/Rose Street-CP Elgin Subdivision crossing</td>
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<tr>
<td>Cass Avenue - RNSF Chicago Subdivision crossing</td>
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<tr>
<td>Crawford Avenue-CTA Yellow Line</td>
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<tr>
<td>Des Plaines River Road-CF Elgin Subdivision crossing</td>
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<td>Fairview Avenue-RNSF Chicago Subdivision crossing</td>
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</tbody>
</table>

- ![Little or No Relationship] - ![Very Strong Relationship] are as per the CMAP GO TO 2040.

Organizational and Public Policy strategies encompass and promote all other strategies, and therefore have no "explicit" performance measures.
## Table 10.1. Infrastructure Recommendation Performance Ranking (cont’d)

<table>
<thead>
<tr>
<th>Projects/Project Bundles</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Mobility: Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intermodal Facilities with NHS Roadway, Rail Access</td>
<td>Major Generators Near Interstate, Four-Lane Highway or Intermodal Facility</td>
<td>CMF</td>
<td>Average Number of Hours Spent by a Vehicle Congested with ≥50% or ≥75% Congestion</td>
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<tr>
<td>Improve at-Grade Rail Crossing (continued)</td>
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<tr>
<td>Gilbert Avenue-BNSF Chicago Subdivision crossing</td>
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<tr>
<td>IL 171-CP Elgin Subdivision crossing</td>
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<tr>
<td>IL 45-CF Elgin Subdivision crossing</td>
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<td>IL 30-CTA Pink Line</td>
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<tr>
<td>IL 68 – CPRS C&amp;M Subdivision crossing</td>
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<tr>
<td>Main Street (Downers Grove)-BNSF Chicago Subdivision</td>
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<td>Oakton Street-CTA Yellow Line</td>
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<td>Roselle Road-CP Elgin Subdivision crossing</td>
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<td>Touhy Avenue - CPRS C&amp;M Subdivision crossing</td>
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<td>U.S. 12 (Lake Grove) - BNSF Chicago Subdivision crossing</td>
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<td>U.S. 12 (95th St.) - CN Joliet Subdivision crossing</td>
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<td>U.S. 14 (Dempster) - CPRS C&amp;M Subdivision crossing</td>
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<td>Vernon Street-CN Joliet Subdivision crossing</td>
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<td>Wall Road-CN Joliet Subdivision crossing</td>
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<td>York Road-CP Elgin Subdivision crossing</td>
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<tr>
<td>Increase Utilization</td>
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<td>CN Elson Subdivision</td>
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<td>CN Freeport Subdivision</td>
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<td>Viaduct Improvements</td>
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<td>79th St. at CSXT Blue Island Subdivision (Near Oakley)</td>
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<td>Cermak Rd. at CN Freeport Subdivision (Near Archer)</td>
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<td>Irving Park Rd. at UP Harvard (near 150/94)</td>
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<td>Western Ave. at BNSF Chillicothe/CN Freeport (near 32nd St.)</td>
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<tr>
<td>Other Modes</td>
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<tr>
<td>New port facility near Logistics Park Chicago</td>
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</table>

- Little or No Relationship
- Some Relationship
- Moderate Relationship
- Strong Relationship
- Very Strong Relationship

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Table 10.2. Policy Recommendation Performance Ranking

<table>
<thead>
<tr>
<th>Ref</th>
<th>Policy Recommendation</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Safety</th>
<th>Reduction of Crash Rates</th>
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<tr>
<td></td>
<td></td>
<td>Average Length of Haul by Carrier Type</td>
<td>Modal Options for Goods Movement</td>
<td>GRP</td>
<td>Environmental and Community Impacts</td>
<td>Ton-miles per emissions output</td>
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<tr>
<td>1</td>
<td>Through partner agencies, implement projects and operations strategies that address the freight infrastructure and operations needs and deficiencies for growing and strong industries in metropolitan Chicago to facilitate industrial retention and expansion</td>
<td>●</td>
<td>●</td>
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<td>●</td>
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<tr>
<td>2</td>
<td>Identify and publish information about the region’s freight transportation system that would attract manufacturers, distributors, service providers, and freight handlers who might be interested in locating in the Chicago region.</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>3</td>
<td>Identify and enhance existing logistics-related training &amp; education opportunities and encourage additional programs, as appropriate for developing and sustaining logistics related workforce</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td></td>
<td>Policy Theme Bundle: Industry Logistics Patterns</td>
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<tr>
<td>4</td>
<td>Identify, assess and implement freight corridors &amp; facilities of regional significance, including clustering of warehousing, distribution and other freight-related centers, based on freight O-D patterns</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>5</td>
<td>Identify, assess and implement opportunities for corridor preservation</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
</tr>
<tr>
<td>6</td>
<td>Identify and promote good practices to facilitate freight movements and mitigate impacts in a variety of land use and development environments</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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</tr>
<tr>
<td></td>
<td>Policy Theme Bundle: Freight Infrastructure</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ref</td>
<td>Policy Recommendation</td>
<td>Accessibility</td>
<td>Economic Development</td>
<td>Mobility</td>
<td>Safety</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average Length of Haul by Carrier Type</td>
<td>Modal Options for Goods Movement</td>
<td>GRP</td>
<td>Environmental and Community Impacts</td>
<td>Ton-miles per emissions output</td>
</tr>
<tr>
<td>7</td>
<td>Identify opportunities for dedicated freight corridor systems (truckways, truck-only lanes, dedicated NHS connectors, Illiana Expressway, rail linkages)</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Identify investment options in alternative modes and intermodal facilities to encourage diversion from congested highway freight corridors</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>As CREATE Program implementation moves toward completion, work toward a CREATE II program based on the vision of continuing to enhance the main-line rail system so that it has the capacity to efficiently handle potential future traffic loads and meshes with an efficient system for local pick-up and delivery</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

**Policy Theme Bundle: Commodity/Vehicle Traffic Flows**

<table>
<thead>
<tr>
<th>Ref</th>
<th>Policy Recommendation</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Reduce empty container moves</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>11</td>
<td>Manage the travel demand of passenger vehicles to facilitate freight movements, as well as incorporating designs that are conducive to more efficient freight and passenger movements (traffic management)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>12</td>
<td>Identify opportunities for reducing tractor (bobtail) and chassis vehicle miles traveled per container move</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

**Policy Theme Bundle: Organization & Public Policy**

<table>
<thead>
<tr>
<th>Ref</th>
<th>Policy Recommendation</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Establish CREATE counterpart for trucking industry which could include policy options to enhance the movement of cargo by truck</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
### Regional Freight System Planning Recommendations Study

<table>
<thead>
<tr>
<th>Ref</th>
<th>Policy Recommendation</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average Length of Haul by Carrier Type</td>
<td>Modal Options for Goods Movement</td>
<td>GRP</td>
<td>Environmental and Community Impacts</td>
</tr>
<tr>
<td>14</td>
<td>Establish a governance structure, such as a Freight Authority, to identify issues, guide investments and advocate on behalf of the region through public outreach and education, promoting the Chicago economy and protecting the public interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Promote the Chicago region as a development center for freight tracking and freight data-sharing technologies, encourage private sector innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Include freight-related performance measures in project evaluation process to ensure the consideration of freight enhancing projects in the programming process</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Adopt innovative strategies to better match new and available funds with freight system needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Implement the CREATE Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Policy Theme Bundle: Environmental & Community Impacts**

<table>
<thead>
<tr>
<th>Ref</th>
<th>Policy Recommendation</th>
<th>Accessibility</th>
<th>Economic Development</th>
<th>Mobility</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Promote lower-emission freight modes and technologies (e.g. GenSet locomotives)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Identify and implement design features to control freight-related noise</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Develop a process for identifying development opportunities, brownfield re-use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Support City of Chicago industrial corridor designations of Planned Manufacturing Districts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ref</td>
<td>Policy Recommendation</td>
<td>Accessibility</td>
<td>Economic Development</td>
<td>Mobility</td>
<td>Safety</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------------------------------------------------</td>
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<td>--------</td>
</tr>
<tr>
<td>23</td>
<td>Promote safety programs such as &quot;Operation Lifesaver&quot; and &quot;No Zone&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>●</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Address the higher wear and tear on freight-impacted road surfaces with increased maintenance efforts</td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Improve both rail and truck access into intermodal facilities to reduce community impacts</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td></td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>26</td>
<td>Accommodate freight in ways conducive to intermodal passenger transportation, such as pedestrian, bicycle, passenger vehicle, commuter rail, and inter-city passenger rail, including crossings and shared-use corridors</td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

Notes:
- ● indicates a positive impact.
- The table shows recommendations for improving various aspects of freight transportation systems, including safety, economic development, mobility, and environmental impacts.
10.2 PROJECT EVALUATION WITH TRANSEARCH DATA ANALYSIS TOOL

A data analysis tool was developed to validate project recommendations against IHS-Global Insight TRANSEARCH freight flow data. Background on the TRANSEARCH data analysis tool is presented in Appendix D.

Methodology

Highway infrastructure project recommendations were grouped and analyzed according to “project bundles”, with each project bundle consisting of projects located in the same general geographic area. Some projects were analyzed individually. Figure 10.1 also shows major freight-related facilities and corresponding land use. The relationship between the location of these freight facilities, the adjacent land uses, and the project recommendations show that the highway infrastructure recommendations play an important role in serving the future transportation needs of freight-related businesses.

The truck volume forecasts that were generated by the sketch planning tool were used to analyze freeways, tollways and arterial roadways. Since the freight flow data include national flows in addition to trips that are generated in the CMAP region, the highest volumes and more reliable flows occur on the freeways and tollways. Therefore, for freeway and tollway improvements, the truck volume growth that was generated by the sketch planning tool was applied directly to Multi-Unit (MU) truck counts from the base year in order to estimate future year truck volumes:

\[
\text{Future-Year MU Truck Volume} = \text{Base Year MU Count} \times \text{Percentage Growth}
\]

A modified approach was used for evaluating improvements on arterials. For arterial streets, the total percentage growth in truck VMT on arterial streets was calculated for each analysis zone. This method was used to overcome the limitations of the sketch planning tool at the local street level, where the tool produces estimates that are not as robust as the estimates at the interstate highway level. To overcome these limitations, the tool-generated volumes were used to calculate total base and future year commodity truck VMT at the zonal level. The zonal VMT data were used to calculate percentage growth in commodity-carrying trucks at the zonal level for the analysis of arterial roadways within the zone.
Results

Growth on Interstates

To establish the degree to which the estimated future freight flows are supportive of the interstate recommendations, each interstate recommendation was analyzed in a systematic fashion along three dimensions:

- Observed Multi-Unit (MU) trucks;
- Estimated growth in commodity-carrying trucks; and
- Calculated MU truck volume forecast.

The MU truck volume forecast was derived by multiplying the base year MU traffic count value by the estimated percentage growth. These three values were obtained for several points along each proposed improvement corridor, averaged for each corridor, and used for corridor level analysis.

The MU, growth, and future MU values from 36 regionally significant locations were compiled to establish a framework to use in comparing truck flows on the project interstates with truck flows on key facilities throughout the CMAP region. The data values for these 36 locations are shown in Figure 10.2 and listed in Table 10.3. The ranges of values that represent the top third, middle third, and lowest third percentiles for each category (MU, percentage growth, and forecast MU) were compiled from the 36 locations to rank each of the proposed interstate improvements. The top, middle and lowest third percentiles are listed in Table 10.4.
Figure 10.1. Highway Infrastructure Recommendations
Figure 10.2. Regionally Significant Count Locations

Sources: Sketch Planning Tool and IDOT MU Count Data
### Table 10.3. Base Year Daily MU Count, Percentage Growth from Analysis Tool, and Forecast MU Volume for 36 Regionally Significant Locations

<table>
<thead>
<tr>
<th>Count Location</th>
<th>MU Truck Traffic Count</th>
<th>% Growth, 2007-2040</th>
<th>MU Truck Forecast Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>I290 at IL-83</td>
<td>13,000</td>
<td>50%</td>
<td>19,476</td>
</tr>
<tr>
<td>I290 Cook</td>
<td>7,400</td>
<td>22%</td>
<td>9,047</td>
</tr>
<tr>
<td>I294 95th St</td>
<td>15,700</td>
<td>36%</td>
<td>21,356</td>
</tr>
<tr>
<td>I294 at O’Hare</td>
<td>13,600</td>
<td>47%</td>
<td>19,948</td>
</tr>
<tr>
<td>I294 Dempster</td>
<td>10,500</td>
<td>52%</td>
<td>15,942</td>
</tr>
<tr>
<td>I294 Ogden Ave</td>
<td>19,600</td>
<td>50%</td>
<td>29,438</td>
</tr>
<tr>
<td>I355 75th St</td>
<td>8,100</td>
<td>152%</td>
<td>20,425</td>
</tr>
<tr>
<td>I355 North Ave</td>
<td>6,200</td>
<td>91%</td>
<td>11,871</td>
</tr>
<tr>
<td>I39 LaSalle</td>
<td>5,800</td>
<td>40%</td>
<td>8,092</td>
</tr>
<tr>
<td>I39 Lee</td>
<td>7,200</td>
<td>77%</td>
<td>12,750</td>
</tr>
<tr>
<td>I39 Ogle</td>
<td>8,300</td>
<td>121%</td>
<td>18,359</td>
</tr>
<tr>
<td>I39-90 Winnebago</td>
<td>12,300</td>
<td>97%</td>
<td>24,249</td>
</tr>
<tr>
<td>I55 Cicero</td>
<td>12,500</td>
<td>34%</td>
<td>16,698</td>
</tr>
<tr>
<td>I55 Grundy</td>
<td>5,700</td>
<td>78%</td>
<td>10,143</td>
</tr>
<tr>
<td>I55 North of Joliet</td>
<td>15,000</td>
<td>66%</td>
<td>24,969</td>
</tr>
<tr>
<td>I57 130th St</td>
<td>3,500</td>
<td>85%</td>
<td>6,492</td>
</tr>
<tr>
<td>I57 Will</td>
<td>7,900</td>
<td>131%</td>
<td>18,245</td>
</tr>
<tr>
<td>I80 Bureau</td>
<td>8,500</td>
<td>92%</td>
<td>16,302</td>
</tr>
<tr>
<td>I80 East of Joliet</td>
<td>15,300</td>
<td>53%</td>
<td>23,479</td>
</tr>
<tr>
<td>I80 Grundy</td>
<td>11,000</td>
<td>101%</td>
<td>22,077</td>
</tr>
<tr>
<td>I80-94 Indiana</td>
<td>36,000</td>
<td>58%</td>
<td>57,040</td>
</tr>
<tr>
<td>I88 at IL-83</td>
<td>21,500</td>
<td>53%</td>
<td>32,827</td>
</tr>
<tr>
<td>I88 Kane</td>
<td>4,400</td>
<td>134%</td>
<td>10,298</td>
</tr>
<tr>
<td>I88 Lee</td>
<td>2,600</td>
<td>40%</td>
<td>3,649</td>
</tr>
<tr>
<td>I90 Kane</td>
<td>6,100</td>
<td>72%</td>
<td>10,470</td>
</tr>
<tr>
<td>I90 Kennedy at Harlem</td>
<td>3,600</td>
<td>90%</td>
<td>6,839</td>
</tr>
<tr>
<td>I90 Kennedy West of I290</td>
<td>7,500</td>
<td>74%</td>
<td>13,040</td>
</tr>
<tr>
<td>I90 Skyway</td>
<td>4,200</td>
<td>73%</td>
<td>7,250</td>
</tr>
<tr>
<td>I90-94 Dan Ryan 47th St</td>
<td>20,700</td>
<td>83%</td>
<td>37,860</td>
</tr>
<tr>
<td>I90-94 Dan Ryan 83rd St</td>
<td>16,500</td>
<td>42%</td>
<td>23,445</td>
</tr>
<tr>
<td>I90-94 Kennedy</td>
<td>9,000</td>
<td>87%</td>
<td>16,810</td>
</tr>
<tr>
<td>I94 130th St</td>
<td>14,300</td>
<td>44%</td>
<td>20,545</td>
</tr>
<tr>
<td>I94 Dempster</td>
<td>6,900</td>
<td>64%</td>
<td>11,337</td>
</tr>
<tr>
<td>I94 Kenosha</td>
<td>9,500</td>
<td>66%</td>
<td>15,750</td>
</tr>
<tr>
<td>I94 Lake Forest</td>
<td>11,000</td>
<td>63%</td>
<td>17,890</td>
</tr>
<tr>
<td>U20 Winnebago</td>
<td>1,600</td>
<td>15%</td>
<td>1,841</td>
</tr>
</tbody>
</table>
Table 10.4. Percentile Ranges of Base Year MU Count, Percentage Growth from Analysis Tool, and Calculated Forecast MU Volume

<table>
<thead>
<tr>
<th>Value</th>
<th>MU Truck Traffic Count</th>
<th>% Growth, 2007-2040</th>
<th>MU Truck Forecast Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>10,107</td>
<td>76%</td>
<td>17,378</td>
</tr>
<tr>
<td>Lower Third, Range</td>
<td>0-7,300</td>
<td>0-52%</td>
<td>0-12,000</td>
</tr>
<tr>
<td>Middle Third, Range</td>
<td>7,301-12,400</td>
<td>53-80%</td>
<td>12,001-20,000</td>
</tr>
<tr>
<td>Top Third, Range</td>
<td>12,401+</td>
<td>81% and up</td>
<td>20,001+</td>
</tr>
</tbody>
</table>

Table 10.5 lists the average MU, percentage growth, and forecast MU volume values for each interstate in the project recommendations list. The interstates are evaluated by comparing these three values to the percentile ranges shown in Table 10.4. A point system was developed to calculate a score for each interstate improvement. Values that are in the top third percentile were awarded two points, values in the middle third one point, and values in the lowest third zero points. The points for each project were added up to calculate the total score for each improvement. The maximum possible score is six and the minimum is zero. Higher values indicate greater support for the project.

In addition, Table 10.5 shows the level of congestion in the base year that was determined using performance measures. The selected performance measures relate to congestion. For each project, the scores were summed up and then factored to a scale of 10, where 10 indicates significant congestion for trucks.

For facilities that do not yet exist, data were not directly available. For these facilities, the three values were calculated for interstates in nearby corridors that serve the same direction of flow. In cases where there were two competing facilities, scores for each competing facility were calculated separately and then averaged to derive a score for the proposed new facility.
Table 10.5. Limited Access Highway Infrastructure Projects: Importance Ratings

<table>
<thead>
<tr>
<th>Project</th>
<th>Future Year Freight System Support for Project</th>
<th>Base Year Congestion: Scale 1 to 10 (6 is maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Top Third (2 pts.)</td>
<td>Middle Third (1 pt.)</td>
</tr>
<tr>
<td>I-90 Add Lanes</td>
<td>MU X</td>
<td>2 3</td>
</tr>
<tr>
<td>I-39 to I-294</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>I-90/190 Truck Capacity</td>
<td>MU X</td>
<td>2 8.5</td>
</tr>
<tr>
<td>I-294 to Edens/I-94</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>O’Hare Access: Growth on Competing Facilities</td>
<td>MU X</td>
<td>3.5 4.5</td>
</tr>
<tr>
<td>I-90 near Elgin-O’Hare Extensions</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>I-290 between I-355 and I-294</td>
<td>MU X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>I-290 Bottleneck</td>
<td>MU X</td>
<td>1 7</td>
</tr>
<tr>
<td>I-294 to Cicero Ave</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>I-355/North Will County East-West</td>
<td>MU X</td>
<td>5 3</td>
</tr>
<tr>
<td>I-80 from Grundy to LaGrange</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>I-55 Improvements</td>
<td>MU X</td>
<td>4 8</td>
</tr>
<tr>
<td>Weber Rd to I-90/94</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>Joliet North-South Access</td>
<td>MU X</td>
<td>4 6.5</td>
</tr>
<tr>
<td>I-55, I-80 to Coal City (North to South)</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>Mid-City Freightway: Growth on Competing Facilities</td>
<td>MU X</td>
<td>4.5 7.5</td>
</tr>
<tr>
<td>I-294, I-90 to I-57</td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
<tr>
<td>Kennedy/Dan Ryan, Edens to 95th Street</td>
<td>MU X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% Growth, 2007-2040 X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume X</td>
<td></td>
</tr>
</tbody>
</table>
### Table 10.5 Limited Access Highway Infrastructure Projects: Importance Ratings (continued)

<table>
<thead>
<tr>
<th>Project</th>
<th>Future Year Freight System Support for Project</th>
<th>Base Year Congestion: Scale 1 to 10 (10 is worst)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Top Third (2 pts.)</td>
<td>Middle Third (1 pt.)</td>
</tr>
<tr>
<td>South Will County East-West: Growth on Competing Facilities</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>I-80, I-57 to State Line</td>
<td>MU</td>
<td>% Growth, 2007-2040</td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume</td>
<td>X</td>
</tr>
<tr>
<td>Southern Access</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>IL-394, I-80/94 to IL-1</td>
<td>MU</td>
<td>% Growth, 2007-2040</td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume</td>
<td>X</td>
</tr>
<tr>
<td>I-57, I-80 to Wilmington-Peotone Road</td>
<td>MU</td>
<td>% Growth, 2007-2040</td>
</tr>
<tr>
<td></td>
<td>Forecasted Volume</td>
<td>X</td>
</tr>
</tbody>
</table>

According to this analysis, the commodity flow data show the strongest support for the following improvements scoring between 4 and 5 points in the rating system:

- I-355/North Will County East-West,
- I-55 Improvements,
- Joliet North-South Access,
- Mid-City Freightway, and
- South Will County East-West.

Most of these improvements are located in the southern, southwestern, and southeastern parts of the CMAP region. The freeways and tollways in these areas tend to experience heavy commodity truck flows because they serve as major geographic gateways between the Chicago region and most of the remainder of the U.S. For example, the I-80 corridor serves as a gateway to the northeastern and northwestern U.S.

The data also show moderate support for the other interstate recommendations. The following interstate projects rank 2 to 3.5 points in the rating system:

- I-90 Add Lanes
- I-90/190 Truck Capacity
• O’Hare Access
• Southern Access

Although this analysis demonstrates only moderate support for these projects, they are regionally significant for commodity truck travel for other reasons. In particular, these improvements would help to facilitate the heavy through movements between I-80/94 and I-90/39. These improvements would also facilitate access to major freight generators in the O’Hare area.

Congestion in the base year is another level of support for many projects. In terms of base-year congestion, the projects that rank the highest are:

• I-90/190 Truck Capacity
• I-290 Bottleneck
• I-55 Improvements
• Mid-City Freightway

The level of congestion that trucks face is a significant component of the project development process. For example, key regional interstates such as I-90/190 and I-290 pose substantial mobility issues to trucks. As a result, these projects, which rank on the lower end in the future freight system ranking, rank very high on the congestion component.

Levels of congestion are graphically shown along with the project recommendations in Figure 10.3. This figure shows congestion in terms of peak period Travel Time Index (TTI) on freeways and on arterials. The TTI was available for the AM and PM peak periods. The data that are shown in the figure further illustrate the severity of congestion on the major regional interstates such as I-290, I-90, and I-55.

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1 For interstates, the higher of the two TTI value was used. For arterials, congestion at the link level was first weighted by VMT to compose a zonal average by time period, then the higher of the two values was used.
Figure 10.3. Highway Recommendations and Congestion on Interstates and Arterial Streets
Growth on Arterial Streets

Figure 10.4 shows the forecasted percentage change of commodity-carrying truck VMT on arterial streets in each analysis zone. The average zonal growth of commodity-carrying truck VMT on arterial streets was about 65 percent between 2007 and 2040. The zones are color-graded to represent a comparison of the zonal growth with the average zonal growth. The two lighter shades represent below-average growth and the two darker shades represent above-average growth. According to the sketch planning tool, the largest percentage increases in arterial growth are expected to occur in the southern part of the CMAP region. This high-growth area includes Will, southern Cook, and southeastern DuPage Counties.

Most of the proposed infrastructure improvements, shown in Figure 10.4, are also located in the high-growth, southern CMAP area. This analysis suggests that the proposed infrastructure projects located in the southern area of the region tend to be aligned with the higher growth volumes predicted by the sketch planning tool.

The projects which are located in the lower-growth areas also are important for commodity-carrying trucks. For example, routes such as I-90, I-290 and the Mid-City Freightway help to facilitate truck movements throughout the region. Additionally, these routes provide important connections to key freight-related areas in the northern part of the region such as the O’Hare area.

As shown in Figure 10.3, many of these projects are located on roadways with high levels of congestion. For example, the arterial street networks in the vicinity of the I-290 / St. Charles interchange and the O’Hare Access improvements are very congested relative to other areas.
Figure 10.4. Highway Recommendations and Growth in Commodity-Carrying Trucks on Arterial Streets
11.0 Conclusions and Next Steps

The Regional Freight System Planning Recommendations Study conducted data-driven analyses to identify recommendations to improve the safety and efficiency of Greater Chicago’s freight system, and ensure that investments in the transportation system lead to economic benefits, consistent with regional goals. This study also went through a data-driven process to thoroughly vet recommendations for inclusion in the GO TO 2040 Plan.

While this study is complete, there exist several next steps for the study products to ensure that this work continues to benefit the region. These next steps include:

Finalize GO TO 2040 Plan

Among the projects evaluated within the freight system context, several were included in one form or another in the draft CMAP GO TO 2040 fiscally constrained major capital recommendations.\(^2\) Highlights of such projects include:

- Major capital elements of the O’Hare Access bundle (including the O’Hare Bypass, I-190/Mannheim Road improvements, and the Elgin-O’Hare Expressway).
- The Illiana Expressway (Phase-I engineering).
- I-80 improvements (partial)
- I-290 additional lanes (endorsed a multi-modal corridor in support of on-going project study)
- I-55 improvements, I-90/94 to Weber Road (endorsed managed lane concept)
- I-90 additional lanes, I-39 to I-294 (endorsed managed lane concept)

Further, the CREATE Program is included in the Plan as a recommended project within the “strategic improvements” category. Proposed truckways, truck parking, additional rail system improvements, and other strategic freight improvements have similarly been addressed in the draft GO TO 2040 plan recommendation to “Create a more efficient freight network.”

Inevitably, several freight system major capital recommendations were not included in the draft GO TO 2040 major capital recommendations. There is

simply not enough funding to address all of the needed improvements in the transportation system.

**Incorporate performance measures in on-going regional freight planning**

The high correlation between freight performance measure rankings and GO TO 2040 major capital recommendations provide validation for each evaluation mechanism. Though, the freight performance measures were not the sole factor in major capital recommendations, the freight performance measures have been validated by the broader decision-making process. Further, it became understood through this process that such measures provide unique insight to goods movement issues and the applicability of these measures to projects and bundles of projects at scales not reaching those of major capital projects lends credence to future efforts to apply such measures to short-run multi-modal program project selection.

Freight-focused performance measures implemented at a regional level can be valuable tools, among others, in evaluating potential freight system improvements on transportation systems. The process outlined in this report could serve as a touchstone for future freight system performance measure development in the region. The freight performance measures could be useful for future refinements to the GO TO 2040 capital project recommendations and project programming activities, as well as the implementation phase of GO TO 2040, commencing in October, 2010.

**Continue dialog on the importance of freight planning**

A variety of public and private sector stakeholders representing all freight modes and community interests were engaged as part of this study, and constructive feedback was received. It is vital that the momentum of this dialog on freight infrastructure and policy issues continues. CMAP’s Freight Committee served as the general oversight body for this study and will continue to be engaged on freight issues in the region. It is recommended that as part of committee efforts that the recommendations contained within this report are actively discussed as part of regular meetings.

A first item for Freight Committee discussion could be this study’s policy-related recommendations. The 26 Policy Recommendations were evaluated and assigned a priority, timeframe for action and lead implementing agency in partnership with the Freight Committee. Each committee member voted on the importance of the polices selected for inclusion in this study and possesses the potential to take ownership of, and actively pursue, the next dialog required to turn these policies into action. It is up to the Freight Committee to ensure that recommendations are acted upon.
Quantify the economic benefits of investing in the freight system

Oftentimes public agencies struggle to justify transportation investment in projects with unknown benefits, or a project that may return a substantial number of economic benefits to the private sector in addition to the benefits returned to the public sector. While it is important for all projects to be evaluated in terms of project benefits compared to project cost, it is particularly vital to provide this comparison for freight infrastructure investment. A possible approach for evaluating whether freight infrastructure investments are warranted is to assess the “cost of doing nothing.”

It is recommended that the projects identified in this study be modeled in CMAP’s travel demand model and the model output be compared against a base “do nothing” alternative in the future. CMAP has procured a Transportation Economic Development Impact System (TREDIS) model that is essentially an economic benefits determinant. The outputs of the “do nothing” and freight scenarios runs can be inserted in the TREDIS model to essentially calculate the differential between the scenarios and the “cost of doing nothing.”