

FREIGHT RAIL FUTURES FOR THE CITY OF CHICAGO

Final Report

Prepared for the

**City of Chicago
Department of Transportation**

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Executive Summary

This study estimates the economic impacts of the rail freight industry on the City of Chicago. It provides a framework that can help City officials assess the ways that changes in the regional rail system would affect employment, Gross Regional Product (GRP), and other economic indicators over the next 20 years. The core of the study is a multi-sector, regional economic analysis that shows how economic activity in the city, the inner suburbs, and the region would be affected by various possible scenarios concerning rail activity. The base case is driven by standard economic forecasts and continued trends for regional freight activity. Interviews and surveys of carriers, shippers, and public officials provided insights into both the trends that might affect the freight system and the response of railroads and their customers to these changes. The regional rail system could potentially evolve without any dramatic changes to operations within the city; it could also evolve so as to require far more or far less rail activity within the city. To some extent, the City can influence how the system evolves, and this study examines how different evolutionary paths are likely to affect both the city and the region.

The study concentrates on the way that the rail system affects local jobs and local industrial activity. It shows how changes in the location of rail terminals will eventually lead to changes in the distribution of transportation and industrial employment throughout the region. Its goal is to understand the linkages and interactions among the rail system, the distribution of economic activity, and patterns of regional development.

The study acknowledges, but does not analyze, the more immediate ways that rail operations affect daily life throughout the city. Delays at grade crossings, noise associated with rail terminals, heavy truck traffic near intermodal terminals, the possible need for more locomotive whistles, and the visual impacts of container storage are of course daily concerns for many residents and together have an impact on the quality of life in the city. The options for alleviating the negative consequences of rail operations should be considered along with the economic issues addressed in this report.

Summary of conclusions and recommendations

It is in the best interests of the City of Chicago to remain the pre-eminent rail hub in North America. While rail freight service is no longer the driving force for economic development that it once was, it remains an important underpinning for the city's economy. From an economic development perspective, the city should therefore support continued or improved freight operations rather than seeking to constrain or eliminate freight operations. The best strategy will be to support the rationalization of freight operations within the city so as to reduce conflicts between rail and highway operations, improve coordination of freight and passenger services, offer better access to intermodal terminals, enhance freight service, and reduce freight costs. Rationalization of the rail freight system would increase the city's Gross Regional Product (GRP) by more than \$1 billion per year by the year 2020 and provide more than 8,000 additional jobs. Redevelopment of land freed up by rationalization would more than double these benefits.

The problem with aggressive efforts to move freight operations outside of the city is that some rail users will follow the rail facilities, others will end up using more trucks, and more economic development will shift to the suburbs. The city may avoid some problems if rail operations are reduced, but the city could potentially lose more than the trains. Results from the regional economic analysis show that moving freight away from the city would, by 2020, reduce GRP for the city by \$1-3 billion annually, while eliminating 5,000-15,000 jobs. Redevelopment opportunities would offset these losses, but the net benefits would still be 25-75% lower than under the rationalization scenario.

These conclusions are of necessity quite general. The potential for any specific change in the rail system depends upon many site-specific factors related to the rail network, the location and activities of rail users, the impact of rail activities on the local streets, and the role of the rail facilities in the local, regional, and national rail networks. Redevelopment of secondary routes and minor, underutilized terminals will be far easier than relocation of main lines or consolidation of major terminals. The benefits from consolidation, closure or relocation would depend upon local redevelopment options and the extent of disruption to rail-dependent businesses during implementation.

Also, significant changes in either the rail system or in the distribution of economic activity throughout the metropolitan area will take place slowly, over time measured in years or decades. There is no compelling need for immediate action on the part of the city to promote or prevent particular strategies. Left to themselves, the railroads and customers will work toward a system that provides whatever capacity and service requirements are necessary, and there will be time for the city to plan and to react as trends and changes become more evident. However, it is clear that coordinated planning efforts have the potential to create a more effective and more efficient rail system, both for passenger and freight services, with lower impacts on neighborhoods and highways. The benefits cited above for the rationalization scenario are indicative of the payoff to the city from a coherent planning process for the rail freight system.

1 Introduction

For well over a century, the railroad industry has been an inescapable part of Chicago's landscape. For many of the 150 years since the "Iron Horse" first came to Chicago, the railroad industry and the city shared a collective destiny: the triumph of one became the success of the other. However, as the rail industry struggled through the latter half of the 20th century, the once-common pathways began to diverge. The rail industry struggled for survival, consolidating from twenty major carriers to six, and fused the region's 19th century aggregation of railroad lines and terminals into a more compact and denser network. The city was likewise locked in its own battle, digging out from the collapse of the manufacturing-based economy that had been its foundation for many years. Regional growth spread westward away from the city, creating a massive suburban sprawl of residential and light industrial development. Highways became Chicago's arteries. Just as it had served for a century as the crossroads of the Nation's rail commerce, so Chicago emerged as the midwestern "hub" of the interstate network. The divergence of pathways was now complete. Nevertheless, at the dawn of the 21st century, the city retains its position as the center of North American railroading more strongly than ever, and railroads – and the shippers that rely on them - remain a significant physical and economic presence.

While Chicago continues its pre-eminent role in rail freight commerce, it is important to examine in detail the future of that role. A new century brings new perspectives. What history has given Chicagoland in rail infrastructure may or may not be optimal for the rail freight industry's future, or for the City of Chicago and its environment for its businesses and residents. Certainly, there are problems with the present system, problems that need to be addressed. The rail network in and around Chicago is very complex, prone to congestion, and forced to serve burgeoning freight traffic that it was not designed to handle. Chicago is the major hub for rail/highway intermodal traffic, yet the structure of the network demands "rubber tire interchange" for a significant portion of trailers and containers moving through the region. Compounding the challenge has been the steadily growing demand for rail infrastructure capacity by regional and intercity rail passenger services. In many cases, these services utilize the same main line infrastructure that is most heavily used by the region's freight trains.

In 1998 the Business Economic Area (BEA) containing Chicago placed first among all BEA regions for inbound tonnage volumes of rail carload traffic, fifth in outbound tonnage, and ninth in intra-regional traffic. The region's railroads and highways hosted some 73 million tons of rail intermodal traffic – almost half of all rail intermodal traffic handled by U.S. railroads that year. Translated into trailers and containers, this means that 4.6 million loads began or ended their trip in the Chicago region.

The volumes handled in 1998 followed on very substantial growth in traffic by all modes since the 1980s. Between 1985 and 1998, overall traffic for the Chicago BEA grew by 161% for inbound, 152% for outbound, and 115% for intra-regional. Rail carload tonnage approximately doubled, while intermodal tripled. At the same time, the volume of traffic moving by highway grew by over 200%, with most gains occurring in truckload traffic, much of which might once

have been handled by railroads. Volume growth is forecast to remain strong over the next two decades, albeit at a somewhat slower rate of 62% between 1998 and 2020. This means that Chicago's transportation infrastructure must accommodate an additional 439 million tons of inter-regional traffic (inbound, outbound, and through), above the 707 million tons handled in 1998. Out of these 439 million tons, 156 million are expected to use rail for at least part of their journey.

Where and how this additional tonnage – and millions of additional vehicle trips - will be handled is dependent on decisions that are being made by private carriers and public planners. For rail, the expected continued growth in traffic could result in significant collateral impacts: more frequent interference at rail/highway grade crossings, greater noise from more frequent trains, and growing truck traffic over City streets travelling to and from intermodal terminals. The existing rail infrastructure, such as bridges and viaducts, will, without substantial additional investment, become more severely stressed and deteriorated than it already is.

This recent and impending growth, combined with the many changes in Chicago's economy, population, and development trends, have made it readily apparent that the traditional relationship between the railroads and the city has changed greatly. Chicago DOT and the Mayor have appropriately questioned whether this relationship should be fundamentally changed, and, if so, how. Effectively addressing these issues requires an understanding of how much of Chicago's economy continues to be linked to the fortunes of the rail industry.

To answer this essential question, the City of Chicago Department of Transportation commissioned a consulting team – led by Reebie Associates - to analyze the economic impact of rail transportation on the regional economy. The project team developed a multi-faceted framework that can help City officials assess the ways that changes in the regional rail system would affect employment, Gross Regional Product (GRP), and other economic indicators over the next 20 years. The core of the study is a multi-sector, regional economic analysis that shows how economic activity in the city, the inner suburbs, and the region would be affected by various possible rail activity scenarios. A "base case" is driven by standard economic forecasts and continued trends for regional freight activity. Interviews and surveys of carriers, shippers, and public officials provided insights into the trends that might affect the goods movement system as well as the response of railroads and their customers to these changes. The study concentrates on the way that the rail system affects local jobs and local industrial activity. It shows how changes in the location of rail terminals will eventually lead to changes in the distribution of transportation and industrial employment throughout the region. Its goal is to understand the linkages and interactions among the rail system, the distribution of economic activity, and patterns of regional development.

The regional rail system could potentially evolve without any dramatic changes to operations within the city; it could also evolve so as to require considerably more or much less rail activity within the city. To some extent, the city can influence how the system evolves, and this study examines how different evolutionary paths are likely to affect both the city and the region.

The study acknowledges, but does not analyze, the more immediate ways that rail operations affect daily life throughout the city. Delays at grade crossings, noise associated with rail terminals, heavy truck traffic near intermodal terminals, the possible impact of increased whistle-blowing, and the visual impacts of container storage are of course daily concerns for many residents and together have an impact on the quality of life in the city. The options for alleviating the collateral impacts of rail operations should be considered along with the economic issues addressed in this report.

1.1 Methodology

To broadly document and understand the railroad industry's past, present, and potential future impact on Chicago and the region, the study team undertook both primary and secondary research, collected, developed and analyzed statistical data, met with and discussed a variety of topics with key constituencies, and performed economic modeling. The study was organized around five basic task elements:

1. Evaluate historical and future trends in goods movement;
2. Gain the perspectives of key constituencies – transport providers, shippers, and third parties;
3. Develop a set of scenarios for how the future of Chicago's railroads might look twenty years from now, based on current and potential trends;
4. Assess the economic impact of the scenarios on Chicago using a regional impact model; and,
5. Develop conclusions and policy implications.

Each of these five task elements is discussed below.

Historical and future trends in goods movement. To understand the role of rail, it is necessary to understand the nature of freight flows into and out of the region. Rail and intermodal transportation are primarily used for long-distance, high volume shipments, and are not normally solutions for general freight movements moving short distances. Trends in goods movement, in terms of volumes, commodities, and trading partners provide the backdrop for the issues that the city and the railroad industry face now and into the future. Freight traffic in most modes has increased substantially over the past two decades, and forecasters predict almost a doubling in freight volumes for all modes between 1998 and 2020. Assuming no other changes, this implies that there will be no abatement in general demand for an already capacity-constrained transport infrastructure.

Reebie Associates' TRANSEARCH goods movement database served as the basis for this task, given its longstanding coverage of all major modes of freight transportation (except pipeline), commodities, and North American geography. Using TRANSEARCH, Reebie documented freight flows by mode, commodity, origin and destination for traffic originating, terminating, or moving through Chicago. Global Insight, Inc. (formerly DRI-WEFA) produced a forecast of business activity to 2020, which, in conjunction with the TRANSEARCH data, was used to forecast rail freight volumes by commodity, industry group, and geographic trade area.

Gain perspectives of key constituencies. The act of moving goods in itself does not produce significant economic activity and can cause considerable negative collateral effects, such as noise, air pollution, vibration, and interference with daily activities. However, transportation provides access, which in turn facilitates economic development. To determine the current state of the local shipping and carrier community and to understand the linkage between rail service and industrial activity, the study sought to gather the opinions of numerous stakeholders. Using a combination of mail and telephone surveys and face-to-face structured interviews, the study team solicited feedback from nearly six thousand local shippers, freight and passenger rail carriers, drayage companies and government agencies.

Since shippers and not carriers provide the basis for sustained, large-scale economic activity in the region, considerable effort was expended in gaining shippers' perspectives. Survey results were used to estimate the extent to which current rail customers would reduce their operations or move their businesses if rail service deteriorated or moved to the suburbs. Although only a small percentage of shippers would be affected by changes in the rail system, the economic impacts of shipper relocation and adjustment were predicted to be greater than the direct economic impacts of shifting the location of the rail terminals.

Rail carrier interviews were conducted with Metra, six Class I railroads (UP, BNSF, CSX, and NS, CN/IC, CP), and four regional railroads (EJE, BRC, CSS, and RailAmerica). Interviews with trucking and cartage companies were useful in understanding the role of draymen in intermodal operations. Both rail and trucking officials expressed doubts that there could be any significant reduction in rubber tire interchange, unless operations could be concentrated into a single, in-town facility. In addition, interviews were also held with representatives from the Illinois Department of Transportation (IDOT) and the Chicago Area Transportation Study (CATS).

Future scenarios for railroads and the city. The rail industry and the city are both evolving, and there are many trends that affect the future structure and location of rail facilities within Chicago. Four scenarios capture the types of strategies that could be, and to some extent already are, changing the shape of the regional rail industry. These scenarios reflect trends away from a base case that envisions no major changes in the nature of the freight network in the region, i.e., the system continues to expand to support local and regional industry and Chicago continues to be a major hub for the North American rail system. In the Base Case, existing yards within the city continue to be utilized, productivity trends allow some improvements in cost and capacity, and additional terminal capacity is constructed outside of the city. Each scenario highlights an important variation on these basic trends, representing the types of strategies that railroads or public agencies might consider:

- Continuing consolidation of Class I rail carriers into fewer and larger national systems;
- Continuing migration of rail intermodal activity to suburban locales from the current center-city concentration;
- Rationalization of the regional infrastructure into high-density grade-separated rights-of-way designed to minimize the terminal and grade crossing interactions that currently delay rail movement in the region; and,

- Aggressive elimination of rail facilities in the region brought about by capital starvation in the rail industry.

In actuality, a mix of these trends is expected to occur over the next two decades.

Economic impact on Chicago and environs. The information gleaned from the analysis of traffic flows, the shipper and carrier interviews, and the scenario discussions was fashioned into inputs for regional economic analysis using a geographically calibrated model from Regional Economic Model, Inc. (REMI). The major inputs to the model include: a forecast of industrial activity broken into several dozen sectors; basic information concerning prices and wages by industrial sector; variables related to land use (land values, jobs/acre, acres of terminal required per ton shipped); and variables related to transportation costs. These inputs were organized for each of the four scenarios, and included rail and trucking industry employment, construction spending, railroad land use patterns, and shipper job migrations. The inputs were provided for each year of the study (from the 1998 base year through to 2020) and allowed precise insertions of impacts in future years. For the Base Case analysis, regional growth factors were obtained from the Northeastern Illinois Planning Commission (NIPC). Individual analyses were constructed for each scenario, and all of the scenario analyses were run multiple times to insure accurate results.

A key part of the economic analysis concerns the potential for redeveloping rail facilities. The project team assessed current land values and the potential for redevelopment for a sample of rail facilities in the city. Based on a review of prior land redevelopment patterns, the most common development option would be light industry or retail; a few sites might be appropriate for residential development, and pieces of at least one site might be added on to a nearby park. The REMI analysis of the redevelopment potential was driven by estimates of employment increases for select light industrial and retail activities (based on a comparison of the average number of rail freight employees per acre to the average retail-manufacturing employees per acre) and construction of facilities. The analysis allowed several years for the transition from a rail facility to new development in order to allow time for environmental clean-up, sale of the land, permitting and new construction.

To simulate the various scenarios in the REMI analysis, Reebie first estimated the amount of land that would be required for terminal operations in each sub-region, based upon projected (TRANSEARCH) levels of industrial activity and rail operating characteristics. The analysis took into account both announced and planned expansions of terminal capacity in projecting land requirements over the 20-year horizon. The amount of land required in each sub-region was then varied to reflect the specifics of each scenario. The inputs to REMI reflected the costs of terminal construction and the effects of terminal relocation of transport costs for shippers in each sub-region. Since population and economic activity adjust to changes in these inputs, the REMI model was able to predict changes in economic performance for each scenario.

Conclusions and policy implications. The results of the REMI analysis, the surveys and the discussions with CDOT were used to produce a set of conclusions and policy analyses. Given the size, complexity, and regional impacts of the issues involved, the situation in Chicago offers an important opportunity for public sector involvement by bringing the stakeholders together,

combining public and private resources, and achieving effective solutions. These conclusions and their public policy implications are presented in the final chapter of this report.

The study was conducted over a period of twenty months, beginning in April 2001. Although some of the fundamental data used in the study predated the economic slowdown that began in 2001, all of the survey data, stakeholder interviews, and economic forecasts reflect current trends. Furthermore, the effects of economic activity peaks and valleys, such as the one that we are currently experiencing, tend to average out over a longer period such as the twenty-year horizon for this study. Finally, it is important to note that the analysis, conclusions, and recommendations presented in this report are those of the consulting team; they do not necessarily reflect the opinions of CDOT or of any of the many people who were interviewed.

1.2 Report structure

Including this introductory chapter, this report consists of six chapters plus appendices. The organization of the report largely follows the five major tasks outlined in Section 1.2, above. Chapter 2 covers the first task of the study, presenting historical and forecast trends for goods movement. Chapter 3 introduces the results from the shipper survey, carrier interviews, and discussions with other critical stakeholders. Future rail industry scenarios are discussed in Chapter 4. Chapter 5 takes the scenarios, the data from the Tasks 1 and 2, and converts them into inputs for the economic impact analysis. Finally, Chapter 6 discusses the results and their implications for policy development by the city. The appendices provide further detail on various elements of the study, including a complete profile of the shipper survey results, and greater detail on the REMI model and supporting data.

2 Context

Chicago and transportation have been closely intertwined almost since the city's founding. It has functioned not only as North America's premier rail hub, but also as a major hub for the air and highway networks. The context in which railroads exist now and may possibly function in the future must be examined not only from a purely rail-related perspective, but also a broader one that takes into account Chicago's position as a major economic center and multi-modal hub.

This chapter provides this context by beginning with an overview of recent trends in transportation and the region, and following with a look into the future using a forecast produced by Global Insight. A more detailed discussion of the railroad industry, its relationship with the Chicago region, and its future prospects provides the basis for many of the concepts and issues that underlie this study. The chapter concludes with an examination of the fastest growing segment of the rail industry, intermodal. Decisions that are now being made by both private sector and public decision-makers may have far reaching impacts on how and where this traffic is handled.

2.1 Chicago's evolving role as the transportation hub of Mid-America

Since its creation as the largest interchange point between the eastern and the western rail carriers during the latter half of the 19th century, Chicago has served as the primary hub of the North American railway network. At the same time, its central geographic location and ready access to the rest of the nation resulted in tremendous economic development that has led to its longstanding status as the second or third-largest regional economy in the U.S. By the middle of the 20th century, Chicago, by benefit of its central geographic location and economy, began to take on similarly important roles for the emerging air and highway modes. The most apparent symbol of this development has been O'Hare Airport, which for many years has led the nation with the highest volume of commercial flights and passenger enplanements.¹ However, its central position as the Midwest's hub for goods movement by highway, rail, and air, while less noticeable, is of no less importance.

At the end of the 20th century, the Business Economic Area (BEA)² region containing Chicago³ led the nation with the largest volume of manufactured, industrial and raw materials transported

¹ Bureau of Transportation Statistics, **National Transportation Statistics, 2001**, table 1-36 (http://www.bts.gov/publications/national_transportation_statistics/2002/html/table_01_39.html). In 2002, Chicago was second place nationally for passenger enplanements.

² "The Bureau of Economic Analysis (BEA) Economic areas are nodal functional areas delineated to facilitate regional economical (sic) analysis. Each area consists of an economic node – a standard metropolitan statistical area (SMSA), or similar area, that serves as a center of economic activity – and the surrounding counties that are economically related to the center. To the extent possible, each area includes the place-or-work and place-of-residence of its labor force. The areas cover the entire United States." Source: BEA Economic Areas (Revised 1977) Component SMSA's, Counties, and Independent Cities. Prepared at U.S. Department of Commerce, Bureau of Economic Analysis. Washington, D.C.: U.S. Government Printing Office, 1978.

³ Historical comparisons presented in this section are based on the Chicago BEA due to the lack of comparable historical data for the metropolitan region. The BEA containing Chicago (64) consists of five northwest Indiana

into the region, and placed second for outbound shipments. In 1998, inbound tonnage amounted to 335 million tons, while outbound tonnage was somewhat less at 247 million tons. The Chicago BEA ranked third for intra-regional traffic. For rail transport, Chicago's position remained central: for inbound carload traffic, Chicago handled 30% more traffic than the second largest inbound market, St. Louis. Chicago's status as North America's rail intermodal hub put it in first place for both inbound and outbound intermodal traffic. For goods transported by highway, Chicago ranked third for inbound traffic, after the Los Angeles and New York regions, and fourth for outbound traffic, after Los Angeles, Houston, and San Francisco.⁴

While freight transportation volumes have grown marginally faster than the economy over the past twenty years, in certain regions and corridors they have grown far more rapidly. Chicago is one such region. Between 1985 and 1998, the growth in tonnage among all modes in the Chicago BEA reported by TRANSEARCH was substantial: 152% for outbound, 160% for inbound, and 116% for intra-BEA (local) traffic (see Figure 2.1). On a proportional basis, overall growth

between 1985 and 1998 – inbound, outbound, and local traffic - was greatest for air cargo, which expanded by over 500%, and truckload (TL), with an overall increase of approximately 300%. Also achieving substantial growth was rail intermodal at 212% over the thirteen-year period, private truck at 145%, and rail carload traffic at 116%. Only the less-than-truckload (LTL) and waterway volumes remained

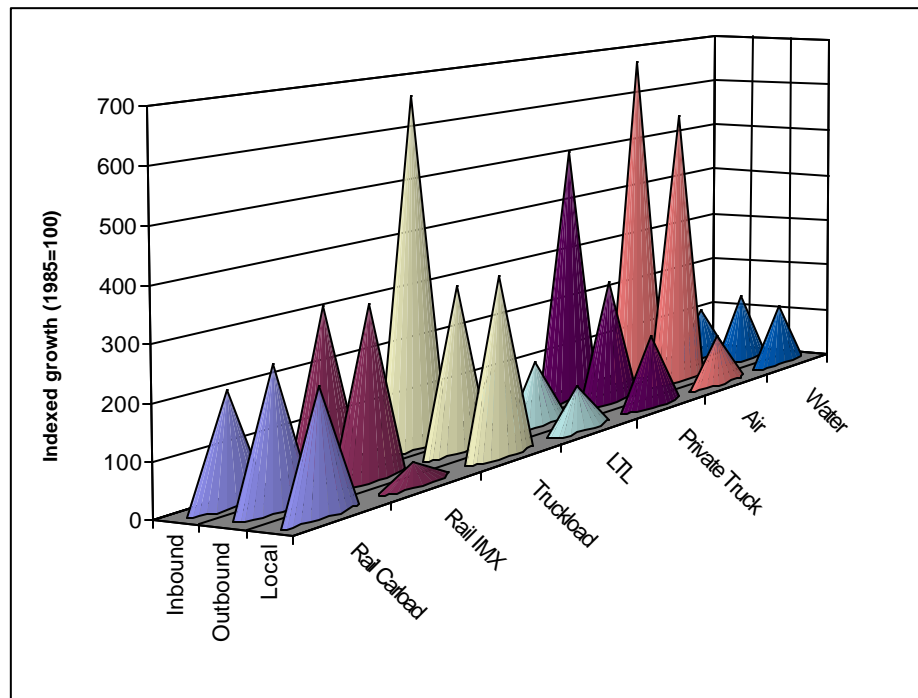


Figure 2.1 – Indexed growth in tonnage by mode between 1985 and 1998 (1985 = 100), not including through traffic

counties, most of northern Illinois between Lake Michigan and the Mississippi river, plus two counties in southeastern Wisconsin. The boundaries changed in 1996, with the most notable changes being the addition of Bloomington/Normal (McLean) and Rockford (Winnebago) into the Chicago BEA. Rail statistics are based on the full Surface Transportation Board/ Interstate Commerce Commission rail waybill sample. For a detailed discussion on the construction of the sample, see Fine and Owen, **Documentation of the ICC Waybill Sample** (Washington DC: Interstate Commerce Commission, The Office of Policy and Analysis, November 1981).

⁴ Data drawn from Reebie Associates' TRANSEARCH 1998 goods movement database. The region with the highest outbound volume was the Casper, Wyoming BEA, which encompasses the Powder River Basin coal fields.

essentially flat, increasing by 14%.⁵

The regional trends for LTL and waterway traffic were consistent with national trends. Institutional and competitive challenges impeded the LTL carriers' ability to achieve volume growth. The integrated package carriers, led by UPS and FedEx (which appear in the truckload category in Figure 2.1), absorbed the massive growth in small packages handled, while for large shipments the new national and regional TL carriers provided compelling service and cost advantages over the traditional LTL carriers. On the inland waterways and the Great Lakes, shipments of bulk commodities that comprise the vast majority of waterway traffic grew more slowly than the general economy. The increasing substitution of midwestern high-sulfur for low-sulfur western coal destined to power plants and factories in northern Illinois substantially contributed to a shift in mode from waterway to rail.

The growth in carload traffic is noteworthy, given that it far outpaced the Class I railroads' overall growth in originated tonnage of 25% during this thirteen-year period. It reflects the importance of Chicago as the hub of the North American railroad network, and changes that the industry has undergone in recent years. Flows from some key commodities have changed - particularly coal - and traffic has become more concentrated along core lines and terminals. This

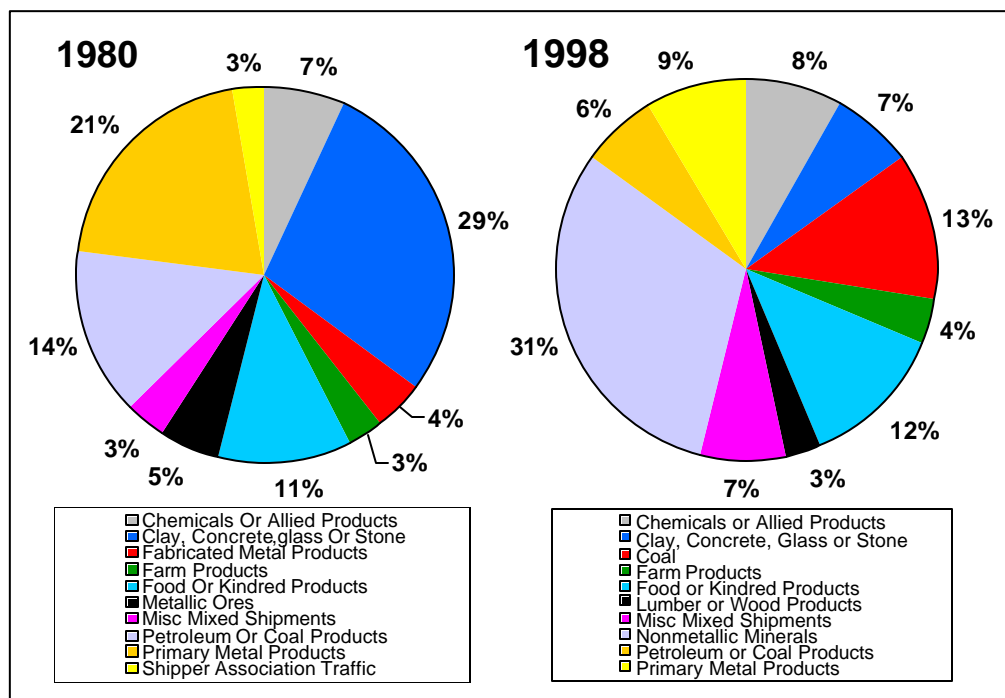


Figure 2.2 – Chicago region rail commodity tonnage trends, 1980 and 1998

⁵ 1985 TRANSEARCH data presented in this section has been adjusted to reflect changes in BEA boundaries that occurred in 1996 to produce comparable results. During this period, the data sources and methodologies used to develop TRANSEARCH evolved – particularly with the addition of secondary warehouse truck traffic and rail drayage in the mid-1990s - which limits the accuracy of comparisons across time periods. Nevertheless, the results from

shifting mix of rail commodities becomes apparent in Figure 2.2, which is a comparison of the top ten rail commodities shipped through Chicago in 1980 and 1998.

The importance of highway transport and the continued significance of rail are evident when trends in modal split are examined. Figure 2.3 compares the relative modal shares for the Chicago BEA on a tonnage basis for inbound and outbound traffic between 1985 and 1998.

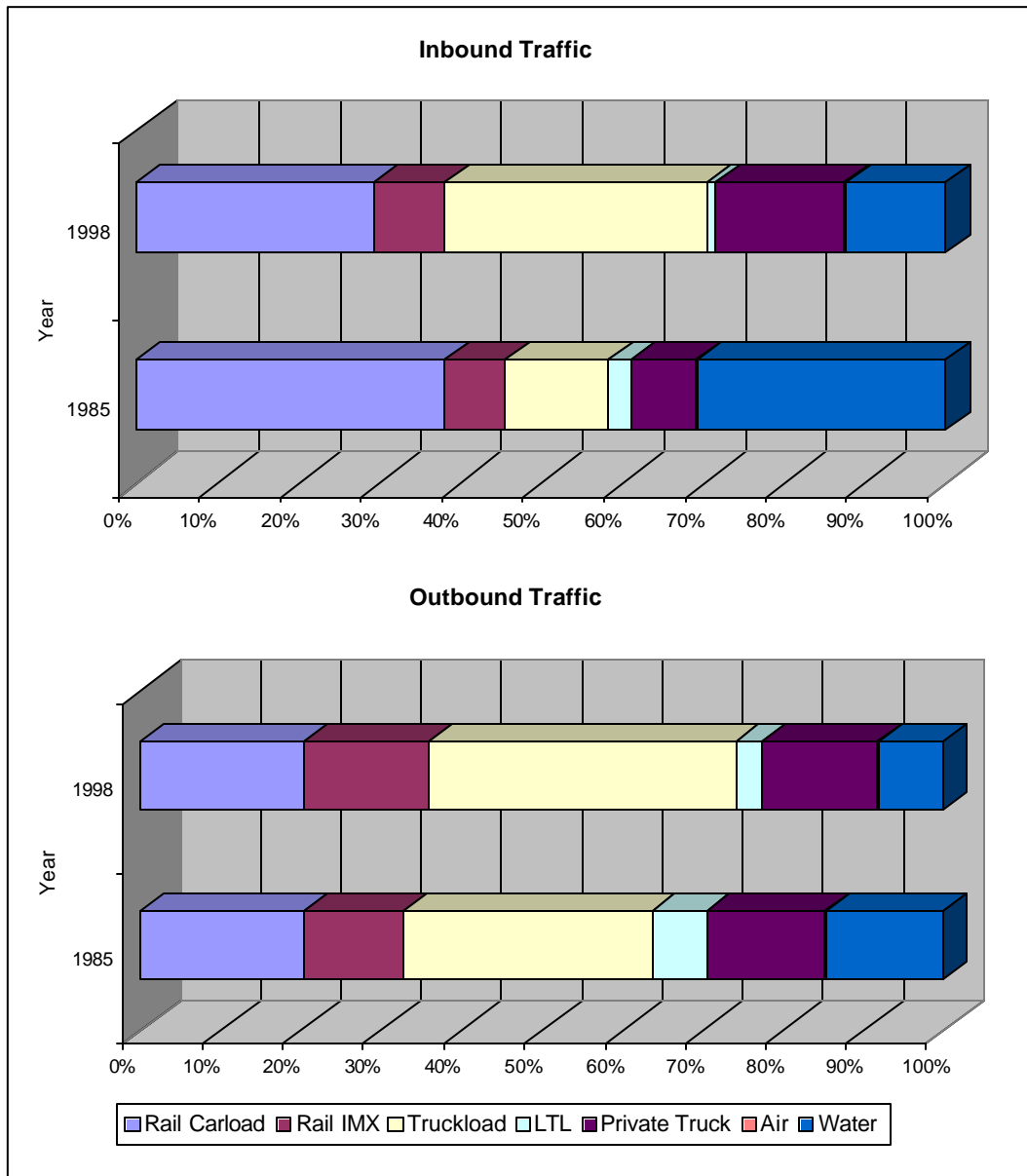


Figure 2.3 – Mode split trends for inbound and outbound traffic for Chicago BEA, 1985 and 1998

broad comparisons as done here are a reasonable reflection of actual trends. A more detailed discussion on the composition of TRANSEARCH can be found in Appendix 3

While the proportion of traffic handled by highway (LTL, TL, and private) grew from 24% to 49% for inbound and 52% to 56% for outbound traffic, the strong growth in rail intermodal and carload traffic resulted in very modest changes in overall modal share: inbound declined from 46% to 38%, while outbound increased from 33% to 36% of total volume. The proportion of tonnage handled by rail intermodal service increased for both inbound and outbound traffic, from 7% to 9% for inbound, and 12% to 16% for outbound. Static tonnage volumes for goods moving by waterway resulted in a steep drop in mode share: whereas waterways handled 31% of inbound and 15% of outbound traffic in 1985, by 1998 they handled only 12% of inbound and 8% of outbound traffic. While the proportion of goods transported by air remained small and thus not visible in Figure 2.3, it nevertheless represented approximately 0.2% of both inbound and outbound tonnages in 1998.

These growth trends demonstrate the vitality of Chicago as the economic center of the Midwest and its importance to the entire nation, and indeed internationally. The Chicago region is the largest transit point of international freight in North America, and the third-largest such point worldwide, exceeded only by Hong Kong and Singapore.⁶ It is thus hardly surprising that the dramatic growth in traffic volumes has imposed increasing stress upon Chicago's transportation infrastructure. Since the completion of the interstate highway system in the 1970s, the highway infrastructure has seen only modest changes, with some expansion in outlying areas of the region and reconstruction of critical urban segments. One measure of this increasing stress on the region's highway system has been the level of congestion experienced by users. In an annual congestion ranking produced by the Texas Transportation Institute, Chicago was ranked third worst – after Los Angeles and San Francisco-Oakland, California - for highway congestion (ratio of peak period travel time to free-flow travel time) in 2000 among the major metropolitan areas.⁷ Since most urban highway traffic largely consists of private passenger vehicles, and truck traffic does not generally follow the same time-of-day usage patterns as private vehicles, the impacts of congestion are also primarily absorbed in passenger vehicles. In other words, truck traffic requires relatively little capacity at rush hour and therefore contributes little to the congestion problem, yet is subject to all of its negative impacts.

For the rail, water, and air modes, capacity remained essentially unchanged. By the late 1990's capacity limits for air-side operations at the major Chicago airports were achieved, with resulting deterioration in reliability. In the rail sector, the decade of the 1980s saw considerable removal of capacity that had been dedicated to handling of carload traffic, and conversion to other rail and non-rail uses. Most Chicago-area intermodal terminals are sited on property that was previously used for carload traffic. When rail traffic rebounded in the 1990s, much of the capacity was absorbed, and by the end of the decade service performance had deteriorated considerably. These and other aspects of the evolving railroad industry and Chicago's unique situation are discussed in more detail later in this chapter.

⁶ Chicago Metropolitan Planning Council, **Critical Cargo: A Regional Freight Action Agenda**, April 2002, p. 13.

⁷ Texas Transportation Institute, **2002 Urban Mobility Study** (<http://mobility.tamu.edu/ums>). In 2000, Chicago ranked third worst for travel time, and 11th for annual delay hours per peak period road traveler. While the methodology used to measure stress levels of a region's highway network can be debated, they do provide a unique and useful means for drawing comparisons among different regions.

2.2 Expectations for transport demand growth

With the increasing capacity constraints faced by most major modes of freight transport in the Chicago region, the means by which further growth might be handled becomes critical for carriers and infrastructure providers. A core goal of this study was to forecast the demand for inter-regional freight transportation for all modes. To this end, Global Insight produced a region to region commodity forecast for the years 2010 and 2020, using 1998 as the base year. This forecast was then applied to the 1998 TRANSEARCH database to estimate specific commodity-level volumes for traffic originating, terminating, and, in the case of rail and highway, travelling through the region. Given its central position in the U.S. highway and rail networks, the region handles considerable through volumes.

The Global Insight model functions as a series of nine *regional* economic models that are tied together through a *national* macro-economic model that projects overall trends in the U.S. economy based on national and international economic factors. Local conditions are derived from the nine regional models, typically at the metropolitan level. Four primary measures are forecast: employment, income, population, and industrial production. Each of these relates to key elements of business activity and the relative attractiveness among regions for general business activity as well as different types of industry. The model estimates the factor inputs that these businesses require, and selects the most cost-effective region from which to source them. The change in demand for factor inputs in turn affects the demand for transportation between the affected regions. The Global Insight forecast aggregates the *change* in inter-regional demand by industry and commodity, which can then be applied to a TRANSEARCH base year (1998 in this case) from which transport volumes can be estimated by lane and mode for the forecast year(s).⁸

The forecast assumes that the comparative modal positions will remain consistent for the entire period. The model does not make any implicit or explicit assumptions about secular trends, infrastructure constraints, or other potential events that may affect the competitive balance among the different modes. However, since various sectors of the economy grow at different rates, the share of traffic handled by each mode will shift to reflect the varying geographic sourcing and commodity characteristics that affect mode choice.

For this study, Global Insight developed a county-level forecast for the Chicago metropolitan area, consisting of six Illinois counties – Cook, McHenry, Lake, Kane, Du Page and Will - plus Lake and Porter counties in Indiana (see map in Figure 2.4). This forecast was used to estimate traffic volumes originating and/or terminating in the region. For rail and highway traffic travelling through the region, a nationwide county-to-county commodity forecast was produced. The portion of this traffic that would travel through the Chicago region en route to its destination was identified on the basis of its likely routing using enhanced versions of the Oak Ridge National Laboratories highway and Federal Railroad Administration railway networks.

⁸ A more detailed discussion on the construction of the Global Insight forecast can be found in Appendix 1. Assessing the economic impact of different futures for the rail industry required a regional economic forecast for the “base case.” REMI was used to produce this forecast. The Global Insight and REMI forecasts were tied together at the regional but not national levels. This is discussed in Section 5.2.1.

Forecast results are summarized in Figure 2.5. As noted previously, water and air traffic are shown for inbound and outbound traffic, but not for through traffic. For all three traffic types shown - inbound, outbound, and through - the total volume is expected to increase from 707 million in 1998 to 924 million in 2010 and 1,146 million tons in 2020. This amounts to an overall expansion in volume of 62% over a 22 year period, for an average compounded annual growth rate of 2.22%. Growth is anticipated to be more rapid between 1998 and 2010, and slower in the years following. By 2020, inbound traffic is expected to amount to 495 million tons representing 43% of the analyzed traffic; outbound 363 million tons and 32%; and through, 288 million tons and 25%.

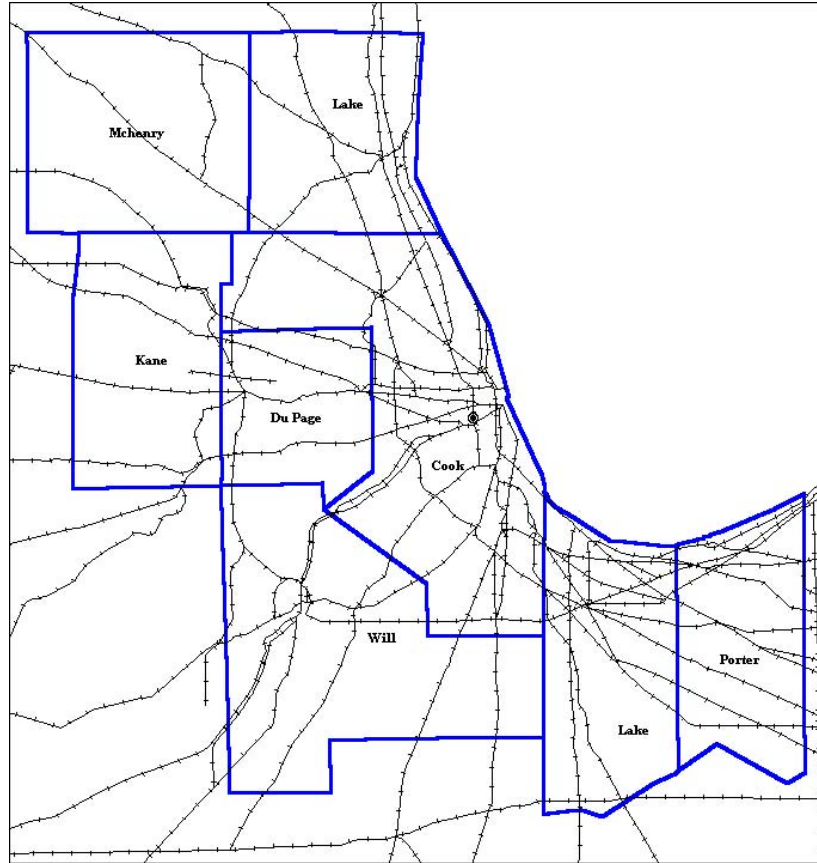


Figure 2.4 – Chicago metropolitan region

At 2.36%, the annual growth of inbound traffic is expected to significantly exceed that of outbound traffic, which is anticipated to grow by 1.87% annually. This difference in growth reflects the ongoing shift from an economy based on industrial manufacturing and warehousing to one built primarily on services. Through traffic is expected to grow more rapidly than either inbound or outbound traffic: by 2020 it will have increased by 70%, for an average annual growth rate of 2.45%. This implies that there will be a continuing challenge for planners to develop effective solutions for handling traffic that brings modest direct benefits to the region.

Although some shifts in commodities are anticipated, these changes will not have a significant impact on modal shares. In general, they all grow proportionally to their 1998 base. This implies a resumption of growth in LTL and waterway, modes that have been static since the mid-1980s. While it is entirely possible that such growth can resume, the challenges faced by both LTL and waterway require a careful assessment of their future potential.

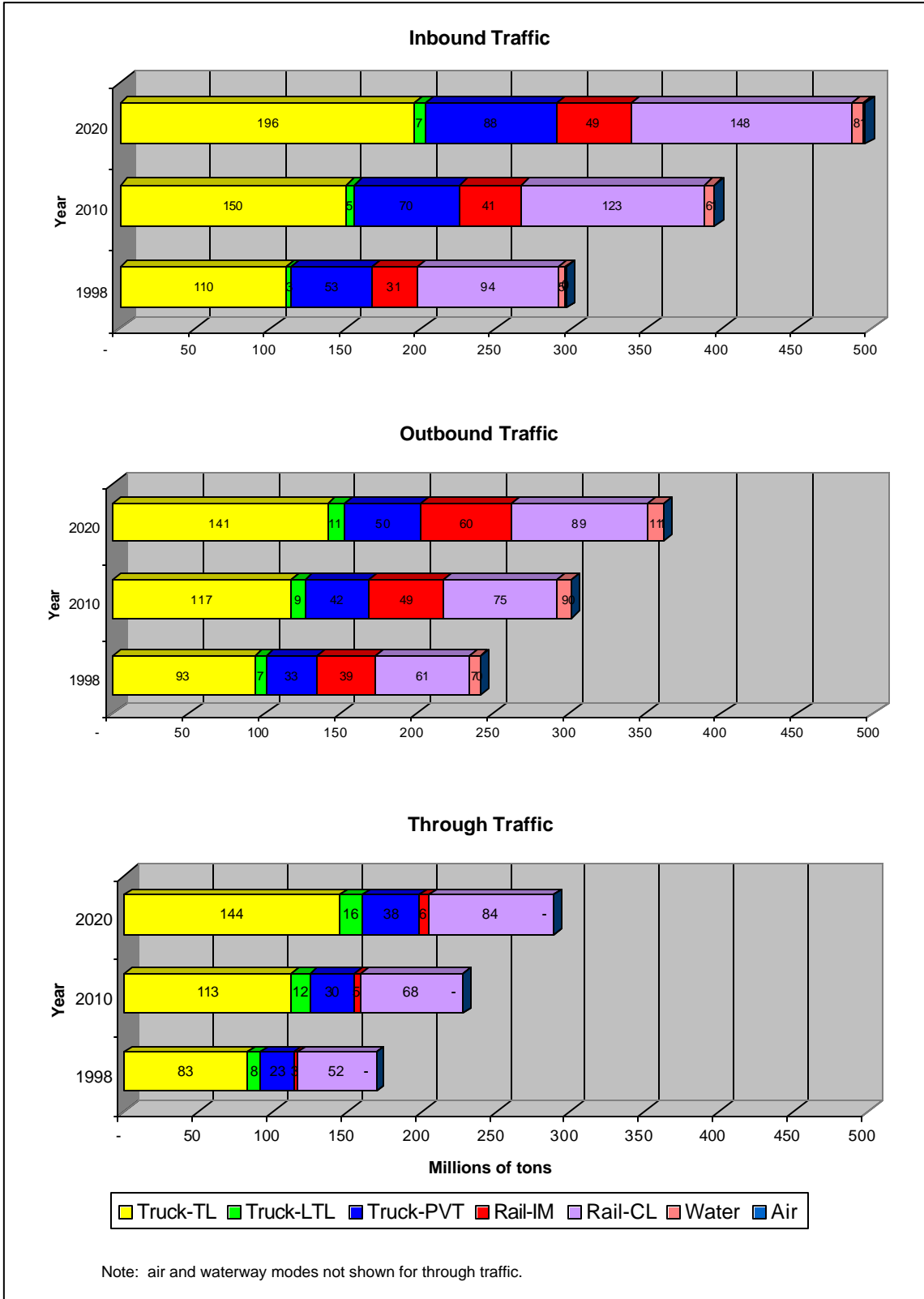


Figure 2.5 – Chicago metropolitan region traffic volumes by mode for inbound, outbound and through, 1998, 2010 and 2020

The growth in trade that is anticipated by the forecast implies that growth in transportation demand that has occurred over the past twenty years is expected to slow down but still remain robust. Effective accommodation of this growth requires resourceful planning by all parties. It further calls for coordination among the different modes, so as to provide the most efficient solutions that minimize the overall costs and impacts and maximize the resulting economic benefits to the region.

2.3 Railroads and goods movement

2.3.1 Historical development and present conditions

Rail services in the United States fall into three broad categories. Freight services are by far the most important, as freight accounts for well over 90% of the rail industry's revenues. Intercity passenger services are important in the Northeast Corridor, stretching from Boston to Washington D.C., but relatively unimportant in most other parts of the country. Regional passenger services are locally critical in New York City, Chicago, Philadelphia, Boston and several other cities. Freight services are profitable, the best Amtrak services cover operating costs, while the regional services are heavily subsidized.

During the 19th century, rail construction dominated economic development and integrated the US economy from coast to coast. The economic advantages of rail arose from the ability to carry large amounts of freight more quickly and more efficiently than was possible on the roads of that period, and railroads, unlike canals and waterways, suffered few geographic constraints. Chicago grew to its position of dominance because its location was ideally suited as a gateway between the Northeast and the West. As railroads expanded their range, Chicago prospered because it was the predominant transfer point between the eastern and western networks. Every railroad wanted to reach Chicago, and those that did constructed their own freight facilities, eventually creating the country's densest network of track, yards, industrial sidings, and related industrial activity. By the middle of the 19th century, there were well over 100 rail yards within the region.

The rail network reached its peak in the United States in the 1920s. By then, it was generally recognized that too many lines had been constructed, that competition among railroads had weakened the financial outlook for the once all-powerful industry, and that trucks were evolving to the point where they could compete for freight. It was also apparent that automobiles, buses, and – somewhat later – airplanes would take most of the traffic away from the passenger trains. While the depression and World War II delayed highway construction, the faster and more reliable highway modes took traffic away from the railroads. It has taken approximately seventy years for the rail network to adjust to the new competitive realities caused by cars, trucks and planes. The network that once boasted more than 250,000 route-miles has declined by more than half, and the rail industry's shares of traffic and especially revenue have dropped dramatically. Mergers, which had begun almost as soon as railroads were first constructed, have continued until only a handful of major carriers remain. Since the division of Conrail in 1999, CSX and Norfolk Southern have served the East, and Burlington Northern Santa Fe and Union Pacific the

West. In addition to these four U.S.-based Class I railroads, the two large Canadian railroads, Canadian National and Canadian Pacific, also remain, and with substantial U.S. operations. Each of these six major railroads serve the Chicago region, where the greatest volume of interchange between carriers occurs.

Despite the shrinking network and the near total loss of intercity passenger traffic, the railroad industry as a whole has remained profitable and, for the most part, in the private sector. In addition to rationalizing the network, the industry greatly improved operating efficiency through the use of better technologies for track, equipment, and communications and operations control.

New technologies allowed the operation of longer trains with heavier cars and smaller crews, and the costs of shipping by rail continued to decline. New vehicle designs allowed railroads to compete effectively with both barge and truck competition. Larger cars and better track structure enabled much cheaper transport of coal, grain and other bulk materials. Multi-level automobile carriers allowed railroads to compete effectively with trucks for serving automobile assembly plants. Intermodal innovations, especially the introduction of double-stack container trains, allowed railroads to remain competitive for long-haul shipments of general merchandise.

Thus, despite the increasing predominance of highway transportation, rail traffic has continued to grow in terms of ton-miles and tonnage, but not in terms of revenue and commodity value transported. Whereas railroads produced 28% of inter-city freight ton-miles in 2000, they carried

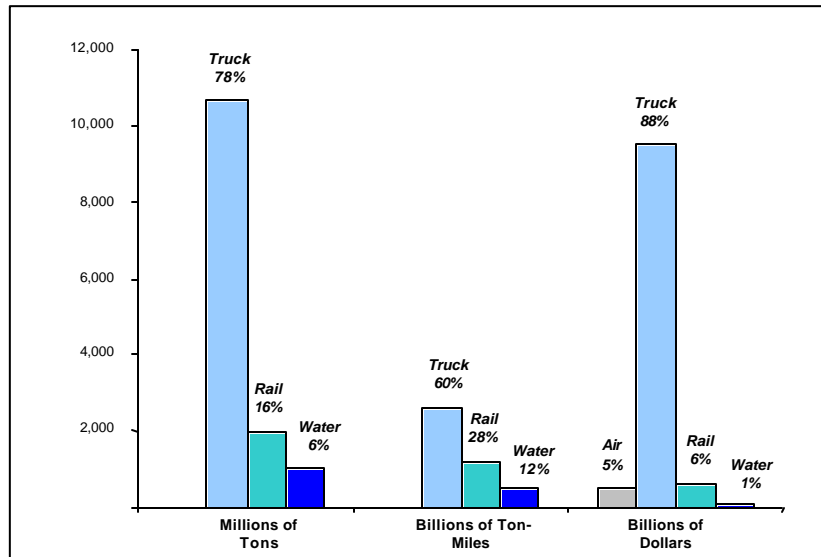


Figure 2.6 – U.S. freight system production measures in 2000

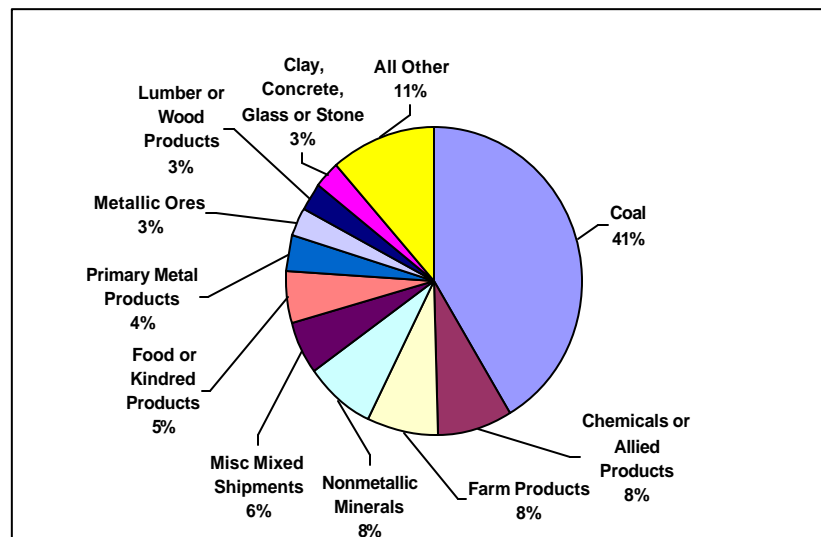


Figure 2.7 – U.S. top ten rail commodities by tons in 2000

only 6% of the value of commodities transported (see Figure 2.6) by all modes in the U.S.⁹ The railroads' modest share of overall freight value and revenues produced is caused by several factors, of which the nature of the commodities handled by the railroads, service quality (trip times, reliability) vis à vis motor freight, and the markets served by the railroads have had the most influence. Railroads attain their greatest efficiency and competitive advantage over other modes when handling large volumes over longer distances in point to point service. These strengths are most apparent in their success in handling high volume bulk commodities, shown in Figure 2.7. In 2000, the single largest railroad-hauled commodity was coal, with 41% of all ton-miles, followed by chemicals, farm products, and non-metallic minerals, each with approximately 8% of total ton-miles. Intermodal, largely represented by the category "Miscellaneous Mixed Shipments" in the figure, appeared in fifth place with 6% of ton-miles. The actual share is somewhat higher, as figures for the commodity-specific categories include some traffic that moves intermodally in addition to carload and unit train service.

Today, the rail system, like the rest of the transportation system, is feeling growth pains, both nationally and regionally in and around Chicago. Much of the infrastructure was first designed and constructed more than 100 years ago, when technologies and industrial development were much different from what they are today. In some locations, there may be too much infrastructure, but in others there may be too little. Terminals initially designed for sorting cars and assembling general freight trains are now used for intermodal operations, and the transformation from one type of operation to the other is seldom without problems. Older infrastructure needs periodic renewal and upgrading. Coordinating operations over Chicago's complex regional rail network is difficult, even with the consolidation of the North American rail network into six major rail systems.

A major question for public policy concerns the ability of the rail industry to handle projected growth, particularly for intermodal traffic. Intermodal traffic includes trailers and containers that can move by truck, railway, or containership. Containerization makes it easy to capture the benefits of cheap transportation, and it is cheap rates for containers that have allowed the globalization of so many markets. Intermodal operations also offer the prospect for some relief of highway congestion, and most forecasts cite dramatic growth in this sector of the business over the next two decades. However, this growth can only occur if there is indeed sufficient line and terminal capacity. Intermodal must compete with other market segments for investment. From the industry's perspective, unit trains move the most freight and provide the greatest share of profits. Intermodal operations, especially shorter distance moves that are highly competitive with truck, may make little or no contribution to profit. Moreover, the railroads are content to position terminals in locations outside major cities, where land is cheap, economies of scale are readily achieved, and highway access is good. This trend, evident in Chicago as well as many other cities, may reduce truck traffic on the rural interstates, but it will leave many trucks in dense urban areas where air quality, safety and congestion concerns are greatest.

Another area for public policy concerns the possibility of another round of mergers within the industry. With two eastern, two western, and two Canadian carriers, there is a balance of sorts

⁹ Statistical information in this section drawn from American Association of State Highway and Transportation Officials, **Freight Rail Bottom Line Report** (Washington, DC: AASHTO 2002).

within the industry, and Chicago is the only gateway where all of these carriers connect. If there is another round of mergers, the result presumably will be two or three transcontinental carriers, and the role of Chicago could change. First, a transcontinental carrier might well be willing and able to bypass the congested rail network around Chicago. This conceivably could reduce the rail traffic in the region and in the city. Second, a transcontinental carrier might also be more willing to consider moves through Chicago, e.g., Detroit to Minneapolis or Wisconsin Rapids to Buffalo. This type of change could be more important, as it could offer some reduction in truck traffic through the region.

The financial health of the rail industry is becoming a greater concern to the carriers, as competitive pressures continue to hold prices down in freight transportation. While low prices are certainly welcomed by shippers, long-term difficulties will result if the industry is unable to finance the capacity expansion required to handle more traffic. A recent AASHTO study¹⁰ found that the U.S. railroads face unfunded capital needs of \$53 billion merely to maintain and expand capacity in line with expected growth in freight volume between 2000 and 2020. In the past, railroads have addressed this problem by attempting to retain the most profitable traffic while seeking to discourage or avoid the least profitable. With this expected shortfall, it is possible that the industry will continue to rationalize and end up serving fewer markets and leaving more freight for the highways. It is generally acknowledged by carriers and public officials that some sort of cooperative effort will be necessary if serious improvements are to be made to rail infrastructure, especially in cities where opportunities – but also construction costs, project complexity and collateral impacts - are high.

2.3.2 Chicago's rail freight system

Since its creation as the largest interchange point between the western and the eastern rail carriers during the latter half of the 19th century, Chicago has served as the most important hub of the North American railway network. With the advent of rail intermodal traffic during the 1950's, its significance as the central hub has become even more critical. At present, nearly three-fifths of all U.S. rail intermodal traffic and one-third of all U.S. rail traffic flow through the Chicago region. Chicago's rail network performs three distinct functions on these same assets:

- **Local:** The Chicago local market is a significant origination and termination point for freight. With a metropolitan population of over eight million people, and an important industrial and manufacturing base, it serves as the regional economic center for the entire upper Midwest.
- **Hub:** Chicago serves as the nation's primary consolidation and de-consolidation center or "hub" for carload and intermodal freight by virtue of its status as a network endpoint for both eastern and western railroad carriers. For carload freight, the region's extensive collection of classification yards and connecting track permit the sorting of inbound trains and transfer of cars between carriers and destinations throughout North America.

The nation's intermodal network operates as a hub and spoke system, much like the hubs operated by airlines. Intermodal trains originate primarily at major metropolitan markets,

¹⁰Ibid, p. 67.

and run in dedicated point-to-point service to intermodal hubs where traffic (individual trailers, containers, or railcars) is re-sorted (through lift-on/lift-off or switching movement) to construct other trains for movement to a final destination. In Chicago, trainloads of intermodal freight are broken apart and reconstructed, much as air travelers transfer between flights at O'Hare Airport. Chicago's streets play host to somewhere between 1,400 and 2,500 daily truck movements through "rubber-tire" interchanges, as trailers and containers are transferred by truck from one intermodal facility across town to connect to trains at another. Markets such as Philadelphia, Charleston, Denver, Phoenix, and Omaha that do not have sufficient volume to generate point-to-point trainload volumes to other cities, can obtain truck-competitive intermodal service through this Chicago re-sorting.

- **Interchange:** Chicago is the nation's largest rail-to-rail interchange point. The city has historically been the endpoint of ownership for America's leading railroads: the old Pennsylvania, New York Central, Chesapeake and Ohio, Wabash, Nickel Plate and Baltimore and Ohio lines in the East, and the Santa Fe, Rock Island, Milwaukee, Burlington, Chicago and North Western, and Illinois Central railroads in the West. More than one-quarter of all U.S. rail traffic is interchanged between carriers in the Chicago region. This is the case not only for carload traffic that is typically processed in some form while traversing the Chicago region, but also block (unit) train and intermodal traffic.

Because of the large number of railroads operating into and out of Chicago, numerous classification yards were built to accommodate the interchange activity taking place there. As carload traffic began to decline in the 1960s and the need for intermodal facilities increased, many of these sites were put to use as intermodal terminals. Today a growing volume of intermodal freight is interchanged over the rails via "steel wheel", where individual or groups of cars and sometimes even full trains of intermodal trailers and containers are transferred between western and eastern railroad companies.

2.3.3 Intermodal rail/highway traffic development

From its substantive beginnings in the 1950s, it took more than twenty years for the Chicago region to host more than one million containers and trailers. However, by 1980 the industry was poised for take-off: volume more than doubled by 1990 to 2.7 million units, and then increased by another 79% to 4.9 million units by 1998 (see Table 2.1). This rapid growth was the result of a variety of factors, ranging from improvements in technology (double stack cars that dramatically lowered line haul costs), to operational innovations (dedicated intermodal trains that improved service reliability and decreased travel time), changing domestic freight markets (shift from carload to intermodal service for "traditional" rail customers) and changing trade patterns, led by the rapid growth in imports from the Far East.

Year	Originating Loads	Terminating Loads	Through Loads (Steel Wheel)	Total
1980	689,938	324,074	278,769	1,292,780
1990	1,440,127	1,024,682	266,951	2,731,761
1996	2,350,979	1,765,265	283,245	4,399,488
1998	2,613,854	2,052,387	226,521	4,892,761
2010	3,250,154	2,700,668	306,063	6,256,885
2020	3,969,147	3,281,742	388,221	7,639,110
Notes: 2010 and 2020 estimates based on Global Insight forecast. “Loads” based on 15-ton/unit average for annual tonnage moving into, out of, or through the Chicago metro-area from Reebie <i>TRANSEARCH</i> ® database. Years 1980 and 1990 use old BEA (#83) to represent the Chicago area; other years use the 8 selected study area counties to represent the Chicago area.				

Table 2.1 – Chicago region intermodal traffic trends

The figures for through traffic shown in Table 2.1 represent steel-wheel interchange traffic, which has been provided mainly in dedicated run-through services for steamship companies since the mid-1980s. Between 1980 and 1998, while the total number of loads has nearly quadrupled, the number of through loads have remained roughly the same. The bulk of the intermodal “through” traffic is interchanged via rubber tire, and amounts to rather substantial volumes: for one major carrier, rubber interchange traffic amounted to more than one-third of all intermodal volume –more than 2,000 containers and trailers every day– in the Chicago region in 1999. Since 1998, some railroads have reported increases in through loads. The continued growth and development of this through traffic presents both a tremendous opportunity for the railroads, as well as a tremendous challenge in how to manage it.

Noteworthy has been the consistent imbalance between inbound and outbound volumes. In 1980, more than twice as many loads originated as were terminated in the Chicago region. By 1998 this imbalance had diminished significantly, caused in large part by the emergence of heavy volumes of inbound steamship container traffic from West Coast ports. However, in spite of the growth in import traffic volumes, originating loads continue to exceed terminating loads, and are expected to do so into the future. This imbalance is caused by the nature of North American trade patterns and Chicago’s unique standing as the hub of the industrial Midwest, which exports high volumes of manufactured goods to the large consumption centers on the West Coast. This is evident from Figures 2.8 and 2.9 (see following page), which show the origin and destination of intermodal traffic by region. The economics of rail intermodal service, which strongly favor long-haul, high-density markets that are characterized by a few key western routes, such as Chicago – Los Angeles, also come into play. Chicago serves as the gateway for traffic heading to the West Coast from a substantial section of the east central U.S., much of which is within one day's driving distance. However, the majority of western intermodal traffic that is not being drayed from or to an eastern carrier has the Chicago region as its origin or destination.

Beginning with the UP-CNW merger in 1994 and continuing with the BN-ATSF merger in 1995, the UP-SP merger in 1996, and the CSX and NS split of Conrail in 1999, the patterns of rail intermodal traffic have been changing. Rail carriers have redesigned their intermodal networks to improve margins by concentrating volumes in the densest corridors, many of which touch the Chicago region. Some lanes, such as Los Angeles - Chicago, with more than a dozen daily departures, have achieved historically high service levels. On the other hand, low-density lanes, such as Chicago to Greenville, SC have been dropped entirely. Although the market for intermodal service continues to be primarily east-west, important new markets that do not follow this pattern also have emerged. Much of the NAFTA trade - the north-south traffic between the US, Canada, and Mexico - flows through the Chicago region. In addition, Chicago - Atlanta and Chicago - Dallas have developed as important intermodal corridors. Similarly, the changing mix of foreign and domestic trade has modified traffic patterns in the Chicago region. Most evident have been the directional shifts in the balance of traffic flow in the Chicago - Los Angeles corridor, oscillating from eastward to westward and back from the 1980s through the current and forecast periods.

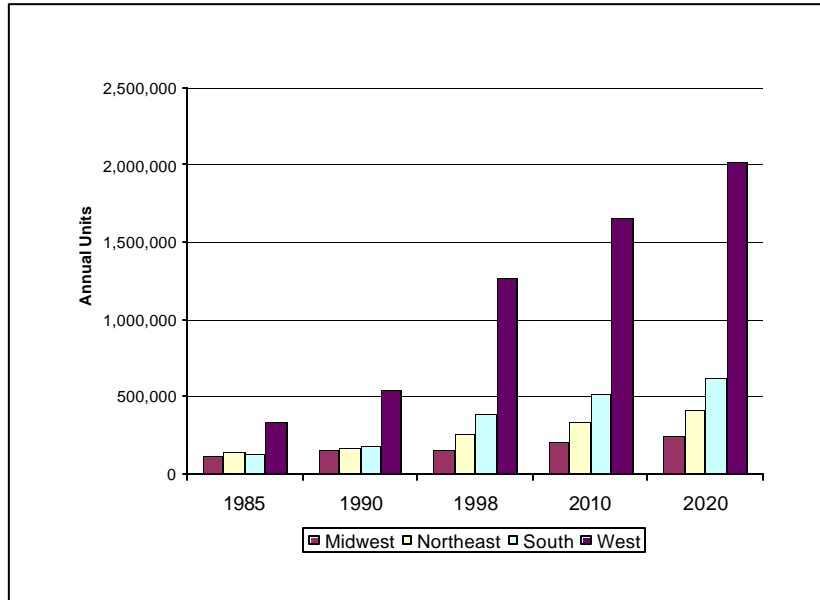


Figure 2.8 – Region of origin for intermodal traffic inbound to Chicago, 1985 - 2020

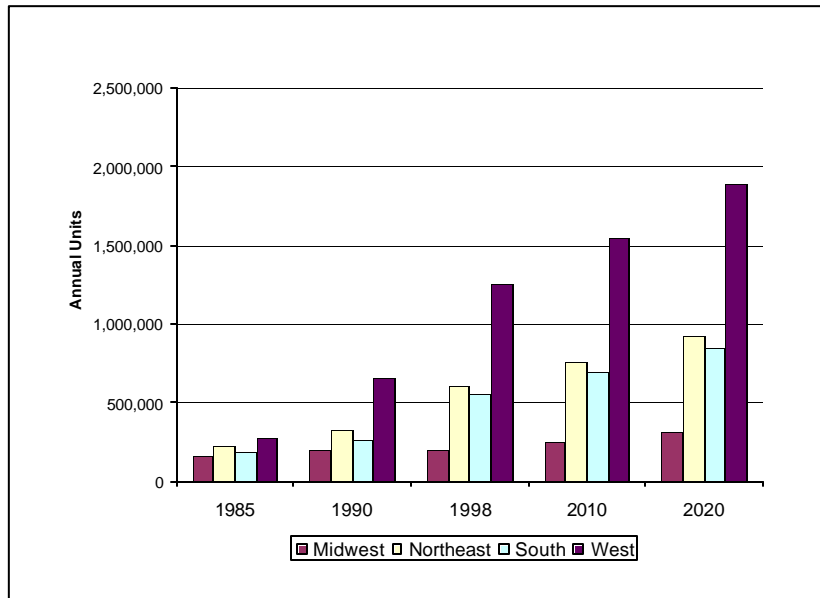


Figure 2.9 – Destination region for intermodal traffic outbound from Chicago, 1985 - 2020

Looking ahead, rail intermodal traffic volumes through Chicago are expected to continue to increase, albeit at a slower rate than has been the case over the past twenty years. The Global Insight forecast anticipates a compound annual growth rate averaging 2.1% from 1998 onward. Given the much larger base for this growth than was the case in 1980, this more moderate proportional growth is, nevertheless, expected to add 2.8 million units by 2020 for a net increase of 56%. From our discussions with the various stakeholders, it is clear that this volume will be difficult to handle within the existing Chicago terminal and main line infrastructure.

3 Perspectives on railroads and Chicago's economy

A key element of this study was to gain the perspectives of Chicago's shipping community and the other key stakeholders about rail facilities and service in the region. The location, structure, and condition of rail facilities directly affect the cost and quality of service that can be provided by the freight railroads, motor carriers that are part of the intermodal logistics chain, and passenger rail operators. The cost and quality of rail and rail intermodal operations affect the region's economy through their impact on the large number of rail shippers situated within the region. Many of these shippers rely on the uniquely high level of service that is the direct result of Chicago's position as North America's premier railway hub. Thus, their opinions and perceptions about freight transportation are critical to understanding the potential impacts of changes in operating practices and facility investment strategies by service providers and public policy makers.

The project team obtained feedback from these stakeholders through mailed surveys, structured phone interviews, and on-location meetings. The surveys and interview scripts were developed by the project team and submitted to CDOT for review and approval prior to proceeding. Results from the surveys and interviews were incorporated into the economic analysis, and provided important anecdotal information for many other aspects of the study. This chapter summarizes the results from the surveys and interviews.

3.1 Shippers

Between November 2001 and March 2002 two surveys were conducted throughout the eight county Chicago metropolitan area, to better understand area business use of freight services. The survey was directed at companies that receive shipments from outside of the region as well as companies that send shipments from inside the region; most companies both send and receive some sort of freight shipments. A customer of freight transportation is commonly referred to as a "shipper," a term that is used throughout this report. The first survey, conducted by mail, queried shippers extensively on their goods movement activities and attitudes. Subsequently, a shorter follow-up phone survey was conducted to augment the mail survey. The surveys solicited information from shippers on the following subjects:

- Firm demographic data – company size, markets served, headquarters location, number of employees at site and company-wide, etc;
- Location – facility size, type of modal access;
- Traffic – current and projected volumes by mode;
- Plans for facility – expansion/contraction/relocation;
- Perspectives on rail service – importance, quality, timeliness, availability (schedules and equipment), future needs; and,
- Level of importance placed on rail freight service in determining business location.

Survey participants were selected randomly from Reebie Associates' Freight Locator[®], a database of manufacturers, and an InfoUSA database of non-manufacturers, all of whom were likely to ship or receive goods on a consistent basis. Respondents included carload and rail intermodal (container, truck trailer load [TL], less-than-truckload [LTL]) shippers, as well as shippers that rely solely on motor carriage. This latter group, representing the majority of shippers, completed the profile of the types of shippers located in the region, and provided a perspective on non-rail shipper needs and practices. The survey results represent input from 265 out of almost 6,000 shippers contacted throughout the eight-county Chicago metropolitan region. The survey samples were drawn in a manner that created two response pools for analysis: shippers that use rail (rail users) and shippers that do not use rail (non-rail users). Due to the general poor response of businesses, attention was focused on those that are likely to ship by rail, to ensure that their concern was effectively captured. There were sufficient initial responses from non-rail shippers to produce reasonable data for comparison purposes.

In the following sections, key results from the survey are presented. In addition, detailed results from the shipper survey can be found in Appendix 2.

3.1.1 Survey results

3.1.1.1 Characteristics of respondents

Some selected characteristics of the respondents are shown in Figures 3.1 and 3.2. Figure 3.1, based on data from the initial mail survey, lists type of facility by four categories: warehouse, manufacturing plant, retail and other. Figure 3.2, using data drawn from both surveys, provides a coarse measure of facility activity levels based on the number of employees. Most enterprises are relatively small, with 95% of non-rail and 93% of rail-served facilities having fewer than 500 employees. The majority of respondents were manufacturing facilities, with warehousing at a distant second place. For rail users, 53% reported having a rail siding at their facility, and 47% reported using rail intermodal services, either via TOFC/COFC, or bulk transload.

Facility age, historical and future trends in facility usage are displayed in Figures 3.3 and 3.4. From Figure 3.3 it is evident that the typical rail facility is considerably older and experiencing

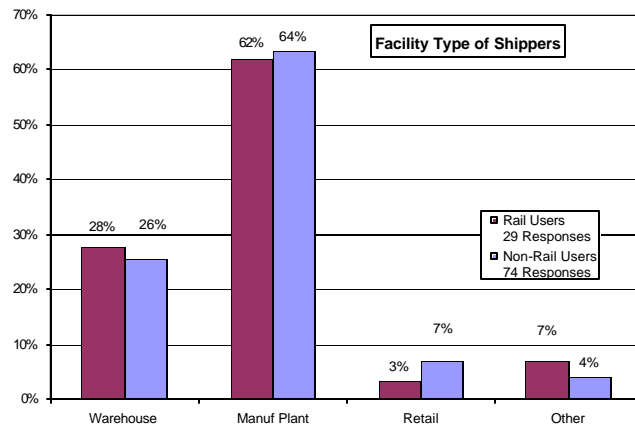


Figure 3.1 – Shipper respondents by facility type

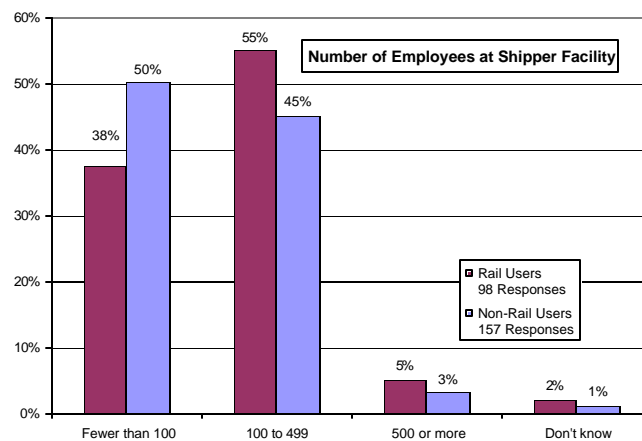


Figure 3.2 – Facility employment levels

slower growth than non-rail facilities; none of the facilities served by rail are less than ten years old. In contrast, twelve percent of non-rail facilities have been in business for fewer than ten years. Furthermore, the longer-established non-rail users are much more likely to report that their business has grown significantly over the past ten years. The shipper respondents are reflective of the transport modes that they use. Larger, older shippers are more likely to use rail, while smaller and newer shippers are far less likely to use rail.

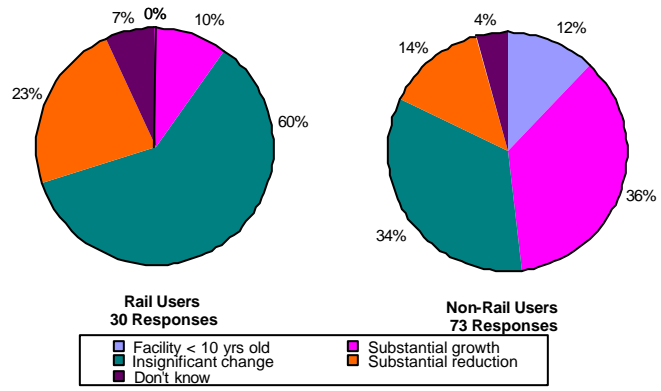


Figure 3.3 – Trends in facility activity

Facility usage plans over the next five years, shown in Figure 3.4, appear counter-intuitive. Almost half of the rail-served facilities, which had generally experienced either static growth or decline over the past ten years, anticipate expanding operations. In contrast, only one-third of non-rail respondents expected growth, with half expecting no change. Responses for the other categories – close, relocate and reduce facility operations - were all roughly the same for both rail and non-rail shippers. Among respondents expecting their business to expand or contract in the next five years, most indicated that demand for their product is driving the change, and not changes in freight service, access to qualified labor, or other factors. Whether these results can really be considered a general trend, or simply an anomaly of the survey is not clear and calls for further research.

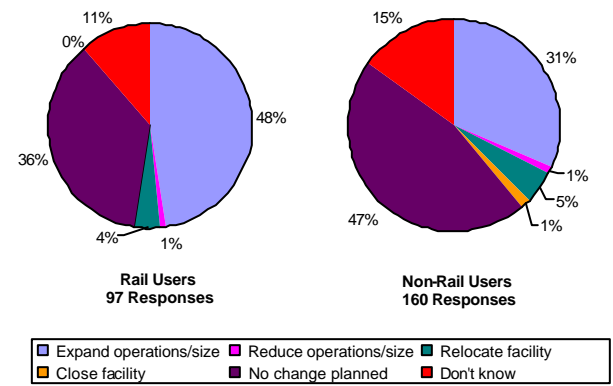


Figure 3.4 – Plans for facility over next five years

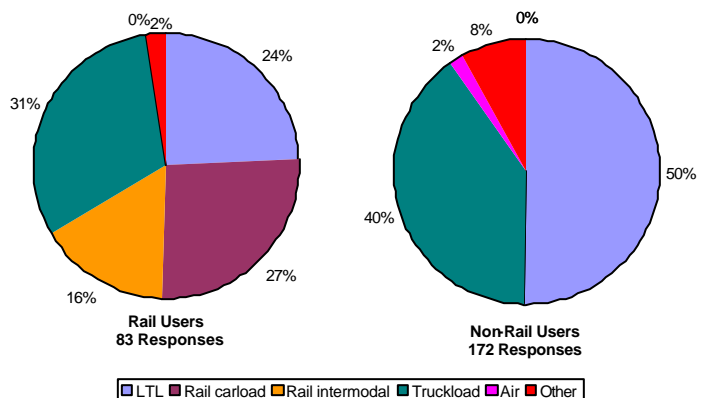


Figure 3.5 – Primary method of receiving all products

Mode share by inbound and primary outbound commodity shipped is shown in Figures 3.5 and 3.6, respectively. Rail users tended to receive larger volumes of product than non-rail users, and in a mix

of truck and rail. Among rail shippers, the predominant mode – approximately half - was carload for both inbound and outbound shipments, with intermodal a distant second at 10% or less. Among the non-rail shippers surveyed, the most common mode (50 – 56%) was Less-than-Truckload (LTL). This is not surprising, given the generally smaller facility size of the non-rail shippers, and the nature of the commodities that are handled by them. The use of intermodal service is understated for both rail and non-rail shippers, since significant volumes of motor freight are transparently handled in intermodal service by truckload and integrated carriers without the shipper’s explicit knowledge or consent.

3.1.1.2 Shipper attitudes

Not surprisingly, rail and non-rail users generally agreed that fast, frequent, reliable and inexpensive freight service is critical to their operations. But, while national surveys tend to identify a core of dissatisfied shippers, the survey respondents were almost universally satisfied with the quality of freight services they use (Figure 3.7). Only one respondent reported dissatisfaction with the service they used to *ship* their primary product. None of the respondents reported any dissatisfaction with the service that they used to *receive* their primary good.

Highway access (Figure 3.8) was important to rail and non-rail respondents, but more so to rail shippers. Almost 90% of rail users indicated that if highway truck access to their facility was slowed or limited, they would

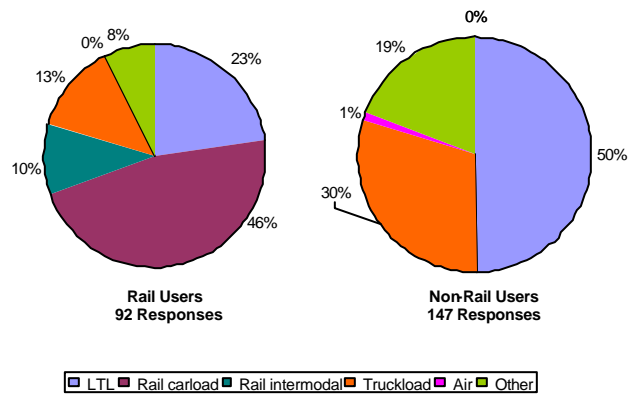


Figure 3.6 – Mode of shipping primary product

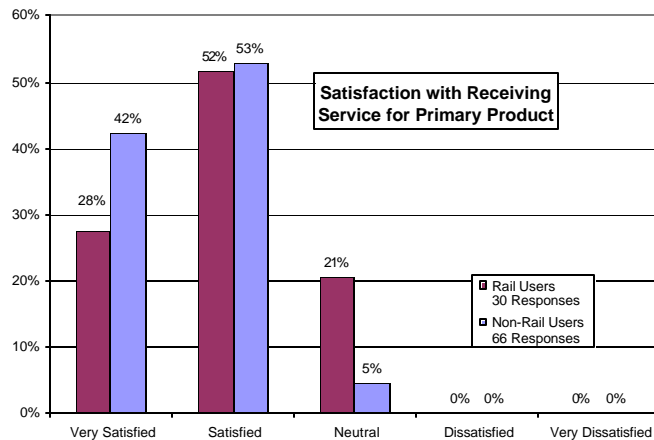


Figure 3.7 – Satisfaction with service for inbound primary product

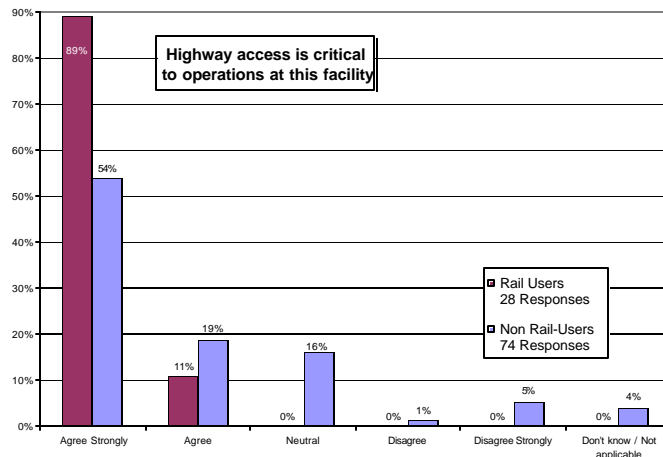


Figure 3.8 – Importance of highway access

reduce operations. Only slightly more than half of non-rail users felt that slowed or limited truck access would adversely impact their operations. This outcome is likely the result of rail users shipping larger volumes, and being more deeply involved in the process of managing their supply chain.

Responses on the subject of carload and rail intermodal service, quality and availability are shown in Figures 3.9 through 3.11. Figure 3.9 demonstrates the significance of rail carload service to rail and non-rail shippers. In spite of rail shippers' primary dependence on carload service, only 19% reported that high quality carload service was a necessity to their operations. Non-rail shippers generally viewed carload service as irrelevant. Opinions regarding the importance of high quality intermodal service (Figure 3.10) did not differ greatly. Twenty-three percent of rail shippers viewed intermodal service as being important to their operations, while non-rail shippers again viewed it as largely insignificant to their continued operations.

Rail shipper's opinions on the value of Chicago's rail infrastructure and competitive options for carload service were quite revealing. They demonstrate Chicago's competitive advantage over many other regions, and strike a cautionary note on the potential impact of substantial changes in service options. Over two-thirds of rail users indicated that access to multiple rail carriers was critical to their operations (Figure 3.11) and 42% stated that if nearby rail yards were relocated, their facility would be downsized, relocated or closed. Furthermore, 46% of rail shippers

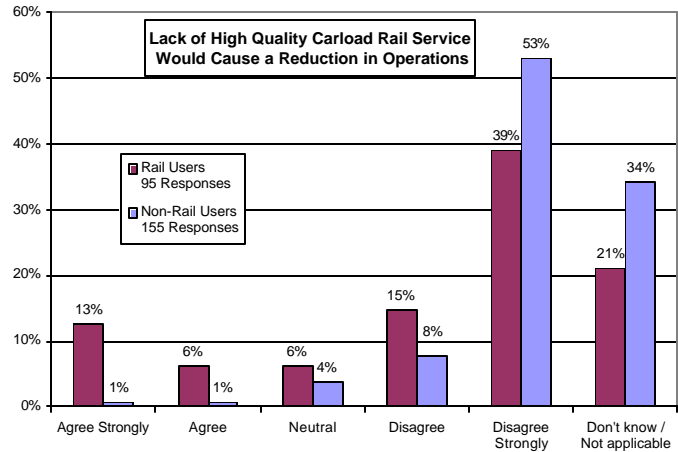


Figure 3.9 – Importance of rail carload service

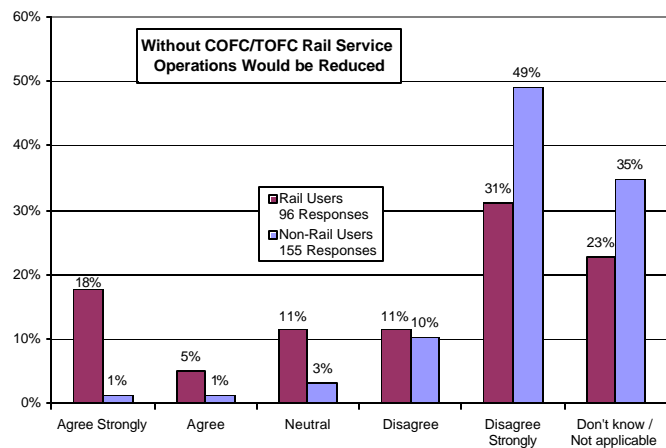


Figure 3.10 – Importance of TOFC/COFC service

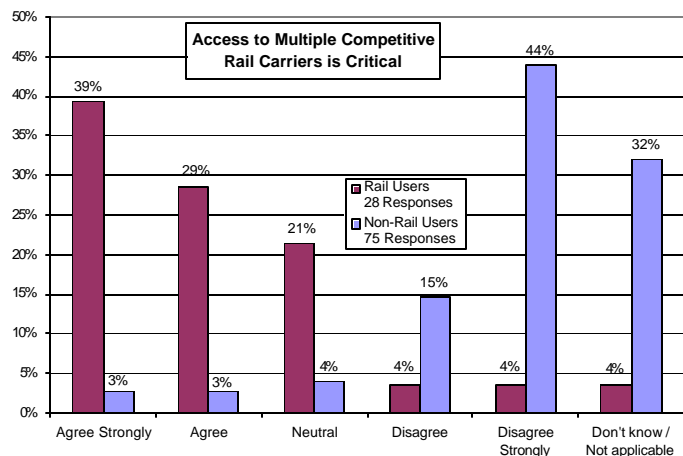


Figure 3.11 – Importance of access to multiple rail carriers

indicated that direct carload rail service is very important in their firm's choice to operate at their current location. In contrast, rail users are not nearly as sensitive to intermodal terminal location: almost three quarters of rail users stated that relocation of the nearest rail intermodal terminal to more than 25 miles away would not impact their operations.

3.2 Freight railroads

The project team conducted structured interviews with senior managers from seven freight railroads:

- The six major North American Class I railroads – Union Pacific (UP), Burlington Northern Santa Fe (BNSF), CSX, Norfolk Southern (NS), Canadian National-Illinois Central (CN/IC), and Canadian Pacific (CP),
- Two out of the three local “belt” railways – Elgin, Joliet & Eastern (EJE) and the Belt Railway Company of Chicago (BRC), and
- Two short lines, the Chicago South Shore and South Bend Railroad (CSS), and RailAmerica.

With the six major Class I carriers, managers having direct responsibility for Chicago area facilities and operations as well as corporate planning functions were interviewed. This approach provided a range of perspectives on the tactical and strategic situations that railroads are facing.

The structured interviews were targeted to cover five general topics: (1) the current situation, (2) bottlenecks, (3) anticipated conditions, (4) proposed solutions and means to implementation, and (5) impacts and changes resulting from proposed solutions. Since a discussion on the past history and future potential of Chicago and the rail freight industry is presented in Chapter 2, it is not repeated here. Instead, this section summarizes key findings about anticipated future directions for the railways discussed during the interviews, and highlights some of the differences in perspectives among the railroads.

3.2.1 Current conditions

Respondents expressed a range of opinions about current conditions. On the one hand, certain trends are pushing railroads to leave the region's core: geographic constraints, aging plant, and rail traffic congestion make for costly and unreliable operations. On the other hand, most carriers reported that the core of their business remains in Chicago and suburban Cook County, and that extensive changes in industrial development and rail facilities were unlikely to occur and would be costly to accomplish. Congestion has been caused by track capacity that is inadequate for handling the growing number of freight and passenger trains, and delays at interlockings (where multiple rail lines cross and/or diverge at grade) and grade crossings. Land in Chicago and suburban Cook County has become expensive, crowded, and heavily developed, with the result that it is difficult to assemble parcels suitable for new customers as well as terminals and yards. Some interviewees felt that railroads are losing business because of the high costs and poor service associated with current operating strategies and infrastructure.

Trends towards more dispersed development are evident and have been underway for some time, and not just with the new BNSF Joliet Logistics Park and UP Rochelle intermodal terminals that are being developed on the periphery of Chicagoland. As large rail facilities have moved to the suburbs, industrial development has followed. For example, NS is examining the potential of locating warehouses on the periphery for carload distribution to local shippers. Some inbound breakbulk facilities are moving to the Belt Railway of Chicago. UP is pushing multilevel operations (for finished automobiles) to the south at Gibson Yard. Some carriers see delivery and processing activities occurring at fewer, larger terminals than those presently in place.

Carriers were ambivalent about rail facility and industrial development in the seven Illinois and Indiana suburban “collar counties” outside of Cook County. While some areas are still quite open and suitable for rail-oriented development, many others are not, and face similar issues to those in the regional core. The best example of these challenges can be found with the siting of UP’s new intermodal terminal, which was eventually located in Rochelle due to a lack of acceptable locations within the Chicago metropolitan region. Other examples of this conflict have occurred in Lake County, which fears over-development as happened around Waukegan, and West Chicago, where the UP was unable to construct a simple connecting track between the UP West line and the Elgin, Joliet & Eastern.

Historically a critical component of Chicago’s rail network, the switching carriers have evolved away from their traditional role of interchanging traffic between unconnected carriers. Along with being charged with classifying a growing proportion of carload service trains, they are also taking on a greater role in performing pick-up and delivery of local industries. EJE is mainly concerned with carload traffic, although it does deliver unit coal trains to a half dozen receivers. BRC handles approximately 1 million cars per year that originate or terminate or require classification; they handle another million cars per year as “overhead traffic” that is moved from one connecting railroad to another. Chicago South Shore and South Bend Railroad is focused on deliveries of coal trains to steel plants and utilities. Congestion is an important issue to all of the railroads operating in the region; track quality and ability to handle heavy loads (and capacity to handle 286,000 lb. cars throughout the region’s rail system) are important to the railroads that handle large amounts of coal and other bulk commodities. The switching roads have also become more active in pursuing on-line industries, and believe that there is considerable potential if cooperation among the carriers on rates and service could be improved. The BRC and EJE each claim to be adding three to four new industries per year, although EJE reports they are still losing heavy industry.

3.2.2 Future of Chicago as the hub of North American railroading

NS, UP, and BNSF did not anticipate a major shift of gateways away from Chicago due to the design of the North American rail network, although CSX questioned whether gateways or intermodal hubs might shift. The switching roads offered a slightly different perspective. The EJE expects the Class I railroads to try to avoid Chicago unless they retain or achieve maximum control of operations; they indicated that traffic could decline 10-20% in 10 years. Some

believed the growing demand for rail passenger service could undermine Chicago's position as the freight hub of North America.

Even if there is another round of mergers, carriers will still have to deal with the existing infrastructure and operating problems in Chicago, as Chicago would remain an extremely important origin and destination for rail freight. Comments by CSX and BNSF officials suggest that the creation of transcontinental carriers would have the greatest effect on activities that are unrelated to local markets, e.g., hub terminals for sorting and transferring intermodal freight and interchange of unit trains and general merchandise trains. In addition, the potential efficiency gains from continental mergers could be limited by provisions requiring the new carriers to maintain some of the old gateways.

Despite some concern over the future of carload traffic, the switching roads and at least some of the Class I's believe that this traffic has a future. UP believes that carload traffic is important for long term strategic thinking. For UP, Chicago traffic and Chicago operations (Proviso Yard) are critical for this market group. Other roads have substantially scaled back their carload traffic facilities. For example, BNSF now has only one carload yard in the region, located at Eola. Traffic destined for Chicago from BNSF points is pre-blocked to avoid en-route switching prior to delivery, thus avoiding the need to process most Chicago bound traffic. Traffic moving away from Chicago is handled in a similar manner, with processing done at classification yards in Galesburg IL, Kansas City and Northtown, Minnesota.

3.2.3 Intermodal service futures

For *intermodal* service, the challenges are somewhat different. As noted in Chapter 2, the Chicago area terminals serve three functions: local delivery and pickup, transfer between trains within terminals, and interchange between carriers. The infrastructure requirements are different for each of these functions. For local services, it is generally desirable to locate the terminals close to customers in locations with good access to the local and regional highway networks. To minimize truck-miles, it is desirable to have multiple terminals spread throughout a major metropolitan area. A hub terminal, however, is of necessity a single large terminal that facilitates efficient sorting and transfer of containers and trailers between trains; access for local traffic may be secondary. Interchange operations are more complex, especially where there are as many different carriers as there are in Chicago. Close proximity to connecting railroad facilities is highly desirable, as that limits the time and cost of the transfer movements and allows closer coordination among interchanging railroads.

Many of the intermodal rail terminals were created by transforming rail yards that were located to serve industrial and network needs of the nineteenth century. As CSX pointed out, these locations are not necessarily the best for today's needs, and it may be difficult to find appropriate sites to handle growing traffic. If land and capacity is unavailable near customers, then railroads will be forced to locate elsewhere – and some customers will follow. Some customers are willing to relocate to be close to new terminals, and some (e.g., UPS) are interested in creating

major distribution facilities at the periphery of the city with excellent connections to both highways and railways.

The intermodal interchange function is complicated and clearly important to the city and the roads. There are over one million rubber tire interchanges per year,¹¹ with resulting impacts on Chicago streets and neighborhoods. If traffic volumes are sufficiently high, and if the network has the necessary connections, then steel interchange can be an effective way to reduce local truck traffic. However, if it is necessary to take containers and trailers off one train and then to transfer them to multiple locations for interchange to other railroads, then it may be more efficient and certainly faster to use rubber tire interchange. Some railroad respondents (like the draymen) questioned the flexibility, cost and service that would be associated with widespread use of steel interchange; trucks are vastly more flexible than tracks.

The issue is not so much “steel wheel” vs. rubber tire, but *where* the rubber tire interchange takes place. If there were a single, centrally located facility that was accessible to the major carriers, then the rubber tire interchange could be completed by hostlers working within the terminal. If there were several terminals in close proximity that were connected (or mostly connected) by special freight roads, then the rubber tire interchange would have minimal effect on other highway traffic. According to CSX, the interchange function therefore draws traffic into the city, where the major terminals are closer together and accessible to everyone. If the interchange function is not consolidated within a single facility, then the interchange would continue to take place where it does today, e.g., Corwith (BNSF), Global I (UP), 59th Street and Bedford Park (CSX), and Landers Yard (NS). Possible locations for a single sorting center include Conrail’s old terminal at Ashland Avenue and CSX’s terminal in Bedford Park, if problems with grade crossings and access were addressed. Some respondents stated that, while Rochelle (UP) and Joliet Arsenal (BNSF) have the land required for interchange, they are too far out of the city and too inaccessible to the major carriers (and their existing terminals) to play that role. However, with most new industrial development occurring to the west of the city, in twenty years’ time these intermodal terminals may find themselves in the heart of the region’s industrial activity.

For intermodal hub operations, customers and carriers are looking more toward the suburbs. CACH (Chicago Area Consolidation Hub at Willow Springs) is a prime example of creating a new location with excellent highway and railway connections that is suitable for rail-truck intermodal, LTL (less-than-truckload), and small package operations. The railroads believe that hub activity could be shifted to low-cost areas, and Chicago is not a low-cost area for either rail or truck operations. This has presented opportunities for smaller outlying towns, like Rochelle and Joliet, which have been able to attract new intermodal terminals. To some extent, carriers could also shift portions of their hub functions to more distant cities, including St. Louis, Kansas City, New Orleans, and Memphis. However, the fact that high-capacity mainlines from the rest of the U.S. had historically been designed to funnel traffic to Chicago makes a large-scale shift expensive and thus unlikely. Secondary lines leading to secondary hubs have been subjected to much downgrading or outright abandonment since the non-Chicago roads (e.g., Cotton Belt, Katy, Louisville & Nashville) were absorbed by Chicago-oriented carriers.

¹¹ Chicago Metropolitan Planning Council, **Critical Cargo: A Regional Freight Action Agenda**, April 2002, p. 7.

3.2.4 Solving the Chicago “bottleneck” and handling future growth

Following the service failures of the late 1990s that were brought about primarily by a combination of traffic growth and a series of mergers, the need to greatly improve the efficiency and reliability of rail operations in Chicagoland became painfully evident. Consequently, the rail industry has striven to address these problems by undertaking a variety of tactical and strategic initiatives to develop both near- and long-term solutions. At the same time, there have also been efforts by the public sector to address redevelopment of railroad property, reduce collateral impacts on the urban environment, and rectify bottlenecks affecting passenger train operations. Thus far, results have primarily taken the form of a number of studies, of which several came up frequently during the interviews. Only the general nature of these plans is discussed here, as they have been quite fluid.

The service failures led to the formation of the Chicago Planning Group (CPG) in April 1999. This group, which is composed of the Class I's, along with the Chicago area belt railways plus Metra and Amtrak, undertook two initiatives that bear mention in the context of this study:

- To tackle operational issues on a day-to-day basis, the CPG established the *Chicago Transportation Coordinating Office* (CTCO). This operations clearinghouse, staffed by representatives of all major railroads and physically located at Metra's offices, handles coordination activities among the freight and passenger railroads on a day-to-day basis. It has focussed on basic operating concerns such as improving schedule coordination between railroads, locomotive distribution and sharing, and winter preparedness. Respondents generally viewed it as being successful in improving throughput and reliability of rail operations in the Chicago region. Between 1999 and 2001, average dwell time at the major Chicago yards was reduced from 41 hours down to 27 hours, and crosstown throughput that was averaging 45 hours in 1999 had been reduced to 32.¹²
- The *Chicago Planning Committee* (CPC) has worked to achieve longer-term solutions to Chicago's recurring congestion problems, again on a collaborative basis between the freight and passenger railroads. The CPC undertook detailed analyses of Chicago's rail network in the context of current and projected operational requirements. The result has been a set of recommendations for changes in operations and infrastructure improvements. The recommendations were presented to public decision-makers in mid-2002, and have evolved since then.

Although industry efforts have accomplished significant efficiency and service gains since 1999, most respondents felt that not much more could be gained without more radical operational and institutional changes and significant infrastructure improvements. Numerous suggestions were made:

- Enhance cooperation among carriers to create plans for bypassing Chicago area yards. There are already many examples and suggestions:

¹² Tom Judge, “Fluid at Last,” *Railway Age*, June 2001, 27-29.

- NS builds blocks at Elkhart, Indiana which are delivered to the CP, UP and BNSF at yards west of the city (CP’s Bensenville Yard, UP’s Proviso Yard, and BNSF’s yard at Eola).
 - BNSF is rerouting some unit trains via Galesburg, Illinois.
 - EJE suggests making greater use of yards at Battle Creek, Michigan and Stevens Point, Wisconsin.
- Modify operating rights along key segments to increase throughput and provide greater flexibility in interchanging traffic between the eastern and western carriers. A commonly cited example was the CN’s interchange with the western roads and Iowa lines that currently relies on the St. Charles Airline. Another example is the Ashland Avenue interchange, which currently is only accessible by one eastern carrier, NS.
 - Use the “Hub Near Consumption” concept for intermodal terminals in order to minimize truck travel in picking up and delivering intermodal shipments.
 - Expand the amount of double and triple track along critical routes.
 - Reduce delays and improve safety at grade crossings. Several respondents mentioned problems with “whistle bans,” which has become a politically charged subject.
 - Provide separation of freight and passenger operations at critical locations. This could be accomplished by providing separate main lines for freight and passenger in high volume corridors and constructing fly-overs at key junctions.
 - Grade separation (fly-overs) at critical locations. These were viewed to be feasible only at a few sites due to geographic constraints and their high construction cost.

Beyond these general suggestions, discussion centered around several specific concepts that have gained broader recognition. These are (1) use of the EJE as a high-volume bypass route, and, (2) selected improvements in the closer-in circumferential railways – primarily the BRC and the Indiana Harbor Belt (IHB). While the first two projects appear to be competing, all of the railroad respondents felt that no one project could effectively solve the Chicago bottleneck, and that a combination of concepts would produce the best results.

The EJE bypass scheme has received the greatest attention from outside the railroad industry. Its potential has been examined by several public and private studies (most recently in **Critical Cargo: A Regional Freight Action Agenda**). Metra, has studied its potential application for the region’s first suburb-to-suburb passenger service. However, the interviewees expressed divergent opinions on both the value and cost that would be associated with upgrading the EJE. None of the Class I respondents was fond of this strategy, at least as an exclusive solution. They believed that much of the targeted intermodal and merchandise traffic could not be diverted over this “outer ring” route due to the location of existing terminals (such as Proviso on the UP) and other rail facilities. In addition, the capital requirements necessary to upgrade this route would be high, due to its length (approximately 110 miles for the entire line from Griffith, Indiana to Waukegan, Illinois), frequent grade crossings, and the very limited capacity of the existing track configuration and traffic management systems. As part of a broader menu of options, expanded use of the EJE for certain traffic (such as coal and grain unit trains) could offer some benefit.

Furthermore, cost and risk sharing with a parallel public sector initiative to introduce passenger service along the route could also improve its attractiveness by offering impacted residential and commercial abutters something in return.

More attractive to the western Class Is and the two Class I-controlled switching railroads, are solutions involving a collection of improvements focused largely on the BRC and IHB. These form the basis of a plan advanced by the CPC, whereby the complex network of lines and junctions that are used to interchange traffic between the carriers would be rationalized and streamlined. Capacity and speeds would be substantially improved, and the railroad industry's substantial investment in yard and terminal facilities located within the city and suburban Cook County would be preserved. Although the list of specific actions continues to evolve, the general elements of this plan include:

- Expanded use of the IHB (fewer highway grade crossings and improved crossing systems, grade separations at key rail crossings, modern traffic control and increased capacity at the Blue Island terminal),
- Similar enhancements on the BRC,
- Expanded use of the Western Avenue Baltimore and Ohio Chicago Terminal (BOCT) interchange, and
- Better passenger routes to the east (CSX and NS) and south (CN).

Several respondents stated the challenge in advancing such an agenda is that this collection of improvements may be more difficult to accomplish than a single large project, such as was the case with Los Angeles' Alameda Corridor. (According to Metra, the Alameda Corridor Project "pales beside what is needed in Chicago.")

Included in the plan is a "solution" for replacement of the St. Charles Airline. Compared to some of the other main lines in the region, this line is of modest importance for both freight and passenger traffic. It does provide a couple of important connections between the southern lines of CN/IC and the western lines of the CN, as well as access to Union Station for Amtrak from the CN/IC's lakefront main line.

More abstract discussions involved development of improvements that address the specific needs of intermodal service in the urban core. Several respondents raised the concept of a joint use "intermodal mixing center," which could be used to bring the "hub" function down to one facility and reduce the need for crosstown drayage between facilities.

3.2.5 Public policy towards railroads

Respondents displayed varying levels of interest for public funding of freight rail facilities. Some carriers strongly support public funding, while others do not. Most interviewees believed that the railroad industry remains a vital force in northeastern Illinois, and that strong outreach must be made to communicate the service and economic benefits associated with the rail system in order to secure public capital. A few expressed skepticism that the social and environmental benefits of rail – reduced roadway congestion, reduced energy consumption, improved air

Cushing, etc.) and/or pickup and delivery services (F.A.R., Cushing, Triton, etc.) in the Chicago region.

3.3.1 Characteristics of drayage operations

The economic and performance demands of the short-haul trucking and drayage market require that specialized firms provide most of the capacity. These firms are distinguished by the following characteristics:

- They are small, privately held, and generally operate fewer than 25 tractors. Prior to deregulation of the trucking industry in the early 1980s, large railroad-owned trucking companies such as the defunct Pennsylvania Truck Lines, Santa Fe Trails Transportation, etc. provided drayage services.
- They typically have contracts with one terminal operator, and/or a very limited group of customers.
- They specialize almost exclusively in transporting shipments between customer sites and rail terminals, and between rail terminals, e.g., “crosstown” service. This latter service is dominated by a couple of larger carriers.
- They supply only tractors and drivers, with the railroad and/or third parties providing trailers, containers and chassis. Frequently, drayage tractors are more than five years old, which is a result of both the extremely tough economics as well as the relatively low annual mileage (50,000 or so) compared to an over-the-road tractor.

Truckload, less-than-truckload, and integrated carriers also perform drayage activities, but only on their own account. Thus, companies such as UPS, Schneider National and J.B. Hunt will use their own drivers and tractors to transport shipments between intermodal yards, terminals and customer facilities.

Respondents estimated that the crosstown drayage represented approximately 600,000 to 700,000 annual moves with 800 tractors. Typically, these moves are relatively short, thereby allowing an operator to make 3-4 moves per day per tractor. Estimating the number of pickup and delivery moves is more difficult because there are so many more carriers providing this service, and these carriers are much smaller. Most interviewees were not comfortable offering an estimate beyond what they believe their own companies do, which is basically one to two loads per day per truck if the unit stays within 75 miles of Chicago.

Excluding the companies that provide crosstown service as their primary business, at least 30% of the non-crosstown volume travels outside a 75-mile radius of Chicago. Ten to fifteen percent of the non-crosstown moves occur within Chicago city limits, with another 15-20% in suburban Cook County. The remaining 40% travel to the Chicago region’s collar counties, and primarily Lake (IL), Lake (IN), DuPage, Will, and Kane.

Respondents that were purely in the drayage business were not overly enthusiastic about their business. Financial pressures are intense, and since they operate as subcontractors, they have little control over the marketing, pricing, and delivery of the product. They must constantly deal

with other, far larger, parties – equipment owners, terminal operators, intermodal marketing companies, shippers – each of which is focussed on its own responsibilities, often to the exclusion of the other participants in the intermodal supply chain. At the same time, they operate in one of the most congested and costly regions in the nation, complicating efforts to provide consistent service and manage productivity.

Although the interviewees were dissatisfied with their conditions, they did state that the quality of their interaction with rail intermodal facilities has improved significantly in recent years. Conditions at intermodal yards are now safe, for the most part. There is greater space for entry and exit into the yards from most streets, pickup and drop-off procedures have been streamlined, and the Safe Container Act has helped improve the quality of equipment that they are transporting. Terminal access through area roads has improved, although it could be further improved through better geometry and an increase in the weight limit to 80,000 pounds at some locations. Most heavily used expressways (e.g., the Kennedy, Dan Ryan, and Stevenson Expressways plus the I-90/94 Tollway) have also been substantially improved in the past twenty years. Respondents saw a need for continued improvement in: the handling of bad ordered equipment (i.e., defective trailers that needed maintenance) and delays in getting repairs done; finding equipment in the yards; and reducing roadway blockages by trains while drivers are in the facilities. Furthermore, area highways continue to experience substantial congestion during many hours of the day, particularly at certain high volume interchanges.

3.3.2 Future trends

Respondents generally agreed that future rail industry developments would most heavily impact crosstown drayage operations. As discussed elsewhere in this report, some of these changes are taking place now, with railroads working to increase steel-wheel interchange and run-through operations. At the same time, pickup and delivery operations have been most affected by trends in regional economic development, which have seen a substantial shift in industrial development from the city to the suburbs. Respondents felt that both of these trends are expected to continue, but they also expressed strong doubts as to how successful increased steel wheel interchange will be in reducing crosstown drayage.

In considering different directions that the railroads might take, interviewees felt that the greatest impact on their operations would be caused by relocation of terminals to the rim. The centrality of Chicago within the greater region provides for an even distribution of traffic from the terminals. If terminals were relocated to outlying locations, distribution would be less even and average drayage distances would increase, resulting in lower productivity and higher costs for drayage providers. From this standpoint, operators voiced concerns about the distances to UP's new Rochelle and BNSF's new Joliet Arsenal facilities. Not only would drayage distances have to increase, they anticipate that truck-related congestion on already congested highway segments would worsen.

3.4 Rail passenger operators

Chicago hosts two large rail passenger operators: Metra, which operates regional service centered on commuters working in downtown Chicago, and Amtrak, the national intercity rail passenger carrier for which Chicago is the hub of their long-haul network and Midwest corridor operations. The project team interviewed several representatives of Metra, but was unsuccessful in gaining substantive information from Amtrak. With over 700 versus Amtrak's 55 or so weekday trains, Metra clearly plays a far more critical role in managing and improving Chicago's railroad infrastructure. However, as the Midwest corridor rail services are developed over the coming years, intercity passenger train demands on main line and terminal capacity in the Chicago region can only be expected to grow. In several instances, potential infrastructure changes could impact intercity operations far more than Metra (Brighton Park Junction, St. Charles Airline). Nevertheless, the remainder of this section will focus on Metra and its relationship to freight rail.

Metra is the second largest regional passenger rail operator in North America after New York's MTA rail subsidiaries. At present, Metra operates some 700 weekday trains over a network of 546 route miles with 228 stations and a daily volume of 300,000 unlinked trips throughout the Chicago metropolitan region. A Metra subsidiary (Northeast Illinois Rail Corporation, operating former Milwaukee Road, Rock Island and Illinois Central trackage) owns some lines, and various Class I railroads own the remaining lines with Metra as tenant under varying conditions. These are the BNSF (ex Burlington Northern), UP (ex CNW), CN (former Wisconsin Central/SOO and Illinois Central), and Norfolk Southern.

Since its beginnings in 1984, Metra has developed a reputation as being one of the most successful regional rail operators, particularly from the standpoint of service quality (on-time performance, customer satisfaction) and its relationships with the rail freight industry. Out of a total of twelve routes, nine involve shared operations with freight trains. According to Frank Malone, Metra's Director of Media Relations, "railroads have to cooperate because of the criticality of Chicago to their operations." From Metra's perspective, the relationship with the rail freight industry is paramount. Continuing growth in passenger service, combined with growth in freight volumes, has consumed much of the surplus capacity that had been present since the 1960s. Addressing these challenges requires aggressive cooperation between Metra, Amtrak, and the freight railroads. Indeed, Metra has played a central role in facilitating discussion among railroad stakeholders following the service meltdown in the late 1990s. As part of this effort, Metra came to host the *Chicago Transportation Coordinating Office*, an operations clearinghouse that is staffed by representatives of all major railroads. This has resulted in improved fluidity for freight operations, and more consistent on-time performance for Metra's passenger trains. Metra also participates in the *Chicago Planning Committee*, which has formally recognized that passenger trains have first priority.

Metra's traditional focus has been suburb to Chicago Loop travel, using, for the most part, the traditional main line routes that were built into the city during the latter half of the 19th century. Although these are high capacity, well-engineered lines, many handle substantial volumes of freight and passenger traffic and, due to their advancing age, are in need of substantial

reinvestment simply to return them to a state of good repair. Over the years, Metra has been addressing these needs through a bridge replacement program, track renewal projects, and signal upgrades in critical areas. Many of the bridge replacements have occurred within the Chicago city limits. These projects are often done on a cost-sharing basis with the owning freight carriers, with the division based on the benefits received by the parties.

Metra interviewees indicated that available capital is adequate to bring the infrastructure up to a state of good repair. This investment has allowed Metra to maintain existing services and to modestly expand train schedules. However, if long-term growth trends in rail freight and passenger service continue, far greater investments will be required along some of the main lines, terminal areas, and perhaps also in equipment technologies and operations (increased train speeds, closer headways, fare collection technology). Thus far, Metra has not developed a comprehensive plan to address expected capacity shortfalls, but has identified and in a few cases undertaken some incremental improvements to ameliorate particularly onerous congestion problems. An example of such a project is the automation of a major junction between Metra's Heritage Corridor and the Belt Railway (Brighton Park Junction) on the city's Southwest Side. At the same time, the agency is undertaking significant expansion projects on the North Central (CN), UP West, and South West (NS) services.

Over the past decade there has been a growing interest in developing new inter-suburban services that skirt the downtown region. Several studies of such service have been undertaken, but only recently has Metra committed to developing a particular service. One of the key impediments to implementing such services is the inadequacy of the available infrastructure. The EJE route, the focus of several studies, would require substantial capital investment simply to be able to support passenger service in an operationally acceptable manner. Metra recently announced that it will pursue funding for development of the Star line, a proposed service that will extend Northwest from the O'Hare Airport vicinity and continue South along the EJE to Joliet.

quality, and more efficient land use – will justify the billions of dollars that will be needed for major rail restructuring. Nevertheless, respondents agreed that the railroads “get short shrift” when it comes to public funding for transportation infrastructure.

While some interviewees expressed concerns about the attractiveness of increasing involvement of the public sector in freight rail issues, they also universally indicated that the railroad industry was not in a position to implement extensive solutions on their own in Chicago. Not only are the expected costs of such solutions high, but institutional impediments within the industry would be difficult to overcome without strong leadership from the outside. An “Alameda Corridor style” quasi-public authority was cited by several respondents as an option, given its success in Los Angeles. However, further discussion and analysis will be needed to determine what the best approach might be. Several stated that the complex jurisdictional situation, and the sensitivity of the competitive balance among the freight railroads makes the challenge in Chicago more daunting than was the case in Los Angeles for significant infrastructure and operational changes.

3.3 Motor carriers

As noted in Chapter 2, the majority of goods movement occurs over the road. A small but vital part of the Chicago region’s motor carrier sector participates in intermodal transport. In the context of railroads and Chicago, motor carriage plays an important role in two ways:

- Transport of shipments over the “last mile” between a rail gateway and shippers located throughout and beyond the Chicago region, and
- Transport of containers and trailers between the intermodal terminals of the various railroads.

“Drayage” encompasses the activity of hauling freight between rail (or port) terminals and shipper facilities. As such, drayage forms the crucial first and last links in the intermodal transportation chain, and usually is the only direct contact with the user of the service. In Chicago, a common form of drayage is the transport of containers and trailers between the intermodal yards of the eastern and western railroads; in essence, drayage is used to sort traffic by destination similar to the way a traditional switching yard is used to sort carload freight. This “crosstown” drayage developed because of the operational complexity and cost of directly transferring containers and trailers by rail. With far higher unit costs than line-haul carriage, the length and location of the drayage portion of a move frequently determine whether intermodal service is a viable option or not. From this standpoint, the perspectives of motor carriers that perform drayage functions provide a useful element for qualifying the alternative scenarios examined in this study, especially in terms of traffic congestion, loading/unloading delays, impact on manpower and equipment requirements, and other factors that affect the cost of operations.

The project team conducted structured interviews with senior managers of approximately fifteen trucking firms that engage in the haulage of intermodal containers and trailers in the Chicago region. Interviewees ranged in size from large national trucking companies (J.B. Hunt, Schneider, UPS) to smaller firms that specialize in providing crosstown drayage (Pacella,

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4 Scenarios for the future

4.1 Scenario overview

The rail industry and the city are both evolving, and there are many trends that affect the future structure and location of rail facilities within the city. As noted in Chapters 2 and 3, past changes in the rail industry have substantially affected the city's economy, employment levels, land use, and environment. Although diminished from earlier years, railroads continue to have a significant impact on Chicago's economy and economic geography. Future trends affecting the railroad industry will impact the city, and vice versa. Such trends may include continued consolidation of the freight railroads, relocation of intermodal terminals to the outer suburbs, and public sector participation in rail infrastructure development. Drawing from a series of preliminary carrier and agency interviews, data analysis, and discussions within the project team and CDOT managers, a set of four alternative scenarios was developed. These scenarios capture the types of strategies that could, and to some extent already are, changing the shape of the rail industry. These scenarios are designed to reflect trends away from a "Base Case" that envisions no substantial changes to the rail freight network within the region. The following sections of this chapter discuss the elements and assumptions made for each of the scenarios in greater depth.

4.2 Scenario elements and assumptions

The purpose of the study was to gain a better understanding of what the future may hold for Chicago's rail system. Scenarios focussed on the rail network and flows, and developing appropriate inputs for analysis within the structure of the REMI model. Although numerous elements may impact the rail industry and the region to varying degrees, model development concentrated on the few primary or key factors, which were used to drive all other impacts. This approach provided clarity to the analysis in terms of illuminating the effects of the different directions that may be taken, and also met the needs of the economic model. On the rail side, the three key elements are:

- The rail network in and around Chicago;
- The traffic flows over that network; and,
- The operating and marketing strategies for serving those traffic flows.

From the perspective of the region, the key elements include:

- The growth rate of the economy, which relates to the need for rail service and transportation service in general;
- The trends in land values, which relate to the opportunities for redeveloping land currently occupied by rail facilities and the opportunities for increasing the land devoted to the rail network and to rail customers; and,

- The status of the regional highway and transit networks, which relates to the effects of freight traffic on highway congestion.

Following a series of preliminary interviews and considerable discussion between the consulting team and CDOT, five major directions for the rail network were identified, each with differing impacts on the railroads and the city. In order of increasing impact on the rail industry, these directions or scenarios are as follows:

- *Base Case.* No major changes in the nature of the freight network in the region, i.e., the system continues to adapt to support local and regional industry, and Chicago continues to be a major hub for the North American rail system. Existing yards within the city continue to be utilized, productivity trends allow some improvements in cost and capacity, and additional terminal capacity is constructed largely outside of the city.
- *Rationalization.* Rationalization is a broad term for many possible actions that would keep rail activity within the city, but would seek more effective uses of infrastructure and more effective operations. Most likely, this would involve the creation of one or more major, grade-separated rail freight corridors through the region, with coordinated efforts for terminal expansion, consolidation and relocation. Rationalization would have little or no negative effect on local industry, and it would free up some land and portions of rights-of-way for alternative uses.
- *Intermodal-to-Rim.* Existing intermodal terminals would be relocated to the periphery of the region. Since land is much cheaper outside of the city, where it is also easier to assemble large sites, there is a clear logic for railroads to consolidate intermodal operations on the periphery.
- *Bypass Chicago.* The capacity of bypass routes would be upgraded, thereby reducing the need to route through-traffic through the most congested parts of the city. Facilities currently used to handle this freight could then be redeveloped for other uses.
- *Minimal Rail Freight in City.* Move most rail operations out of the city, using intermodal terminals and transload facilities on the periphery to handle traffic destined to or from the city. Major rail customers would still be served, but they would be served from more distant terminals and the locus of industrial development would move out of the city. High costs for land and labor along with congested highways and cumbersome switching operations could encourage both railroads and their customers to leave the city. This scenario would certainly reduce service and increase freight costs for firms within the city, and of the four scenarios it would lead to the greatest loss of employment and gross regional product in rail and rail-related industries.

To a substantial degree, these scenarios represent “extreme” examples of the changes that are likely to occur. By performing the analysis in this manner, the effects of a particular strategy could be isolated and examined. In reality, a combination of these scenarios is likely to occur. Indeed, many of these trends are already evident in changes that are now taking place in the region.

For the *Base Case*, we assumed the following conditions:

- Network- no major changes to the nature of the freight network in the region.

- Traffic – unrestrained growth for each major traffic class, using Global Insight’s regional forecast as the basis.
- Marketing and operating trends – existing practices and strategies assumed to remain in place.
- Economic conditions – regional economic projections for the economy of the city (provided by the Northeastern Illinois Planning Commission [NIPC]).
- Land values – continued trends, presumably increasing prices for land, more proposals for redeveloping rail facilities, and more options for alternative use of freight rail corridors.
- Chicago transportation system – presumably some investment in transit and highways, levels of congestion continuing to rise (which could favor rail intermodal over truck and make rail lines more valuable for passenger transport).

The *Rationalization* scenario assumes that major investments are made to rationalize or streamline the use of the existing infrastructure within the Chicago region. The main objective of these investments would be to reduce the time and cost of moving rail freight through the region. The city’s primary terminal network would continue to service the region’s local needs, while investments in terminal and line capacity would allow (1) faster and more reliable merchandise movements (e.g., 12-24 hours faster), (2) an increase in “steel-wheel interchange” for intermodal, and (3) less delay for bulk moves (e.g., 6-12 hours faster). Potential impacts would be as follows:

- Network - rationalize the regional network through the creation of one or more high-capacity, grade-separated rail freight corridors through the region, with coordinated efforts for terminal expansion, consolidation and relocation;
- Traffic – continued trends for bulk and intermodal; more medium-haul through merchandise traffic because a) better service will help mode split and b) more capacity and better cooperation among the railroads will allow changes in marketing strategy (see next item);
- Marketing and operating trends - continued trends for each major traffic class; greater emphasis on medium-haul (500-800 miles) merchandise traffic that passes through the Chicago terminals;
- Economic conditions – general economic projections for the economy of the city, i.e., no change from base;
- Land values – continued trends, presumably increasing prices for land, more proposals for redeveloping rail facilities, and more options for use of rail corridors [no change from base];
- Chicago transportation system – presumably some investment in transit and highways, but levels of congestion are expected to rise (which will favor rail intermodal over truck and which will make rail lines more valuable for passenger transport) [no change from base].

The *Intermodal-to-Rim* option represents the possibility of the rail industry moving aggressively to a “Hub & Spoke Intermodal Network.” Instead of trying to route all intermodal freight directly from one terminal to another (with a possible rubber tire interchange in Chicago), the railroads would decide to establish major hubs in rural areas where they could reclassify intermodal shipments. This scenario would reduce the importance of Chicago as a terminus and

eliminate much of the current urban rubber tire interchange. Since the impact of terminal location on economic development and truck traffic in the region is more a public than a private concern, the railroads will not be overly concerned with these issues. Potential impacts would be as follows:

- Network – build new intermodal terminals and expand capacity of terminals on the periphery of the region; reduce capacity of intermodal terminals within the city;
- Traffic – continued trends for each major traffic class, except for the likelihood that some shippers and other rail-related businesses will relocate outside of the city in order to be close to the new intermodal facilities;
- Marketing and operating trends – use terminals in and near the city primarily for local traffic; reduce use of rubber tire interchange for through traffic, but increase length of drays for intermodal shipments to/from the city; no major changes in merchandise or bulk traffic;
- Economic conditions – general economic projections for the economy of the city, i.e. no change from base;
- Land values – continued trends, presumably increasing prices for land, more proposals for redeveloping rail facilities, and more options for use of rail corridors [no change from base];
- Chicago transportation system – presumably some investment in transit and highways, but levels of congestion are expected to rise (which will favor rail intermodal over truck and which will make rail lines more valuable for passenger transport). The relocation of the intermodal terminals could have some impact on congestion on major routes in, out, and around the city, and could increase truck VMT as distances to intermodal terminals would increase.

The third option, *Bypass Chicago*, represents the possibility of upgrading the capacity of routes that could bypass the Chicago region entirely. Circumferential routes, such as the EJE, would be used more extensively than in the base case, but not as extensively as in the “Rationalization” or “Minimal Rail Freight in the city” cases. Instead, railroads make more drastic changes in routing to move freight on routes that do not even come close to Chicago. Possibilities might include greater use of the St. Louis gateway for east-west traffic or circuitous routings that avoid congestion or gridlock in Chicago.

- Network – with less traffic, there will be less terminal activity and fewer trains; it may be possible to close 30-50% of the yards in the region, with much of the reduction taking place within the city;
- Traffic – continued trends for each major traffic class of local traffic; sharply reduced through traffic (perhaps 50% decline from base case);
- Marketing and operating trends – dramatic attempts to reduce Chicago routings for each major traffic class;
- Economic conditions – general economic projections for the economy of the city [no change from base];
- Land values – continued trends, presumably increasing prices for land, more proposals for redeveloping rail facilities, and more options for use of rail corridors [no change from base];

- Chicago transportation system – presumably some investment in transit and highways, but levels of congestion are expected to rise (which will favor rail intermodal over truck and which will make rail lines more valuable for passenger transport). A decline in intermodal traffic and sharp reduction in train volume may have some effect on congestion levels.

The fourth and final option, *Minimal Rail Freight in City*, would entail moving most rail operations out of the city. Intermodal terminals and transload facilities would be located on the periphery, and handle most of the traffic destined to or from the city. Unit trains could still be delivered directly to customers in the city, and major merchandise customers would still receive direct service from nearby yards. However, most intermodal and class yards would be shifted out of the city.

- Network – intermodal would be entirely shifted out of the city (more dramatic change than in Intermodal-to-Rim); interchange activities would be largely shifted outside the city; classification activity within the city would decline on the order of 75% from the base;
- Traffic – continued trends for each major traffic class (i.e. the drivers of traffic would be the same; the mode split or the attractiveness of the city could change);
- Marketing and operating trends – there would be major changes in both marketing and operating strategy aimed at reducing rail activity in the city. Most rail-dependent development would take place outside of the city;
- Economic conditions – general economic projections for the economy of the city [no change from base];
- Land values – continued trends, presumably increasing prices for land, more proposals for redeveloping rail facilities, and more options for use of rail corridors [no change from base];
- Chicago transportation system – presumably some investment in transit and highways, but levels of congestion are expected to rise (which will favor rail intermodal over truck and which will make rail lines more valuable for passenger transport); relocation of intermodal terminals and class yards may have some effect on congestion levels.

The Base Case and each of the four scenarios were investigated using the REMI model. To operate the model, it was necessary to translate the assumptions embodied in each scenario into the various inputs used by the model. To represent changes from the base case for any scenario, it was necessary to indicate the changes in the location of railway activity, indicate the likelihood that industry would relocate to remain close to rail facilities, and specify the number of transportation industry jobs that would be affected by the move. This process is described in Chapter 5.

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5 Economic impacts of scenario alternatives

The central element of this study was to assess the economic impacts of alternative future directions in the railroad industry on Chicago and the surrounding metropolitan region. Four potential trends or scenarios plus a “status quo” baseline were selected for analysis, which are discussed in Chapter 4. This chapter begins with a brief overview of the economic simulation model that was used and its application in the study, followed by a discussion of the process by which the scenarios were implemented in the model. The concluding section presents the results of the economic analysis for the four scenarios plus the Base Case.

5.1 REMI background

The Regional Economic Model, Inc. (REMI) model is generally acknowledged to be the premier economic simulation and forecasting system within the U.S. that is specifically designed for project and policy impact analysis. It is the most widely used and accepted approach for forecasting the economic development impacts of major transportation projects by state and regional agencies around the United States.

The software system allows the user to fine-tune any aspects of the calibration using local expertise and available data. The model predicts, for each year in the future, the impact of the proposed project or policy change on employment and business output for each of 53 industry categories and 94 detailed occupational categories. The model also predicts other variables such as changes in regional personal income, population, business competitiveness, industry wage rates, and industry value added.

The REMI model effectively combines four components:

- *General economic forecast*, which projects changes in population, employment, business sales, and profits for the region over the 1999-2035 time period;
- *Policy impact*, which estimates how public policy and facilities investment changes business revenues and operating costs in each industry in the region, and the effects of these changes on the region’s competitive position and share of national growth;
- *Population trend*, which estimates changes in the migration of the working age segment of the region’s population in response to changes in demand for labor, wage levels and living costs; and
- *Input-output analysis*, which accounts for the inter-industry flows of dollars, and the associated indirect and induced economic effects.

These four functions are combined into one integrated model system, which simulates the effects of public or private projects or policy programs on the economy. A multi-area REMI model is first calibrated with data to describe the affected region(s) under study, and then is applied to forecast the changes in employment and income by year for every year out to the year 2035. For each scenario, the REMI model is run multiple times, first to capture the base case of the

economy, and then to represent the economy under the influence of a specific alternative. For this study, the base case assumes no changes to the current rail system, and each alternative represents a specific reconfiguration of the rail system in and around the Chicago region. Each time, results are provided in terms of employment, personal income, economic value added, business output and population. Results of the “control” forecast and an “alternative” forecast (describing a rail freight system reconfiguration) are then compared to estimate project impacts, as illustrated in Figure 5.1.

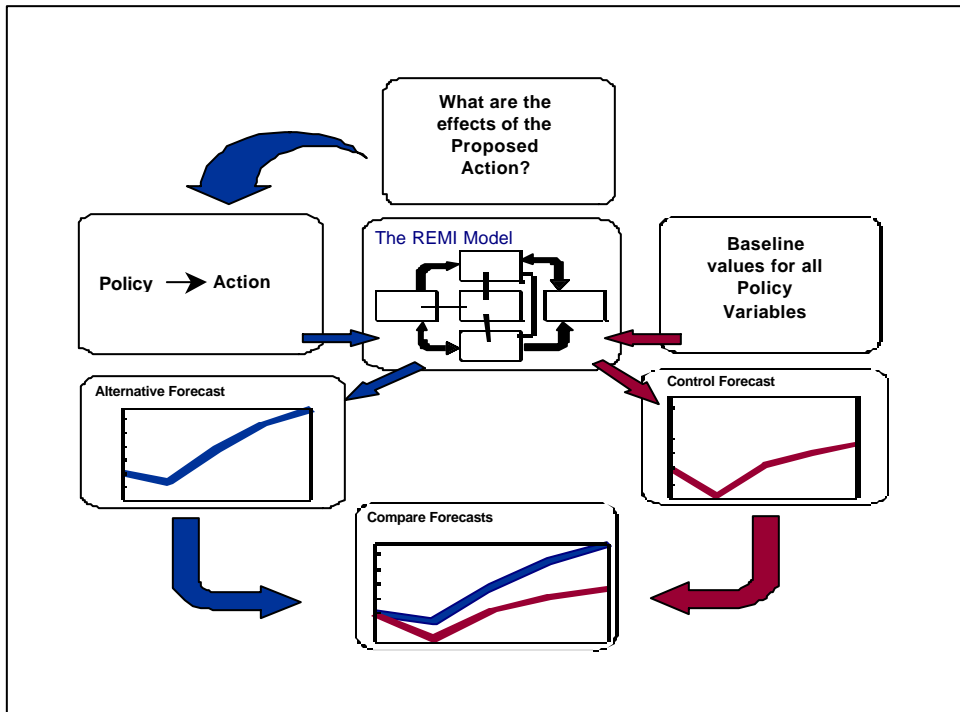


Figure 5.1 – Effect of policy or action

The capabilities of the REMI model have been published in national academic journals such as the *American Economic Review*, *The Review of Economic Statistics*, and *International Regional Science Review*.¹³

¹³ An extensive list of references on the technical design and application of the REMI model can be found at http://www.remi.com/Analysis_Areas/Article_List/article_list.html#Technical.

5.1.1 Application of REMI for alternative rail freight movement configurations

In operation, the REMI economic simulation model of the regional economy can be broken down into five key economic arenas, illustrated in Figure 5.2 below; (1) output, (2) labor and capital demand, (3) population and labor supply, (4) wages, prices and profits, and (5) market shares. Changes in rail freight movement can affect the model in the following ways:

- In the Labor and Capital Demand module, rail transport jobs and trucking/warehousing jobs will shift within the regional geography defined for this study as a result of reconfiguring freight movements, thereby affecting regional sales, capital requirements (hence investment), wages and working age population migration.
- In the Output module, construction spending for initial site demolition of retired rail yard acreage and eventual site redevelopment to other uses affects demand for construction jobs, supplier jobs, wages, regional income level and consumer spending and working age population migration.
- In the Wages, Prices and Profits module, the magnitude of cost changes to ship via rail for area businesses affects their market share competitiveness and jobs. Logistics cost changes (such as inventory carrying costs, delayed shipment charges, production line slowdowns) to regional businesses dependent on rail freight would also enter the model in the wage, price, profit module.
- In the Population and Labor Supply module, new jobs coming on-line for the city as a result of rail yard acreage transitioning into new light industrial and/or retail uses affects the city's economic output, wages, city income levels and working age population migration.

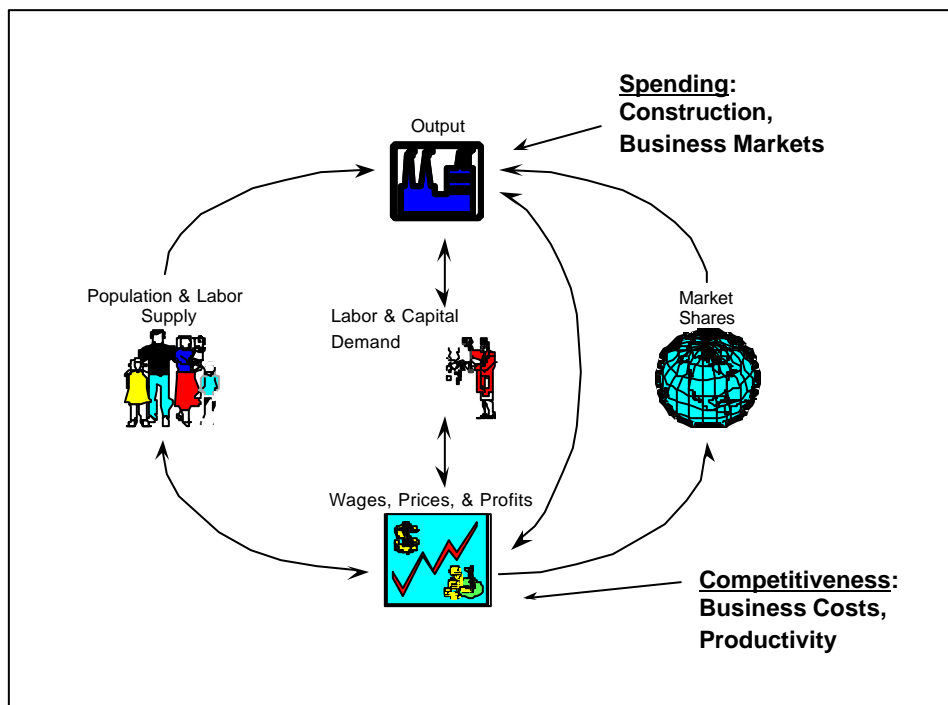


Figure 5.2 – Transportation effects in REMI

- In the Market Share Module, the degree to which area industries can export their products and satisfy local demands is determined. This is based on the city's price competitiveness, which is a function of the cost of doing business in that area relative to other potential suppliers, i.e., the region immediately outside the study region, as well as other regions of the United States.

In the following section, the methods by which the variable parameters were specified are discussed.

5.2 Scenario inputs

5.2.1 Factors common to all scenarios

5.2.1.1 Source data

Freight traffic data by mode and commodity were assembled for a base year and a forecast period using Reebie Associates TRANSEARCH database for the year 1998. TRANSEARCH covers U.S. domestic, NAFTA, and major elements of inland waterway trade activity. TRANSEARCH data is used by numerous states, metropolitan planning organizations and academics, as well as by the Federal Highway Administration, and is an accepted and credible market information source among motor carriers and railroads. The TRANSEARCH database provided several distinct advantages for the Chicago study:

- It draws from a unparalleled truck data sample, including trucks engaged in intermodal operations;
- It is produced nationally by county, thus allowing for the detailed corridor and sub-regional analysis required to effectively assess the freight impacts for this region; and
- It is issued annually, so that information can be analyzed on a time series basis and renewed readily for regional analysis in years ahead.

The modes captured in TRANSEARCH include truckload, less-than-truckload, private trucks, carload and intermodal rail, air and water. Volumes are expressed in terms of tons and numbers of trucks, and by the dollar value of goods, but can be converted to loads (rail, rail intermodal and all truck modes) and even truck equipment types and configurations (truck modes only). County-to-county traffic is flowed with routing models along highway and railroad networks, to permit identification of volumes relevant to a corridor and/or region. Finally, goods are specified by four-digit commodity code, giving a basis for forecasting, a window on industrial supply and distribution patterns, and an indication of service requirements.

The data were analyzed at the county level, which consisted of Cook, Kane, Lake, Will, DuPage and McHenry counties in Illinois, and Lake and Porter counties in Indiana. For the REMI analysis, the Reebie traffic flow data were consolidated into four geographic regions: City of Chicago, the balance of Cook County ("Suburban Cook County"), the five Illinois "collar counties," and the two adjacent Indiana counties of Lake and Porter. Traffic for the City of Chicago itself was estimated using an allocation method based on industry-level *FreightLocator*

data for in-City zip codes. A fifth category “Outside Study Region” was added to accommodate growth in the greater Chicago region that impacted the study regions, but which was not otherwise included in the REMI analysis geography.¹⁴

5.2.1.2 *Forecasted traffic flows*

A forecast of domestic and international freight traffic was developed for the years 2010 and 2020 by Global Insight (formerly DRI-WEFA). Global Insight’s forecasting models unite regional business transactions with national and international trends to yield combined and consistent projections of domestic and foreign commerce.

In this analysis, the Global Insight forecast factors were applied by commodity and geography to inbound, outbound and through traffic totals. This methodology permitted the regional grouping and time-series analysis that was an integral part of the scenario impact assessments. A detailed description of the Global Insight forecasting methodology appears in Appendix 1. Consistent with Reebie’s normal practice, mode share changes were kept separate from the forecast. The REMI model has embedded mode shift factors, and these were determined to represent a more reasonable depiction of impact in this regional analysis.

5.2.1.3 *Metrics of business activity*

In order to correlate the current and forecasted rail flow data from TRANSEARCH into factors that could be utilized to measure changes in regional economic performance, we needed to develop a series of metrics for business activity impacts. For this purpose, we selected a series of input/output factors that could be linked directly to corresponding factors in the REMI model. The metrics were divided broadly into two major categories of (1) railroad activity measures, and (2) rail shipper/receiver activity measures.

5.2.1.3.1 *Railroad activity measures*

In a regional economy, the volume of carloads, trailers and containers handled impacts jobs, both directly (as in the case of railroad jobs) and indirectly (as in the case of trucking and warehousing jobs). Traffic flows (drawn from Base Case TRANSEARCH data and forecast volume data) plus productivity factors (such as tons/acre and railroad jobs/acre) enable us to translate changes in traffic volume into changes in railroad employment and acreage requirements. Both

¹⁴ An example of this is the present construction of a new Union Pacific 1,230-acre intermodal terminal in Rochelle, IL. The Rochelle Intermodal Terminal – located in Ogle County – is not within the defined “Collar County” region (which is comprised of Kane, Lake, Will, McHenry, and DuPage counties in Illinois), but has a material impact on intermodal activity in the City of Chicago, suburban Cook County, and the “collar counties” surrounding Chicago. Apart from impacting intermodal traffic patterns in the region, the Rochelle construction is providing an economic benefit to the Chicago region through design and construction investment, some of which is realized in Chicago proper.

employment levels and acreage can be adjusted to reflect anticipated trends in productivity over time. In the economic modeling, changes in railroad activity – traffic volumes – produced impacts on five elements of economic activity in the region:

1. Railroad jobs gained or lost,
2. Trucking and Warehousing jobs gained or lost,
3. Trucking and Warehousing sales gained or lost,
4. Acreage consumed by railroad activities, and
5. Intra-regional railroad revenue effects.

To develop job and acreage factors, the project team researched recent railroad construction projects and their associated job creation results – both direct (railroad) and indirect (trucking and warehousing). Employment levels were assumed to be proportional to traffic volume, with an adjustment for expected improvements in sector productivity. Data were collected from press releases, railroad websites and the carrier interviews to develop averages for these factors based on the acreage of the constructed facilities. These were then matched to projected railroad activity levels for the facilities as a basis for comparison. The results were a series of factors that correlated railroad activity, tonnage and acreage consumed that could be applied as inputs to the REMI analysis for the various scenarios. For example, if rail traffic grew and existing facilities became more congested, new facilities would be added, creating additional jobs and sales, and consuming additional acreage. The same principles worked in reverse, where scenarios contemplating a reduction in citywide rail activity would lead to reduced jobs, sales and acreage.

The impact of changes in railroad revenues brought about by changes in traffic volumes is less evident. Railroad revenue generally follows railroad tonnage originating and terminating in a region. However, since no major railroad operating in Chicago is headquartered in the region – and hence a most of its staff and activities are located elsewhere – revenue impacts would primarily be felt elsewhere. However, to the extent that there is a local impact (such as increased purchases of locally produced goods and services), this effect can be calculated. An intra-regional sales impact was estimated within the REMI model, which reflects the local impact of changes in intra-regional sales activities brought about by changes in traffic volumes.

Acreage estimates for rail intermodal and all other railroad activities were developed to match the scopes of the four scenarios. A variety of sources were used for this information, including railroad property valuation data from the Illinois Department of Revenue, land use statistics from NIPC, intermodal acreage estimates from CATS, information from the National Transportation Assets Database (version 2001 published by the U.S. Department of Labor Statistics) and State-level statistics from the Association of American Railroads and from the Illinois Department of Revenue. Figure 5.3 contains a summary of this information.

These factors tied directly to inputs in the REMI model so that job gains or losses or acreage consumed or released would create corresponding economic impacts in the various study regions.

County Land Use	Acres
COOK 1510	9,630
COOK 1520	10,480
COOK 1530	5,108
COOK 1540	1,243
COOK 1550	126
COOK 1560	8,338
DUPAGE 1510	2,575
DUPAGE 1520	629
DUPAGE 1530	2,072
DUPAGE 1540	126
DUPAGE 1550	144
DUPAGE 1560	1,615
KANE 1510	1,413
KANE 1520	420
KANE 1530	461
KANE 1540	33
KANE 1550	52
KANE 1560	801
LAKE 1510	1,063
LAKE 1520	933
LAKE 1530	646
LAKE 1540	103
LAKE 1550	38
LAKE 1560	3,166
MCHENRY 1510	325
MCHENRY 1520	89
MCHENRY 1530	314
MCHENRY 1540	16
MCHENRY 1550	62
MCHENRY 1560	478
WILL 1510	2,964
WILL 1520	1,328
WILL 1530	762
WILL 1540	39
WILL 1550	158
WILL 1560	2,692

Chicago Area Land Use Summary		
County	Approx. Rail Acreage	Percent of Total Rail Acreage
COOK 1520	10,480	75.5%
DUPAGE 1520	629	4.5%
KANE 1520	420	3.0%
LAKE 1520	933	6.7%
MCHENRY 1520	89	0.6%
WILL 1520	1,328	9.6%
Total	13,879	100.0%

1510 -- Interstate and Tollway, Regardless of Width --
Includes limited access, high speed, divided highways, right of way, interchanges, tollway and highway rest areas and their parking facilities. (Expressways and Tollways such as the Eisenhower, Kennedy or I-88, I-94 will be coded regardless of width. These special cases will be determined exogenously.)

1520 -- Other Linear Transportation with Associated Facilities -- (A minimum width of 125 feet in the City of Chicago and 200 feet in the rest of the region, a minimum area of .25 acres in the City of Chicago and 2.5 acres in the rest of the region). This would include railroad, rail rapid transit (and associated stations) ; commuter rail track & ROW & station , rail yards, linear transportation such as parkways.

1530 -- Airport Transportation -- Includes air strips and tarmacs, associated air fields, passenger & freight terminals, hangars, airport storage and equipment maintenance, heliport landings/takeoffs (when not associated with other activity such as hospital or hotel).

1540 -- Automobile Parking -- Defined as non-residential off-street parking that is .25 acres or greater in the City of Chicago and 2.5 acres or greater in the rest of the region.

1550 -- Communication -- Includes telephone, telegraph, radio, and television including towers, dishes, microwave facilities, and other communication, NEC. Does not include the lines themselves (they are too small to code).

1560 -- Utilities and Waste Facilities -- Includes electric, gas, water, sewage, solid waste, and other pipelines. NOTE: ROW for a particular linear feature is coded as utility when the surface is devoted exclusively to the right-of-way and is used for no other purpose. Includes utility line right-of-way in excess of 200 feet wide; (but not refineries (manufacturing) or storage tanks (warehousing)).

Figure 5.3 – Land use data for Chicago and surrounding areas

5.2.1.3.2 Rail shipper/receiver activity measures

A significant part of the study involved obtaining feedback from the Chicago region's rail stakeholders. This included in-person and telephone interviews with railroad representatives, public transit and rail passenger agencies, local planning groups, and several area experts, in addition to the extensive shipper survey conducted by the consulting team. The factors derived from these data included: (1) expected changes in overall logistics costs based on shifts in rail facility locations; and (2) anticipated changes in shipper/receiver job levels as a result of rail facility relocations. In both cases, the data from the shipper survey process was used to estimate the economic impacts of changes in railroad activity to railroad shippers and receivers.

5.2.1.3.3 Cost of doing business

To measure the changes in shipper logistics costs resulting from changes in railroad activity in the Chicago region, we constructed a proxy measurement using information provided by the shipper survey (data categorized by Standard Industrial Codes [SIC]), Reebie's Freight Locator Database, and current railroad traffic distributions as measured from Reebie's TRANSEARCH database. The structure of the shipper survey permitted the grouping of results by industry or SIC, and allowed us to identify those industrial sectors that were most likely to experience a rise in costs due to the relocation of rail facilities in the Chicago region. The survey responses were aggregated by 2-digit SICs, and a weighted average was calculated for each SIC grouping based upon the array of responses provided by the shippers. Respondents from SIC groups that indicated a higher impact resulting from the relocation of rail facilities received a higher score, while shippers from SIC groups that cited less impact received a lower score.

These scores were then weighted based on the volume of rail traffic in that SIC group as derived from TRANSEARCH for the Chicago BEA. High volume shipper groups with high predicted impacts received greater weight than those with lower volume or impact profiles. The combined scores were multiplied by a logistics cost factor that was calculated from a variety of source data including: (1) a Reebie Associates proprietary database that provided a relative cost per ton for each of the various 2-digit STCCs;¹⁵ (2) the average tons per load based on historical data developed by Reebie Associates; (3) the distribution of shipper industries (SIC2) from Reebie's Freight Locator database; and (4) the modal mix of traffic for the Chicago BEA as derived from TRANSEARCH. The relative size of the logistics cost factor adjustment was validated by the results of survey responses and interviews of rail, motor carrier and dray operators. The factor adjustment was then expressed as a percentage of average railroad revenue (sales), and served as a proxy measure of transportation and inventory cost increases or decreases that would accrue to local shippers as a result of the kinds of railroad facility reconfiguration that were contemplated in the various alternative scenarios.

¹⁵ At the two-digit level, STCCs and SIC are largely identical.

Having calculated a logistics cost impact for the various shipper groups, we then determined whether the change in rail operations represented a deterioration of service levels for shippers and receivers in a given region, or an improvement. We accomplished this by calculating a “surplus” or “deficit” of rail activity in a region based on the available rail acreage relative to the amount of rail acreage required to support the forecasted level of freight activity. This is a logical assumption in that currently shippers in the collar counties are receiving rail freight (intermodal and carload) which is often first sorted at facilities in Cook County. For example, BNSF intermodal shippers in Will County are currently serviced from intermodal terminals in Willow Springs (Cook County) or Cicero (Cook County). With the completion of the Joliet Arsenal intermodal facility, much of this freight will be “grounded”¹⁶ at the new facility, saving these shippers drayage costs. Thus, where a surplus existed in a region (as is the case currently in Cook County), shippers will likely experience lower logistics costs relative to those areas where there is a lack of capacity.¹⁷ And when a new facility is constructed in a region the local shippers would likewise be expected to benefit from lower logistics costs. Conversely, where there is a deficit of rail facilities in a region – such as would be the case for Cook County shippers in the Intermodal-to-Rim scenario, logistics costs would be expected to rise.¹⁸

5.2.1.3.4 Business relocations and reductions

The loss of competitive rail service was a concern expressed by numerous rail customers in the shipper survey. 23% of current rail shippers indicated that a deterioration in intermodal service would cause them to scale back operations or to relocate, while 19% indicated that a deterioration in rail carload services would cause such an impact. Using data developed by the project team, a series of rail customer labor impacts were devised that could be utilized in the REMI model to estimate the economic impact of service deterioration resulting from rail facility migration.

Again using the data output from the shipper surveys, we aggregated shipper responses by two-digit industry SIC code. As different quantities of shipper respondents expressed various degrees

¹⁶ “Grounding” is a term that means to remove intermodal trailers or containers from railcars and to place them on the ground for pickup by a dray operator.

¹⁷ In locations of surplus capacity, rail carriers traditionally price services competitively in an effort to build volume and offset the significant fixed costs of rail operation. In areas that lack excess capacity, rail carriers traditionally “de-market” low margin traffic, so as to concentrate limited resources on more profitable services. This common practice was modeled in the analysis through the calculation of “surplus” and “deficit” regions. The underlying assumption to this proxy analysis is that current railroad operating capacity is utilized efficiently. While not universally true, for purposes of this analysis, and in this region, such an assumption was considered appropriate.

¹⁸ This does not account for corresponding migrations of rail shippers in the impact region. We determined that the employer attrition factors already built into the REMI model would be a sufficient measure of this activity, and we did not seek to augment these numbers or discount the logistics costs impacts based on this fact. As a point-in-fact, the logistics cost analysis impacts were de minimis in the context of the REMI Analysis, ranging from \$0.01 per rail transported ton increase for the city, to (\$0.20) per rail transported ton for Porter and Lake Counties in Indiana by 2020. That such a small population would be impacted was not unexpected: changes would be applicable only to rail users, and only to the rail portion of their logistics operation. These minor adjustments were greatly overshadowed in the REMI modeling by the relocations of rail-served businesses, and the redevelopment of railroad properties.

of concern over the relocation of railroad facilities, we constructed a weighted-average score by industry sector for each two-digit SIC. This score was then multiplied by the reported employment by Industry SIC for the Chicago region as developed through Reebie's Freight Locater Database¹⁹ to develop a "job impact factor."

The job impact factors were scaled to the specific circumstances of the various scenarios based on two criteria. First, the factors were adjusted to reflect a job loss or gain based on the "surplus" or "deficit" of rail activity in a region. This was determined by comparing the available rail acreage with the rail acreage required to support the projected (forecasted) level of freight activity. This is essentially the same procedure as was employed in the calculation of logistics cost changes. As shipper logistics costs rise, we would expect shippers impacted by this change to become less competitive. The inability to compete successfully with businesses located in more logistically efficient regions would then be expected to reduce sales, followed by a reduction in operations and finally a reduction in labor requirements. Conversely, when shipper logistics costs are lowered, as would be expected to occur in areas of capacity surplus, shippers would logically add jobs to accommodate increased sales demand for their products. In this fashion, the job impact factors were adjusted based on the amount of surplus or deficit rail facilities calculated for each of the four geographic regions. The greater the variance from this theoretical equilibrium, the greater the job impact.²⁰

The combined effect of the business impact factors yielded only very small changes in projected regional employment and logistics costs. This was not unexpected given that only a portion of the region's shippers are rail customers, and that competitive transportation alternatives are readily available to most of Chicago's shipping community. These impacts are lost in a sea of productivity, inflation, and growth factors embedded in REMI's model of the regional economy. Nevertheless, the linkages between railroad operations and shipper activity are quite clear, and vigilance in this area remains a prudent course of action.

¹⁹ The Freight Locater database captures a select portion of shippers in a specific region. For the Chicago region, it identified approximately 750,000 manufacturing and non-manufacturing jobs in 2001, less than the 4.2 million total regional non-farm employment reported by the Department of Labor Statistics. By using the Freight Locater statistics in this study, the impact in terms of jobs lost due to rail facility relocations could thus be understated. Conversely, the results of the shipper survey were skewed towards rail shippers (who responded at a significantly higher rate than non-rail shippers) and would thus tend to overstate the impact in terms of jobs lost due to rail facility relocations. After several discussions with the project team's economic modeling experts about the sensitivity of the REMI model to these small fluctuations, it was decided that adjusting the formula driven impacts with these additional factors would have only a small bearing on the overall results of the analysis. Thus the impact of these two additional but offsetting factors was ignored.

²⁰ Such a scaling methodology assumes a competitive marketplace. The presumption was made that competitive market forces would require shippers to pass much of the variable cost savings along to consumers, rather than collect these savings as monopoly profits.

5.2.1.4 *Construction spending*

The migration of rail facilities from city and suburban Cook County locations to other counties in the region could be expected to bring significant construction investment into the region. To estimate the impact of this spending on the regional economy, we analyzed the historical size and geographic distribution of construction spending for a comparable group of railroad facilities across the nation. The figures were then averaged to develop proportional investments based on facility acreage. In turn, this average was applied to future investments for rail facilities on a per-acre basis as would be contemplated in the selected scenarios. The group of railroad facilities used to model construction spending were: CSXI Atlanta, CN Taschereau (Montreal), Bethlehem Intermodal, NS Philadelphia Navy Yard, Port of Corpus Christi, Pier 500 Los Angeles, UP Rochelle Illinois, CSXI 59th St, BNSF Willow Springs Illinois, Oakland International Gateway, Memphis Super Terminal, CN Milton (Toronto), Westmoreland Pennsylvania, NJ Portside Expansion, Joliet Arsenal, NJ Portside Original.

Additional research conducted by Reebie Associates, and confirmed in some of the carrier interviews, suggests that the investments in new intermodal facilities flow to the economies of several counties, in addition to the county where the facility is actually constructed. In Chicago, for example, much of the terminal design and environmental analysis work completed has historically been contracted to firms in the city, while regional firms have generally captured the preponderance of the construction dollars. Through our discussions with rail carriers currently engaged in Chicago area construction projects, we were able to validate the general distribution of construction dollars developed for the analysis.

5.2.2 Factors specific to individual scenarios

5.2.2.1 *Rationalization scenario*

The premise of this scenario is that the railroads and government agencies, faced with worsening rail congestion in the Chicago area, seek to improve the fluidity of the region's "through" traffic with investment in high-capacity rail bypass corridors.

While the preponderance of Chicago area traffic either originates or terminates in the region, nearly 25% of the traffic merely moves through the region en-route to some other destination. This significant volume of "through" traffic reflects the history and geography of the railroad system and the role of Chicago as the largest rail gateway in North America. The largest eastern and western railroads traditionally terminated in Chicago, and constructed an extensive network of yards, terminals and stations to interchange their cargo of freight and passengers. Despite nearly seventy years of mergers and facility rationalization, in Chicago the railroad traffic patterns first established in the 20th Century continue to prevail at the dawn of the 21st Century.

For this scenario, we began with facility utilization statistics obtained in a year-2000 study of land use obtained from NIPC.²¹ This information provided the approximate acreage consumed by railroad activities in the region (13,900 acres). The construction of high-capacity railroad corridors to divert through traffic and to improve the fluidity of local traffic was assumed to provide significant increased capacity for service to shippers located in the region. In addition, we assumed the construction of additional railroad classification and support facilities for the high-volume corridors. As the additional capacity became available (which had been previously consumed by through traffic), it was assumed that some portion of the existing facilities would become surplus. Thus a modest acreage attrition rate was inserted into the analysis to reflect this anticipated condition.

Again using the forecasted traffic volumes derived from the Global Insight forecast as applied to the Reebie TRANSEARCH data, we projected forward the required acreage needed to support the anticipated growth in traffic.²² For the 2002 and 2003 forecast years, we included the additional intermodal acreage provided from the anticipated completion of the new BNSF Joliet Arsenal and UP Rochelle intermodal terminals. The addition of these facilities, along with the diversion of a significant portion of through traffic, minimized the need for future terminal construction in the region.

The construction of a grade-separated high-capacity route or routes in the Chicago region can be compared in some ways to the Alameda Corridor Project recently completed in the Los Angeles Basin. This \$2.4 billion project entailed construction of a 20 mile, grade-separated high-capacity rail-truck corridor between the rail yards located near downtown Los Angeles and the ports of Los Angeles and Long Beach. For the Chicago region, a more extensive project would probably be required. Using the conclusions in the Critical Cargo study, and the input from several railroad executives, we assumed that at a minimum, about 100-miles of high-capacity grade separated corridor or corridors would be required to support Chicago's anticipated traffic growth.²³

²¹ The land use data provided by NIPC for this analysis is presented in Figure 5.3.

²² In the development of inputs for REMI, we assumed that rail productivity remains constant over the period of the analysis. Productivity adjustments for the rail industry are embedded in the regional factors of the REMI model, and thus to avoid obvious double counting, the input process maintained productivity at a constant level.

²³ The Critical Cargo Study contemplated improvements to a significant portion of the Elgin, Joliet and Eastern Railway (EJE) as the preferred bypass route around Chicago. Our interviews with railroad executives however, suggested that this route represented a less desirable alternative than other available routes (see Chapter 3). Several of the carriers indicated that the Indiana Harbor Belt (IHB) and Belt Railway of Chicago (BRC) offer better bypass options given current yard and terminal infrastructure. Others suggested that a combination of routes including the IHB, and portions of other routes (such as the BOCT and the GTW), might be more efficient. Suffice it to say that there is not a consensus on which route or combination of routes provides the best solution to Chicago's transportation needs. Absent a sponsoring agency and a well funded study (as was the case in the Alameda Corridor Project), carriers are focusing their efforts on maintaining the efficiency of the current route network.

The EJE Corridor Improvements contemplated in the Critical Cargo Study suggest a route length of approximately 100 miles through suburban and rural countryside. The IHB route is somewhat shorter at approximately sixty miles, but passes through a more densely populated area. The carriers that we interviewed indicated that an engineering cost estimate for the construction of a grade separated corridor using either the EJE or the IHB route has not yet been developed. Thus we developed a proxy estimate based on the actual cost of the Alameda Corridor project, the longer corridor length and the different geography of the two suggested Chicago routes. This provided

In this scenario, capacity upgrades and facility restructuring would be scheduled to commence in the year 2006 and be completed in 2010. It is anticipated that the institutional, planning, and funding challenges can be surmounted more quickly in Chicago than was the case with the Alameda Corridor project (that project began in 1989, but construction did not commence until 1997).²⁴

5.2.2.2 *Intermodal-to-Rim scenario*

The premise of this scenario is that continued economic and political pressure will force railroads to move intermodal facilities outward from the city and suburban Cook County into the collar counties of Illinois and Indiana, and locations even farther out. For this analysis, we began with facility utilization statistics obtained in a 1997 study of Chicago area intermodal activities conducted by CATS.²⁵ This information provided the approximate acreage consumed by intermodal activities in the region (2,800 acres), and provided the overall utilization rates of the city's current intermodal network (nearly 100% overall).

Using the forecasted traffic volumes derived from the Global Insight forecast as applied to the Reebie TRANSEARCH data, we projected forward the required acreage needed to support the anticipated growth in traffic. For the 2002 and 2003 forecast years, we included the added intermodal acreage provided from the anticipated completion of BNSF's Joliet Arsenal Intermodal Terminal (630 acres)²⁶ and the UP's Rochelle facility (1,230 acres).²⁷ Once these two massive terminals are in full operation, intermodal capacity will increase significantly. However, projected traffic growth in the region will ultimately consume this additional space, and more terminal construction will become necessary. Historically, intermodal terminal construction is patterned in a stair-step fashion. Rail carriers will generally resort to the construction of new facilities only when less-costly alternatives have been exercised and only when existing facilities are persistently choked with traffic. Not surprisingly, this situation occurs for most carriers at the same time – when rail intermodal volumes are growing. Thus the concurrent timing of the Joliet Arsenal project and the Rochelle Terminal development is not atypical.

an approximate construction cost of \$3.4 billion. This is a planning number only, and does not constitute an engineering-based estimate of the investment necessary to construct a grade-separated high-capacity rail corridor using any of the route alternatives discussed above.

²⁴ The early years of the Alameda Corridor project's formal existence were devoted to developing a financing strategy and overcoming institutional hurdles with the railroads and government entities (see http://www.acta.org/main_menu_fact_sheets.htm). Since then, institutional understanding and federal transportation policy and legislation have become somewhat more developed in supporting projects of this type. However, a different approach might be more suitable to fund and manage a project in Chicago.

²⁵ <http://www.catsmpo.com>

²⁶ Jeff Stagl, "BNSF christens Chicago-area multi-modal facility, ponders similar all-service centers," <http://www.progressiverailroading.com>, October 15, 2002.

²⁷ <http://www.uprr.com/customers/intermodal/featured/global/>

5.2.2.2.1 Capacity utilization

For this scenario, we calculated a regional “terminal capacity utilization” figure to estimate the timing of future intermodal facility investments. When the volume of rail traffic pushed regional utilization towards 100%, we assumed that carriers would invest in new infrastructure to continue to participate in traffic growth. Consistent with the premise of this scenario, and the events of recent history, we surmised that this additional investment would occur primarily in the collar counties, northern Indiana, and in other locations outside the study region.

Historically, the growth rate of intermodal traffic to and from the West Coast has far exceeded the growth in traffic to and from points along the East Coast, and indeed, based on the forecasted volumes developed by Reebie and Global Insight, this trend is expected to continue. The rail carriers that serve the West Coast markets have their principal intermodal facilities located in suburban Cook County and the city’s western neighborhoods. Conversely, rail carriers serving the East Coast are primarily located in the southeastern suburbs and the city’s southern neighborhoods. To duplicate this precedent for the Intermodal-to-Rim scenario, we patterned the forecasted new construction to favor western traffic growth at percentages equivalent to historical growth rates. For eastern traffic, we assumed that there will be some growth but at lower rates than western traffic.

5.2.2.2.2 Capacity attrition

In order to transfer intermodal terminal capacity to the collar counties, northern Indiana, and more distant counties, we developed an acreage attrition rate for facilities in the city and suburban Cook County. As there is currently insufficient capacity in the more distant counties to accommodate the current and projected volumes of intermodal traffic, we constructed the scenario to simulate a more gradual reduction of close-in capacity. Unlike the terminal construction which is “bunched” in selected years, the attrition rate reflects the fact that even after a new facility is constructed, the traffic will take some time to shift, as intermodal drayage operators and intermodal shippers adjust to new patterns of activity and new service schedules.

In order to maintain a balance between capacity additions and capacity deletions, we used the regional capacity utilization factor to meter the opposing forces in the face of continued traffic growth. The result was a scenario that gradually shifted approximately 1,400 acres, or 46% of current regional capacity, to the collar counties, northern Indiana, and more distant counties outside the study area.

5.2.2.3 *Bypass Chicago scenario*

The premise of this scenario is that in order to reduce congestion and improve service for Chicago area shippers, the railroads cooperatively work to divert through rail traffic to other interchange gateways such as St. Louis or Memphis, and to increase utilization of Chicago’s own bypass routes such as the EJE, the NS-BNSF connection at Streator, etc. The scenario

contemplates little change in the area's originating and terminating traffic, but shifts the preponderance of through traffic out of the city. This scenario represents a more dramatic shift of through traffic in Chicago, but a less dramatic impact locally. The Bypass Scenario envisages the elimination of between 30% and 50% of the rail facilities in the region, with much of the reduction occurring in the city.

For this scenario, we separated Chicago area traffic into two categories – “through traffic” and “local traffic.” Local traffic represented traffic originating and terminating in the Chicago region, while through traffic represented traffic that moves through the region but neither originates nor terminates within the Chicago region.

Both through and local traffic volumes were forecasted through 2020 based on the factors supplied by Global Insight. But while local traffic volumes were allowed to grow unrestrained, through traffic volumes²⁸ were diminished to reflect the shift in preferred railroad gateways – away from Chicago - that is contemplated in the scenario. As with the other scenarios, we included the additional intermodal acreage provided from the anticipated completion of the BNSF's Joliet Arsenal Intermodal Terminal and the UP's Rochelle facility in 2002 and 2003.

Even with the significant reduction in through traffic, this scenario contemplates new terminal construction outside the study region. The diversion of traffic to other gateways does however, significantly postpone the need for additional construction as current facilities – vacated by the route diversion of through traffic – shift to handle the growing local traffic base. Also consistent with most of the other scenarios, the timing of construction investments was matched to the regional capacity in acreage relative to the required capacity based on traffic growth patterns.

5.2.2.4 *Minimal Rail in City scenario*

The premise of this scenario is that the railroads, faced with continued economic and political pressures to surrender their Cook County real estate for economic redevelopment and rights-of-way for transit expansion, move their primary operations to suburban counties. The scenario contemplates the use of intermodal drayage and rail-to-truck transload operations as a means of providing continued rail service to city and suburban Cook County shippers. This scenario represents a more dramatic shift of facilities than is contemplated in the Intermodal-to-Rim scenario, with the migration of some 75% of projected traffic levels and their attendant facilities.

Within the rail industry, there has been significant discussion about rail carload traffic that cannot be moved in block (unit) trains, and which continues to represent well over half of the industry's revenue base. Some railroad managers have questioned the economic viability of this

²⁸ Although through traffic volumes decline throughout the region in this scenario, the total amount of traffic moving is unchanged. The volumes are shifted to other gateways and bypass routes and are captured in the “outside the study region” impacts. These impacts are not reflected in the REMI output, but are included at the input stage. This insures that all forecasted regional volumes are accounted for in the analysis, and that secondary construction impacts in Chicago and Cook County (for rail facility expansion just outside the periphery of the analysis) are captured.

“loose-car” traffic, in large part due to the increasing difficulty of providing a cost-effective, competitive service that the shipping community will use. Indeed, BNSF and NS have both recently undertaken efforts to redesign and streamline their carload networks in light of the changing market expectations and investment requirements.

As with the Rationalization scenario, we began with facility utilization statistics obtained in a year-2000 study of land use obtained from NIPC.²⁹ This information provided the approximate acreage consumed by railroad activities in the region (13,900 acres). In this scenario however, the primary focus was on the elimination of current facilities commensurate with a “de-marketing” of traffic, and the construction of a limited number of multi-use facilities on the periphery of the region. These new facilities could be designed to support carload transfer, automotive and intermodal akin to BNSF’s Alliance Transportation Facility outside Fort Worth, Texas.

With the reduction in rail activity in the city and Cook County, we estimated a corresponding decrease in railroad acreage requirements. In this scenario, a significant acreage attrition rate was assumed. Although each of the scenarios involved freeing of rail acreage for other uses, the redevelopment of former rail yards in the city and suburban Cook County was most pronounced in this scenario. The project team’s land-use expert estimated the benefit of this redevelopment, which was incorporated into the REMI analysis. In addition to the rail yard redevelopment, we assumed that a certain amount of site remediation – reflected in dollars and time - would be required before redevelopment could commence.³⁰

Again using the forecasted traffic volumes derived from the Global Insight forecast as applied to the Reebie TRANSEARCH data, we projected forward the required acreage needed to support the anticipated growth in traffic. In this scenario however, we discounted these volumes to reflect the de-marketing of carload traffic inherent to the scenario. For the analysis, this traffic erosion was phased in beginning in 2004, and continued for the duration of the study period to 2020. As with the other scenarios, for the 2002 and 2003 forecast years, we included the additional intermodal acreage provided from the anticipated completion of the BNSF’s Joliet Arsenal Intermodal Terminal and the UP’s Rochelle facility.

Even with the significant decline in traffic volumes, this scenario contemplates new terminal construction outside the study region. Consistent with the process used in the Intermodal-to-Rim scenario, the timing of these investments was matched to the regional capacity in acreage relative to the required capacity based on traffic growth patterns. Terminal capacity was added, as and where needed to absorb projected traffic growth.

²⁹ The land use data provided by NIPC for this analysis is summarized in Figure 5.3.

³⁰ Remediation costs were estimated at \$67,000 per acre, or approximately 25% of new construction costs. Since remediation costs can vary significantly by site based on previous use, this number represents an estimated average rather than a historical average cost.

5.3 Model results

5.3.1 REMI's "Base Case" outlook

The Base Case outlook within the context of this study is interpreted as no change from the current stance on behalf of a) the railroad transport industry concerning the location of rail freight operations, b) the City of Chicago's land-use policies, and, c) the mode choice mix of area businesses moving goods/supplies into and out of their respective regions. The base case takes into account Global Insight's freight forecast growth factors for 2010 and 2020 (using 1998 as basis). The Base Case does not reflect the impact of growing congestion along the network of roadways on the economy of the four regions that form the Chicago metropolitan area in the model: City of Chicago, suburban cook county, the Illinois collar counties, and Lake and Porter counties in Indiana.

Key economic measures of the Base Case for each of the four regions are shown for 2002, 2012 and 2020 in Table 5.1 on the following page. With respect to the number of railroad jobs in 2002, the ranking by region (in descending order) is as follows: Chicago, suburban Cook County, collar, and the Porter-Lake (IN) counties³¹. With respect to trucking and warehousing jobs in 2002, suburban Cook County and the city switch positions, with suburban Cook County having the greatest number of jobs, followed by Chicago, the collar counties, and Porter-Lake. To place the regional changes for the rail and the combined trucking/warehousing sector in context, Table 5.2 presents the forecasted national growth for these two sectors.

Output (or business sales) for the railroad and trucking/warehousing sectors is predicted by REMI's national and regional forecasts to grow continuously from 2002 through 2020 in the four regions and nationwide. At the same time, employment levels in railroad and trucking employment are expected to decline through 2020. The growth in output for these sectors in light of the declining employment is explained by labor productivity gains for both the railroad and trucking sectors that are embedded in the REMI factor forecasts.

Apart from the railroad and trucking portions of the regional economies involved in our analysis, private-sector employment growth is predicted for the period 2002 to 2020, with higher growth between 2002 and 2012 and somewhat lower growth from 2012 onward. This is the case across all four regions. Gross regional product and regional output (measured in billions of current dollars) exhibit the same growth patterns as private-sector employment growth for all four regions.

5.3.2 Shaping the "alternative" forecasts using rail freight reconfiguration

For each of the four alternative scenarios that were evaluated in this study, four components came into consideration:

³¹ The number of railroad jobs in the region would increase by a factor of 3.6 if you include other 'non-strictly rail' supplying businesses from within the region.

Indicator	Chicago			Rest of Cook		
	2002	2012	2020	2002	2012	2020
Employment (thousands)	1,885.7	2,110.3	2,213.6	1,744.8	1,971.4	2,051.9
GRP (Bil 2002\$)	137.8	183.0	209.8	131.0	205.4	247.7
Personal Income (Bil Nom \$)	92.1	146.6	200.3	117.5	185.5	252.2
Real Disp Pers Inc (Bil 2002\$)	71.5	89.2	101.1	90.0	111.2	125.2
Population (thousands)	2,951.4	3,393.2	3,708.6	2,407.6	2,506.5	2,575.4
Labor Force (thousands)	1,345.1	1,503.7	1,561.2	1,359.5	1,502.6	1,525.7
Regional Demand (Bil 2002\$)	202.1	307.7	353.4	237.8	399.1	468.4
Regional Output (Bil 2002\$)	222.6	298.6	343.0	236.2	368.5	444.0
Railroad Jobs (thousands)	5.8	4.4	3.7	2.4	1.8	1.5
Trucking Jobs (thousands)	23.2	18.7	16.6	37.0	29.6	26.0
Railroad Output (Bil 2002\$)	1.6	1.9	2.2	0.6	0.8	0.9
Trucking Output (Bil 2002\$)	3.4	3.9	4.5	5.3	6.1	7.0
Avg. Annual Rate of Change						
Railroad Jobs	NA	-2.4%	-2.0%	NA	-2.4%	-2.0%
Trucking Jobs		-2.0%	-1.4%		-2.0%	-1.5%
Railroad Output		2.0%	2.1%		2.0%	2.0%
Trucking Output		1.4%	2.0%		1.5%	2.0%

Indicator	Collar Counties			Porter-Lake Co.'s, IN		
	2002	2012	2020	2002	2012	2020
Employment (thousands)	743.9	826.5	887.9	342.5	376.6	406.9
GRP (Bil 2002\$)	62.3	91.5	109.6	22.3	33.9	47.3
Personal Income (Bil Nom \$)	68.7	112.2	156.3	19.7	31.2	44.2
Real Disp Pers Inc (Bil 2002\$)	52.7	69.2	80.6	17.6	21.9	25.6
Population (thousands)	1,132.3	1,446.1	1,542.0	645.7	690.5	733.3
Labor Force (thousands)	662.5	849.6	897.2	332.3	366.2	380.3
Regional Demand (Bil 2002\$)	131.4	195.0	220.9	49.0	92.8	162.6
Regional Output (Bil 2002\$)	115.0	164.8	196.1	42.2	66.6	97.5
Railroad Jobs (thousands)	1.5	1.1	1.0	0.6	0.4	0.4
Trucking Jobs (thousands)	10.8	8.6	7.6	7.0	5.7	5.1
Railroad Output (Bil 2002\$)	0.4	0.5	0.6	0.2	0.2	0.3
Trucking Output (Bil 2002\$)	1.7	1.9	2.2	1.0	1.2	1.4
Avg. Annual Rate of Change						
Railroad Jobs	NA	-2.3%	-2.0%	NA	-2.3%	-2.0%
Trucking Jobs		-2.0%	-1.4%		-1.8%	-1.5%
Railroad Output		2.1%	2.1%		2.2%	2.0%
Trucking Output		1.3%	2.0%		1.7%	2.0%

Table 5.1 - Selected Base Case economic indicators

U.S.	2002 to 2012	2012 to 2020
	Average Annual Rate of Change	
Railroad Jobs	-2.26%	-1.79%
Trucking Jobs	-0.40%	-1.18%

Table 5.2 - U.S. Base Case rail and truck sector growth rates

	Cumulative by 2020			
	City	Rest of Cook Co.	Collar Counties	Porter-Lake IN
Rationalization				
Railroad Acres Added/(Lost)	(400)	(797)	1,620	800
Railroad Jobs Added/(Lost)	(180)	(359)	729	360
Trucking Warehousing Jobs Added/(Lost)	(344)	(685)	1,393	688
Site Demolition/prep – \$ Millions	\$215	\$130	\$386	\$191
Business Relocations: Jobs Added/(Lost)	3,588	(688)	477	(626)
Industrial Re-Use Jobs Added	5,058	(253)	(505)	0
Retail Re-Use Jobs Added	2,845	(1,138)	(1,138)	0
Intermodal-to-Rim				
Railroad Acres Added/(Lost)	(906)	(529)	1,220	400
Railroad Jobs Added/(Lost)	(408)	(238)	549	180
Trucking Warehousing Jobs Added/(Lost)	(780)	(455)	1,049	344
Site Demolition/prep – \$ Millions	\$130	\$93	\$291	\$103
Business Relocations: Jobs Added/(Lost)	(2,272)	(1,325)	1,440	599
Industrial Re-Use Jobs Added	6,510	(325)	(650)	0
Retail Re-Use Jobs Added	3,662	(1,465)	(1,465)	0
Bypass Chicago				
Railroad Acres Added/(Lost)	(1,320)	(1,500)	620	0
Railroad Jobs Added/(Lost)	(594)	(675)	279	0
Trucking Warehousing Jobs Added/(Lost)	(1,135)	(1,290)	533	0
Site Demolition/prep – \$ Millions	\$137	\$141	\$157	\$16
Business Relocations: Jobs Added/(Lost)	(1,294)	(1,471)	4,495	1,055
Industrial Re-Use Jobs Added	9,610	(480)	(960)	0
Retail Re-Use Jobs Added	5,406	(2,162)	(2,162)	0
Minimal Rail in City				
Railroad Acres Added/(Lost)	(1,850)	(2,102)	1,820	1,200
Railroad Jobs Added/(Lost)	(833)	(946)	819	540
Trucking Warehousing Jobs Added/(Lost)	(1,591)	(1,808)	1,565	1,032
Site Demolition/prep – \$ Millions	\$253	\$248	\$451	\$284
Business Relocations: Jobs Added/(Lost)	(5,053)	(5,743)	539	677
Industrial Re-Use Jobs Added	14,200	(710)	(1,420)	0
Retail Re-Use Jobs Added	7,988	(3,195)	(3,195)	0

Table 5.3 - Summarized REMI Scenario Inputs

1. Employment changes in the railroad and trucking sectors, shifting out of Cook County and into the collar counties and Porter-Lake counties, Indiana;
2. Relocation of jobs in businesses dependent on access to and location of rail freight services;
3. Site demolition/preparation expenditures on acres going out of or into rail freight use; and
4. Potential redevelopment and re-use of former rail yard acres in the city for other purposes.

Table 5.3 presents the “direct effects” of these components as accumulated by 2020 for each reconfiguration scenario examined. The construction spending tied to redevelopment in the city is not shown in these tables, since the nature of this spending occurs at a discrete point in time. Therefore it might be misleading to represent this component as a perpetuating effect.³²

5.3.3 Impacts of rail freight reconfiguration without redevelopment

The results from each scenario are first presented without consideration of possible redevelopment and re-use of any Chicago rail yard acreage retired from railroad use or ownership. This was done to illustrate the differences in economic impacts under the various configurations of rail freight infrastructure and the ensuing service implications. After these are presented, the impacts of each reconfiguration are recast when some portion of Chicago’s rail yard acreage is redeveloped. The scenarios are presented in descending order of rail system activity within the city, with the greatest amount of rail activity remaining with Rationalization, and the least with Minimal Rail in city.

The critical factor in understanding both a scenario and its subsequent economic impacts is the number of acres that are expected to shift annually from rail yard use in Chicago and suburban Cook County to rail yard and intermodal terminal uses in the surrounding Illinois and Indiana counties. It is the change in traffic flows and needs for rail yard activity that determines the estimated changes in acreage required for rail yards (see cumulative changes in the above tables). The changes in acreage in turn determine the change in the number of jobs in the railroad and trucking/warehousing sectors. Acreage changes also determine the construction spending related to decommissioning railroad yard parcels and establishing new rail-related facilities peripheral to Chicago and Cook County. The redevelopment impacts to follow are also determined in part by the amount of rail yard acres retired in the city and re-deployed for other uses. The precise timing of real estate re-use cannot be anticipated in the model, since re-use is largely driven by broader real estate market conditions. The business relocation effect of reconfiguring rail freight is the only component in the analysis that is determined separate from the annual acreage

³² The industrial and retail sector re-use job changes proposed for the *Rest of Cook County* region in Table 5.3 reflect the consultant’s assumption of an offset for some portion of the city’s new re-use activities in these sectors. Even though the *Rest of Cook County* region also decommissions rail yard acreage, the project team was asked to consider re-use options for Chicago proper only.

changes. For the city and suburban Cook County, potential job dislocations from businesses reliant on rail freight were drawn from the shipper survey, discussed in Chapter 3 of this report.

It is important to realize that REMI's estimates of annual economic impacts for a region not only reflect the direct information of a scenario as it occurs within the boundaries of the region but also the multi-regional feedbacks between the city, suburban Cook County, the collar counties and Porter-Lake counties in Indiana. These feedbacks are attributable to inter-regional flows of commuters (hence earnings) and goods and services. Therefore, a contraction in economic activity across Cook County as a whole (due to decommissioning rail freight infrastructure) will have a negative ripple effect on suppliers and commuting households in the collar counties. More generally, shifts in rail activity within the city and Cook County will eventually affect the distribution of population and other economic activity throughout the entire metropolitan region.

5.3.3.1 Rationalization without redevelopment – job impacts in 2020

Results for this and the other three scenarios are presented in three ways. The bar chart shown in Figure 5.4 represents direct and indirect job impacts in the year 2020 for the four REMI regions. Table 5.4 summarizes total and direct job impacts that are expected to occur in the base year 2002, and forecast years 2012 and 2020. Figure 5.5 presents the financial impacts on the region for each year between 2002 and 2020 through three key measures: Gross Regional Product (GRP), real income, and regional sales.

Despite direct reductions in freight-serving sector employment for both the city and suburban Cook County, under the service efficiencies achieved with rationalization of rail freight infrastructure, the city will experience an increase in jobs in 2020 (see Table 5.4 on previous page). A key component of the positive total job impact in the city is the gradual, anticipated business location response to the attractiveness of the city with enhanced rail freight service. Combined with subsequent job changes, the city's total job gain is 8,300 jobs. Suburban Cook County, despite experiencing the largest reduction in freight-serving sector employment and a negative business location response, will increase jobs in 2020 by 823 (compared to the base case) due to the positive economic stimulus in the surrounding regions – namely the city, but also the regions peripheral to Cook County positively affected by some aspect of rationalization.

The impacts over time on several other key economic indicators for the city exhibit an interesting pattern under the assumptions of Rationalization. As Figure 5.5 shows, the city does not experience positive impacts until 2015. However, in the year 2008, declines in regional sales, income, value-added and employment (not shown) are punctuated due to an infusion of rail and trucking sector jobs between 2006 and 2010 to support a new, highly efficient facility located in the periphery of the city under the assumptions of rail freight rationalization. It is the gradual increase in direct business locations into the city that drives the city's positive impacts after 2015. By 2020, the city has an increase in regional sales of \$3.06 billion when compared to the base case. The impact on real income in 2020 is an additional \$220 million.

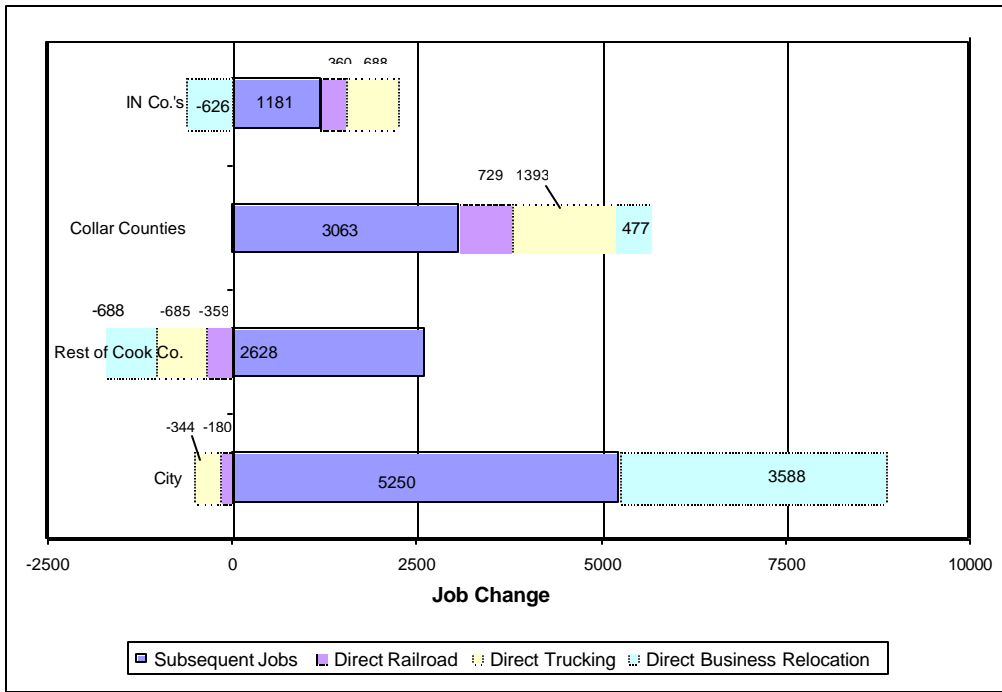


Figure 5.4 – Rationalization: Job impacts by type, 2020

City: Rationalization	2002	2012	2020
Total Job Impact	185	(2,710)	8,314
Direct Job Change	(271)	(1,148)	2,951
Direct Freight-Serving	(58)	(110)	(524)
Direct Business Relocation	(213)	(1,038)	3,475

Table 5.4 – Rationalization: Job impacts for selected years

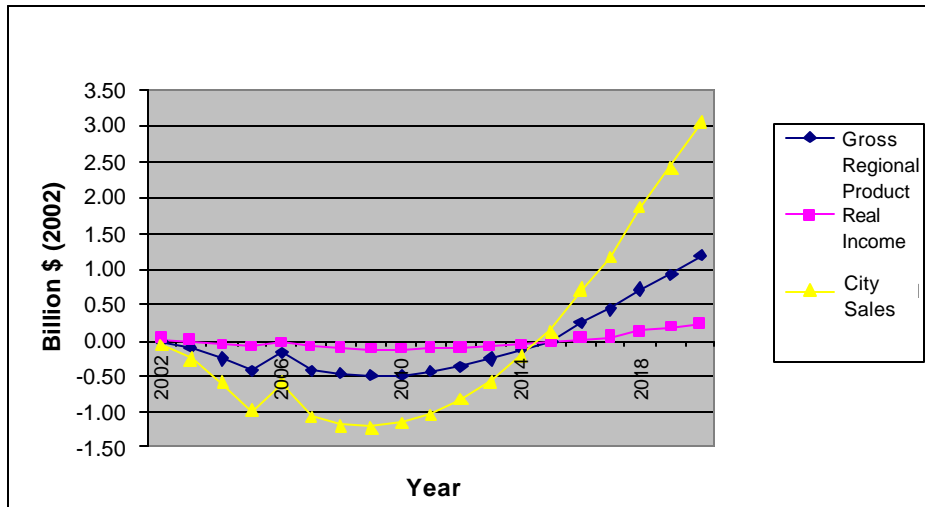


Figure 5.5 – Rationalization: effects on Chicago's economy

5.3.3.2 *Intermodal-to-Rim without redevelopment*

Under Intermodal-to-Rim, it is the city that experiences the greatest direct job reductions in 2020 in both freight-serving sectors and the anticipated business relocations from a broader set of sectors (see Figure 5.6). Combined with subsequent job changes, the city's total job loss is almost 6,400 jobs compared to a loss in suburban of Cook County of 5,100 jobs (see Table 5.5). The collar counties are the greatest beneficiaries with job gains in all categories.

The impacts over time on several other key economic indicators for the city due to the Intermodal-to-Rim configuration are consistent with the employment losses. Figure 5.7 shows that business output (measured as sales) is \$2.3 billion lower by 2020 and both real income and gross regional product (the value-added portion of business sales) are negatively impacted as well throughout the analysis period. By 2020, real income declines for the city by \$180 million.

5.3.3.3 *Bypass Chicago without redevelopment*

By the year 2020, the impact of bypassing Chicago with respect to rail freight movements is job loss throughout Cook County and gains in the seven surrounding counties (see Figure 5.8). Suburban Cook County experiences the largest loss of jobs in freight-serving industries (railroad and trucking) and anticipated business relocations. The city's reductions in these categories are slightly less (see Table 5.6). The total loss of jobs in Chicago in 2020 is 5,100 jobs, of which approximately 2,800 jobs are lost due to subsequent contractions in business activity tied to the freight-serving jobs and the business relocations. For the rest of Cook County, the total job loss in 2020 is 6,600, of which 3,200 are due to subsequent contractions in business activity tied to the freight-serving jobs and the business relocations.

The direct business relocation potential in the four study regions (negative for the city and suburban Cook County) magnifies the impacts beyond the employment changes in the railroad and trucking sectors. This phenomenon prevails in all of the scenarios that were examined.

The impacts over time on several other key economic indicators for the city due to bypassing Chicago are consistent with the employment losses. Figure 5.9 shows that business output (measured as sales) is almost \$2 billion lower by 2020 and both real income and gross regional product (the value-added portion of business sales) are negatively impacted as well throughout the analysis period.

5.3.3.4 *Minimal Rail in City without redevelopment*

The Minimal Rail in City configuration carries the greatest direct job reduction for Chicago among all the scenarios. By 2020, the freight-serving sectors will forego 2,424 jobs and the anticipated business relocations from a broader set of sectors amount to another 5,054 jobs lost

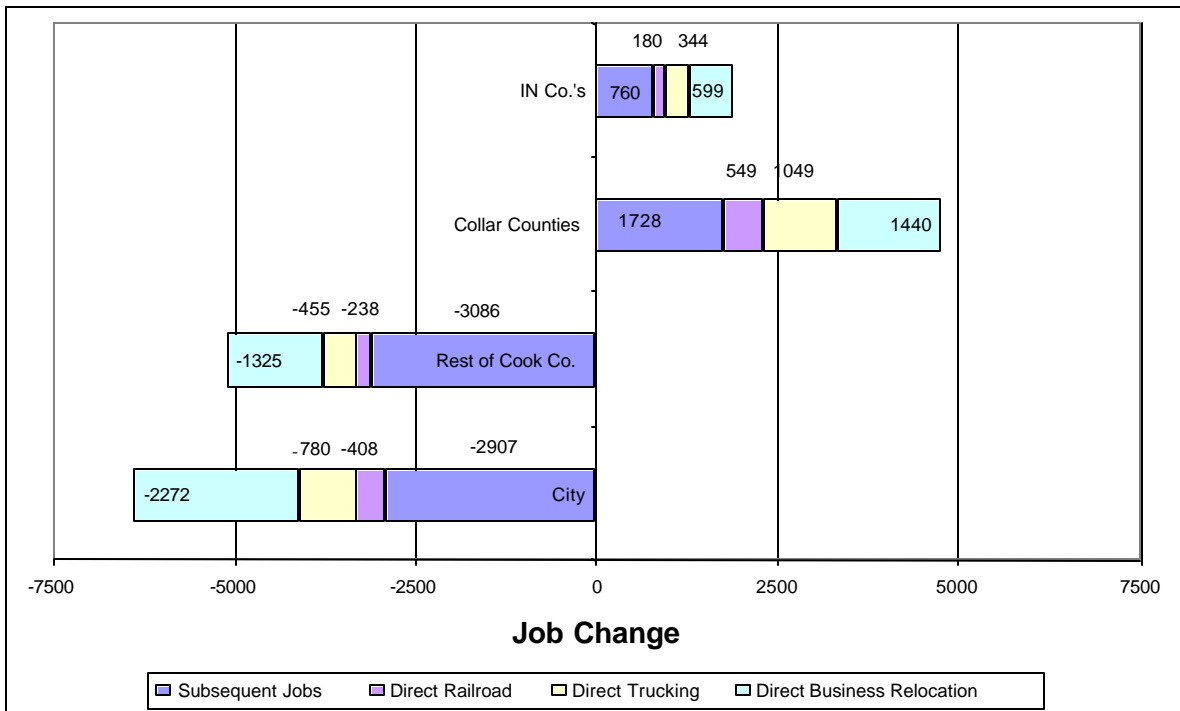


Figure 5.6 – Intermodal to Rim: job impacts by type, 2020

City: Intermodal to Rim	2002	2012	2020
Total Job Impact	558	(3,034)	(6,367)
Direct Job Change	(121)	(1,705)	(3,462)
Direct Freight-Serving	(88)	(796)	(1,188)
Direct Business Relocation	(33)	(909)	(2,274)

Table 5.5 – Intermodal to Rim: job impacts for selected years

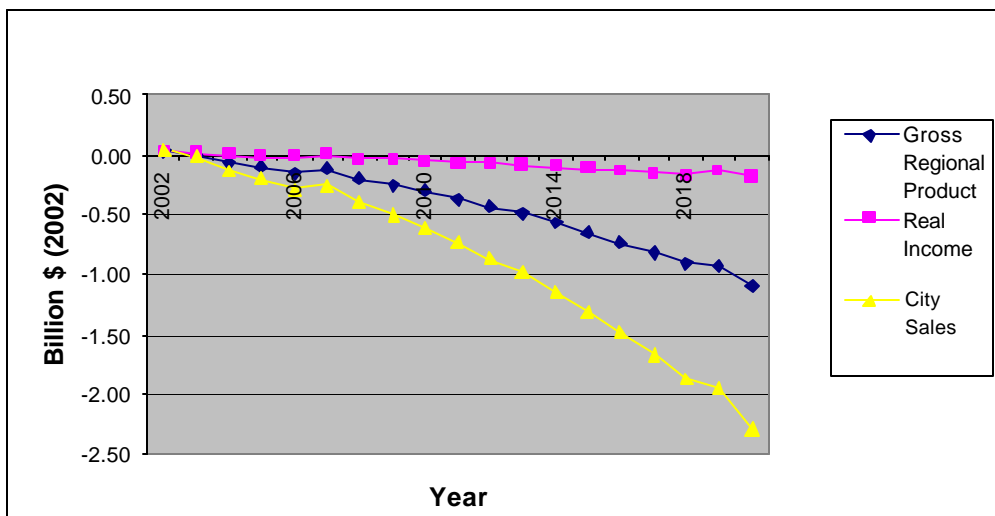


Figure 5.7 – Intermodal to Rim: effects on Chicago's economy

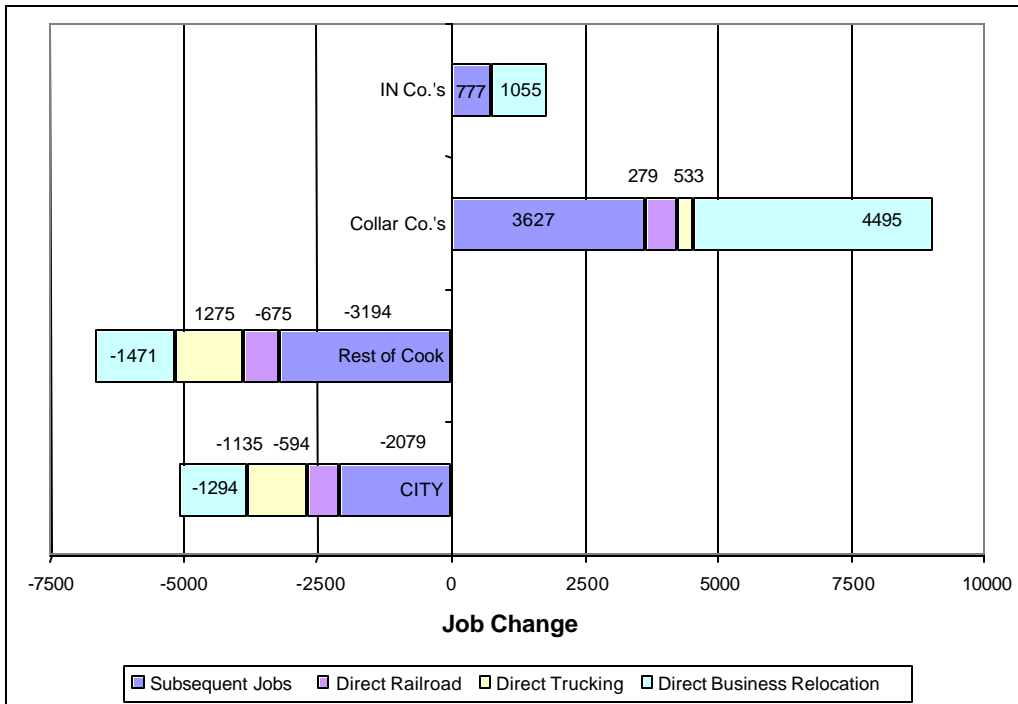


Figure 5.8 – Bypass Chicago: job impacts by type, 2020

City: Bypass	2002	2012	2020
Total Job Impact	341	(3,943)	(5,102)
Direct Job Change	(188)	(1,962)	(3,023)
Direct Freight-Serving	(136)	(1,187)	(1,729)
Direct Business Relocation	(53)	(776)	(1,294)

Table 5.6 – Bypass Chicago: job impacts for selected years

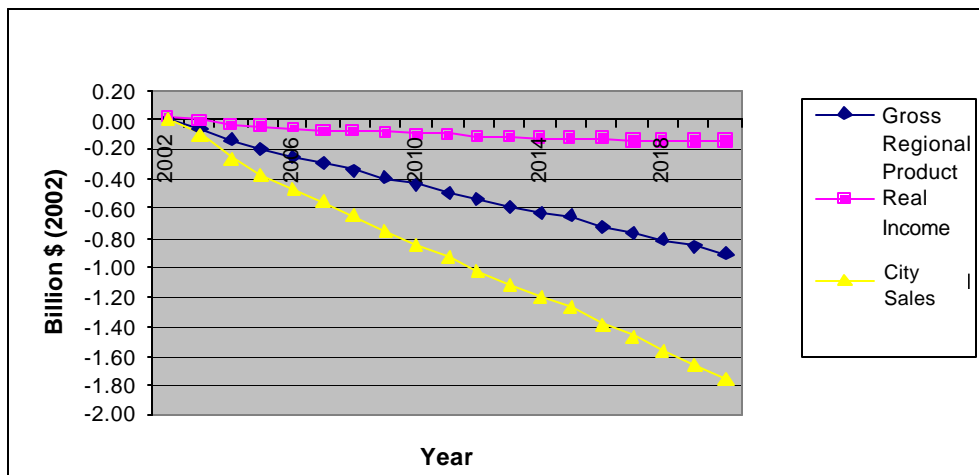


Figure 5.9 – Bypass Chicago: effects on Chicago's economy

(see Figure 5.10 and Table 5.7). Combined with subsequent job changes, the city's total job loss is 15,940 jobs when compared to the Base Case. Suburban Cook County, as in all scenarios except Intermodal-to-Rim, shows a more negative total job impact than the city. In 2020, the balance of the county will have 19,290 fewer jobs as a result of minimal rail in the city when compared to the Base Case forecast. Indiana's Porter and Lake counties are the largest beneficiaries in 2020, with 3,700 jobs added to their combined economies compared to the Base Case forecast.

The impacts over time on several other key economic indicators for the city due to the Minimal Rail scenario are consistent with the employment losses. Figure 5.11 shows that business output (measured as sales) is \$5.2 billion lower by 2020 and both real income and gross regional product (the value-added portion of business sales) are negatively impacted as well throughout the analysis period. By 2020, real income declines for the city by \$560 million.

5.3.4 Rail freight reconfiguration and redevelopment – re-use of city acreage

This section reports the scenario-specific impacts on the City of Chicago when redevelopment and re-use of the proposed city acreage changes occurs. The assumptions for phasing of acres into construction and completed facilities into operation are as follows:

- Construction begins two years after rail yard acreage is ear-marked for decommissioning and projects are completed within twelve months.
- Annual rail yard acreage retirements are phased into the real estate market at a rate of 20% per year and fully phased-in in five years (not to exceed 320 acres total).
- Mix of uses deemed appropriate (without being 'site-specific') is light industrial (64%) and big box retail (36%). Appendix 5 contains the supporting market analysis for rail yard development trends in the city.
- Construction spending (for buildings and parking spaces) and the number of jobs to be accommodated in the operational facilities, were developed using floor area ratios by use, and data on cost –per-square foot by use, and employment-per square foot by use.
- Five percent of the city's new industrial jobs would be shifted from elsewhere in Cook County, and 10% would shift out of the collar counties.
- Forty percent of the city's new jobs in big box retail would shift from elsewhere in Cook County and another forty percent would shift out of the collar counties.
- Light industrial activities assumed for the new growth in the city include Electrical Equipment Manufacturing (40 % of new jobs), Furniture & Fixtures Manufacturing (40% of new industrial jobs), and Stone, Clay & Glass Products Manufacturing (20% of new industrial jobs). These three industries were selected on the following basis: a) they are forecasted to continue positive growth in output nationally; b) Chicago's forecasted growth in labor productivity for these industries lags somewhat and may signal untapped opportunity for the city; and c) these industries pay attractive wages in the city.

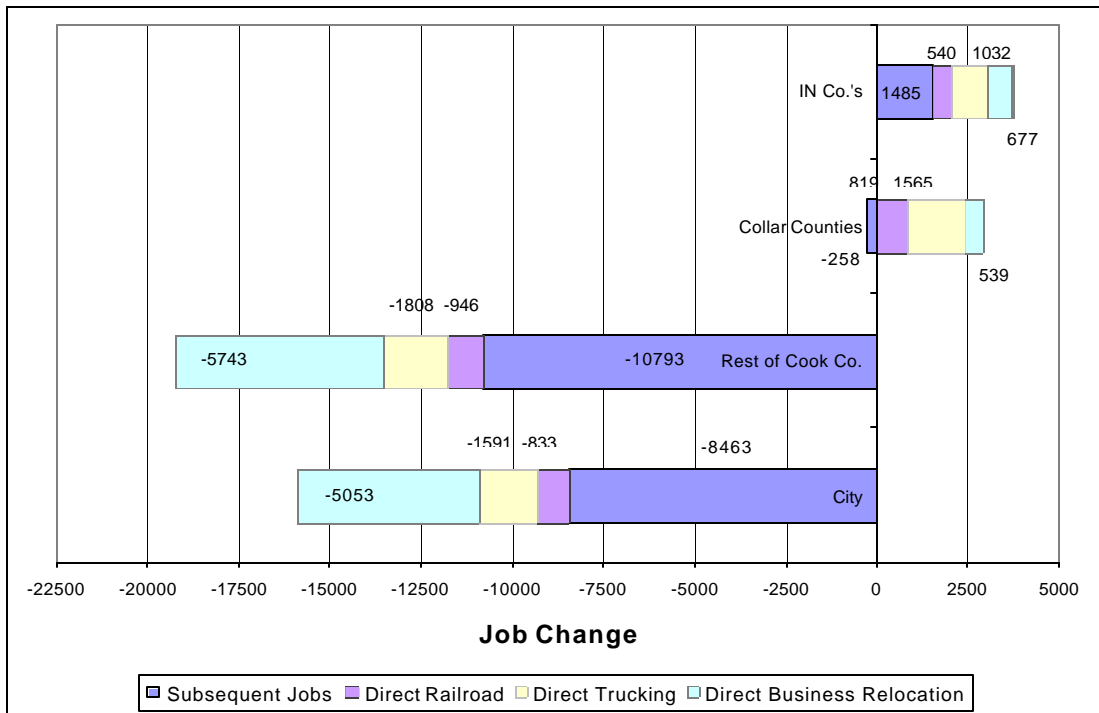


Figure 5.10 – Minimal Rail in City: job impacts by type, 2020

City: Minimal Rail	2002	2012	2020
Total Job Impact	771	(8,609)	(15,940)
Direct Job Change	(7)	(3,695)	(7,478)
Direct Freight-Serving	0	(1,793)	(2,424)
Direct Business Relocation	(7)	(1,902)	(5,054)

Table 5.7 – Minimal Rail in City: job impacts for selected years

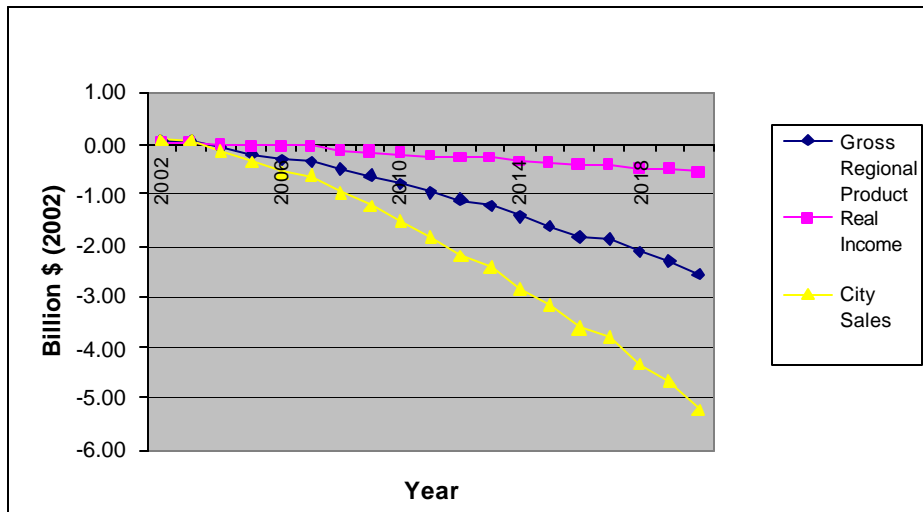


Figure 5.11 – Minimal Rail in City: effects on Chicago's economy

The results for each of the four scenarios are again presented in order, from least to greatest impact on Chicago's rail network. For each scenario, changes in Chicago's GRP and employment are summarized in three graphs for the years 2002, 2012, and 2020: (1) employment impact, (2) GRP trends with and without re-use, and, (3) composition of the direct, indirect and induced job creation and loss.

5.3.4.1 Rationalization with redevelopment

Figures 5.12 through 5.14 present employment and gross regional product (GRP) impacts over time for the city when the Rationalization scenario is extended to include redevelopment of vacated railroad property into select industrial and retail uses. It should be understood that in the context of Chicago's economy, redevelopment activities can stimulate the economy in all four scenarios, due to initial construction of buildings and their subsequent operation. Not surprisingly, given the long-term positive impact of the rationalization scenario on the city without considering redevelopment, incorporating the effects of redevelopment substantially improves the results. Economic growth and job creation remain modest through 2012, but once the rail facility improvements have been completed and land re-deployment has taken

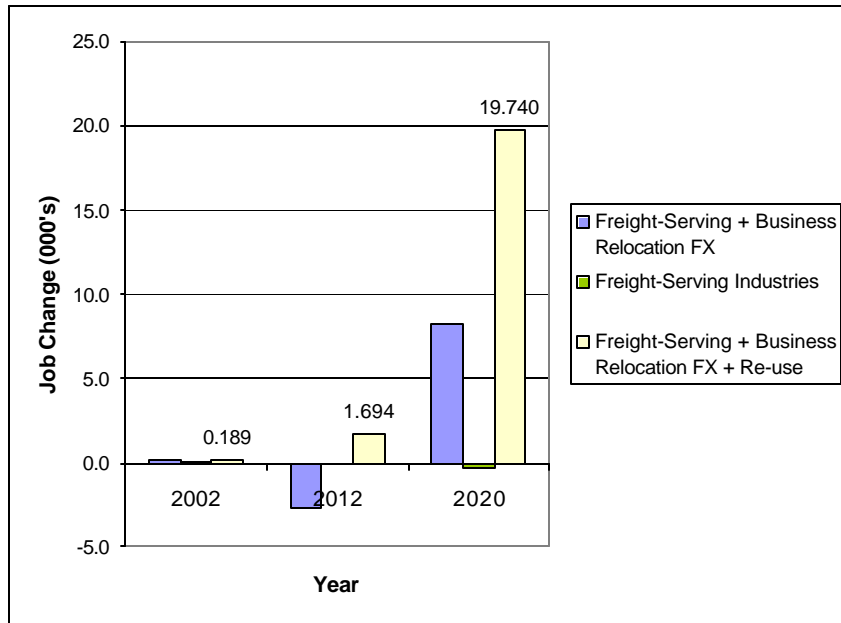


Figure 5.12 – Rationalization & Redevelopment: employment impact on City for selected years

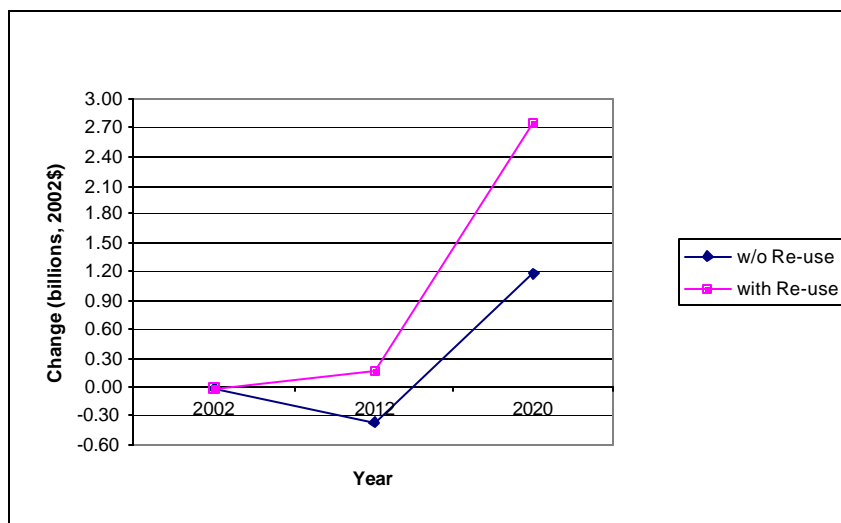


Figure 5.13 – Rationalization & Redevelopment: GRP impact on City for selected years

place, the impact is substantial. By 2020, new job growth is forecast to exceed 19,000 positions, and the city's GRP would increase by \$2.7 billion over the Base Case.

Figure 5.12 shows a comparison of the city's total job impacts in 2002, 2012 and 2020 due to a) freight-serving sector job changes alone, b) these job changes plus business relocation changes and c) the full effect of (a) and (b) with re-use of the city rail yard acreage. Figure 5.13 shows the impact on GRP for the city both with and without redevelopment. By 2020 the city adds a little more than \$2.7 billion to GRP when redevelopment occurs. A closer look at the sources of job growth, shown in Figure 5.14, reveals that the direct jobs associated with re-use – namely industrial and retail jobs, make up a large portion of the total, positive job impact, followed by the indirect and induced (termed the subsequent job changes) impacts. There is no change in employment levels of the rail and trucking industries from the scenario without redevelopment.

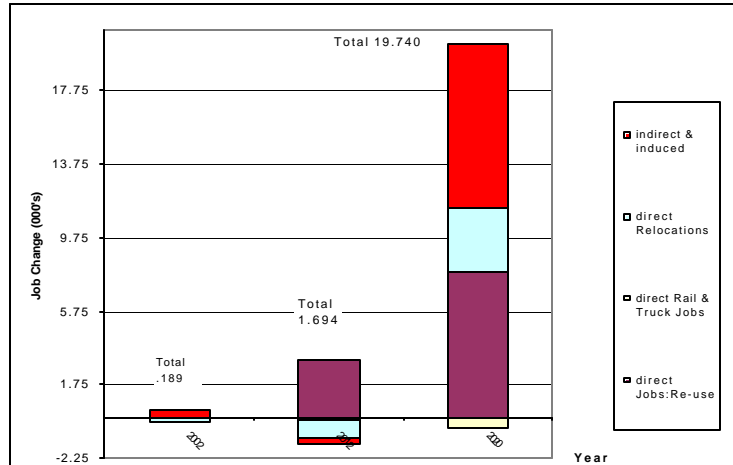


Figure 5.14 – Rationalization & Redevelopment: composition of job impacts on City

5.3.4.2 Intermodal-to-Rim with redevelopment

In comparison to the Rationalization scenario, the Intermodal-to-Rim scenario produces lower job growth both directly and indirectly through property redevelopment (see Figures 5.15 through 5.17). The key difference from the Rationalization scheme is that, while job growth from re-use is higher by 2,000 or so, direct and indirect losses from the departure of rail intermodal service from the city overshadow the additional job gains from the freeing of

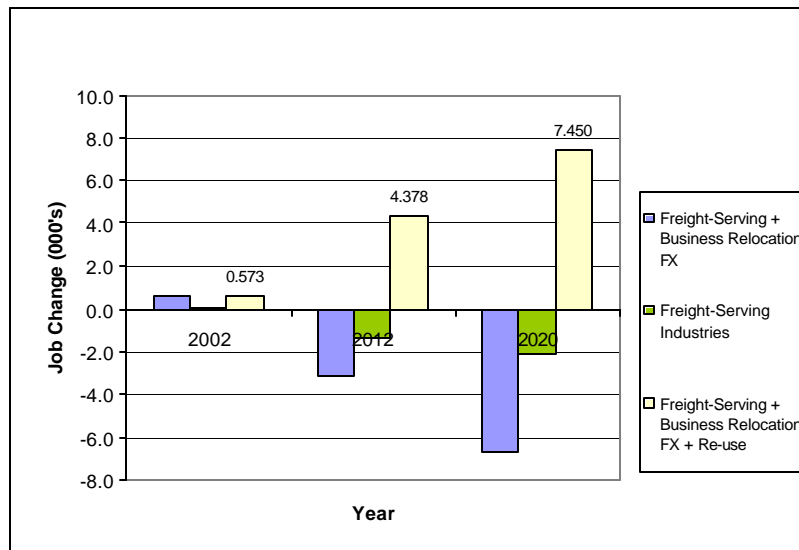


Figure 5.15 – Intermodal-to-Rim: employment impact on City for selected years

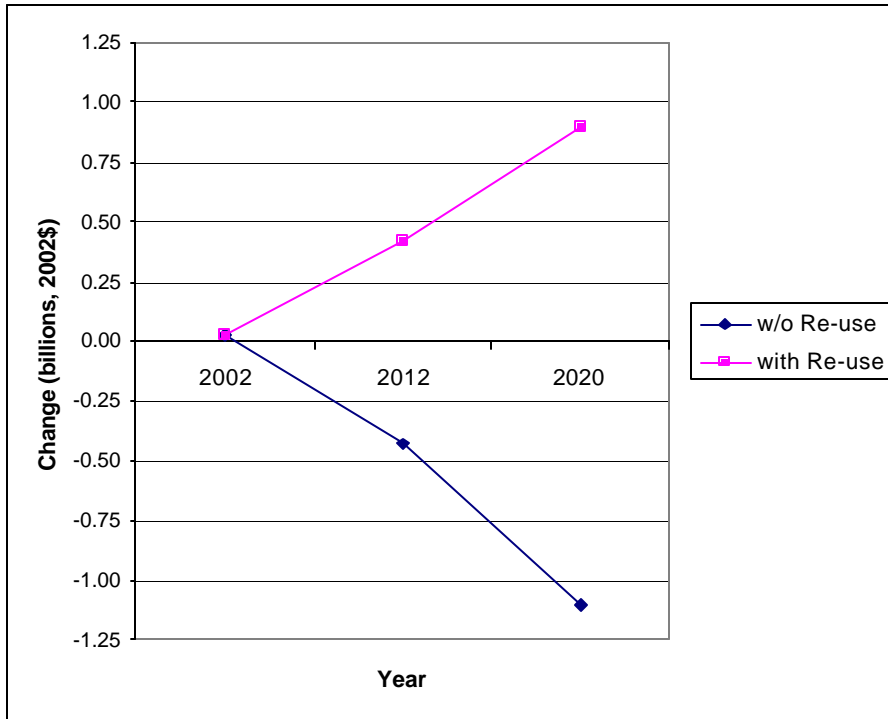


Figure 5.16 – Intermodal-to-Rim: GRP impact on City for selected years

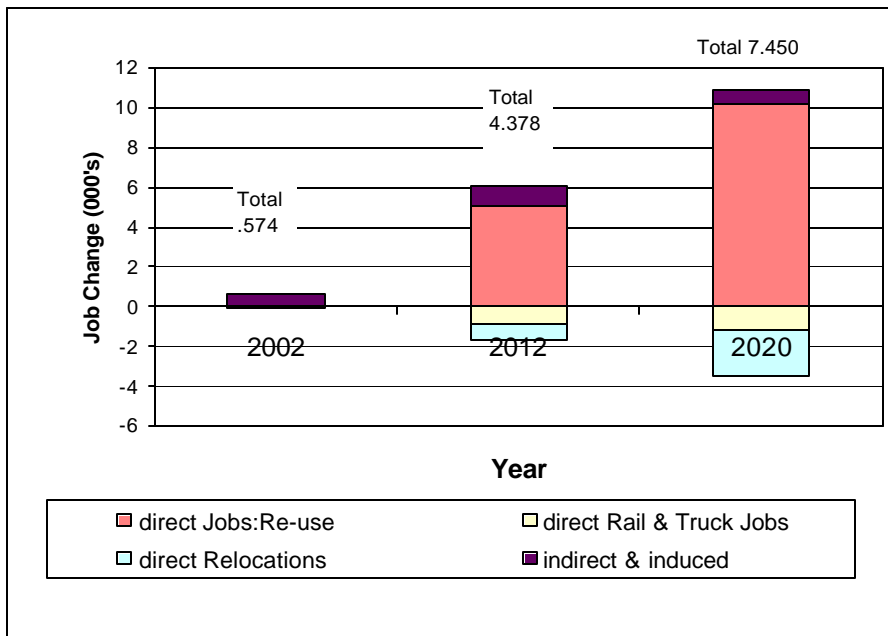


Figure 5.17 – Intermodal-to-Rim: composition of job impacts on City

larger tracts of railroad land. As a result, the net employment gain under this scenario is only expected to be around 7,450. The City's GRP does grow to approximately \$900 million by 2020, compared to a deficit of \$1.1 billion without redevelopment.

5.3.4.3 Bypass Chicago with redevelopment

Figures 5.18 through 5.20 present employment and GRP impacts over time for the city when the Bypass Chicago scenario is extended to include redevelopment of railroad land into industrial and retail uses. Not surprisingly, the city immediately overcomes the negative impacts of freight-serving sector job losses and business attrition effects, starting in 2002, due to site demolition/preparation spending. Construction of facilities tied to re-use starts to exert a positive effect by 2004 and new industrial and retail jobs first appear starting in 2005. By 2020, the city gains a little more than \$2.0 billion in GRP with redevelopment, in contrast to a loss of \$900 million without. Noteworthy is that the GRP gain is second only to the Rationalization scheme (\$2.7 billion). The components of change in the job market (Figure 5.22) indicate that the largest portion of the direct new jobs (approximately 15,000) are associated with re-use – namely industrial and retail jobs. The number of jobs resulting from re-use in this scenario are only exceeded by the Minimal Rail scenario, which results in an even greater reduction of land used for rail purposes.

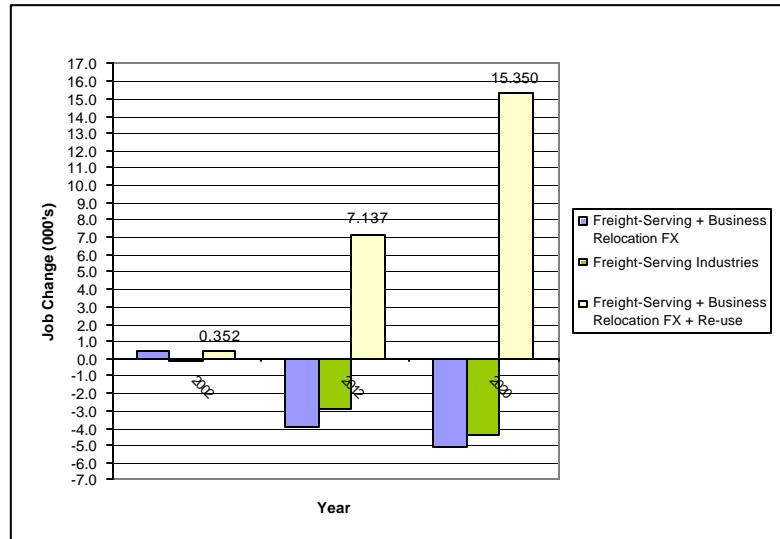


Figure 5.18 – Bypass City: employment impact on City for selected years

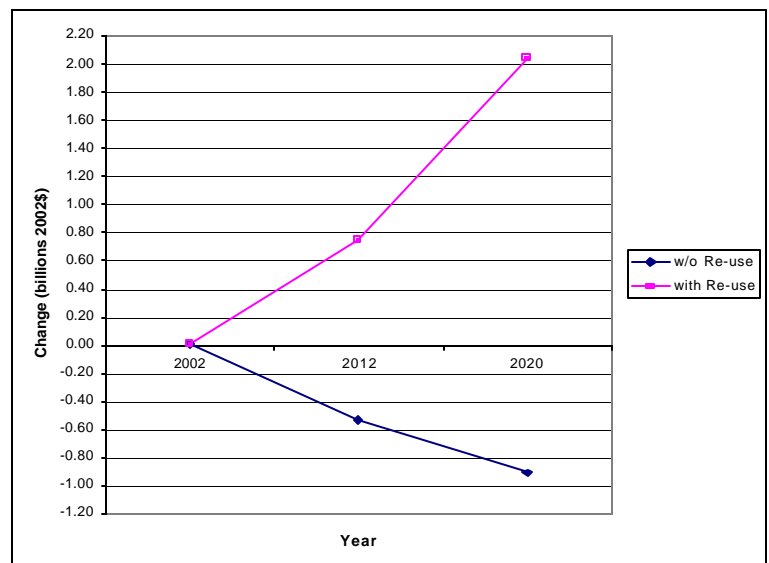


Figure 5.19 – Bypass City: GRP impact on City for selected years

5.3.4.4 Minimal Rail with redevelopment

The fourth scenario, Minimal Rail (Figures 5.21 - 5.23), provides the greatest reduction in rail activity, and thus the greatest reduction in GRP (\$2.5 billion) if no redevelopment were to occur. On the other hand, this scheme would also free up the greatest acreage for redevelopment, with a concomitant impact on job creation from re-use. Over 21,000 direct jobs would be created through re-use by 2020. However, offsetting this growth are substantial losses among shippers dependent on rail and rail intermodal service, plus rail and truck jobs amounting to a total of approximately 8,000 jobs. Subtracting these losses from the employment gains caused by re-use produces a net gain of approximately 13,600 jobs for the city. This places this scenario in third place after the Rationalization and Bypass scenarios. It is noteworthy that this scenario produces the greatest swing in GRP between the re-use and no re-use analysis - \$4.3 billion (Figure 5.22) - of all scenarios examined for this study. While the GRP gains of \$1.8 billion from re-use are substantial, it would also suggest that this scenario yields far greater implementation risk and economic displacement to the city's economy than the other three scenarios.

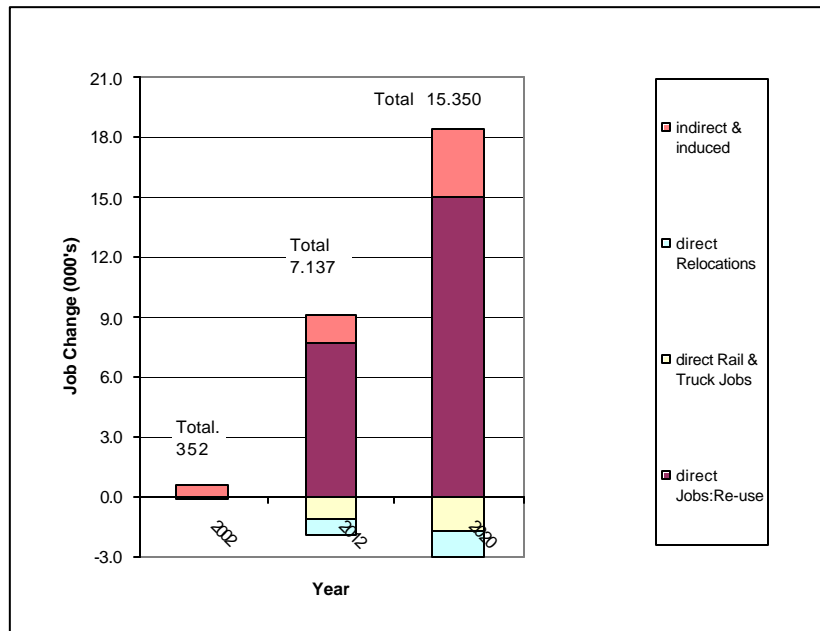


Figure 5.20 – Bypass: composition of job impacts on City

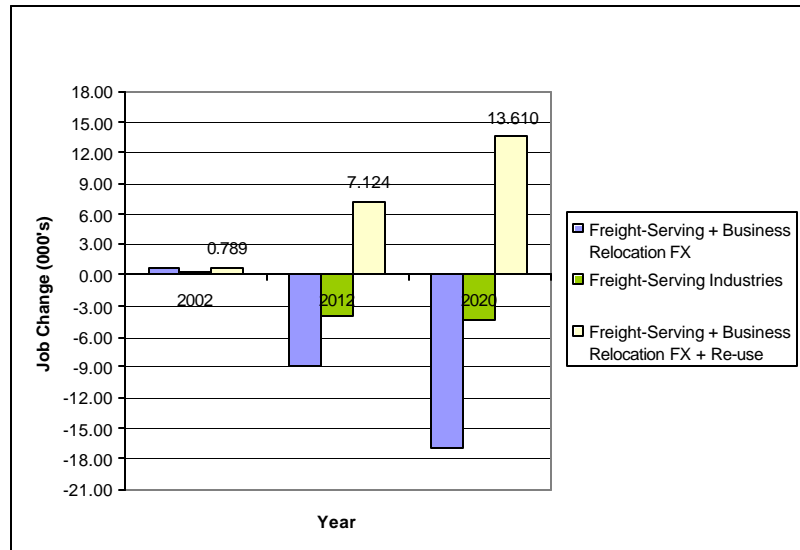


Figure 5.21 – Minimal Rail: employment impact on City for selected years

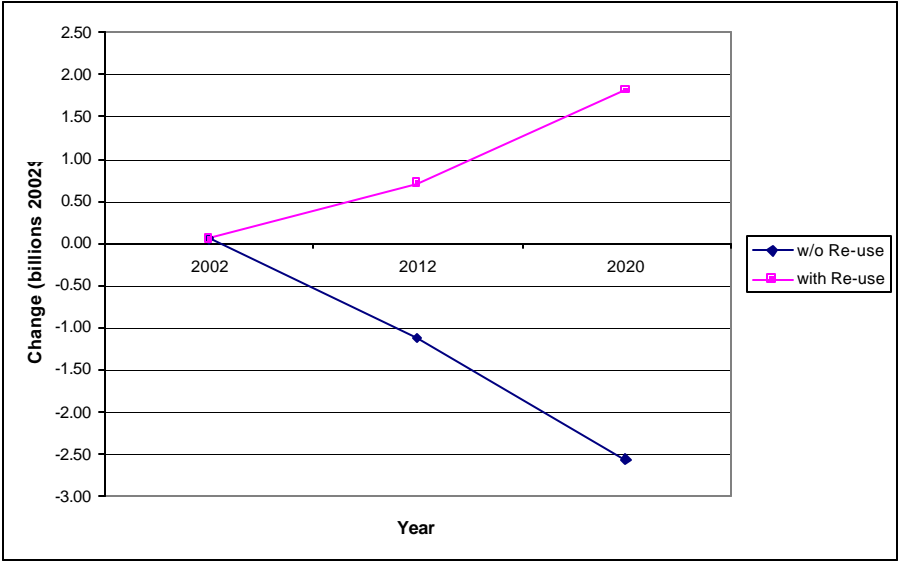


Figure 5.22 – Minimal Rail: GRP impact on City for selected years

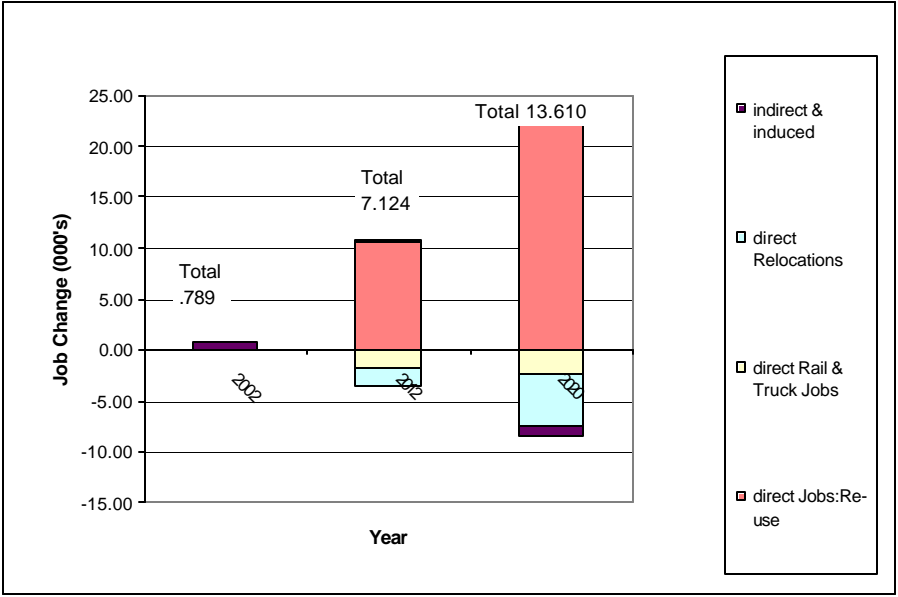


Figure 5.23 – Minimal Rail: composition of job impacts on City

5.5 Summary and discussion of impacts on Chicago for the four scenarios

Results from the economic analysis are summarized in Tables 5.8 and 5.9. Table 5.8 provides a ranking of the scenarios related to employment changes in Chicago’s direct freight sector, business relocation losses, and the resultant total employment impacts with and without re-use. A ranking of one (1) in any category indicates that the particular scenario imposes the most positive or least negative impact on the city. For example, the Minimal Rail in City scenario produces the greatest job loss in direct freight sector jobs, business relocation losses, and total job impacts in the city without re-use. Once re-use is taken into consideration, total job impacts for this scenario put it in third place, with Intermodal-to-Rim producing the smallest net gain in jobs. In considering the relative impacts of the four scenarios, all but the Rationalization scenario will result in job losses if re-use of vacated railroad property is not taken into account.

Scenario	Year 2020			
	Aspect			
	Direct Freight Sector Jobs Lost	Anticipated Business Relocation Losses	Total Job Impacts on City No Re-Use ^a	Total Job Impacts on City with Re-Use (all Positive)
Rationalization	1	1 (+)	1 (+)	1
Intermodal-to Rim	2	3	3	4
Bypass Chicago	3	2	2	2
Minimal Rail in City	4	4	4	3

^aJob impacts are negative for all but the Rationalization scenario when re-use is not taken into consideration

Table 5.8 – Summary ranking of job impacts on City in 2020 with and without redevelopment

Based on these rankings, it is evident that the Rationalization scheme produces the greatest net benefit in jobs for the city. This position amongst the four scenarios is affirmed when GRP and real income impacts are examined. Table 5.9 on the following page summarizes and ranks the scenarios from “best” to “worst” by total job impact, GRP, real income, and with and without re-use for the year 2020. Compared to the other scenarios, Rationalization outperforms the “second best” scenarios by substantial margins: 29% for job growth, 40% for GRP, and 83% for real income impacts with re-use. A similar comparison without redevelopment lacks meaning, given that rationalization without redevelopment is the only scheme that results in some positive impacts on the city. Realistically, it would not be worthwhile for the city to pursue any of these scenarios without anticipating and planning for at least some redevelopment of vacated railroad property. It is also evident from these summary results that implementation of the different scenarios will impact the city’s economy to a greater or lesser degree at noticeable levels.

The reconfiguration of rail freight services in the Chicago Metro Area has the potential to effect some obvious changes (by shifting railroad and trucking/warehousing jobs out of the city) and unleash other effects that are of importance to the health of the city’s economy. These latter effects include the sensitivity and dependence of the city’s businesses on the current configuration of rail freight services, and their likely business location response to a change in how these services are provided, as well as the potential economic opportunities from decommissioned railway property. Regardless of whether these changes in land use are initiated

by the railroad industry or are externally driven, decommissioned acreage

Scenario	With Re-Use		Without	
	Value	Rank	Value	Rank
Total job impact in 2020				
Rationalization	19,740	1	8,314	1
Intermodal-to-Rim	7,450	4	(6,367)	3
Bypass	15,350	2	(5,102)	2
Minimal Rail	13,610	3	(15,740)	4
GRP impact in 2020 (\$ bil, 2002)				
Rationalization	2.8	1	1.2	1
Intermodal-to-Rim	0.9	4	(1.1)	3
Bypass	2.0	2	(0.9)	2
Minimal Rail	1.8	3	(2.5)	4
Real income impact in 2020 (\$ bil, 2002)				
Rationalization	0.42	1	0.22	1
Intermodal-to-Rim	0.08	3	(0.18)	3
Bypass	0.23	2	(0.14)	2
Minimal Rail	(0.01)	4	(0.56)	4

Table 5.9 – Summary of impacts in 2020 on City across all scenarios

provides an opportunity to support other economic activities that may have salutary effects on jobs, wages and economic output.

The summarized results in Tables 5.8 and 5.9 illustrate how the direct economic loss of shifting railroad and trucking activity out of the city can be aggravated further (whether measured in jobs, income or GRP) when other city businesses with shipping needs relocate some of their operations as a result of the deterioration in service. There are two exceptions to this general conclusion. The first is: shipper survey respondents indicated that the impact from the Bypass Chicago scenario was more important than the Intermodal-to-Rim, even though Intermodal-to-Rim would render more in-town rail facilities obsolete. The second is that while Rationalization also forfeits rail facilities in the city (many of them redundant), the service improvements promised under Rationalization actually would attract business growth in Chicago.

A critical element to reasonably gauging the economic impacts of reduced rail freight activity in the city is taking into account how and when decommissioned acreage would be put back into productive use. Thus, while the greatest rail acreage retirements would result in the largest railroad and freight-serving sector job losses, they also potentially hold promise for substantial long-term redevelopment for other uses. For example, the Minimal Rail in City scheme has the most negative drag on the city's economy from the combined loss of railroad and freight-serving sector jobs and collateral business relocation effects. With re-use, however, our analysis found that a negative 15,740 job impact for the city in 2020 turns into a positive 13,610 jobs, with redevelopment generating 29,350 jobs. Nevertheless, as noted previously, this could also be construed as the riskiest strategy for the city, given the complexity and magnitude of the change.

Re-use will ultimately be determined by the city's land-use and planning efforts, matching land-use needs with site characteristics and attracting new businesses and developers. It is also crucial to remember that the city's economy is closely tied to the rest of Cook County and the surrounding counties in Illinois and Indiana. While it might appear that the shifting of railroad and freight-serving sector activity between regions is a zero-sum game, the job losses for the city would be partially offset by new jobs generated in the city due to economic gains outside the city limits. In other words, it is possible to move freight rail and production businesses that require rail service to the suburbs in a wholesale fashion, provided that such re-use of land within the city would create a more attractive cityscape and attract new businesses – including some that are needed to support those that relocated in the first place.

6 Conclusions and policy implications

6.1 The rail system provides a variety of benefits

The rail freight system provides a variety of economic benefits to the City of Chicago, the suburbs of Chicago, and the region around Chicago. Direct benefits to residents of the city are based upon employment opportunities in rail and rail-related industries; direct benefits to firms within the city are based upon excellent access to competitive rail services to and from major locations in the United States, Canada and Mexico. No less real are the indirect benefits of having the best developed rail infrastructure and the best rail service available in any city in North America. Cost savings resulting from transportation efficiencies and the competitiveness of the freight system permeate the entire economy of the city and the region. While relatively few people or firms have direct contact with the freight railroad industry – except at grade crossings – they all benefit from the existence of the rail system and Chicago’s unique place in the continental network.

The study has highlighted the role that the railroad industry presently plays and can continue to play in the city’s economic firmament. But, while the direct benefits of the rail industry on the Chicago economy are modest at around 1-2% of GRP, the presence of an efficient and effective rail system makes the region attractive for transportation intensive industries. The study suggests that while the focus of planners has traditionally been on the absence or presence of regional infrastructure, the impacts of transportation on the regional economy are more logistical in nature. The presence of infrastructure is a necessary requirement for quality transportation service, but not a guarantee of economic attractiveness.

In the case of Chicago, the continued growth of the regional economy is vitally linked to maintaining the capacity and performance of the region’s rail system. Limited capacity or unacceptable performance will, over time, weaken the attractiveness of Chicago as a location for businesses and industries that utilize rail service. If transport costs rise and service deteriorates, local firms will have more difficulty competing both regionally and nationally. They will therefore have an incentive to relocate outside the city or even the region, and economic development for freight-dependent activities will slowly shift away from the city.

For residents, the rail system offers other types of benefits. There are employment opportunities not only with railroads, but also with trucking companies that are involved in intermodal services, heavy industry that is dependent upon good rail service, and light industry that wants to be near good intermodal service. There are significant environmental benefits from using rail freight, as a single rail car can carry as much as 3-5 fully loaded trucks, at a lower cost per ton, and with lower emissions and fuel consumption. Rail operations generally consume less land than highway operations, and rail facilities can be shared among freight and passenger services. Rail rights-of-way offer opportunities for passenger rail services that connect Chicago with many cities within 300-400 miles, thereby offering an alternative to intercity air and auto travel.

However, there are serious problems with the rail system, as noted above. The system uses large amounts of land, some of which undoubtedly has attractive alternative uses. The system is constantly active around the clock and throughout the year, so that noise and night-time activity can be a major irritant for abutters. There is considerable traffic into and out of intermodal facilities, and much of it is concentrated on local streets. Rail activity at grade crossings adds to highway congestion, especially when trains are held on the line because a yard or rail crossing is blocked.

Moreover, the rail system – like the rest of the region’s transportation system – is feeling growth pains. Much of the infrastructure was first designed and constructed more than 100 years ago, when technologies and industrial development were much different from what they are today. In some locations, there may be too much infrastructure, yet elsewhere there may be too little. Terminals initially designed for sorting cars and assembling general freight trains are now used for intermodal operations, and the transformation from one type of operation to the other is seldom without problems. Older infrastructure needs periodic renewal and upgrading to handle longer or faster trains or heavier freight cars. Coordinating operations over the complex regional rail network is difficult, even with the consolidation of the national rail network into four major rail systems.

It is important to understand that the Base Case and all of the scenarios assume that sufficient rail capacity is added to maintain service levels throughout the region. The differences discussed here result from the beneficial effects to the city of effective rationalization as compared to the detrimental effects to the city of trying to minimize rail in the city. The region can prosper with many variations on the existing rail system; which parts of the region benefit most depends on the changes that are made.

A recent study by Hewings and Seo³³ of the importance of transportation to the Chicago economy took a somewhat different approach and reached a similar conclusion as to the importance of rail service. This study hypothesized that the rail intermodal capacity would be reached in 2005; the study estimated the reductions in jobs and output that would result annually through 2020. The employment impacts would be a loss of 18,000 jobs, \$650 million in income, and \$2 billion in regional output. About 40% of these losses were directly related to cutbacks in transportation related to the capacity constraint; the rest were indirect effects resulting from the multiplier effect of the direct losses on the rest of the economy.

The two studies dealt with two distinct problems. The Hewings/Seo study examined the effects on the region (and also the state and the country) of a capacity crunch in the region. This study examines the effects on the city of a redistribution in rail and related activities.

³³ Hewings, Geoffrey J.D. and John J.Y. Seo, *Economic Impact of the Transportation Sector on the Chicago Economy 1970-2021 and the Potential Impact of Freight Transportation Capacity Limitations on the Chicago, Illinois and US Economies*, REAL (a joint venture of the University of Illinois, Chicago and the Federal Reserve Bank of Chicago), April 8, 2001

6.2 General policy options

Chicago could explore possible ways to improve the rail system, either on its own or in cooperation with other public agencies. There are four generic options for investment that any public agency might want to consider:

- Invest to obtain public benefits;
- Invest to maintain sufficient rail infrastructure for long-term growth of the region;
- Invest to move rail facilities and operations out of the city in order to allow redevelopment of rail infrastructure and rights-of-way; and,
- Invest to rationalize the system so as to provide better service, better access, lower costs, greater capacity, alternative use of some routes and facilities.

The first approach promotes greater use of rail by existing customers in order to obtain environmental benefits associated with the use of rail. This strategy could include such things as eliminating grade crossings in order to reduce highway congestion, curtailing the use of whistles, or reducing intermodal rubber tire interchange in order to alleviate highway congestion and pavement deterioration. The problem with this approach is that it may be difficult to demonstrate that rail is better than truck or that the potential benefits justify significant public expenditures.

The second approach is to invest in rail infrastructure as part of a general strategy to support economic growth. The goal is not necessarily to change mode share, but to ensure that bottlenecks in the rail system do not become a deterrent to regional growth or a significant cost factor for local industry. The economic analysis for our study and prior studies suggests that annual economic costs rise into billions of dollars if rail problems restrict industrial development, so there is likely to be a more solid economic underpinning for this than for the first approach.

The third approach is concerned with upgrading the city and making better use of land and rights-of-way currently used for rail operations. The long-discussed proposed abandonment of the St. Charles Airline in order to allow redevelopment of that corridor is an example of this type of strategy. As discussed above, the costs and benefits of any such proposal will be highly site specific.

The fourth approach is for the city to promote rationalization of the system to achieve both the economic and environmental benefits that are possible. This differs from the first approach primarily in the level of coordination, planning, and investment required. Rationalization implies a systems approach to the regional rail system, with considerable restructuring and investment to achieve more efficient operations, better service, more effective control, or higher capacity.

Chicago clearly has many other policy options available that could affect the future of the rail system. Zoning, taxation, level of support for industrial development, level of support for plans for redeveloping rail facilities, traffic management, highway investment, and many other City activities and policies could make it more or less attractive for rail operations to remain within Chicago.

6.2.1 Options for dealing with intermodal sorting/transfer

Intermodal interchange is an area of special interest to the city, as most of the terminals and streets used for rubber tire interchange are within the city. There are various strategies for dealing with this function. First, it would be possible to concentrate interchange at a single facility, so long as that facility is accessible to and used by all of the major railroads. Ashland Avenue is one location that was suggested by a railroad official; out-of-city sites, such as the Joliet Arsenal are less attractive, as they are too far from the existing terminals and rail access routes.

Another strategy would be to improve connections for interchange so as to facilitate either steel wheel or rubber-tire interchange. For example, a special access road could conceivably be built (or designated) for rubber tire interchange among existing terminals. The same road or roads could conceivably be used for other purposes as well, including bus rapid transit or airport access. These truck routes could also be part of a more general strategy to improve access to intermodal terminals, for pickup and delivery as well as for rubber tire interchange.

Longer term solutions could be based upon new terminal construction. Large terminals could be located on either side of Chicago for interchange and regional drays, with steel wheel shuttles to and through Chicago. The mainline connections would probably have to be moved south of the city for this strategy to work.

6.3 Findings and recommendations

- 1 Since Chicago still has by far the greatest concentration of both industry and rail facilities within the region, the city remains the dominant location.
- 2 Shippers are extremely satisfied with the quality of service that they receive.
- 3 The complexity of the issues, the long lives of both infrastructure and industrial facilities, and the slow pace of change have implications for the city:
 - a. Significant change will take years, if not decades.
 - b. Planning and coordination are essential to identify and implement effective changes to the existing system. All of the participants support some kind of coordinated, comprehensive, long-range planning; many support public/private efforts to improve the system.

- 4 Chicago is the nation's primary rail hub, with the most traffic, the greatest concentration of rail and rail-related facilities, and the clearest need for service and capacity enhancements. This is certainly one of the best, and possibly the best, metropolitan areas in the country for investing to rationalize the rail system.
- 5 Rationalization should be encouraged, as this maintains and improves service while providing some opportunities for alternative land use.
- 6 The City should discourage the loss of rights-of-way and critical terminals and the loss of development to the suburbs.
- 7 It is in the best interest of the city to maintain the locus of intermodal operations and interchange within the city. At the same, it is also clear that the growing volume of intermodal traffic will require development of new terminals in the outer areas of the Chicago region. Properly implemented, this will broaden the appeal of intermodal service to a greater range of customers, by providing multiple access points at geographically convenient locations and at the same time reducing the VMT impacts on the region's highway network.
- 8 The rail infrastructure and the related industrial locations are an enduring asset for the city. Wide rights-of-way, space for terminals, and space for industrial activity are strategic assets to be nurtured and guarded by the city.
 - a. The City has numerous brownfield sites that would be suitable for re-use by rail-related businesses.
 - b. The rights-of-way may have uses for passenger and other transportation systems, not just rail freight.
 - c. Once the rights-of-way are broken and once large parcels are sub-divided, it will be much more difficult and perhaps impossible to regain them for future use.
- 9 Rail rationalization may be driven by fundamental forces related to industrial location and freight competition. However, rationalization is also linked to issues with broader appeal:
 - a. Grade crossings, whistle bans, large trucks on local streets are important issues for residents – policies that provide some benefits in these areas could receive general support from the public.
 - b. Airport access and airport capacity are continuing, complicated problems that are likely to call for expensive solutions. Rail can play a role both in providing access to Midway and O'Hare and in serving the mid-distance inter-city markets.

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Appendices

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Appendix 1: Methodology for Forecasting Freight Activity

The study team developed forecasts of freight traffic activity in the Chicago region, as well as the rest of the nation, using the Global Insight Regional Information Service (RIS). The following explains the nature of this methodology and sources.

This econometric model provides forecasts of employment, income, population, industrial production, and a host of other variables at the regional, state, Metropolitan Statistical Areas (MSAs), and county levels of geography. Global Insight's approach to modeling MSA, state and regional activity is based on a methodology that places emphasis on those factors that influence a firm's decision to locate within particular regions. States within regions compete for a share of the business that is locating within the region. This approach allows one to isolate the events that affect changes in a state's share of national income and also provides a framework for examining the interrelationships among regions and states. The Regional Model is intimately linked to the Global Insight U.S. Quarterly Macroeconomic Model and as a result the state and regional forecasts are consistent with Global Insight's U.S. national forecast.

Generating a complete solution of the RIS models is a multi-step process, as shown in **Figure A1.1**. The Core Regional Model is linked directly to the Global Insight Quarterly Model of the U.S. Economy (and is consistent with the remainder of the Global Insight economic forecasting models). The Core Model is first solved for levels of economic activity in the nine (9) RIS regions (New England, Middle Atlantic, South Atlantic, East North Central, East South Central, West North Central, West South Central, Pacific Southwest, and Pacific Northwest). In subsequent steps, the models are solved to obtain forecasts of economic activity for the states, counties, and metropolitan statistical areas (MSAs) within each region.

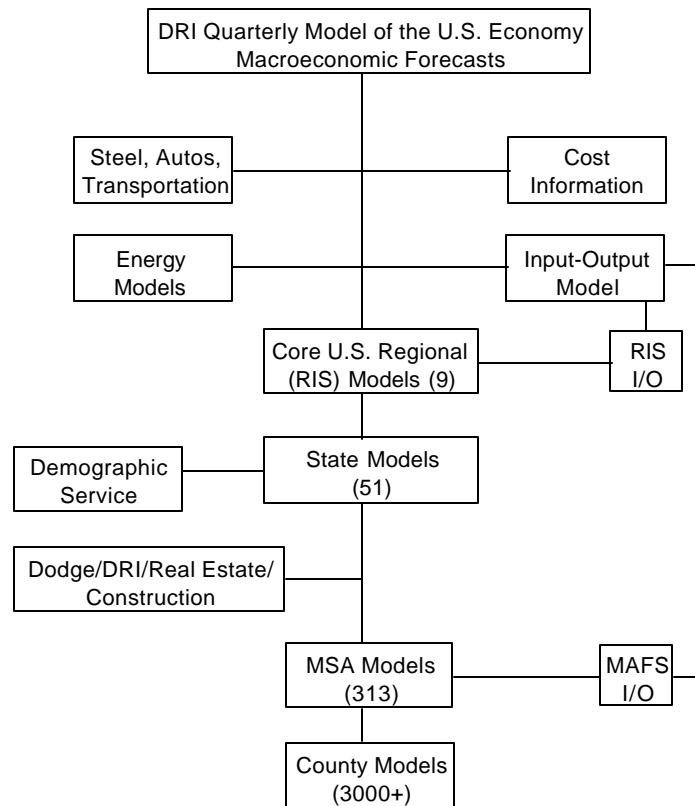


Figure A1.1 – Structure of Global Insight's Modeling

This approach recognizes that states and sub-state regions do not exist in isolation, but are greatly influenced by changes in the national and regional economy, as well as local conditions. Global Insight's emphasis on industrial location also recognizes that the elements influencing a business's decision to move from one region to another are different from those affecting a firm's choice of a specific site within a region. The factors a firm considers in the decision to move between regions are:

- Proximity to markets;
- Cost considerations (wages, energy prices, taxes);
- Degree of unionization;
- Housing prices;
- Climate; and
- Overall desirability or attractiveness of the region.

Within a given region, elements affecting industrial location are more limited. States within the region are essentially competing for a share of the business that is moving into that particular region. The Global Insight models reflect the finding that the single most important factor determining a state's ability to compete with its neighbors is its business tax burden.

Global Insight's regional industry models (IO-Regional) produce forecasts of employment and output in 239 industries for 50 states and the District of Columbia, and 319 metro areas. The IO-Regional models are linked to Global Insight's U.S. Inter-Industry model, which provides estimates of output, sales, price indices, employment, and productivity for 254 industries. Industry definitions in the IO-Regional models correspond directly to three- and four-digit Standard Industrial Classification (S.I.C.) codes or are aggregations of these categories. The IO-Regional forecasts are calculated at an annual frequency for a twenty-five year horizon.

A1.1 Data sources

Global Insight's historical IO-Regional database is constructed from the U.S. Census Bureau's County Business Patterns (CBP). This data, which is published annually with a three-year lag, consists of employment estimates by four-digit S.I.C. categories for all U.S. counties. The CPB data is aggregated across industry categories to produce a historical IO-County database. The historical IO-County data is then aggregated geographically to produce unconstrained employment databases for states and metro areas.

The historical state employment data is constrained to two-digit ES-202 (need definition) data to ensure consistency with Global Insight's state forecasting models. Missing values in the aggregated CBP data (which result from data suppression by the Census Bureau) are also corrected during the constraining process. The historical metro area employment data is constrained to one- and two-digit ES-202 data to ensure consistency with Global Insight's metro area forecasting models. As with the state employment data, the metro area constraining procedure corrects missing values.

A1.2 State industry forecasting methodology (IO-RIS)

The state industry forecasting model (IO-RIS) is a hybrid econometric/constant-share model. Employment within each industry sector is represented by a single equation. The employment equation that is used for a particular industry sector is determined endogenously, based on a statistical evaluation of the performance of three different models. Forecasts of employment for the two-digit aggregates, which are used in the regression equations, are produced by Global Insight's state forecasting models.

The three candidate employment equations are:

- (1) A regression model based on national employment shares:

$$\frac{EMP_I^{ST}}{EMP_J^{ST}} = f\left(\frac{EMP_I^{US}}{EMP_J^{US}}\right)$$

where EMP_I^{ST} = state employment in industry I,

EMP_J^{ST} = State employment in the two-digit aggregate (J) that contains industry I,

EMP_I^{US} = National employment in industry I,

EMP_J^{US} = National employment in the two-digit aggregate (J) that contains industry I,

- (2) A log-linear regression model based on state two-digit employment levels:

$$EMP_I^{ST} = f(EMP_J^{ST})$$

- (3) A constant-share model based on national employment levels:

$$EMP_I^{ST} = f(EMP_I^{US})$$

To choose which equation is used for a particular industry sector, equation (1) is estimated using historical employment data. If the results of this regression meet certain criteria for goodness-of-fit, the statistical significance and magnitude of the estimated model coefficients, and the stability of predicted employment levels, this equation is used to forecast future employment levels. If this regression fails to meet any of these criteria, equation (2) becomes the next candidate equation. If the results of the second regression meet criteria for goodness-of-fit, the statistical significance and magnitude of the estimated model coefficients, and the stability of predicted employment levels, equation (2) is used to forecast future employment levels. If this regression fails to meet any of these criteria, equation (3) is used to forecast future employment levels.

The state industry model also contains procedures to incorporate information from the residual errors in regressions (1) and (2) into the employment forecasts. This adjustment process ensures that the forecast for the initial forecast period is consistent with data for the last historical period. The adjusted forecasts are then constrained to Global Insight's two-digit state employment forecasts. Output levels within each industry are found by multiplying state employment levels by national labor productivity coefficients. Total output by industry for all states and the District of Columbia is constrained to national output levels to ensure consistency between the state and national forecasts.

A1.3 Metro area industry forecasting model (IO-MAFS)

The mathematical formulation of the metro area industry forecasting model is analogous to the state model, but state industry employment (instead of national industry employment) is used as a base for estimating metro area industry employment. Employment within each industry sector is represented by a single equation. The employment equation that is used for a particular industry sector is determined endogenously, based on a statistical evaluation of the performance of three different models. Forecasts of employment for one- and two-digit aggregates, which are used in the regression equations, are produced by Global Insight's metro area forecasting models.

The three candidate employment equations are:

- (1) A regression model based on national employment shares:

$$\frac{EMP_I^M}{EMP_J^M} = f\left(\frac{EMP_I^{ST}}{EMP_J^{ST}}\right)$$

where EMP_I^M = metro area employment in industry I,

EMP_J^M = metro area employment in the two-digit aggregate (J) that contains industry I,

EMP_J^{ST} = state employment in industry I,

EMP_I^{ST} = state employment in the two-digit aggregate (J) that contains industry I,

- (2) A log-linear regression model based on metro area one- and two-digit employment levels:

$$EMP_I^M = f(EMP_J^M)$$

- (3) A constant-share model based on state employment levels:

$$EMP_i^M = f(EMP_i^{ST})$$

The procedure for choosing which equations are applied to employment in each industry and metro area is the same as the procedure for the state industry model. The metro area industry model also contains procedures to incorporate information from the residual errors in regressions (1) and (2) into the employment forecasts. This adjustment process ensures that the forecast for the initial forecast period is consistent with data for the last historical period. The adjusted forecasts are then constrained to Global Insight's one- and two-digit metro area employment forecasts. Output levels within each industry are found by multiplying metro area employment levels by national labor productivity coefficients.

A1.4 State and metro-area consumption methodology

The methodology above provides information on how the output and employment side of the state and metro-area models is constructed. These concepts are provided as part of Global Insight's standard Regional Information Service. Global Insight's consulting service takes this information one step further providing state and metro-area total consumption at the 254 industry level. This information serves as an input to commodity flow analyses.

Consumption is the sum of inter-industry and final demands. At the state level, inter-industry demand is calculated by using the I/O A-matrix. The A-matrix shows the deliveries of each industry's output to other industries as an input. The sum of the deliveries or sales of an industry's output to other industries represents the intermediate demand for that industry. A-matrices are not available at the state level, thus the national matrix is used to share out state and metro-area total output to intermediate demand.

Final demand records the deliveries of an industry's output to final users, i.e., consumers, the government, businesses for investment or inventory, and foreign markets. Final demand at the state and metro-area levels is shared down from the national final demand figures calculated in the U.S. Inter-industry Model. Each piece of final demand—personal consumption expenditure, residential investment, nonresidential investment (structures and equipment), government construction, government (non-construction), exports, and imports—is shared out using an appropriate state to national ratio.

The final step in the process for the Chicago Department of Transportation study was to map the 254 Global Insight industries to 4-digit Standard Transportation Commodity Codes (STCC) for integration with Reebie Associates' TRANSEARCH database.

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Appendix 2: The CDOT Shipper Survey: Process, Results, Analysis

A2.1 Summary

Between November 2001 and March 2002 two surveys of shippers were conducted in the Chicago area to better understand their use of freight services. A long mail survey asked shippers for extensive information on the freight activities and attitudes about freight services in the Chicago area. A short phone survey was conducted to augment the mail survey. The survey samples were drawn in a manner that created two response pools for analysis: shippers that use rail (rail users), and shippers that do not use rail (non-rail users). The surveys provide information on the shipper behavior and attitudes that can help inform the development of public policy relative to freight transportation in greater Chicago.

The survey sample indicates that most shippers in the Chicago area are manufacturing firms with fewer than 500 employees. All respondents to the survey were almost universally satisfied with the quality of freight services they received. The shippers that were classified as “rail users” are often more intensive users of freight services. Rail users tend to use a mix of rail service (either direct carload or containerized intermodal) and various truck services to ship goods in and out of their facilities. Rail users are more likely to be older established firms that have experienced little growth in the last ten years but often expect growth in the next five years. Rail users tend to be very concerned about the quality and price of all freight services. Nearly half of the rail users rely on direct carload service to their facility. The balance of rail users relies on intermodal services. Most rail users feel that access to multiple rail carriers in Chicago is critical to their operations.

Non-rail users tend to make less intensive use of freight services in general. In fact, non-rail user freight volumes are most likely to ship in less than truckload (LTL) or smaller shipment sizes. Non-rail users are much more likely to be younger firms that have experienced considerable growth over the last decade. Less than one third of the non-rail users expect more growth in the next five years. Non-rail users tend to be insensitive to the quality of rail service to their facility, but overwhelmingly agreed with rail users that fast, frequent, reliable and inexpensive freight service is critical to their operations.

Key findings of the survey are presented below.

A2.1.1 Characteristics of respondents

- Most respondents were manufacturing facilities.
- Most respondents employ less than 500 employees.
- 53% of rail users reported having a rail siding at their facility.
- The other 47% of rail users transfer goods at an intermodal facility.

A2.1.2 Shipper behavior

- Rail users tend to receive larger volumes of product than non-rail users.

- Rail users tend to use a mix of truck and rail services to meet their shipping requirements.
- Non-rail users in the survey sample tend to use LTL truck services more frequently than truckload services for their freight activities.
- Respondents are almost universally satisfied with the quality of freight services they use. Only one respondent reported dissatisfaction with the service it uses to ship its primary product. No respondents reported any dissatisfaction with the service that they use to receive their primary good.
- Rail users tend to be older mature businesses that seldom report substantial growth in traffic over the last ten years.
- More than one third of non-rail users have been in business for less than ten years at their current facility. Non-rail users that have been in business for more than ten years are much more likely to report that their business has grown in that period.
- More than half of rail users plan to expand their facility in the next five years.
- Less than one third of non-rail users plan to expand in that time frame.
- Among respondents expecting their business to expand or contract in the next five years most indicated change was due to change in demand for products, not to changes in freight service, access to qualified labor, or other factors.

A2.1.3 Shipper attitudes

- Rail users overwhelmingly indicate that highway access is critical to their operations. Most non-rail users tend to agree that highway is critical to their operation.
- Both rail users and non-rail users generally agree that fast, frequent, reliable, and inexpensive freight service is critical to their operations.
- More than two thirds of rail users indicate that access to multiple rail carriers is critical to their operations.
- Approximately one fifth of rail users indicate that if high quality carload service were not available at their current location that they would reduce operations.
- Almost one quarter of rail users indicate that if high quality intermodal service were not available at their current location, they would reduce operations.
- Almost 80% of rail users indicate that if highway truck access to their facility was slowed or limited, they would reduce operations. Only slightly more than half of non-rail users felt that slowed or limited truck access would adversely impact their operations.
- 42% of rail users indicated that if rail yards near them were relocated, their facility would be downsized, relocated, or closed.
- 46% of rail users agreed that direct carload rail service is presently very important in their firm's choice to operate at its current location.
- Almost three quarters of rail users indicated that relocation of the nearest rail intermodal TOFC/COFC terminals to more than 25 miles away would not impact their operations.

The remainder of this Appendix 2 describes the objectives, methods, process and results of the shipper surveys conducted for the Chicago Rail Freight Economic Impact Study.

A2.2 Objectives

The project plan for the Rail Freight Economic Impact Study called for a shipper survey. The plan envisioned that the shipper survey would be a means to “gain viewpoints from business constituencies.” Within this context a shipper survey is the centerpiece of the discussion.³⁴ The shipper survey was designed to understand the views, plans, and needs of Chicago’s shipping community. Qualitative and quantitative data directly provided by freight shippers were used to:

- Gain a better understanding of underlying economic trends that affect shippers in the Chicago area;
- Refine scenario options;
- Validate results from the economic impact modeling; and
- Define appropriate policy options that may be considered by the City of Chicago.

A2.2.1 Methodology

A2.2.1.1 Mail survey

The project team used a written mail survey as the primary method for gaining information from shippers. Questions were keyed to meeting the input requirements of the regional economic model, as well as other, more qualitative information that may be useful in guiding CDOT policy development. Specific data elements covered in the survey instrument included:

1. Descriptive information

- a. Firm demographics – company size, markets served, headquarters location, number of employees at site and company-wide, etc.
- b. Location – facility size, type of modal access
- c. Traffic – current volumes by mode

2. Market projections

- a. Traffic –projected future volumes by mode
- b. Plans for facility – expansion/contraction/relocation

3. Opinions and attitudes

- a. Perspectives on rail service – importance, quality, timeliness, availability (schedules and equipment), future needs
- b. Level of importance placed on rail freight service in determining business location

The survey instrument development process employed by the project team is described below.

³⁴ Surveys of drayage firms and managers of local rail carriers were also conducted but not covered in this report.

A2.2.1.1.1 Initial design and pretest

A list of data elements, potential questions and a data analysis plan were drafted by KKO and Associates, L.L.C. for review by the project team. After several rounds of reviews and edits, the draft survey was tendered to CDOT for their approval. The survey was then pre-tested with a small sample of Chicago shippers. Final revisions to the survey were made at that time.

A2.2.1.1.2 Data collection process

The six-page survey had a series of questions about the types of products shipped, the methods of shipping and the importance of different shipping methods to that particular company.

The survey process began in November 2001 with the mailing of 4,714 surveys to a random sample of businesses (primarily manufacturers) found in a Reebie/InfoUSA database of manufacturers known as “Freight Locator” and an InfoUSA database of non-manufacturers that ship or receive goods on a consistent basis. The sample facilities were located in eight counties in the greater Chicago area including counties in both Indiana and Illinois. (See **Figure A2. 1**) Given the extreme length of the survey and the accuracy of the data requested from respondents, and the fact that the surveys were mailed to a non-specific “Traffic Manager” at each firm, the initial response rate to the mail survey was very low. By December 2001 only 71 of the 4,714 questionnaires had been returned completed. It was decided that a telephone outreach to encourage shippers to respond to the mail survey would be conducted.

The survey team examined the list of companies that did not return the survey. The sampling data contained a telephone number for each firm that received a mail survey. From that list, the study team contacted all non-respondents with more than 200 employees. Among firms with 100 to 200 employees, the study team only called non-respondents known to belong to industry classifications most likely to use rail.³⁵ No firms with fewer than 100 employees were contacted by telephone. Ultimately, 111 usable surveys were returned for an overall response rate of 2.3% after a total of 755 non-responding firms had been contacted via phone.

³⁵ The targeted companies belonged to one of the following SIC groups: 20. Food and Kindred Products; 24. Lumber and Wood Products; 26. Paper and Allied Products; 28. Chemicals and Allied Products; 33. Primary Metals Industries; 37. Transportation Equipment.

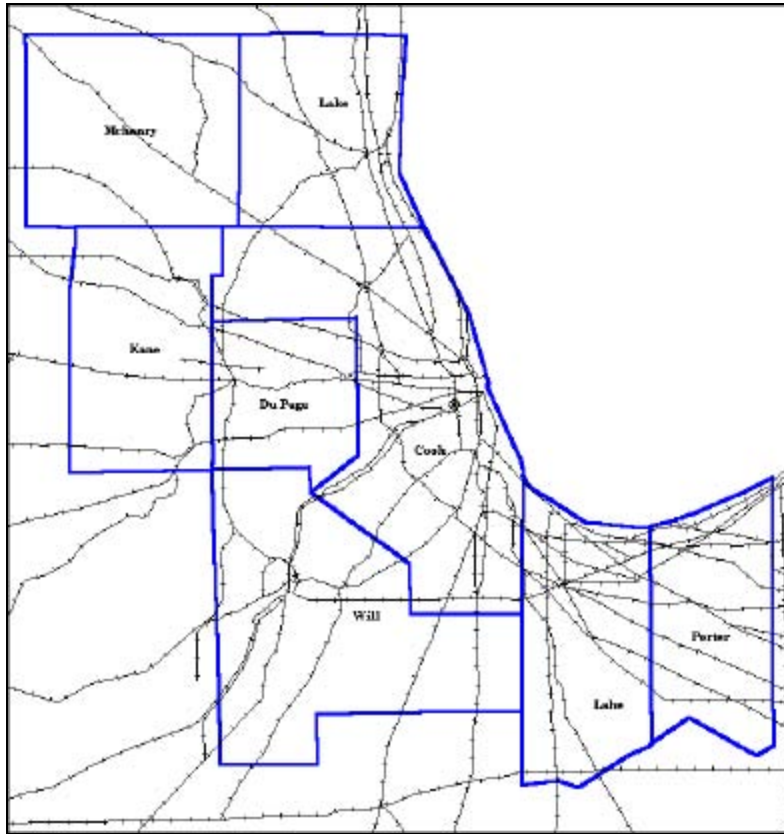


Figure A2. 1

A2.2.1.2 Telephone survey

Due to the low response rate for the mail survey, the study team decided to enrich the sample of responses on especially important questions with a short telephone survey. A survey of 12 questions was designed with the goal of gathering 150 usable responses from shippers in the Chicago area.

A list of data elements was drafted for review by the project team. After several rounds of reviews and edits, the draft survey was tendered to CDOT for their approval. The phone survey began in March 2002. Shippers were selected for the sample from the universe of Chicago area customers in the databases that had not been mailed a project survey. The sample was stratified so that shippers in rail intensive industries with relatively large employment levels were more likely to be called first. When 150 usable surveys were collected, calling was suspended.

The phone survey collected 154 responses by phone, fax, or email by April 10, 2002. The process involved contacting 960 different shippers. The solicitation process started with a phone call to the shipper. The caller would then ask to speak with the traffic manager or shipping manager. Once the connection with the traffic manager was made, the caller would then explain the purpose of the call and request four minutes of time to conduct the survey. If the manager said yes, the survey was conducted, if the manager was busy, then the surveyor offered to fax or

email the survey to them. If the manager was not interested in participating in the survey, the phone call would terminate. In addition, the surveyor would offer the incentive of being entered into a drawing for a gift certificate to Morton's of Chicago if a survey was completed.

The survey team contacted 960 companies to yield 154 usable responses. The response rate for the phone survey was better than the response rate for the mail survey primarily because the time required to complete the 12 question phone survey was much less than the time required to fully complete the 50+ question survey.

A2.3 Findings

With the understanding that the survey sample was designed so that rail users were both more likely to be contacted for the survey and more likely to respond to the survey, the study team recognized that the resulting responses are biased towards rail users. Rail users are more likely to be found in the responses to the two surveys than they are to be found in the general population of shippers in greater Chicago. Consequently this report presents the findings of the survey in two separate groups: Rail Users and Non-Rail Users. Rail users are broadly defined as any respondent who ships or receives at least one product by rail, or strongly agreed with a statement that favored rail. **Figure A2.2** displays the distribution of rail users and non-rail users in the two surveys.

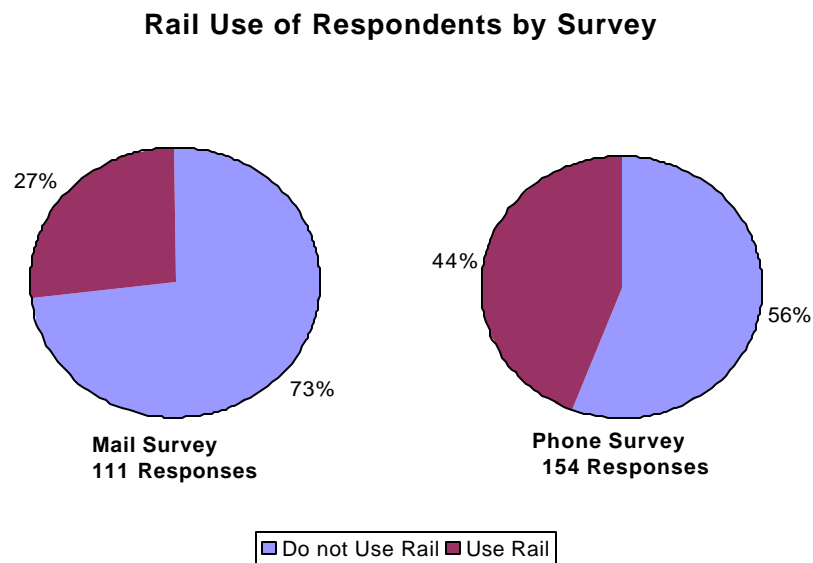


Figure A2.2

A2.3.1 Characteristics of rail users and other shippers

A2.3.1.1 Facility type

The mail back survey asked shippers about the type of facility responding. The four choices were: Warehouse, Manufacturer, Retail, or Other. Between both rail and non-rail users approximately two thirds of the respondents were manufacturers. Approximately one quarter of the respondents were warehouses. **Figure A2.3** shows the facility classification distribution of the respondents.

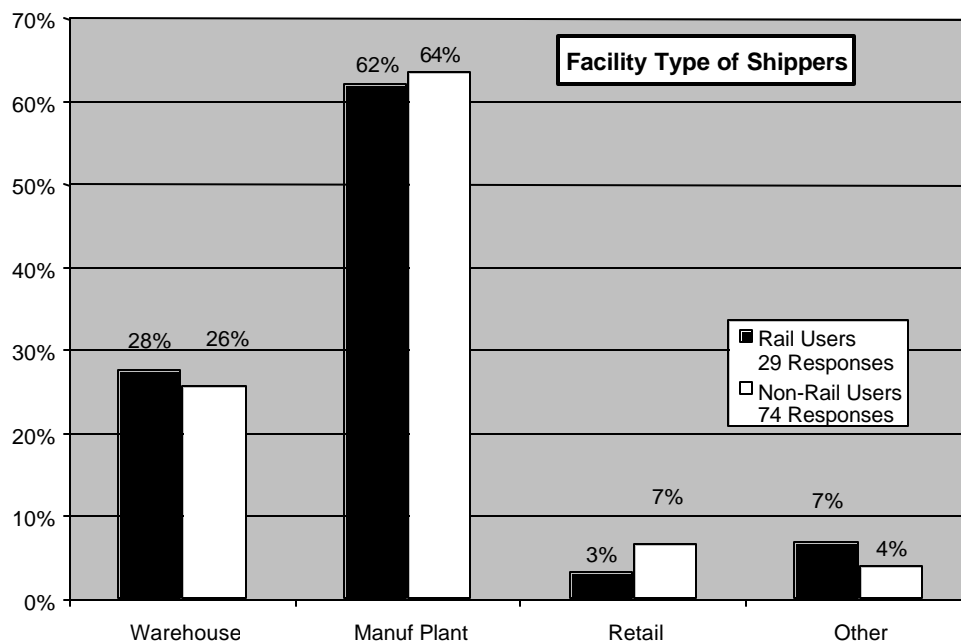


Figure A2.3

A2.3.1.2 Number of employees

Both surveys queried shippers on the number of employees that worked at their facility. Rail users tend to have more employees at their facility than non-rail shippers. **Figure A2.4** outlines the relationship between rail and non-rail shipper respondents in terms of employment levels.

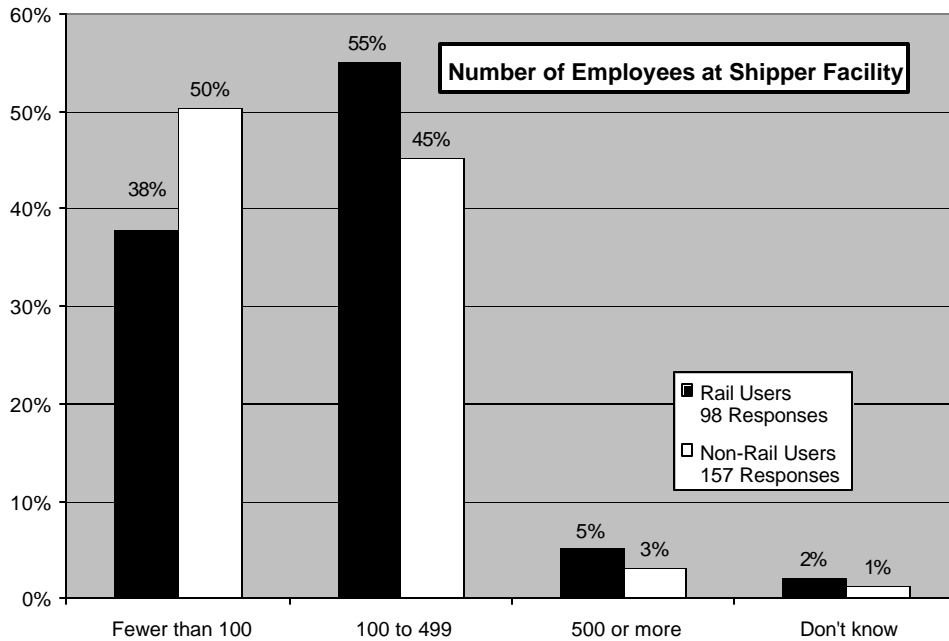


Figure A2.4

A2.3.1.3 Lot size

The mail back survey queried respondents about the acreage of their facility. For the most part facilities ranged between less than one acre to approximately 20 acres. (See **Table A2.1**)

	Rail Users	Non-Rail Users
Minimum	0	0
Maximum	46	22
Median	6	2
Mean	11	3
Responses	23	57

A2.3.1.4 Floor area of facility

The mail back survey asked about the building floor area of the facility. The floor area of rail user facilities tends to be greater for non-rail users. The summarized responses from the survey are displayed in **Table A2. 2**.

Table A2. 2 Facility Floor Area (Square Feet)		
	Rail Users	Non-Rail Users
Minimum	2,750	200
Maximum	1,000,000	500,000
Median	91,000	32,000
Mean	196,248	68,044
Responses	24	59

A2.3.1.5 On an active rail line

Most rail users were located on an active rail line. However, two of five rail users were not. These rail users primarily relied on rail intermodal services. Only a small fraction of non-rail users were located on an active rail line. The survey responses to current access to a rail line is outlined in **Figure A2.5**.

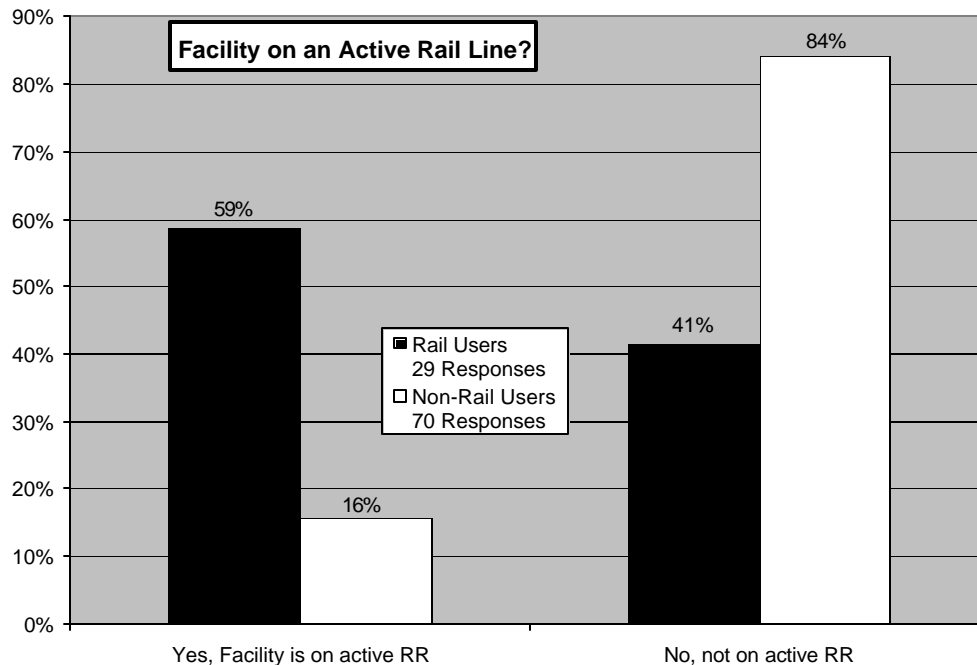


Figure A2.5

A2.3.1.6 Shipper has a rail siding?

Not surprisingly most rail users are located on an active rail siding. But nearly half are not, relying on containerized intermodal or truckload service for rail shipments. Only 10% of non-rail users are on an active rail siding. **Figure A2.6** displays the distribution of respondents by the presence or absence of a rail siding.

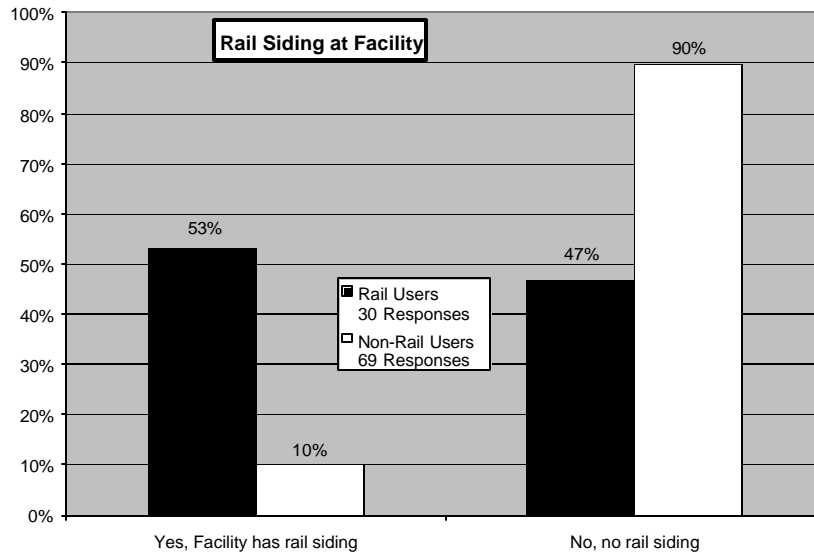


Figure A2. 6

A2.3.1.7 Distance to the nearest interstate ramp

The mail survey also queried shippers about their access to the interstate system. This is a question that is not only targeted at non-rail shippers, but at the rail shippers who are not on an active railroad and to rail shippers and their potential for shipping by truck. Non-rail shippers responded that they were between 0.1 and 25 miles away from the closest “on ramp”, and on average were 3.4 miles away. Rail shippers reported that they were between 0.1 and 6 miles and were on average 1.9 miles away from an interstate on-ramp. **Table A2.3** displays the distribution of interstate highway access among the respondents.

	Rail Users	Non-Rail Users
Minimum	0.10	0.10
Maximum	6.00	25.00
Median	1.5	2.0
Mean	1.9	3.4
Responses	30	70

A2.3.2 Shipping behavior of rail users and other shippers

A2.3.2.1 Primary product received

The mail survey requested information on the four types of products that the facility most commonly receives. Not all respondents provided information concerning four products. Information shown here is for the first, or primary, product reported by each respondent. Non-rail users were most likely to receive primary metal products, however they did receive a wide variety of products. Rail users were most likely to receive food, paper, rubber, and plastic products. **Table A2.4** reviews the distribution of respondents by commodity groups based on two-digit STCC codes.

Table A2.4		
Received Commodity Groups (Primary Product Only)		
Product	Rail Users	Non-Rail Users
20. Food and Kindred Products	4	6
22. Textile Mill Products		2
24. Lumber and Wood Products	1	1
25. Furniture or Fixtures		2
26. Pulp, Paper and Allied Products	3	4
27. Printed Matter		2
28. Chemicals or Allied Products	2	3
30. Rubber and Misc. Plastic Products	3	3
32. Clay, Concrete, Glass, or Stone		1
33. Primary Metal Products	1	12
34. Fabricated Metal Products	2	6
35. Machinery		4
36. Electrical Equipment		1
37. Transportation Equipment	2	
39. Misc. Manufacturing Products		3
41. Misc. Freight Shipments		1
42. Shipping Containers		1
44. Freight Forwarder Traffic	1	
46. Misc. Mixed Shipments		1
47. Small Packaged Freight Shipments		2
49. Hazardous Materials or Substances	1	
Total	20	55

A2.3.2.2 Annual tons received of the primary good

The mail survey gathered information on the volume of the products received. **Table A2.5** displays some information about the responses. Not surprisingly the median annual tonnage of primary goods received was much higher for rail users. One non-rail user receives two million annual tons of steel coils via truckload. The next largest reported annual shipment by non-rail

users was 145,000 annual tons of wide coil steel. **Table A2.6** documents the average annual tons received by commodity group³⁶.

Table A2.5		
Annual Tons Received of the Primary Good		
	Rail Users	Non-Rail Users
Minimum	23	1
Maximum	180,000	2,000,000
Median	7,750	400
Mean	25,934	56,623
Responses	18	43

Table A2.6		
Average Tons Received by Commodity Groups (Primary Product Only)		
Product	Rail Users	Non-Rail Users
20. Food and Kindred Products	6,575	24,840
22. Textile Mill Products		1,425
24. Lumber and Wood Products	NA	2
25. Furniture or Fixtures		75
26. Pulp, Paper and Allied Products	18,000	213
27. Printed Matter		NA
28. Chemicals or Allied Products	25,000	1,603
30. Rubber and Misc. Plastic Products	4,050	575
32. Clay, Concrete, Glass, or Stone		2,500
33. Primary Metal Products	25,000	17,160
34. Fabricated Metal Products	92,500	1,000
35. Machinery		900
36. Electrical Equipment		N/A
37. Transportation Equipment	300	
39. Misc. Manufacturing Products		1,002,262
41. Misc. Freight Shipments		8
42. Shipping Containers		250
44. Freight Forwarder Traffic	2,560	
46. Misc. Mixed Shipments		2.5
47. Small Packaged Freight Shipments		5
49. Hazardous Materials or Substances	45,000	
Other	26,280	14,730

³⁶ Some returned surveys documented the product that they shipped, but not the quantity, while others documented the quantity of the product they received, but not the commodity code. Thus the average tons are based on the non-blank entries, and the “Other” category averages the unknown commodity.

A2.3.2.3 Mode used to receive primary product

Approximately half the rail users relied on rail carload to receive their primary inbound product. Approximately 7% relied on rail intermodal services. One quarter of the primary product received by rail users was shipped in LTL (Less-Than-Truckload) shipments. Among non-rail users, more than half relied on LTL services for their primary inbound commodity. One third relied on truckload shipments of their primary inbound product.

Mode of Receiving Primary Product

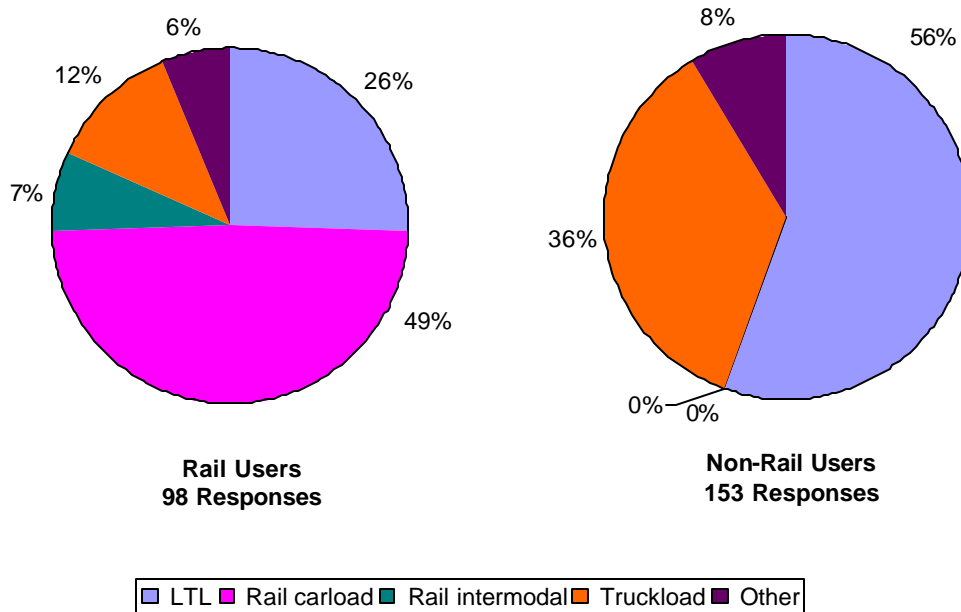


Figure A2.7

A2.3.2.4 Satisfaction with freight service for receiving primary good

The mail survey asked shippers if they were satisfied with the service they use for their received products. Amazingly, none of the respondents reported any dissatisfaction in their suppliers of transportation services for their inbound freight services. Non-rail users seemed more likely to be very satisfied with their inbound freight services.

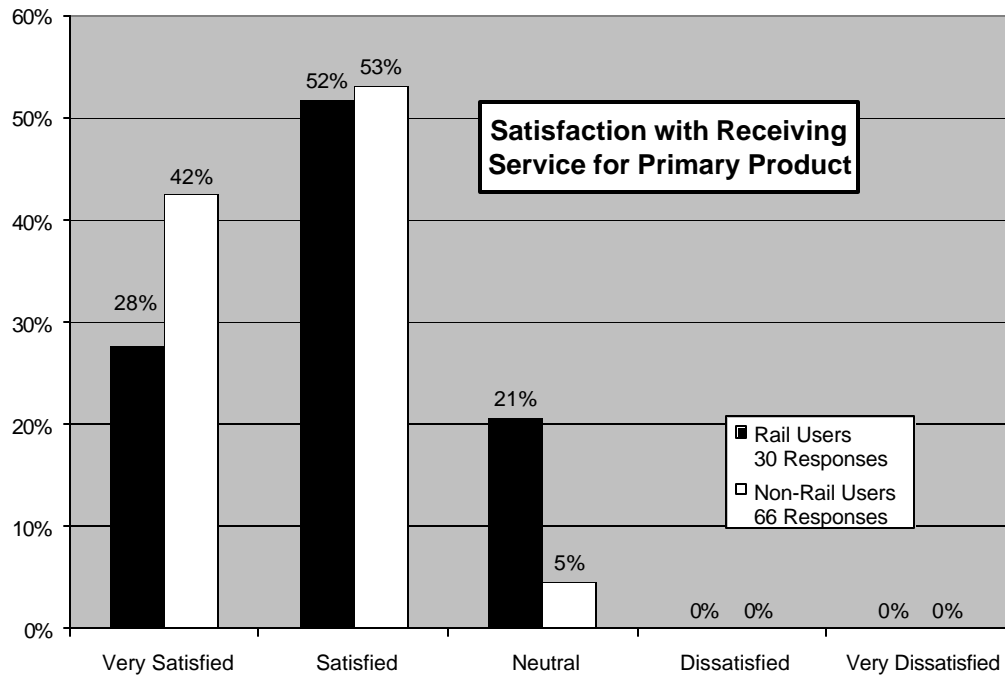


Figure A2.8

A2.3.2.5 Primary product shipped (outbound traffic)

The mail survey also asked respondents about the goods that they shipped. **Table A2.8** shows the primary products that respondents reported shipping. Non-rail users were most likely to ship fabricated metal products. Rail users were most likely to ship food, rubber and plastic products.

Table A2.8 Shipped Commodity Groups (Primary Product Only)		
	Rail Users	Non-Rail Users
20. Food and Kindred Products	4	6
22. Textile Mill Products		1
24. Lumber and Wood Products	1	1
25. Furniture or Fixtures		3
26. Pulp, Paper, or Allied Products	1	
27. Printing and Publishing		6
28. Chemicals or Allied Products	1	2
29. Petroleum or Coal Products	1	
30. Rubber and Misc. Plastic Products	3	3
32. Clay, Concrete, Glass, or Stone		1
33. Primary Metal Products	1	3
34. Fabricated Metal Products	1	14
35. Machinery		3
36. Electrical Equipment	1	1
37. Transportation Equipment	2	

Table A2.8		
Shipped Commodity Groups (Primary Product Only)		
39. Miscellaneous Manufacturing Industries		5
42. Shipping Containers		1
44. Freight Forwarder Traffic	1	
46. Misc. Mixed Shipments	1	
47. Misc. Mixed Shipments		3
Total Shippers	18	53

A2.3.2.6 Annual tons shipped of primary product

In general rail shippers tended to ship somewhat more primary product than non-rail users. One non-rail shipper annually transports 1,500,000 tons of steel coils by truckload. The next largest reported shipment among non-rail shippers was the annual movement of 93,000 tons of meat by truckload.

Table A2.9		
Annual Tons Shipped of the Primary Good		
	Rail Users	Non-Rail Users
Minimum	300	3
Maximum	220,000	1,500,000
Median	20,000	525
Average	52,454	49,306
Responses	17	36

Table A2.10		
Averaged Tons Shipped by Commodity Groups (Primary Product Only)		
	Rail Users	Non-Rail Users
20. Food and Kindred Products	16,093	24,750
22. Textile Mill Products		N/A
24. Lumber and Wood Products	N/A	5,000
25. Furniture or Fixtures		2,300
26. Pulp, Paper, or Allied Products	40,000	
27. Printing and Publishing		3,142
28. Chemicals or Allied Products	20,000	1,000
29. Petroleum or Coal Products	220,00	
30. Rubber and Misc. Plastic Products	25,083	100,250
32. Clay, Concrete, Glass, or Stone		5000
33. Primary Metal Products	25,00	3,483
34. Fabricated Metal Products	180,000	4,332
35. Machinery		1,760
36. Electrical Equipment	N/A	N/A
37. Transportation Equipment	300	
39. Miscellaneous Manufacturing Industries		1,533
42. Shipping Containers		N/A
44. Freight Forwarder Traffic	9,487	
46. Misc. Mixed Shipments	4,000	
47. Misc. Mixed Shipments		N/A
Other	73,600	9,335

A2.3.2.7 Mode used to ship primary product

Approximately 56% of rail users rely on rail for outbound shipments of their primary product.³⁷ Almost one quarter use LTL truck services. Among non-rail users, half rely on LTL shipments and one-third use truckload services. One in five non-rail users reports relying primarily on “Other” modes, including their own trucks or UPS to ship their products.

³⁷ It should not be assumed that the 56% is from the same subset of rail users for both the shipping and receiving mode questions. At least 12% of the rail users both ship and receive freight by rail.

Mode of Shipping Primary Product

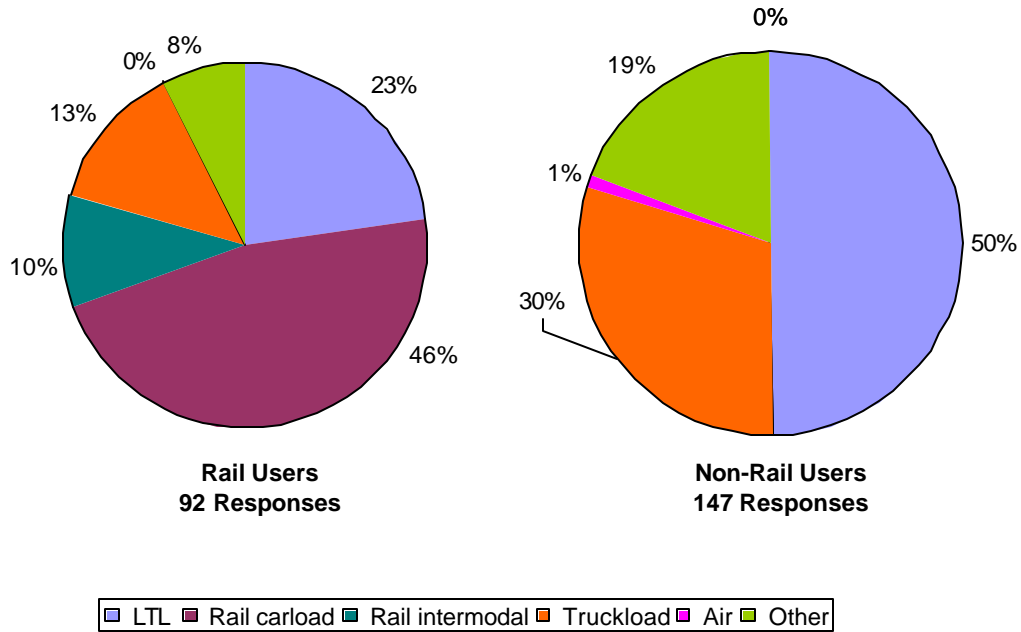


Figure A2.9

A2.3.2.8 Satisfaction with freight service for shipping primary product

Shipper satisfaction with outbound services tends to be very high. Most rail and non-rail respondents reported they are satisfied with their outbound shipping services. However, rail users were less likely to be “very satisfied.” One rail user reported dissatisfaction with outbound rail shipping services.

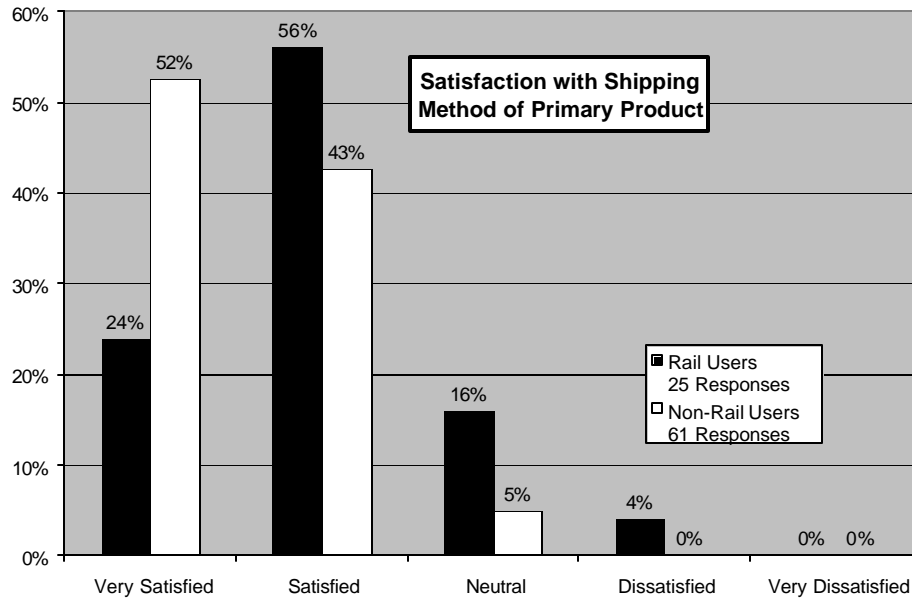


Figure A2.10

A2.3.2.9 Shipping behavior of rail users and other shippers of all products

The mail survey requested that shippers describe the four most commonly received and shipped products. Many companies provided information on more than one primary product that they shipped or received. **Figures A2.11 through A2.14** show information for all shipments reported by rail and non-rail users. With the information concerning additional shipments, the proportion of all products shipped or received by rail is reduced, since rail users who ship or receive more than one product may not use rail to move these goods. On the other hand, non-rail users do not use rail to transport goods at all.

A2.3.2.10 Methods of receiving all goods

The mail survey queried companies about the modes of transportation that shippers use to receive up to four products. Rail users reported that they receive only 43% of their inbound commodities by rail. Non-rail users use LTL or truckload services for 90% of the reported commodity movements. The 8% of non-rail shippers who use another method of shipping to receive goods use a small package service, such as UPS, or use water services.

Primary Method of Receiving All Products

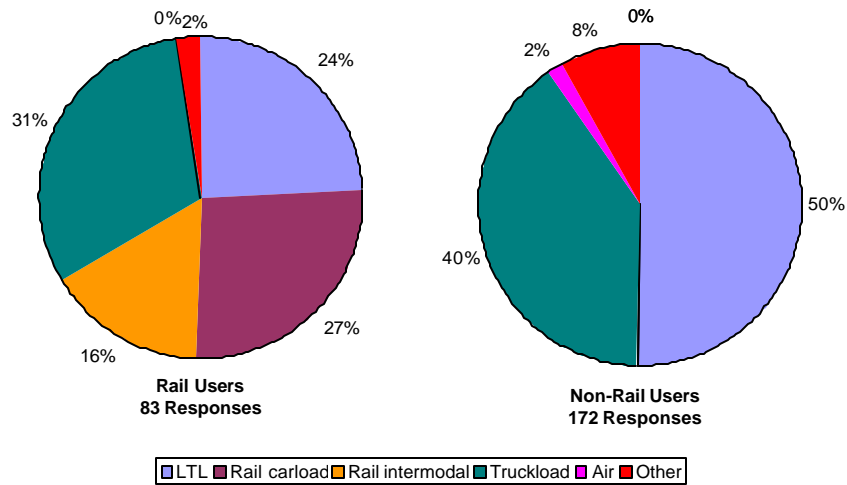


Figure A2.11

A2.3.2.11 Satisfaction with freight service for all received goods

For all received products, shippers in the Chicago area are overwhelmingly satisfied with their service. Non-rail users are more likely to be “very satisfied” and less likely to be “neutral” with respect to their inbound shipping services. No respondents indicated they were “Very Dissatisfied” with inbound services.

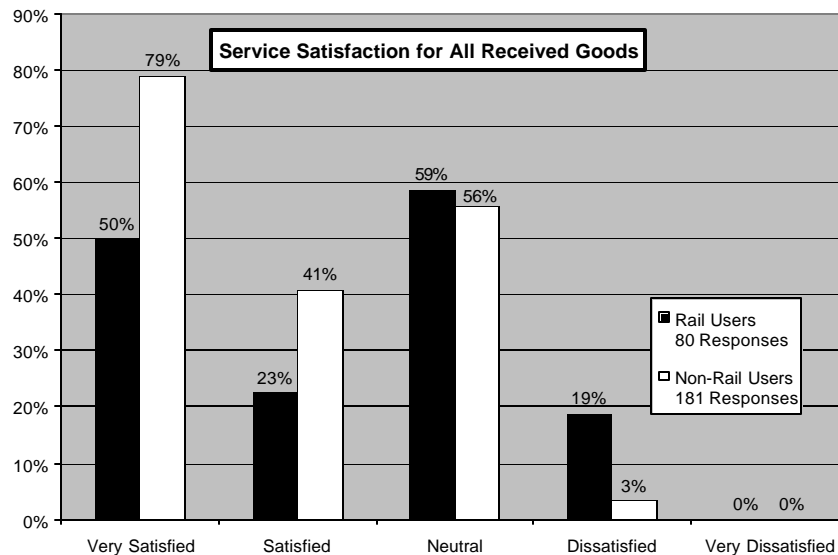


Figure A2.12

A2.3.2.12 Methods of shipping all products

Overall, the rail users report that they ship only 35% of their outbound commodities by rail. Non-rail users tend to ship their outbound products by LTL or truckload methods. Non-rail users shipped by an “other” mode 23% of the time. Typically this “other” method includes small package services, such as UPS, or the company uses its own trucks to make deliveries.

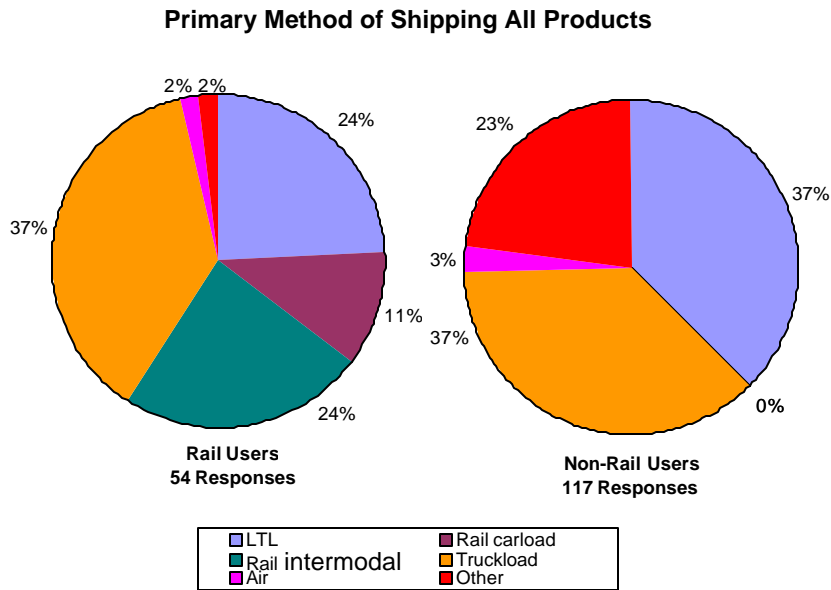


Figure A2.13

A2.3.2.13 Satisfaction with freight services for all shipped products

For all outbound products reported, respondents were overwhelmingly “Satisfied” with their service. Non-rail users were much more likely, however, to be “Very Satisfied”. One in five shipments among rail users yielded a “Neutral” response on shipper satisfaction. Only one rail shipper reported “Dissatisfaction” with one outbound shipping service. No non-rail users reported “Dissatisfaction” with any service.

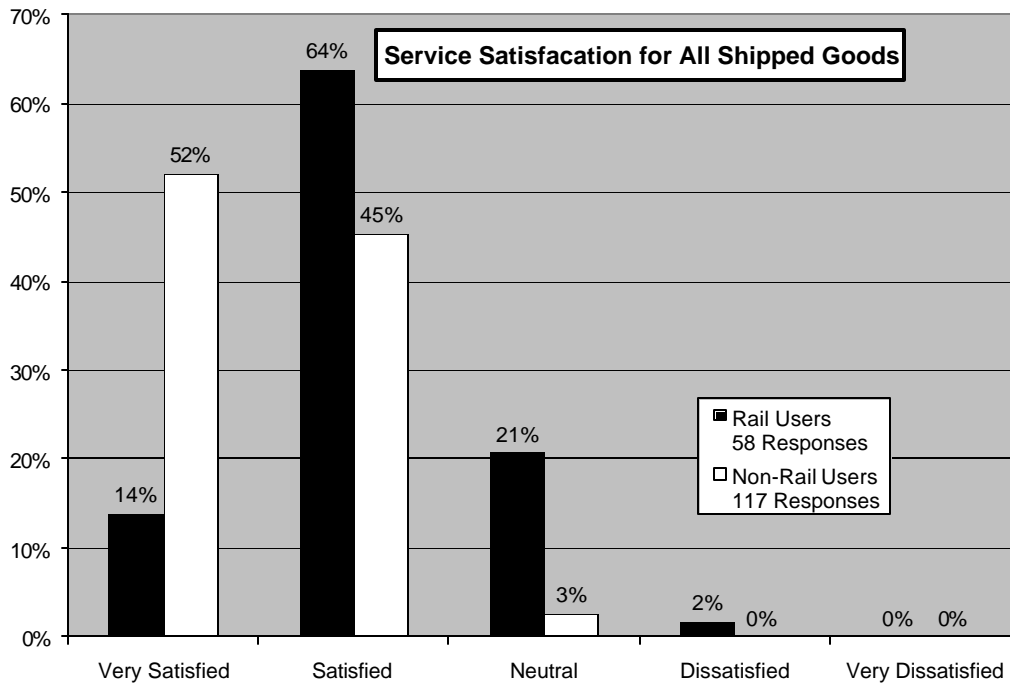


Figure A2.14

A2.3.3 Changes in Facility Activity – Historical and Prospective

A2.3.3.1 Facility activity over the past ten years

The mail survey asked respondents about the history of their facility. There are interesting differences between rail and non-rail users with respect to trends in the last ten years at their responding facilities. Among rail users most report no significant change in volumes and activity over the last decade. Almost one quarter report a downward trend in traffic. Only ten percent report that traffic has increased. No rail users are located in facilities that are less than ten years old. By contrast, more than one third of non-rail users report substantial growth in activity over the last decade. Another 12% are in a facility that is less than ten years old, and thus cannot define an established trend. Only 14% report that activity has been reduced in the last decade.

Trends in Facility Activity

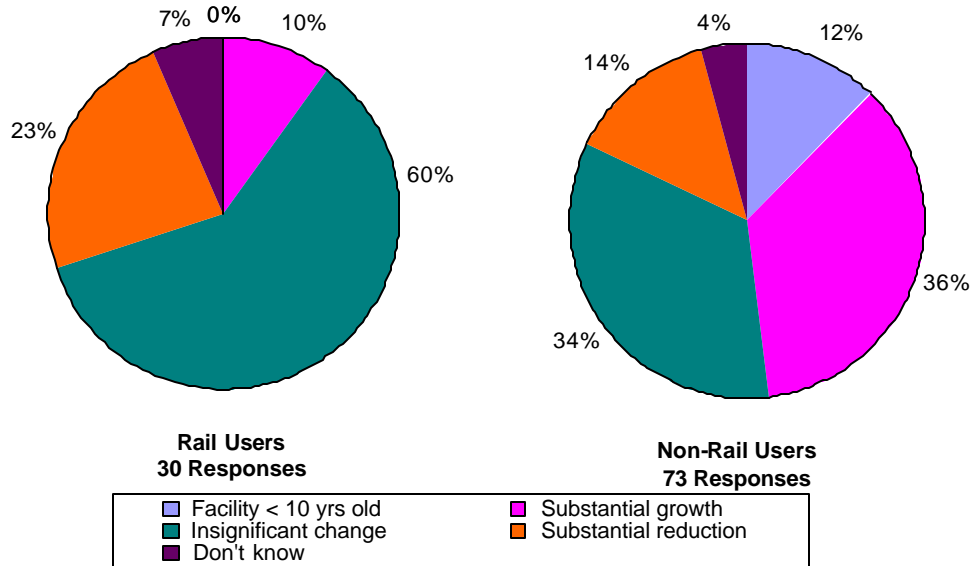


Figure A2.15

A2.3.3.2 Plans for the facility over the next five years

If they were expecting a change in activity at their facility, the mail survey queried respondents about their plans for expanding or reducing operations. The majority of respondents anticipate that the changes in activity can be handled within their existing facility. Thirty-eight per cent of rail users believe that the anticipated change in activity will result in altering the size of the existing facility, compared with only 13% of the non-rail shippers. The majority of both rail users and non-rail users anticipate that the changes in activity at their plant will be manageable within the existing facility.

Plans for Facility over the Next Five Years

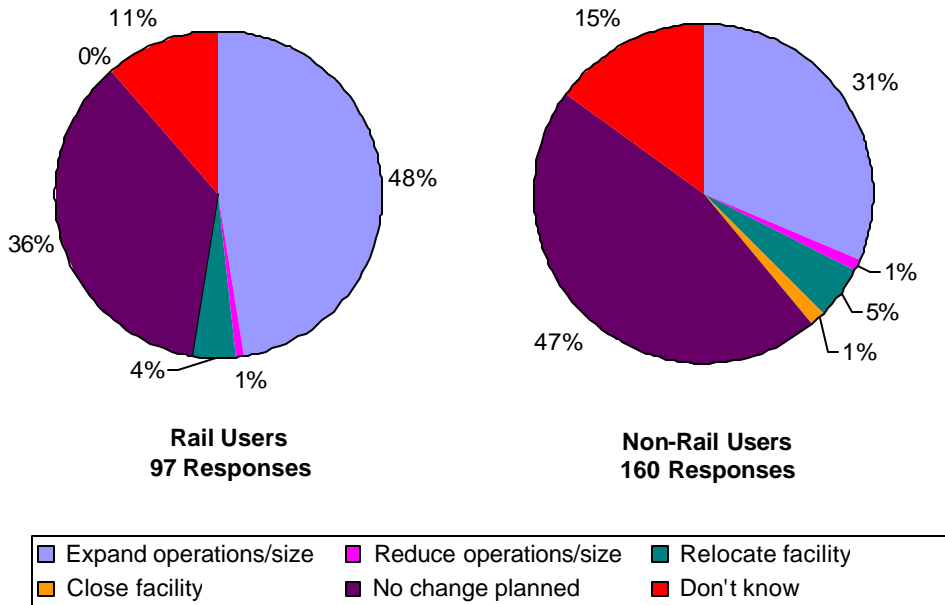


Figure A2.16

A2.3.3.3 How will operations be expanded or contracted over the next five years?

Both surveys queried shippers regarding plans for their facilities over the next five years. For the most part, shippers do not plan to reduce or close their facilities over the next five years. About five percent of both groups plan on moving their facility, but for the most part shippers are apparently happy where they are and feel that they can be profitable at their location. Another interesting point is that while rail users have experienced less growth than their non-rail counterparts, they seem more optimistic about growth in their facility. Approximately 13% of all respondents were unable to characterize their company’s plans for the next five years (Figure A2.16).

Why the Facility will Expand or Contract Over the Next Five Years

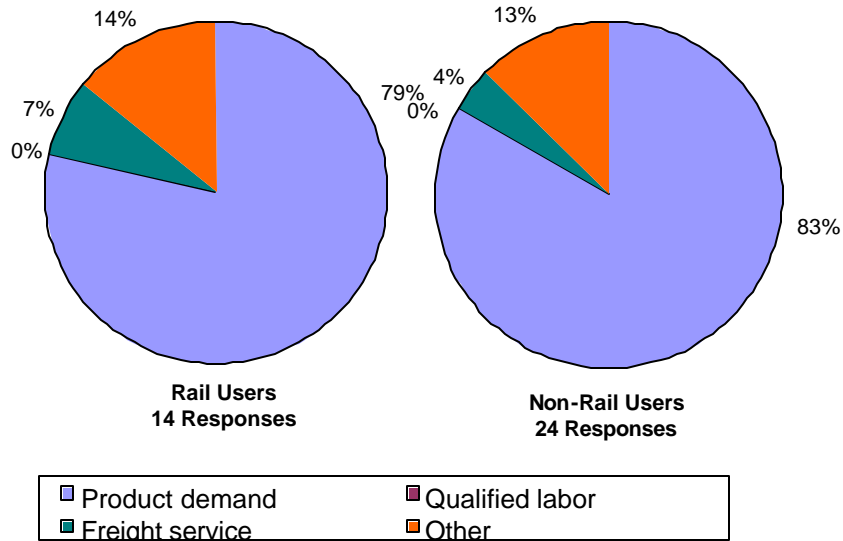


Figure A2.18

A2.3.3.4 Where would the facility relocate to over the next five years?

Very few respondents reported that they would relocate their facility within the next five years. Among the nine respondents who answered yes, three rail and six non-rail, most were expected to relocate to a nearby location. Only two of the nine respondents reported any plans to move out of the Chicago area.

Where Would the Company Relocate to Over the Next Five Years

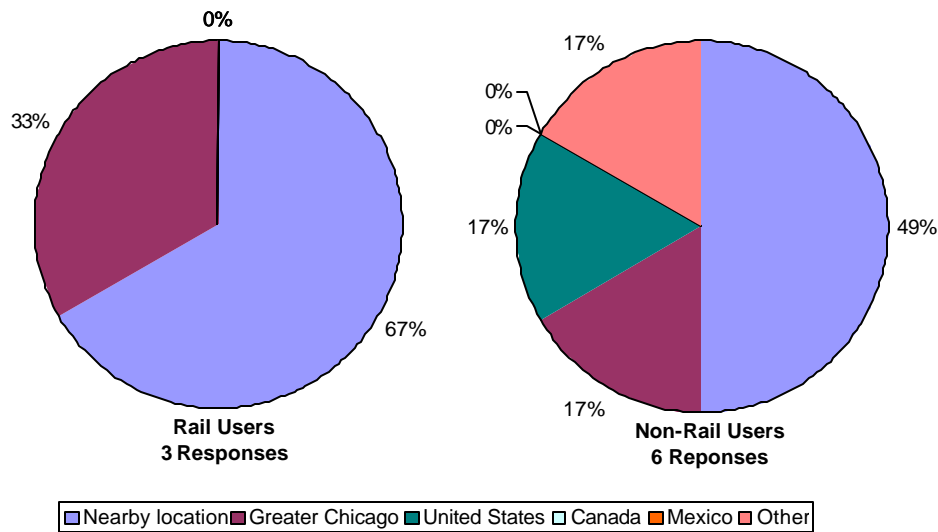


Figure A2.19

A2.3.3.5 Why is the facility being relocated over the next five years?

Shippers who reported that they would be relocating provided the following explanations for the planned relocation:

1. Non-Rail Users
 - a. Access to more or cheaper land
 - b. Access to lower cost of labor
 - c. Change in demand for products (two)

2. Rail Users
 - a. ATSF is relocating
 - b. Building new, larger building to meet demand
 - c. Increased warehouse space

A2.3.4 Attitudes of rail users and other shippers

Shippers were asked to respond to a series of statements concerning their reactions to issues in the freight environment. Their possible answers were: strongly agree, agree, neutral, disagree, strongly disagree, don't know/not applicable.

A2.3.4.1 Rail service is critical to operations at this facility

Both surveys asked respondents if rail service was critical to their operation at their facility. While there is no surprise that 51% of non-rail shippers do not believe that rail service is critical to their operation, it is fascinating that almost one third of rail users also believe that rail service is not critical to their operations.

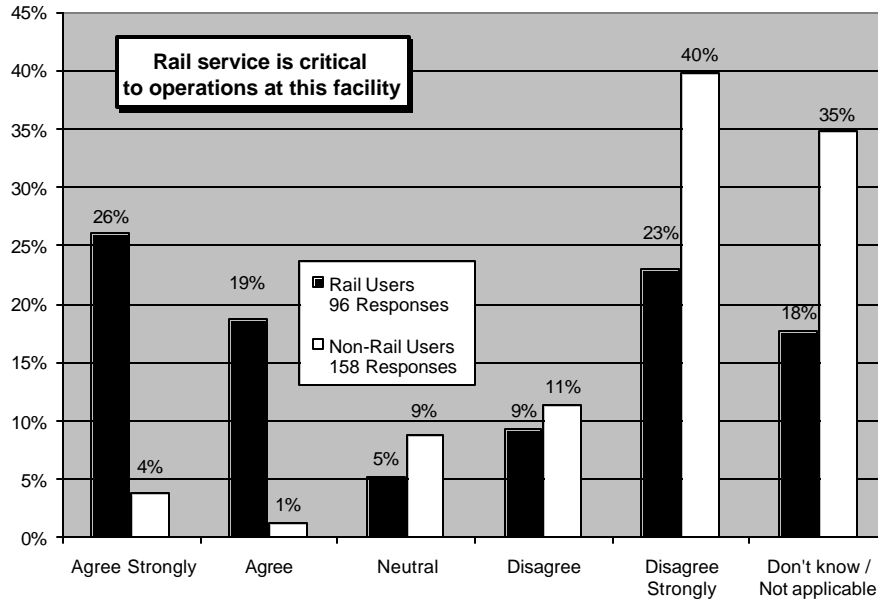


Figure A2.20

A2.3.4.2 Highway access is critical to operations at this facility

All of the rail users agreed with the statement that highway access is critical to their operations. The attitudes of non-rail users were more varied, with 6% indicating that highway access was not critically important to their business (Figure A2.21).

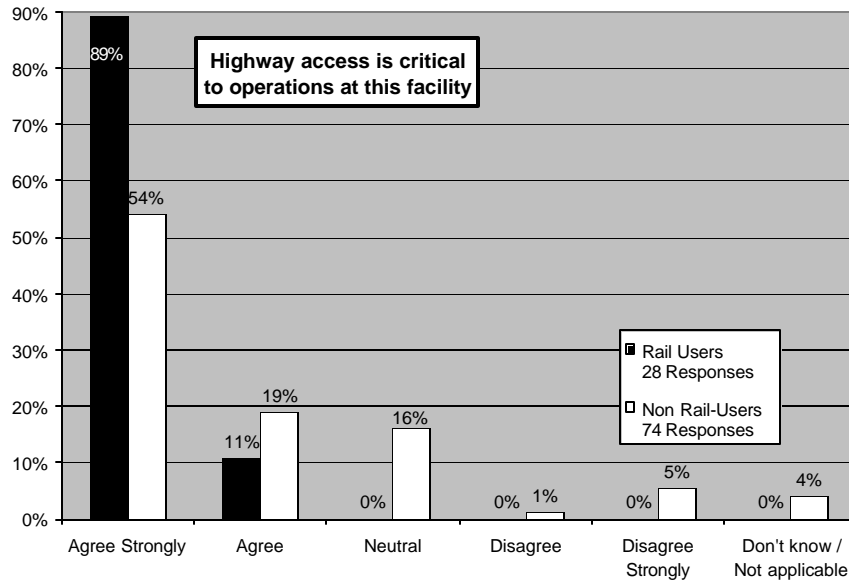


Figure A2.21

A2.3.4.3 Rail intermodal service is critical to operations at this facility

Almost half (46%) of rail users believe that intermodal service is critical to their operation. Not surprisingly only 13% of non-rail users share that opinion. Somewhat unexpectedly, 24% of rail users do not feel that rail intermodal service is critical to their business. Sixty per cent of non-rail shippers report indifference toward intermodal rail service (Figure A2.22).

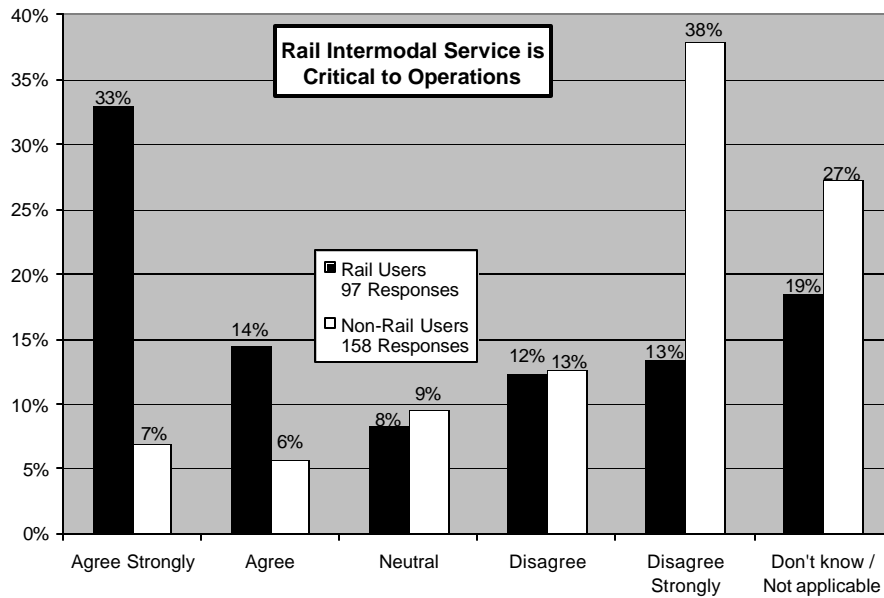


Figure A2.22

A2.3.4.4 Air freight service is critical to operations at this facility

Among rail shippers, 31% believe that air freight is critical to their operations. Non-rail shippers are more likely to rely on air freight, with 44% indicating that air freight service is very important to the business. It would appear that air package services are crucial to a large fraction of both rail and non-rail users (Figure A2.23).

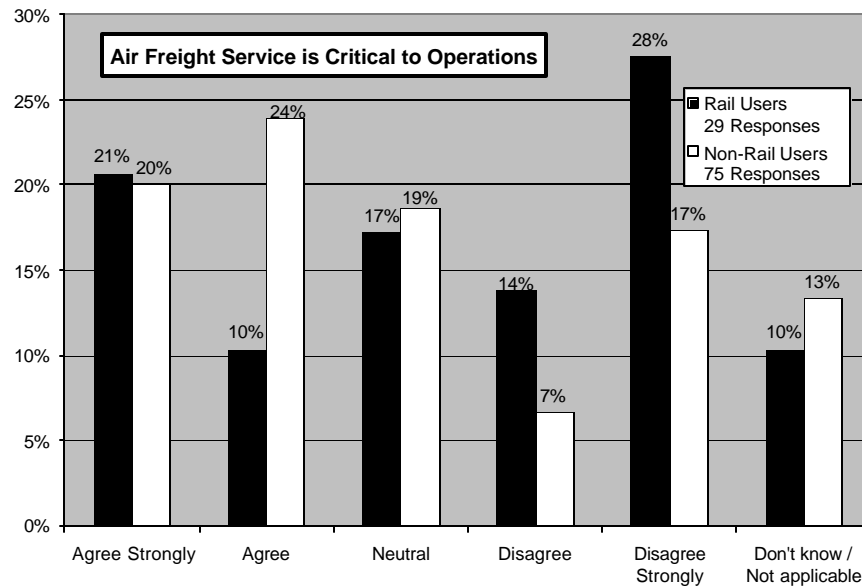


Figure A2.23

A2.3.4.5 Inland water service is critical to operations at this facility

The majority of all shippers reported that water freight service was not critical to their operations. Proportionately almost twice as many rail users as non-rail users agreed that inland water service was critical to their business. “Neutral” means neither agree nor disagree.

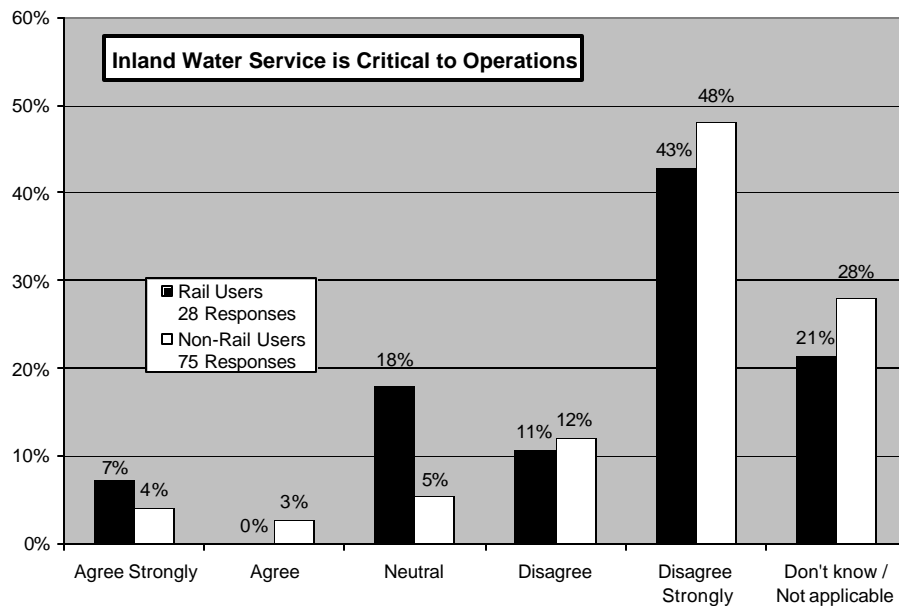


Figure A2.24

A2.3.4.6 Frequent freight service is critical to operations at this facility

Rail shippers overwhelmingly believe that frequent freight service is crucial to their business. Non-rail shippers also believe that high service frequency is important to their operations; however there was one non-rail shipper who disagreed.

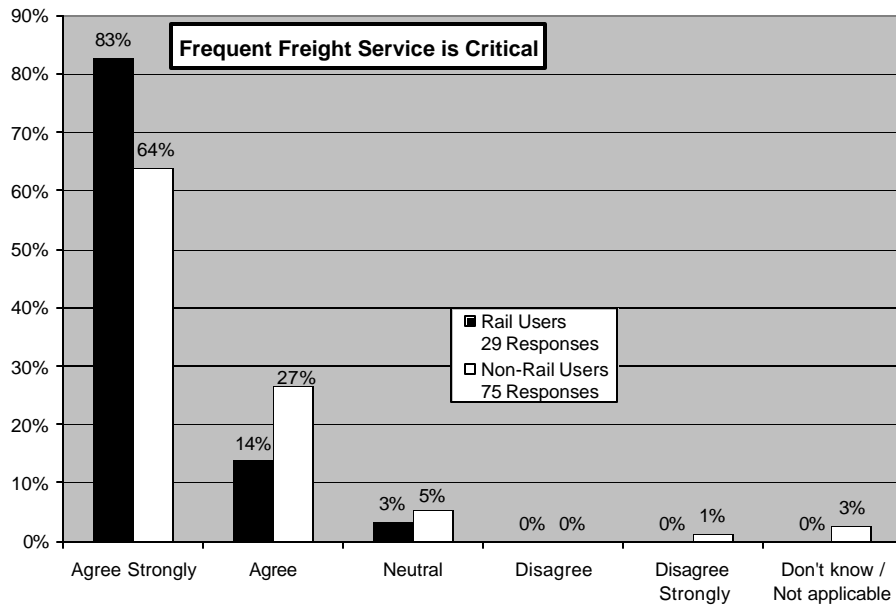


Figure A2.25

A2.3.4.7 Low freight charges are critical to operations at this facility

Rail users feel strongly that low freight charges are very important to their operations. Non-rail users are also sensitive to price, but somewhat less so.

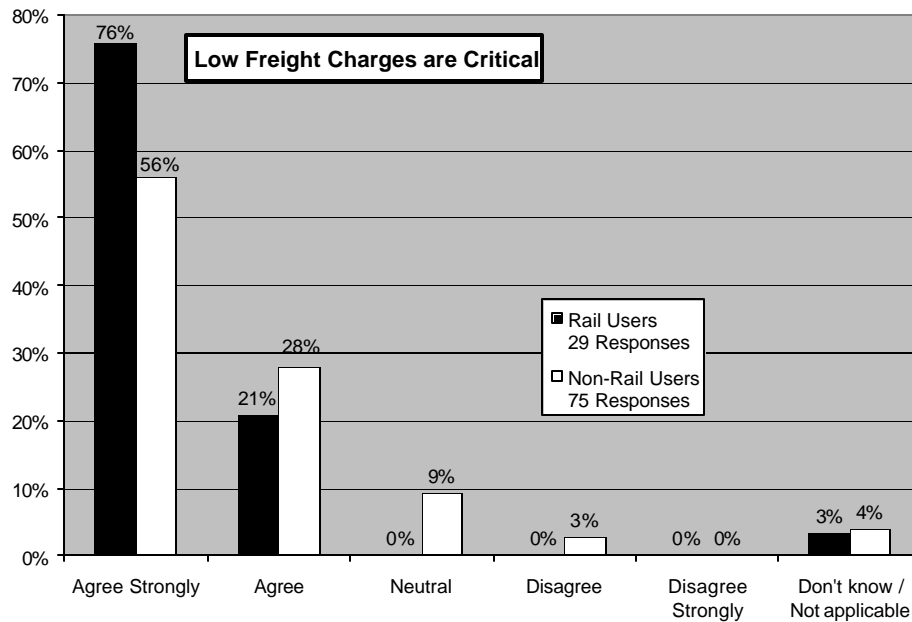


Figure A2.26

A2.3.4.8 Reliable freight service is critical to operations at this facility

Both rail users and non-rail users overwhelmingly believe that reliable service is important to operations at their facility (Figure A2.27).

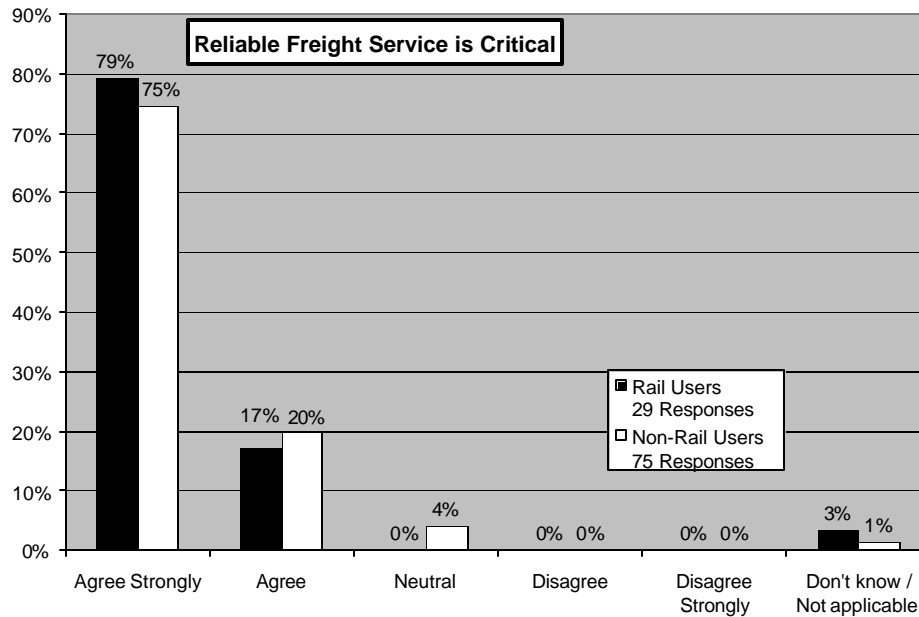


Figure A2.27

A2.3.4.9 Fast freight service is critical to operations at this facility

The mail survey asked shippers about the importance of fast freight service. Even though rail freight is often a slower method of shipping, rail users still place a high importance on the speed of shipping products. Non-rail users also believe that fast freight is important (Figure A2.28).

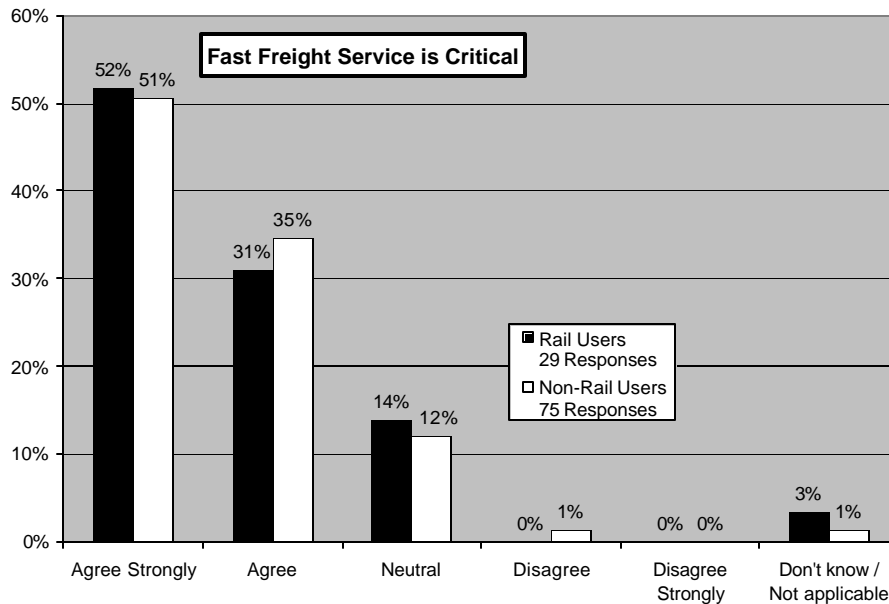


Figure A2.28

A2.3.4.10 Access to multiple rail carriers is critical to operations at this facility

Rail users and non-rail users dramatically disagree on the importance of access to multiple competitive rail carriers to their business. Among rail users, 68% believe access to multiple rail carriers is critical to business. Only 6% of non-rail users share that opinion with rail users.

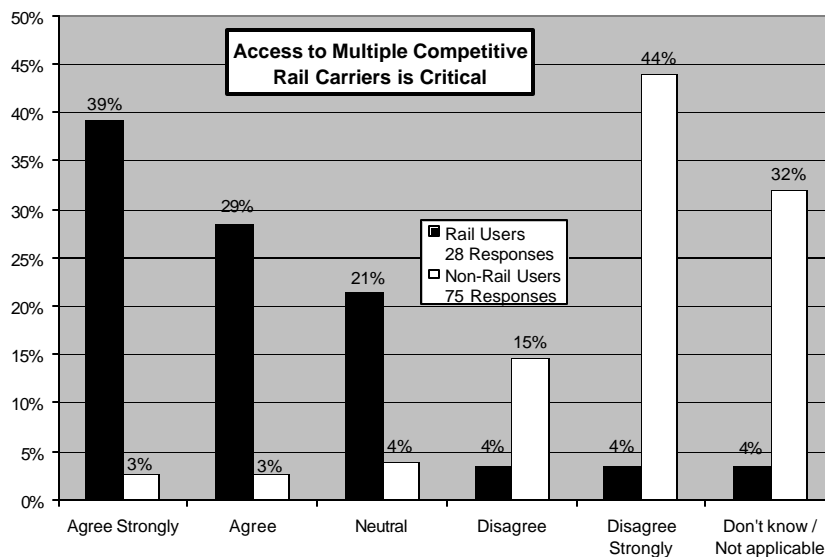


Figure A2.29

A2.3.4.11 *If high quality carload rail service were not available at this location, we would reduce operations at this facility*

Both surveys queried respondents about their need for carload rail service. Non-rail shippers do not use carload rail service, with only 2% indicating they would reduce operations if high quality service were not available. Most rail users also are not dependent on carload rail service in their operations. Only 19% felt that they would have to reduce operations at their facility if high quality carload service were not available.

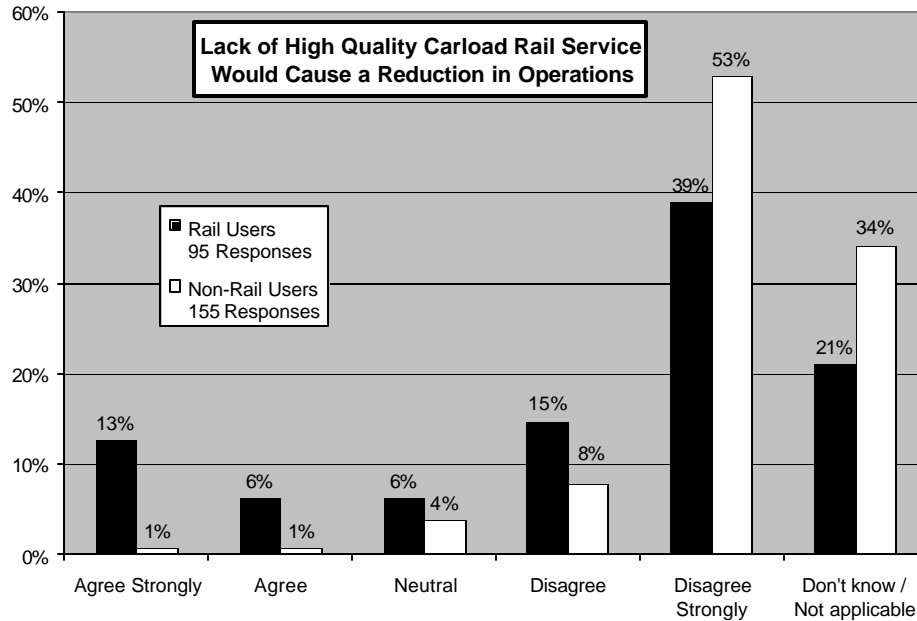


Figure A2.30

A2.3.4.12 *If high-quality intermodal COFC/TOFC rail service were not available at this location, we would reduce operations at this facility*

Shippers responding to either one of the two surveys were asked about the importance of COFC/TOFC rail service to their operation. Again, only 2% of non-rail shippers felt that they would have to reduce operations if this rail service were not available. However, 23% of rail users felt that they would have to reduce operations if high quality COFC/TOFC service were not available at their facility (Figure A2.31).

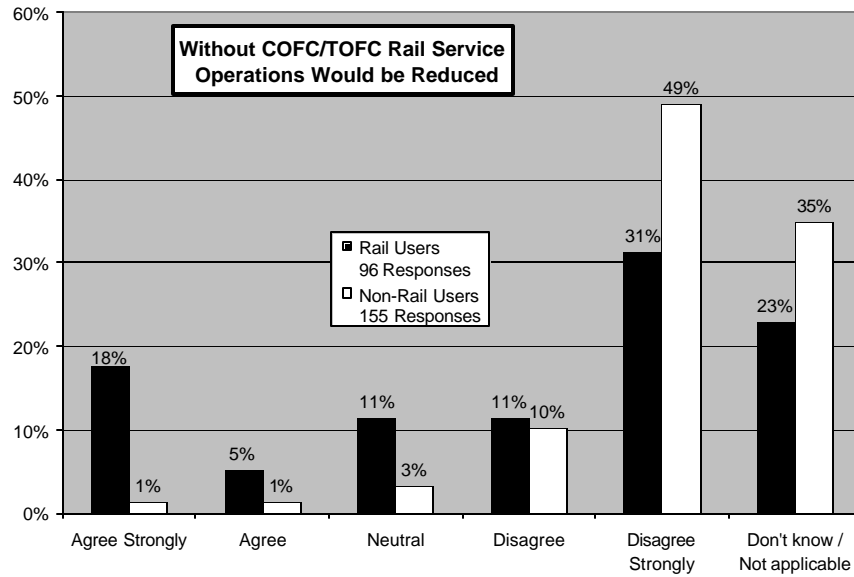


Figure A2.31

A2.3.4.13 *If highway truck access to this location was slowed or limited, we would reduce operations at this facility*

Curiously, non-rail users seemed less reliant on truck access speed than their rail user counterparts. 54% of non-rail users felt that slower truck access would cause their business to reduce operations. Among rail users 79% responded they would reduce operations if truck access was slower to their facility.

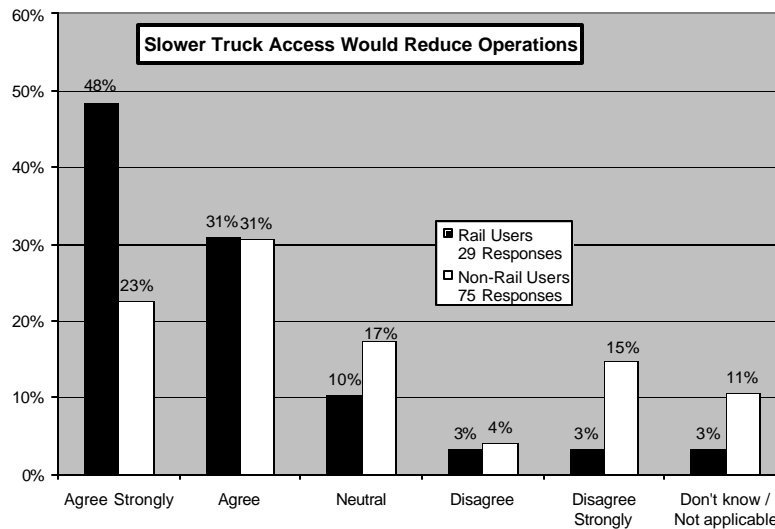


Figure A2.32

A2.3.4.14 *If rail yards near this facility were relocated, this facility would be downsized, relocated, or closed.*

Rail users and non-rail users disagree dramatically on the importance of access to rail yards for their business. Forty-two per cent of rail users agreed that a change in the locations of rail yards would negatively impact their business.

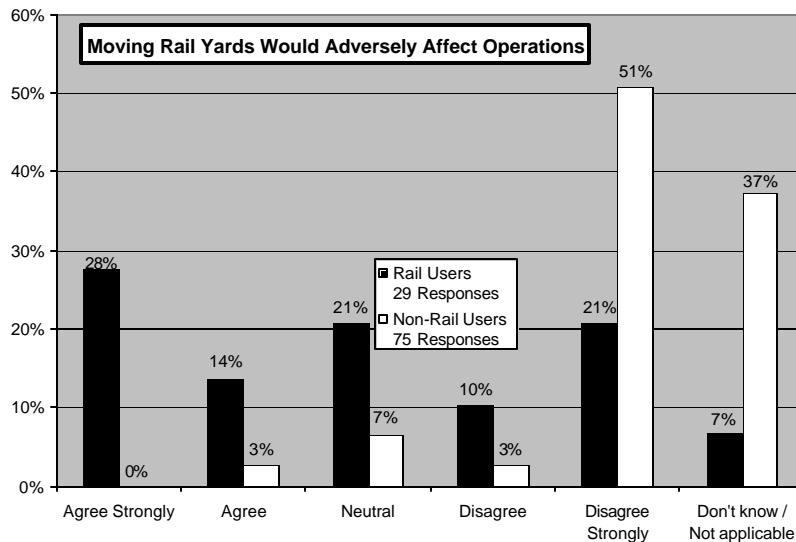


Figure A2.33

A2.3.4.15 *Direct carload rail service to this location is presently very important in my firm's choice to operate this facility at this location*

Rail users and non-rail users also dramatically disagree on the importance of direct carload service to their business. Among rail users, 46% agreed that rail carload service positively affects their operations. Only 5% of non-rail users agreed with this statement (Figure A2.34).

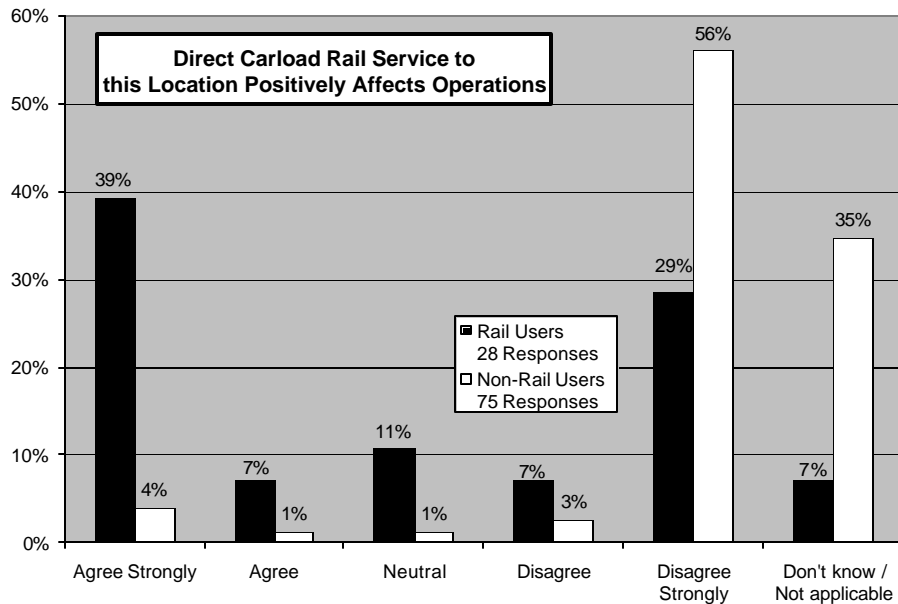


Figure A2.34

A2.3.4.16 If rail intermodal TOFC/COFC terminals were relocated more than 25 miles from your facility, what would happen?

Both surveys asked shippers whether they would be affected if COFC/TOFC terminals serving their facility were to move 25 miles away from their current location. Shippers overwhelmingly responded that they would not change their operations if COFC/TOFC terminals moved (Figure A2.35).

The Effects of Relocating COFC/TOFC Terminals

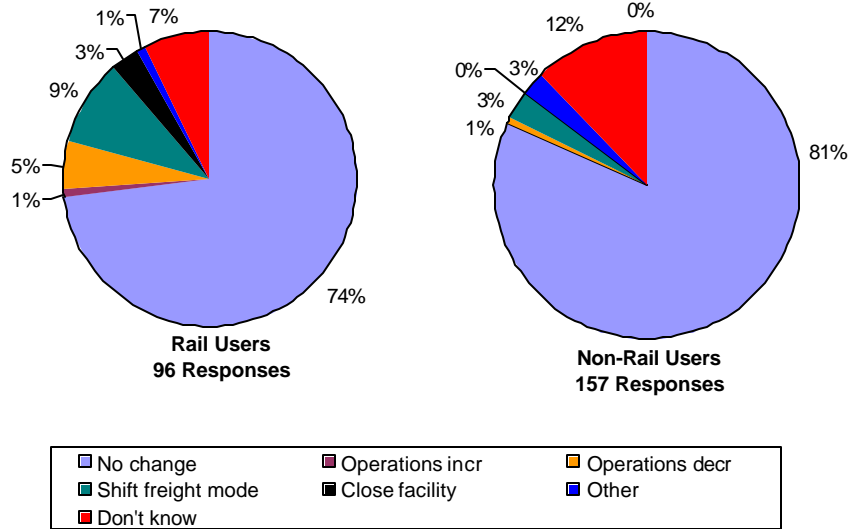


Figure A2.35

A2.3.4.17 Why would your firm respond as answered to a relocation of the rail intermodal TOFC/COFC?

Both surveys asked shippers why they responded the way they did to the question about moving COFC/TOFC terminals. Tables A2.11 and A2.12 (on following page) display the comments that were received relative to each response.

Table A2.11 Rail Users Reactions to Relocating TOFC/COFC Terminals	
Effect of Relocation	Comment
No change	Distance is not a major factor to costs
	Already are over 25 miles away
	Do not rely on these terminals
	Rely on terminals, must get goods to terminal
Operations Decrease	Would have to ship to a separate location
Freight would shift modes	Time sensitive freight would be affected
	Would have to use a different mode
Don't know	Would definitely increase costs
	Might shift to boxcars

Table A2.12 Non-Rail Users Reactions to Relocating TOFC/COFC Terminals	
Effect of Relocation	Comment
No Change	Don't use rail
	Already more than 25 miles away
	Rail does not affect the company
	Use a private carrier/truck service, not our concern
Operations Decrease	Rely on secondary traffic from these facilities
Freight would shift modes	Goods still have to move
	Currently not in proximity to these terminals. Moving them may provide the company with more options.
Other	Hire more workers
	Don't use rail
Don't know	Don't use rail, but may be affected indirectly

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Appendix 3: Reebie Associates Transearch Database

TRANSEARCH is an integrated, multimodal freight flow database constructed from direct and indirect inputs and modeling techniques. A market research data service of Reebie Associates, it is a proprietary database of freight flows that has been produced annually for two decades. It provides a market-to-market picture of freight traffic movements in the United States, for Canada/U.S., and for Mexico/U.S. TRANSEARCH services are supplied to leading carriers across the U.S. transportation industry as well as to government agencies at the federal, state, and local levels. The database is the leading commercial source of freight traffic information, with a long record of practical guidance to marketing, operating, investment and policy decisions. The current base year is 2002.

TRANSEARCH is constructed from a large number of separate, partially overlapping sources. A major component in the development of TRANSEARCH is the conversion of many different information sources into a single, common framework. Not all sources are equal. Economic modeling is used to aid in the design where data are lacking or confidential, and to check such factors as spatial patterns and logic. The domestic database is built from approximately 100 sources. To supplement these sources Reebie Associates has established an ongoing motor carrier data exchange program. The program, which was instituted to validate information about spatial patterns of truck traffic, has been an effective way to confirm traffic patterns in TRANSEARCH. Truck information received in the exchange program amounts to over 60 million shipments. Over 250 computer programs and processes are necessary to create the final product. Exports and vessel-borne imports are included. NAFTA trade is captured from foreign and federal information.

Records display annual dollar value and tonnages moved by market pair, by commodity and seven modes of transportation. Thus a record for domestic U.S. contains an origin market area, destination market area, commodity code (Standard Transportation Commodity Code - STCC or Standard Industrial Classification - SIC) and alpha commodity description, volume in each traffic lane, plus volume for for-hire truckload, for-hire less-than-truckload, private truck, rail carload, rail/truck intermodal, air and water. Market definition can be at the county, Business Economic Area (BEA), metropolitan area, state or province level. Volume can be expressed in terms of tons, vehicles, value, or VMT. TRANSEARCH also includes information on secondary traffic; freight re-handled by truck from warehouse and distribution centers.

In 1995 and again in 1997 Reebie Associates was the recipient of R&D investment from the Federal Highway Administration, to stimulate development of highly detailed freight data for state and urban planning, and for policy formation. The resulting TRANSEARCH Visual Database marries county-to-county or zip code freight traffic information with flow patterns over national highway and rail networks. The product is available with custom GIS and database software prepared on commercial platforms, to simplify access and analysis by users. The effect is an extraordinarily close-up look at industrial distribution systems, and at opportunities for investment and economic development.

Some of the recent users are:

- *Railroads:* *Burlington Northern Santa Fe, Canadian National, CSX, Norfolk Southern, Union Pacific*
- *TL Carriers:* *Schneider National, J.B. Hunt, M.S. Carriers, Trimac*
- *LTL Carriers:* *FedEx East, FedEx West, Jevic, USF Dugan, Yellow Transportation, Roadway Express*
- *States:* *California, Florida, Kentucky, Michigan, Missouri, New York, Texas, Washington, Wisconsin*
- *MPOs:* *Houston, TX; Minneapolis, MN; New York, NY; Cincinnati, OH; St. Louis MO; Savannah, GA*
- *Others:* *United Parcel Service, Federal Highway Administration, Federal Express*

Issued annually, the data can cover all modes and commodities, including empty truck movements, international shipping, and truck shipments of non-manufactured goods. Features like external trip ends, vehicle miles traveled, gross ton-miles, and forecasts can be provided, and traffic routed along major modal corridors can be displayed.

The database maps commodity flows (2, 3 and 4 digit STCC) in short tons between geographic entities (states, counties, BEAs) by mode (rail car, rail intermodal, truck load, less than truck load, private truck, air and water) for current year and forecast years. All volumes shown in tons are in short tons.

A variety of data sources are used to compile the database, ranging from government agencies to private sector industry associations and the carriers themselves, as shown in **Figure A3.1**.

The data sources vary by the different modes of transportation. The primary source for railroad data is the Carload Waybill Samples gathered from about 4% of total rail car traffic. Reebie Associates sources this data from the Surface Transportation Board. This data is compiled to provide both volumes and patterns of flow.

The primary source for waterborne commodity flows is the Waterborne Commerce Statistics compiled by the Army Corps of Engineers. This data tracks the flow of commodities along domestic lakes, rivers and canals, and is used to develop both volumes and patterns of flow.

TRANSEARCH Database Data Sources

Mode	Data Source	Agency/Organization
Rail	Carload Waybill Sample	Surface Transportation Board
Water	Waterborne Commerce Statistics	Army Corps of Engineers
Air	FAA Airport Originating Tonnages	BTS Office of Airline Information (DOT Form 41)
	Airport to Airport Flows	BTS Office of Airline Information
	Commodity Flow Survey	Bureau of Transportation Statistics
	TRANSEARCH	Reebie Associates
Truck	Carrier Data Exchange Program	Reebie Associates
	TRANSEARCH	Reebie Associates
	Annual Survey of Manufactures	U.S. Census Bureau
	Freight Locator Data Service	Reebie Associates
	General Statistics for Verification	Industry Associations
	Commodity Flow Survey	Bureau of Transportation Statistics

Figure A3.1

The air data is compiled from four major sources. The first is FAA airport originating tonnages primarily from Form 41 reports and compiled by the Office of Airline Statistics (Federal). This source establishes volume estimates at airports. The second source is airport-to-airport (ATA) flows compiled by the BTS Office of Airline information. This data is used to establish flow patterns. The third source is from Commodity Flow Survey (CFS) data, which are used to define the commodity types. The fourth source is Reebie Associates' TRANSEARCH Database, which is used to supplement the CFS data.

The trucking data process is more complex and comes from a wide variety of sources developed over the course of 20 years. However, there are four primary sources. The first is a data exchange program Reebie has with motor carriers, which is used to estimate patterns and volumes. The second source is a variety of industry associations (timber, plastics, chemical, automotive, etc.), which provide overall volume information for the respective industry sectors. The third major source is from the Annual Survey of Manufactures, primary employment and output data by industry, distributed at the state and local level. This data maps production and consumption of commodities and is used to calibrate the trucking flows. The Freight Locator data service is a database of industrial facilities and their exact location. This data supplements the previously mentioned sources to help calibrate the flows of goods between specific geographic entities.

Data Issues and Limitations – Reebie Associates recently developed a finer detail version of its TRANSEARCH database in an FHWA sponsored project known as the Intermodal Freight Visual Database (IFVDB). It breaks down origin and destination market areas to the county level and is compatible with GIS applications. It has been incorporated into TRANSEARCH, with its most current base year as 2002. This database is the primary source for the City of Chicago's Economic Impact of Rail Analysis. For this study, TRANSEARCH data were identified at varying levels of detail, including county, state, and BEA regions.

It is generally understood that large databases of this kind are never perfect, and TRANSEARCH is not an exception to the rule. It is, however, the best available source of its kind in the cognizance of the study team. TRANSEARCH is in use by virtually all major U.S. railroads and by of motor carrier companies and several container shipping lines and air cargo carriers. State and federal planning agencies, as well as port authorities, equipment suppliers, investment banks and judicial and regulatory bodies also use it.

TRANSEARCH reports provide a broad picture of freight traffic movements in the United States. Understanding the nature of particular sources when using TRANSEARCH data is important to correctly interpret the information. The following guidelines should be helpful in gaining that understanding.

Freight rehandled by truck from warehouse and distribution centers is identified as STCC 5010 and referred to as secondary traffic at a 4-digit STCC level or STCC50 at a 2-digit STCC level. Many of these types of facilities handle a wide range of different types of commodities, and outbound shipments may also be of mixed consists. For example, shipments from a supermarket chain distribution center are likely to contain a broad range of package food products and other consumer items.

The truck portion of truck/rail intermodal activity is shown as STCC 5020 at a 4-digit STCC level or STCC50 at a 2-digit STCC level. This activity includes two segments: the truck shipment, by trailer or container, from true origin to the intermodal railhead, and from the intermodal railhead to final destination. The Rail Intermodal mode reveals the origin and destination points on the rail system, not the ultimate origin and destination.

Stcc 5030 is used to identify the truck drayage of air freight traffic 5020 at a 4-digit STCC level or STCC50 at a 2-digit STCC level. Both the true origin to airport, and airport to final destination are included. Origins and destination for movements classified in the air mode are airports. Volumes that are transloaded from one aircraft to another are not shown at the transloading point.

Large portions of today's intermodal (TOFC or COFC) traffic are reported in non-commodity categories. Commercial arrangements in the railroad industry have fostered the use of "third parties" such as consolidators and forwarders. Such traffic typically is labeled as "Freight Forwarder Traffic", "FAK" (Freight: All Kinds), or "Miscellaneous Mixed Shipments". The specific commodities moving under these arrangements are not identified in the public use data sources.

Shipments made up of several commodities will be credited to the dominant commodity. This occasionally occurs in the commodity identification of rail shipments. In these instances, the tonnage attributed to the predominant commodity is greater than it should be, and the other commodities in the shipment are understated.

To provide maximum product identification, commodities are shown at the greatest level of STCC detail for each code. Truck data is available and shown at the 4-digit level for the manufacturing sector. Rail data, however, can be shown at 5-digits. Because of the desire to include the greatest amount of detail possible, commodities in a traffic lane may be identified at different levels of detail for each mode. When this occurs, tonnages shown at the more detailed levels should be combined with those displayed at the more aggregate levels to gain a complete picture of modal share for the commodity. All freight traffic flow information in the study is expressed at the 4-digit STCC commodity code level, or consolidated to a 2-digit, or no commodity detail level.

Tonnage data in each cell should be used as an indicator of relative value—since many of the sources for traffic flow information use sample data. Consequently, the more specific the definition of a particular flow, the greater its sampling variability. The more aggregated the definition of the Geography/Mode/Commodity combination, the more reliable the results.

State-to-state movements of “primary” freight at the 2-digit STCC (or sic) level provides the best picture of primary freight moves in the data base. Analysts and planners, however, want and need more disaggregate pictures of the flow activity. Not all of the data used in TRANSEARCH comes into the process beneath the state level or with more than 2-digit commodity/industry classification.

Where the data is available at a disaggregate level, it is used directly in the TRANSEARCH development. The remaining, more aggregate volumes undergo a rigorous process of disaggregation. Inherent to that process is the matter of proportionality. Origins of traffic are assigned on the basis of the location of employment and at destination in terms of the consumption of those commodities using the input/output table of the U.S. economy by industry and/or population. Typically, this process begins with the state-to-state flow patterns by commodity. The process implies that each portion of the state’s freight in both the origination and destination of the traffic is proportional to its demographics and not specific to market conditions or business arrangements.

TRANSEARCH Traffic Flow Patterns Are Based On Domestic Business Activity And Population. In fact, portions of the traffic are influenced by export activity at transborder points and at ports, both air and water. Assignment of international traffic to these “demand” or “consumption” points is difficult from the existing records. These records, therefore, are not explicitly identified as such in the standard TRANSEARCH processing.

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Appendix 4: Participating Organizations in the Motor Carrier, Rail Carrier and Agency Interviews

A4.1 Motor carrier interview participants

- F.A.R., a RoadLink Company
- QS of Illinois; a Hub Group Company
- Triton Transportation
- UPS
- Cushing Transportation
- J.B. Hunt
- Jack Freeman Trucking
- Pacella Trucking
- Miken Cartage
- Schneider National, including Schneider OptiModal and Schneider TruckRail Divisions

A4.2 Freight railroads

- CSX Transportation, CSX Intermodal
- Norfolk Southern Corporation
- Burlington Northern Santa-Fe Railway
- Union Pacific Corporation
- Canadian National Railway
- Canadian Pacific Corporation
- Belt Railway of Chicago
- Elgin, Joliet and Eastern Railway Company
- Rail America Corporation
- Chicago South Shore and South Bend Railroad

A4.3 Passenger railroads

- Metra

A4.4 Other organizations

- Trailer Train Corporation (TTX)
- Illinois Department of Transportation
- Chicago Area Transportation Study (C.A.T.S.)
- Chicago Transportation Coordinating Office (C.T.C.O.)
- Northeastern Illinois Planning Commission (N.I.P.C.)
- Northwestern University Transportation Center

Appendix 5: Assessment of Rail Yard Re-Development Potentials

A5.1 Objective & methodology

If activity in existing inner city rail yards was relocated to the fringes of the metro area or consolidated to larger sites in other locations, acres of inner city land would be freed for possible redevelopment. Based on the four scenarios studied by the project team for reconfiguring Chicago’s rail freight movements, estimates of annual acreage changes through 2020 are as follows:

City	Intermodal-to-Rim	Rationalization	Minimal Rail in City	Bypass City
Railroad Acres Added/(Lost)*	(906)	(400)	(1,850)	(1,320)

* Versus Base Case Analysis

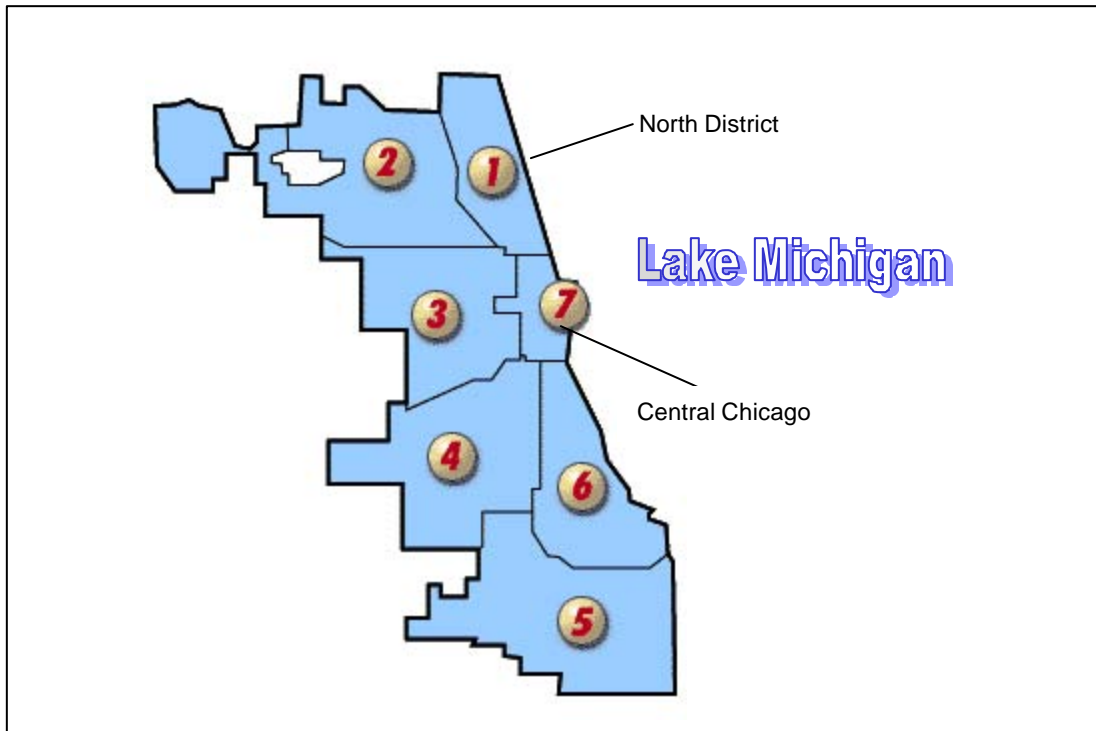
Table A5. 1

In this section, the potential value of the city’s rail yards for redevelopment for alternative uses is assessed. Observations are based on a sample of twelve typical rail yards with a combined total of over 800 acres on the city’s west and south sides. A detailed list of these yards appears in **Table A5.2**. In assessing the highest and best re-uses for these sites a number of factors were considered, including:

- Site size and configuration;
- Access, by local street, highway, and transit;
- Compatibility with surrounding uses;
- Development trends within the corridors where rail yards are located.

Based on these observations, some general conclusions can be drawn regarding the values of Chicago’s urban rail yards for alternative uses. Chicago’s rail yards are concentrated in five main corridors or planning districts, which are shown on **Figure A5.1**:

- Northwest (Planning District 2);
- West (Planning District 3);
- Southwest (Planning District 4);
- South (Planning District 6)
- Far South (Planning District 5).



Source: City of Chicago Dept. of Planning & Development website

Figure A5.1
Chicago's Planning District Map

Observations regarding the highest and best uses for these sites are based on:

- Site visits
- Consultations with neighborhood and industrial city planners, neighborhood groups, and economic development organizations active in each corridor.
- Interviews with real estate brokers and developers actively buying and selling brownfield sites for the recommended re-uses.

Our findings are discussed below by corridor. Following the discussion of trends and prospects within each sub area, some general conclusions are drawn regarding the potential uses and values of the city's large portfolio of rail yards.. The rail yards sampled are not identified by name in order to avoid expectations of sale or redevelopment of any specific property. This discussion is hypothetical and has no basis for intentioned action by either the city or by the rail companies. It is intended merely to illustrate general points and draw workable conclusions about the redevelopment potential of inner city rail yards.

Detailed data for each of the individual sites are presented in **Table A5.2**, which comments on the ownership, size, activity level, location, and access characteristics of each site. An

assessment of the surrounding neighborhood is provided and the strengths and weaknesses of each individual site are identified. Based on these factors, preliminary conclusions regarding the highest and best use for each site are drawn. Sources of information for each site are also identified in the Table. **Table A5.3** summarizes these findings by presenting the best re-use recommended for each site and presents estimates of the market values of these properties for recommended uses.

Our recommendations for the highest and best uses of the sites are presented in Table A5.4 by Planning District. Estimated values for recommended re-uses are presented along with the proportion of acreage recommended for each alternative re-use. Most of the values presented in the table have been discounted for one or more of the following factors:

- Low visibility;
- Poor configuration;
- The need for investment in access, circulation, and other infrastructure to bring former rail sites up to current market standards.

Table A5.4 also presents data regarding the values of the sites in their present uses as rail yards. Values are significantly less than they would be for industrial redevelopment.

These data are intended to provide a baseline for estimating the value of the entire portfolio of urban rail yards for alternative uses. They also provide a basis for comparing potential market values with their present values in rail yard use.

The corridor-level findings are discussed in the pages following Tables A5.2 through A5.4.

APPENDIX 5 – ASSESSMENT OF RAIL YARD REDEVELOPMENT POTENTIALS

**Table A5. 2 – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM X	Owner	Size (Ac)	Status/ Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Galewood	No	Historic Homes Inc. (developer) CP has a two-year lease.	68 but 18 acres sold to Metra, now 50	Container Storage	8 miles northwest of Loop Northwest Industrial Corridor Pl. Dist 2, Northwest	I-90/94: 4 miles to North I-290: 4 miles south Walk to commuter rail	<p><u>Surrounding Uses:</u> In the Cragin neighborhood, a good residential community popular with first time homebuyers looking for affordable housing in a central, but lower density area. Stable, established middle income neighborhood. Single-family homes dominate to the west of the site, while two-story multi-family are more common to the east. Some industrial and commercial uses are to the North. Access is poor, but the planned reconstruction of the Central Ave bridge will improve access & visibility from Central Ave.</p> <p><u>Strengths:</u> Good residential area, strong demand, affordable prices. Good commuter rail access.</p> <p><u>Weaknesses:</u> Not near expressways, long narrow site, 150 yards wide. Direct access to the site is poor but will be improved by the reconstruction of the Central Ave bridge.</p> <p><u>Best Reuse: Residential</u> – affordable starter homes. But the site is now being leased in two parts. The Central Ave end is being marketed for retail (\$15 sf) while the N. Laramie Ave end is being sold for industrial (\$7sf).</p> <p><u>Sources:</u> John Camillado, Property owner leasing 2.5 acre site in area, 773-849-4266 x208; Paine Wetzal, 773-414-9300. Jim Ford, Centerpoint Properties, 630-586-8177</p> <p>Planners: Bill Trumbull 744-4171; Mary Bonome 744-0765</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IMX	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Cragin	No	UP	19	Inactive	7 miles northwest of Loop, Northwest Industrial Corridor; Planning District 3 West	I-90/94: 4 miles North I-290: 3 miles south 1 mile to commuter rail	<p><u>Surrounding Uses:</u> Post-war industrial and inter-war two and three story multi-family houses in West Humbolt, a lower to middle income neighborhood. Northwest Center for Industry (City light modern industrial park) is to the South.</p> <p><u>Strengths:</u> Established industrial area.</p> <p><u>Weaknesses:</u> Small, landlocked site. Poor residential environment, distant from highways and transit.</p> <p><u>Best Reuse:</u> Low profile development for yard-based industries / Affordable housing project.</p> <p><u>Sources:</u> John Camillado, Property owner leasing 2.5 acre site in area, 773-849-4266 x208; Paine Wetzel, 773-414-9300. Jim Ford, Centerpoint Properties, 630-586-8177</p> <p><u>Planners:</u> Bill Trumbull 744-4171; Mary Bonome 744-0765</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IMX	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Global I	Yes	UP	103	Busy / 1000 Trucks per day	3.5 mi west of Loop Western-Ogden Industrial Corridor Pl. Dist. 3 West	I-290: 1 mi. I-90/94: 2 mi. I-55: 2 mi. Blue Line: 0.5 mi.	<p><u>Surrounding Uses:</u> Older industrial buildings immediately surround the site. The University of Illinois Medical District, an agglomeration of 5 hospitals, is developing 20 acres for a biotech park to the North; the California Business Park is being developed to the North; other expanding institutions to the North are the new Juvenile Courts Center. To the west, a significant amount of residential development is occurring near Douglas Park. Three bedroom townhouses are priced at up to \$200,000. To the east is a gentrifying, arts-oriented community and the ABLA (Addams, Brooks, Loomis & Abbott Developments) public housing complex which is undergoing major renovation. Pilsen, a strong Mexican-American neighborhood with supporting cultural institutions, lies to the east and the south.</p> <p><u>Strengths:</u> Strong, multi-use redevelopment trends in surrounding areas. Proximity to Medical Institutions, Three Interstates within two miles. Two branches of the Blue Line within 0.5 mile for workforce access. Central location.</p> <p><u>Weaknesses:</u> High vacancy and blight in industrial land and buildings to the North. Lack of direct highway access to the site. No street frontage (only driveway).</p> <p><u>Best Reuse:</u> Industrial/distribution.</p> <p><u>Sources:</u> Jeff Hayman CBK Realty; 847-928-6016; Matt Rogatz, Paine Wetzel; Centerpoint Properties, Ed Harrington; Richard Daley, Darwin Realty 630-586-8000. Townhouses at Lexington & Campbell, New West Realty 312-829-2100 ext 126 Frank Jops. Jim Ford, Centerpoint Properties, 630-586-8177. Planners: Nancy Kiernan, 744-5799; Mary Bonome 744-0765.</p>

APPENDIX 5 – ASSESSMENT OF RAIL YARD REDEVELOPMENT POTENTIALS

Global 1 (Cont'd)	Yes	BNSF	59	Less Active/ 300 AADT	3.5 mi west of Loop Western- Ogden Industrial Corridor Pl. Dist. 3 West	I-290: 1.5 mi. I-90/94: 2 mi. I-55: 1.5 mi. Blue Line: 0.5 mi.	This yard is next door to Global One. Same information applies as above entry.
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**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
<p>Canal St.</p> <p>(Total 80 acres, 40 are leased for Comisky Park U.S. Cellular Field)</p>	<p>Yes</p>	<p>UP</p>	<p>40 in rail use</p>	<p>Busy/ 400-500 trucks per day</p>	<p>3 mi southwest of Loop</p> <p>Pl. Dist. 4 Southwest</p>	<p>Direct access to 90/94. Near junction of 90/94 and 55</p> <p>Red Line: 0.5 miles</p> <p>Blue Line: 0.25 mi</p>	<p><u>Surrounding Uses:</u> Chinatown is expanding from the North into this area with new housing and commercial development. U.S. Cellular Field, home of the White Sox, is to the south in Bridgeport, a well-established middle income Irish neighborhood.</p> <p><u>Strengths:</u> At the intersection of north-south and east-west Interstate highways. Strong demand for housing in both Bridgeport and Chinatown, immediately north of 31st Street. Good transit access.</p> <p><u>Weaknesses:</u> Elevated site, on an embankment. Small, narrow, little street frontage limits commercial potential.</p> <p><u>Best Reuse:</u> 60% multi-family housing for Chinatown overspill, 40% Chinatown-related retail/commercial.</p> <p><u>Sources:</u> Mary Thompson, Kriti Realtors 773-292-5231; Jeff Hayman CBK Realtors, 847-928-6016; Jim Ford, Centerpoint Properties, 630-586-8177.</p> <p>Planners: Bill Trumbull 744-4171; Mary Bonome 744-0765; John Malloy 312-744-4190.</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IMX	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
IMX	Yes	UP	113	Active/ 433 AADT	6 mi. southwest of Loop Stevenson Industrial Corridor PL Dist. 4, Southwest	Direct link onto I-55 Orange Line: 0.5 miles	<p><u>Surrounding Uses:</u> I-55 on the south. Ship Canal is on the north. The northwestern part of the site has been released for industrial development. The Chicago Sun Times new waterfront plant is here, as is a new spec warehousing development with produce and other local distribution activities.</p> <p><u>Strengths:</u> Direct site access to I-55, waterfront location, good local access on S. Archer radial arterial. Developing light industrial and distribution area. Visibility from I-55. Walk to subway.</p> <p><u>Weaknesses:</u> No street access (31st St. is elevated – only highway access).</p> <p><u>Best Reuse:</u> Industrial/ Distribution. 275K sqf, 50K units in new warehouse complex</p> <p><u>Sources:</u> , Jim Thomson, HSA, 312-683-7260 www.hsa.com. Jeff Hayden, CBK Realty; Matt Rogatz, Paine Weber; Jim Ford, Centerpoint Properties, 630-586-8177.</p> <p>Planners: Bill Trumbull 744-4171; Mary Bonome, 744-0765</p>

APPENDIX 5 – ASSESSMENT OF RAIL YARD REDEVELOPMENT POTENTIALS

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Corwith JB Hunt has exclusive use of part of this.	Yes	BNSF	400	Very Active/ 2000 AADT	7 miles southwest of Loop Stevenson Industrial Corridor PI Dist 4, Southwest	1:55: Direct site access Orange Line: 1 to 2 miles	<p><u>Surrounding Uses:</u> Industrial and auto-related commercial.</p> <p>Lower middle income Elsdon and Brighton Park lie to the east and west.</p> <p><u>Strengths:</u> Large site; Direct highway access from north side of site; good local access from Archer Ave. radial route.</p> <p><u>Weaknesses:</u> Landlocked, no street frontage.</p> <p><u>Best Reuse:</u> Light industrial, distribution.</p> <p><u>Sources:</u> Jeff Haynam, CBK 847-928-6016; Jim Ford, Centerpoint Properties, 630-586-8177. Planners: John Malloy, Planner for Back of the Yards district, 312-744-4190; Ken Panaralla 744-9615</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
47 th St	Yes	NS	85 acres	Active / 825 AADT/ intensive container storage	6 miles south of loop Stockyards Industrial Corridor PI Dist 4, Southwest	I-90/94: Direct Link Red Line: 200 yards	<p><u>Surrounding Uses:</u> Near “Back of the Yards” industrial area. Near Stockyards light industrial park. Food processing industries are clustered in this district. This yard has served as a buffer between the tight-knit Irish Canaryville neighborhood and the lower-income Fuller Park neighborhood.</p> <p><u>Strengths:</u> Excellent interstate and subway access. In long-established industrial area which is experiencing rejuvenation. Good frontage onto 51st Street if viaduct is taken down.</p> <p><u>Weaknesses:</u> In an area of high vacancy and tax delinquency. Poor residential demand environment. New housing here has failed. Viaduct site.</p> <p><u>Best Reuse:</u> Industrial or distribution.</p> <p><u>Source:</u> Jeff Haynam, CBK Realtors; Matt Rogatz, Paine & Wetzels; Jim Ford, Centerpoint Properties, 630-586-8177.</p> <p><u>Planners:</u> John Malloy, Planner for Back of the Yards district, 312-744-4190; Irene Espinoza.</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Park Manor	Yes	NS (leased to CSX)	38	Active	8 miles south of Loop PI Dist 6, South Not in Industrial Corridor	I-90/94 junction: 0.3 mi Red Line: 0.25 to 0.5 mi	<p><u>Surrounding Uses:</u> Low end commercial (e.g., auto auction site); in Woodlawn area, a low-income neighborhood. Retail warehouses are clustered around here.</p> <p><u>Strengths:</u> Excellent access at junction of 90/94. Short walk to subway. In the path of neighborhood revitalization.</p> <p><u>Weaknesses:</u> Long, narrow, diagonal site. Little street frontage. In undesirable neighborhood at present.</p> <p><u>Best Reuse:</u> Distribution, light industry.</p> <p><u>Sources:</u> Ed Wabick, Paine Wetzel; S&G Construction Group, St. Edmund's Manor Rehab, at Indiana & 60th 773-631-8300. Jim Ford, Centerpoint Properties, 630-586-8177</p> <p><u>Planner:</u> Cheryl Cook 744-7289</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Commercial / So. Chicago	No	BRC	60	Less Active	8 miles south of Loop Burnside Industrial Corridor PI Dist. 6, South	I-90: 2 mi north I-94: 1.5 mi. south Commuter Rail: 1 mile west	<p><u>Surrounding Uses:</u> In South Chicago neighborhood, behind 95th St., which is largely commercial. Surplus of vacant land and housing. A new strip shopping center has been built at 95th St. and Stony Island Ave. Some back offices have been built nearby. Market rate housing has been unsuccessful here.</p> <p><u>Strengths:</u> Burnside Industrial Corridor is an emerging back office location.</p> <p><u>Weaknesses:</u> Long, narrow, landlocked site; elevated on embankment. No frontage onto 95st street. Too narrow for commercial or industrial development. Not a good residential location due to the existing surplus of residential stock that results in high vacancy in the area.</p> <p><u>Best Reuse:</u> Open space, recreational, bike path.</p> <p><u>Sources:</u> Ed Wabick, Paine Wetzels; Jorge Perez, Calumet Area Industrial Commission, 773-731-8755 x23; Jim Ford, Centerpoint Properties, 630-586-8177.</p> <p><u>Planners:</u> Marilyn Engwall 744-2214; Cheryl Cook 744-7289; Dan Clayber 312-744-6435.</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Triple Crown /Calumet A.k.a. Calumet Dedicated to Triple Crown Shipping	NS	Yes	32	Less Active/ 104 AADT	10 mi south of Loop Burnside Industrial Corridor PD 5, Far South	I-90: 3.5 mi east I-94: 1.5 mi west Commuter Rail: 103 rd St, 1.8 miles west	<p><u>Surrounding Uses:</u> In South Deering Industrial Area, where heavy industrial uses dominate, which is within the Pullman Industrial Corridor. Many port-related industries surround Lake Calumet, to the southwest. The Port Authority golf course to the west is cut off by yard-intensive materials industries. To the north is Stony Island, an established middle-income African American neighborhood, with 1930's and 40's bungalows. The proposed redevelopment of the Wisconsin Steel site is just west of the site, on the other side of Torrence Drive.</p> <p><u>Strengths:</u> Proximity to the Golf Course and to Lake Calumet. Isolated from residential areas.</p> <p><u>Weaknesses:</u> Possible wetland issues due to proximity to Lake Calumet and river. Heavy industrial surroundings. Indirect highway links. Little street frontage.</p> <p><u>Best Reuse:</u> Yard-based heavy industrial and distribution operations needing outdoor storage space.</p> <p><u>Sources:</u> Ed Wabick, Paine Wetzal; John Zaborsky, USX Realty; Alice Hazell, Stony Island Neighborhood Association; Jorge Perez, Calumet Area Industrial Commission, Bob Saxton, NS trainmaster on site 773-933-8054; Tony Aiello, Port Authority. Centerpoint re. Chicago; Mfg. Campus (near Ford site), Ed Harrington, 630-346-8250; Jim Ford, Centerpoint Properties, 630-586-8177</p> <p><u>Planners:</u> Marilyn Engwall 744-2214; Juanita Charlton 744-0632.</p>

**Table A5. 2 (Cont'd) – Summary of Findings
Sample of Rail Yard Sites Viewed on Site Tour**

Yard	IM	Owner	Size (Ac)	Status / Daily Truck Vol. (AADT: 2 way)	Location	Highway & Transit Access	Surrounding Uses, Potential Reuses, & Contacts
Kensington	No	Disputed between CSX & NS	Approx. 38	Inactive, Vacant, Overgrown	12 mi. south of Loop Pullman Industrial Corridor PD 5, Far South	I-57: 2.5 mi west I-94: 3 mi. north Commuter Rail: Pullman Historical Station, 1 mi north	<p><u>Surrounding Uses:</u> Bounded by the 115th St and 125 St. Yard, the Metropolitan Water Reclamation District (city sludge treatment plant), and yard-based materials plant. I-94. The Pullman Historical Community lies to the north. The Altgeld Gardens public housing project is south of the site. The West Pullman neighborhood, with more CHA housing abuts the site to the west, where some new, moderate-income housing complexes are being developed by a cooperative. The Lake Calumet Industrial area, serving mainly heavy industries, is to the east. The Ford Plant, on the east side of the Calumet River, is expanding. A new industrial park, whose targets are Ford's suppliers, is being developed across the river, near 126th St.</p> <p><u>Weaknesses:</u> Difficult access, poor circulation, abuts low -income residential district.</p> <p><u>Strengths:</u> Low visibility. Site isolated from residential areas.</p> <p><u>Best Reuse:</u> Good site for heavy and yard-based industry but this would encroach on the abutting neighborhood. A better use would be a neighborhood park or open space serving as a buffer zone between the West Pullman neighborhood and the sludge treatment plant and the other heavy industrial uses to the east.</p> <p><u>Contacts:</u> Ed Wabick, Paine Wetzel; John Zaborsky, USX Realty; Alice Hazell, Stony Island Neighborhood Association; Jorge Perez, Calumet Area Industrial Commission; Jim Ford, Centerpoint Properties, 630-586-8177.</p> <p><u>Planners:</u> Marilyn Engwall 744-2214; Juanita Charlton 744-0632.</p>

Table A5.3: Estimated Value* of Selected Rail Yards for Highest & Best Uses

District	Yard Name	Site Characteristics		Estimated Values						Comments	Estimated Value
		Best Reuse	Size (Ac)	Industrial		Retail		Residential			
				Sq. Ft.	Acre	Sq. Ft.	Acre	Sq. Ft.	Acre		
Northwest:	Galewood	50% Light Ind.	25	\$4 - \$6	\$217,800	-	-	-	-	Asking \$7/ft	\$5,445,000
		50% Retail	25	-	-	\$10	\$435,600	-	-	Asking \$15/ft.	\$10,890,000
	Total Galewood		50	-	-	-	-	-	-	(Now For Sale)	\$16,335,000
West:	Cragin	Light Industrial	20	\$3 - \$5	\$174,240	-	-	-	-	Appraisal-based	\$3,484,800
	Global I	Light Industrial	103	\$3 - \$4	\$152,460	-	-	-	-	Central	\$15,703,380
	Western / BNSF	Retail Warehouse	59	-	-	\$5 - \$6	\$239,580	-	-	Not prime	\$14,135,220
		Outlet	-	-	-	-	-	-	-		
Southwest:	Canal St.	60% Residential	24	-	-	-	-	\$8 - \$10	\$392,040	Discounted for viaduct	\$9,408,960
		40% Retail	16	-	-	\$10 - \$14	\$522,720	-	-	Discounted for viaduct	\$8,363,520
	Total Canal Street		40	-	-	-	-	-	-		\$17,772,480

Table A5.3 (Cont'd): Estimated Value* of Selected Rail yards for Highest & Best Uses

District	Yard Name	Site Characteristics		Estimated Values						Comments	Estimated Value
		Best Reuse	Size (Ac)	Industrial		Retail		Residential			
				Sq. Ft.	Acre	Sq. Ft.	Acre	Sq. Ft.	Acre		
Southwest: (Cont'd)	IMX	Ind./ Distribution	113	\$5 - \$6	\$239,580	-	-	-	-	Only highway access, central	\$27,072,540
	Corwith	Ind./ Distribution	400	\$2 - \$3	\$108,900	-	-	-	-	Good Access	\$43,560,000
	47th St.	Ind./ Distribution	85	\$3 - \$4	\$152,460	-	-	-	-	Discounted for viaduct	\$12,959,100
South:	Park Manor	Ind. / Distribution	38	\$3 - \$4	\$152,460	-	-	-	-	Great access	\$5,793,480
	Commercial/	Open Space	60	-	-	-	-	-	-	Bad shape; Narrow viaduct	\$1
	So. Chicago	Bike/Blade Park		-	-	-	-	-	-	Rails to Trails	Unknown
Far South:	Triple Crown	Heavy Industry or Nature Preserve	32	\$1 - \$1.50	\$54,450	-	-	-	-	Possible Wetlands Issues	\$1,742,400
	Kensington	Neighborhood Park or Buffer Zone	38	-	-	-	-	-	-	Inaccessible – Give to City	\$1

Total acres: 1,038

* Values are for cleared sites with basic environmental treatment but without other site improvements

Table A5.4
Market Values of Selected Rail Yards by City Planning District for Highest & Best Uses
Compared with Values for Existing Rail Use

(Values are for raw, cleared, environmentally treated sites without other site improvements)

District	Factors	Industrial	Retail	Residential	Public Park	Value for Existing Rail Use
West						
	Percent of Acreage	63%	37%	-	-	100%
	Estimated Value per Sq. Ft.	\$3.50 - \$5.50	\$6.00 - \$10.00	-	-	\$2.50 - \$3.50
	Estimated Value per Acre	\$150,000 - \$240,000	\$240,000 - \$440,000	-	-	110,000 - 150,000
Southwest						
	Percent of Acreage	94%	2%	4%	-	100%
	Estimated Value per Sq. Ft.	\$2.50 - \$5.50	\$10.00 - \$14.00	\$8.00 - \$10.00	-	\$2.00 - \$3.00
	Estimated Value per Acre	\$110,000 - \$240,000	435,000 - 600,000	\$375,000 - \$400,000	-	85,000- 110,000
South						
	Percent of Acreage	40%	-	-	60%	100%
	Estimated Value per Sq. Ft.	\$3.00 - \$4.00	-	-	-	\$1.00 - \$1.50
	Estimated Value per Acre	\$130,00 - \$175,000	-	-	Donation	45,000 - 65,000
Far South						
	Percent of Acreage	45%	-	-	55%	35,000 - 45,000
	Estimated Value per Sq. Ft.	\$1.00 - \$1.50	-	-	-	\$0.80 - \$1.00
	Estimated Value	\$45,000 - \$65,000	-	-	Donation	
Total Sample	Percent of Acreage	75%	10%	3%	12%	100%
	Estimated Value per Sq. Ft.	\$1.00 - \$5.50	\$6.00 - \$14.00	\$8.00 - \$10.00		\$0.80 - \$3.50
	Estimated Value	\$45,000 - \$ 240,000	\$240,000 - \$600,000	\$375,000 - \$400,000	\$0	\$35,000 to \$150,000

Sources: Real Estate Brokers specializing in above areas and uses.

A5.2 Discussion of findings by region

A5.2.1 West Side and Northwest Side

The city's West Side, which is coterminous with Planning District 3, encompasses diverse residential, commercial, and institutional uses. Four rail yards were viewed here. Half are active intermodal yards with the balance being inactive or dormant traditional rail yards. Half of these are located in mixed industrial and residential areas in the northern portion of the district, with the balance being in the eastern part of the district. The latter is experiencing a flurry of investment in redevelopment for institutional, residential, and industrial re-uses.

Rail yards in the city's West Side have the advantage of central location and good local access but most suffer from poorer highway access than do the sites sampled on the South Side. Like rail yards on the South Side, however, most suffer from one or more of the following drawbacks: low visibility, poor configuration, inadequate circulation, and the steep level of investment in infrastructure needed to bring them up to suburban industrial park standards. The values presented assume that the sites will be cleared and will have undergone some environmental remediation, but will not have other infrastructure investments. They have been discounted for their "brownfield" condition. Most have one or more handicaps, and need considerable investment in infrastructure to make them competitive in today's demanding marketplace.

Due to factors related to access, visibility, and compatibility with surrounding uses, two of the four sites on the West Side are most suitable for light industrial use, while one of the sites has prospects for re-use as a lower-end retail warehouse outlet store, due to more prominent street frontage along a major commercial artery. Part of another site (actually located at the southern boundary of the Northwest Planning District # 2 but on the northern border of Planning District # 3) also has prospects for retail use, with planned City-funded road construction at one end of the site, which will improve access and visibility. The balance of the site is suitable for light industry or for acquisition by Metra for a maintenance facility. (Note: This site is currently for sale – 50% for retail @\$15.00 sq.ft. and 50% for industrial @\$7.00 – these prices seem to be too high. [the site has been available for nearly a year – and the site has been discounted to reflect the poor condition, access and shape]. It is currently owned by a developer and not by CP, who has (or had) a two year lease on it). The sq ft numbers do not appear in the tables.

Despite their relatively uncompetitive highway links, market values for rail yards sampled on the city's West Side are higher than those on the South Side. For retail use, they range from \$240,000 to \$440,000 an acre, while for industrial redevelopment, the range is from \$150,000 to \$240,000 an acre.

Values of the West Side rail yards in their existing uses range from \$110,000 to \$150,000 per acre or \$2.50 to \$3.50 per sq. ft. This is about two-thirds of their value for light industrial re-use.

A5.2.2 Southwest Side

Four rail yards located on the city's Southwest Side (Planning District 4) were sampled. All of these sites have excellent highway links, with direct access onto either I-55 or the Dan Ryan Expressway 90/94. There are subway stations within a short walking distance of three of the four sites.

Due to access, visibility, and compatibility with existing uses, three of the four sites are candidates for warehousing and distribution uses. Market values of these sites for these uses range from \$2.50 to \$6 per sq. ft., or \$110,000 to \$240,000 an acre, depending upon the desirability of the surroundings and the centrality of the location. This is 10% to 25% below values on the city's West Side.

The last of the four Southwest Side sites is in the path of expansion of an ethnic market area with a seemingly insatiable demand for new sites for commercial and residential development. It is recommended that this site be divided for retail and high-density residential development. Due to proximity to highways, the site is considered unsuitable for single-family residential development, so apartments are recommended. Values for residential re-use here range from \$435,000 to \$600,000 an acre, while values for retail re-use are estimated at \$240,00 to \$440,000 an acre. These values have been discounted for brownfield conditions and for necessary investment in access and circulation improvements.

The value of sites on the city's Southwest Side for rail use ranges from \$85,000 to \$110,000 an acre or \$2.00 to \$3.00 sq. ft. This is 20% to 40% less than their value for light industrial re-use.

A5.2.3 South Side

Two rail yards were viewed on the city's South Side, as defined by the bounds of Planning District 6. One of these has excellent highway links and is suitable for distribution or light industry. The estimated value of this site in cleaned, brownfield condition is \$3 to \$4 per sq. ft., or \$130,000 to \$175,000 an acre, ten to fifteen percent less than on the Southwest Side. The other site is on a long, narrow viaduct which is unsuitable for any type of development except residential, which is not compatible with most surrounding uses. Due to surplus existing residential stock with high vacancy rates, the best use of this site would be donation to the city as a park for biking, skateboarding, and roller-blading. The existing viaduct structure could be retained in this use.

The value of the sites sampled in South Chicago for their current uses as rail yards ranges from \$45,000 to \$65,000 an acre – or \$1.00 to \$1.50 sq.ft. This is significantly below their potential value for industrial re-use.

A5.2.4 Far South Side

The city's Far South Side is considered to be an area of unparalleled opportunity for industrial development due to the large surplus of vacant and underused industrial sites. The area is

traditionally a steel-making district. Key sites, including the former US Steel site (USX) on Lake Michigan and the Wisconsin Steel sites are being redeveloped for light industry. The Ford plant is undergoing significant expansion and a new industrial park aimed at Ford's suppliers is being developed on an adjacent site.

Major city expenditure (about \$80 million) in access improvements is supporting the USX waterfront site and a major light industrial operation has been committed for half of the site. The other half is being promoted for residential use due to its high amenity waterfront value which will be enhanced by the proposed extension of Lake Shore Drive. Significant heavy and port-related industries persist on the Port Authority's properties along Lake Michigan and the Calumet Lake and River. The Port Authority has developed a world-class golf course surrounding Lake Calumet, which is an undervalued resource for area businesses and residents. However, the area is built on landfill and has significant wetlands; these pose serious doubts about the redevelopment potential of many of the acres available for industrial expansion on the Far South Side.

Two rail yards on the Far South Side of Chicago (Planning District 5) were included in the sample. Due to low visibility and isolation from residential uses, one of the sites is suitable for heavy industry or a distribution use requiring large tracts of outdoor storage for construction or other bulky materials. The value of this site for heavy industrial re-use is estimated at \$45,000 to \$65,000, or about \$1.00 to \$1.50 per sq. ft., 30% to 40% more than the value of its current rail yard use. The site, like many in the vicinity, has possible wetlands issues that may render it undevelopable for another use. The nearest highway access is 1.5 miles away, rendering the site below prime for a distribution use.

The second site sampled on the Far South Side suffers from difficult access and poor circulation within the site. It could be used for a yard-intensive industry requiring low visibility. The value of the site for this use would be low, however. Since it abuts a low-income residential area, the highest and best use for the site is likely to be a neighborhood park or a common open space to provide a buffer between the neighborhood and the sludge treatment plant and other heavy industrial uses to the east.

A5.3 Conclusions

The city's rail yard sites can provide a valuable supply of inner city industrial land for future development and growth of new and expanding industries. At present, the city's industrial market is experiencing negative absorption as new supply has been exceeding demand for the past twelve months. In the long term, scarce redevelopment sites will come into demand, but significant investment is needed to bring inner city brownfields up to current suburban business park standards.

Best re-use prospects for three-quarters of the more than 800 acres of rail yard sites sampled are for industry – either distribution, light industry, or – for some sites on the South and Far South Sides – heavy industry. Most of the sites recommended for industrial redevelopment have

good- to- excellent highway links and many have good transit connections for workforce access. However, most suffer from low visibility and difficult configuration and need significant investment in infrastructure and access, for which estimated market values have been discounted.

The values of the sites recommended for industrial re-use range widely, from \$45,000 to \$240,000 an acre – or \$1.00 to \$5.50 sq. ft., depending on access and on the market conditions within the surrounding area. The values of these sites for their existing uses as rail yards range from \$0.80 to \$3.50 per sq. ft. – or \$35,00 to \$150,000 an acre – 30% to 60% below their prospective values for industrial re-use. Values for these and other uses are highest in the northernmost areas and show a pronounced tendency to decline as one progresses in a southerly direction.

Ten percent of the acreage of the sample of sites viewed has prospects for re-use for neighborhood or district retailing. The value of these sites is higher than the other uses, ranging from \$240,000 to \$600,000 per acre. None of these sites is prime due to visibility and configuration drawbacks.

Only part of one of the sites viewed, representing just 3% of the total acreage in the sample, was considered to be suitable for housing. Due to the strong local demand for housing and its proximity to highways, part of the site is considered to be suitable for market-rate apartments to serve the neighborhood's burgeoning ethnic population.

Two of the sites viewed, representing 12% of the total sample, were considered to have either no value for re-use or a negative value, because the highest commercial use of the property (for heavy industry or storage) would encroach on an abutting low-income residential area. It is recommended that these sites be donated to the city for parks and open space buffers, as has been done in the past with similar sites.

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