

The role of rail infrastructure in the economic development of Michigan's Northern Lower Peninsula



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Report Summary

The goal of this study is to identify how rail infrastructure can best be utilized as an economic development engine for the Northern Lower Peninsula of Michigan (NLP). The most direct response is for the region's railroad companies, Michigan Department of Transportation (MDOT) and the Michigan Economic Development Corporation to invest in the NLP rail system to support development, expansion, and retention of the region's rail dependent heavy industries.

The Michigan Economic Development Corporation (MEDC) recently released a Logistics and Supply Chain Strategic Plan that articulated the objective of prioritizing investment in infrastructure that supports and capitalizes on Michigan's "core" industries, including agriculture, minerals, chemicals and electric utilities. Fostering these industries is essential to ensuring that Michigan continues to sustain a diverse and growing economy which generates a wide variety of attractive employment opportunities.

NLP rail carrier's primary service capabilities match closely with MEDC objectives regarding the state's core industries. The study found that NLP railroads provide a necessary transportation service for firms:

- that produce and market the grain, minerals, lumber and chemicals that are the dominant products of the Northern Lower Peninsula
- that burn coal to produce the electricity that powers the region, and
- that manufacture a wide variety of other products produced in the NLP.

Of this set of industries, agriculture is the largest rail user and a particular focus of this report. Extraordinary growth in agricultural production is occurring and is projected to continue to grow over the next several decades. The continued growth of grain production is driven by improvements in farming techniques, improved seed technology and warming regional temperatures. Together, these factors are improving crop yield per acre. The longer growing season increases the amount of farmland in the region that is suitable for grain production. Regular availability of efficient and reliable 90-car unit train rail service is a currently unmet and necessary condition for full development of this vital economic opportunity and should be the main focus of private and public rail investment in the near term.

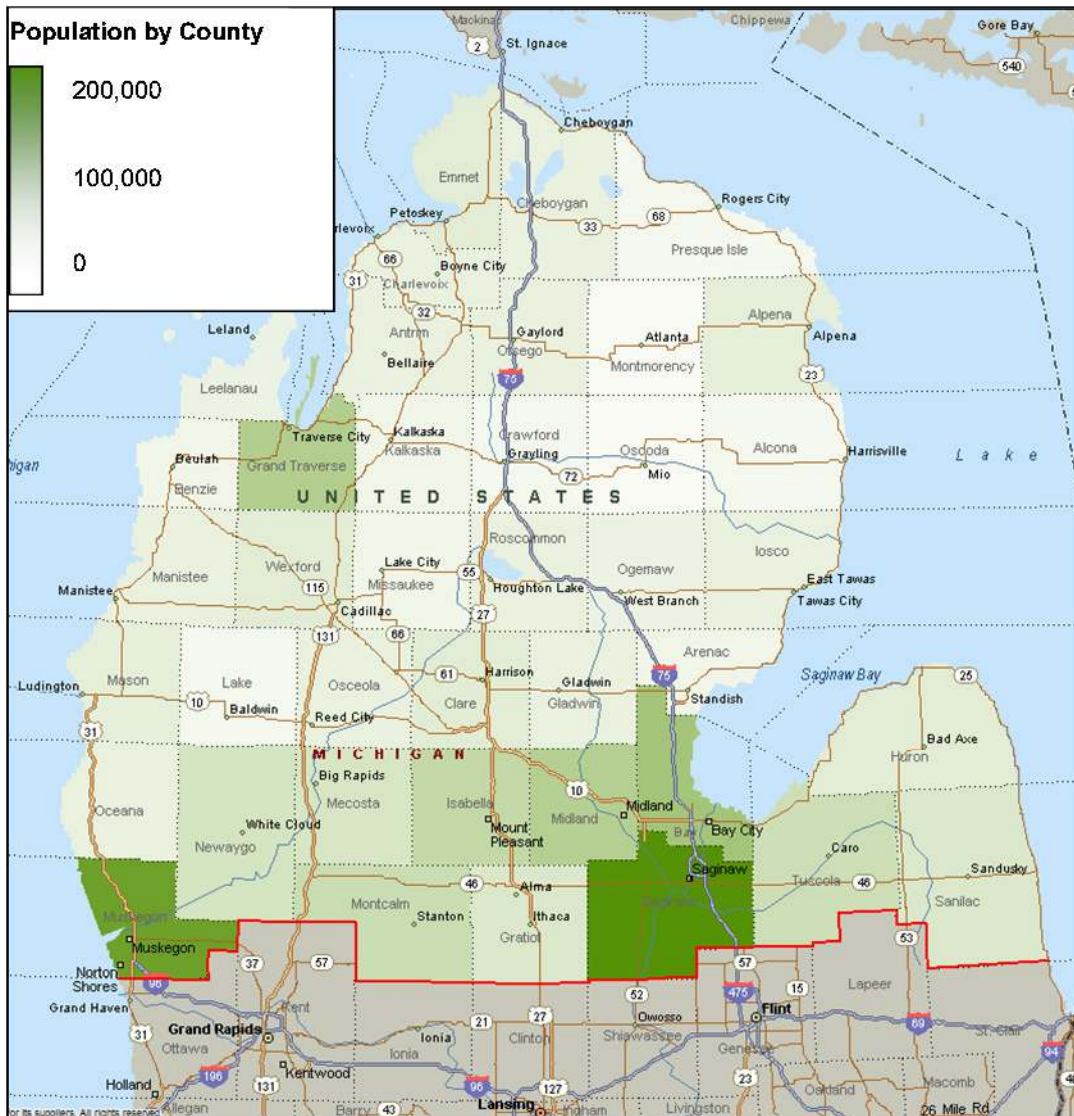
The report is structured as a summary report with a list of high level recommendations and seven technical reports which document the research and support the report's findings, conclusions, and further recommendations as follows:

Technical Report I	Case Studies	Technical Report V	NLP Rail History
Technical Report II	NLP Critical Industries	Technical Report VI	Rail Investment History
Technical Report III	Shipper Modal Options	Technical VII	Methodology
Technical Report IV	NLP Rail Carrier Profiles		

Michigan's Northern Lower Peninsula

The NLP study area in Northern Lower Michigan is a true peninsula, bounded by Lake Michigan on the west, Lake Huron on the east, and M-57 on the south. The study region, shown in the map below, is shaped like a mitten with Saginaw Bay creating a distinctive "Thumb". The area extends about 190 miles from north to south and about 190 miles across at its base in the south. The region's prominent economic features include tourism, agricultural production and natural resource extraction. Exhibit 1 illustrates relatively low population density in the region. The 40 counties in the region account for nearly 40% of the state's area with 22,305 square miles. However, the population of 1.46 million is only 15% of the state's population. The regional population density is 65 persons per square mile; only Muskegon, Saginaw, Bay City, and Grand Traverse counties have a higher than state average population density. Saginaw (population 51,508) is the largest city in the region.

Exhibit 1: NLP Region and Population Density



The northern portion of the NLP is heavily forested and very attractive for recreation. It has relatively little agriculture except for specialized crops along the Lake Michigan shoreline. The central portion begins to have more traditional crops such as wheat, corn and soybeans. The Thumb region has excellent farmland and is very dependent on agriculture. The NLP produced 36 percent of the corn, 51 percent of the wheat and 32 percent of the soybeans grown in Michigan. Virtually all of the 3.7 million tons of sugar beets grown in Michigan are grown in the Thumb and adjacent counties. The Tri-Cities area of Saginaw, Bay City and Midland are more oriented to manufacturing.

Michigan is underlain by a geologic basin, centered in Gladwin County. The basin began forming over 500 million years ago when a large, shallow inland sea covered much of the state. The deposit of sediment and the effects of several periods of glacial activity produced a region rich in mineral resources. As a result, natural resource extraction is a particularly important industry in Michigan.

Limestone production in Alpena County led to the development of the LaFarge cement plant in Alpena, one of the world's largest cement production facilities. Salt (sodium chloride) and quartz sand are mined in the coastal areas of Lake Michigan. Michigan also has large deposits of potash (potassium chloride) used primarily in the production of fertilizer. Dow Chemical, the region's largest corporation, was founded in 1897 to produce bleach and potassium bromide utilizing the salts that were mined in Midland. Rediscovery of large potash deposits in Osceola County has made recent news due to the potential for increased fertilizer production. Oil and gas extraction is an important industry in the northwestern portion of the region.

The primary military presence in the region is Camp Grayling near Grayling, Michigan. Camp Grayling is the largest military installation east of the Mississippi River, and the nation's largest National Guard training site. Year-round training is conducted on its 147,000 acres. Wurtsmith Air Force Base near Oscoda closed in 1993 and has been converted to an important regional industrial park.

Important Canadian border crossings are just outside the study region at Detroit, Port Huron and Sault Ste. Marie. The only land access route between the NLP and Michigan's Upper Peninsula is the Mackinac Bridge.

The NLP's peninsular geography is a natural disadvantage that impedes regional industrial development and makes efficient freight transportation services vital for the economic health of the region. Any NLP industry that requires extensive product distribution faces transportation costs associated with the distance required to reach national markets. A goal of this study is to identify ways in which the rail system can be made more efficient and used to address this natural disadvantage.

Railroads and the NLP

NLP Rail Carriers

Three professionally managed railroad operating companies operate in the NLP;

- Genesee and Wyoming (G&W) owns the Huron & Eastern, Marquette Rail, Michigan Shore, and Mid-Michigan) with a total of 528 miles;
- Lake State Railway Company (LSRC) with 295 route miles, and
- Great Lakes Central (GLC) with 365 route miles.¹

These carriers are profiled in Technical Report IV. Each of the NLP railroads is classified as a regional or short line rail carrier. MDOT owns more than a third of the underlying rail route miles; 97% of the GLC, 36% of the LSRC, and 14% of the HESR (Vassar Wye). Exhibit 2 lists the rail miles operated by each railroad and shows the miles owned by the State.

Exhibit 2: NLP Rail Inventory²

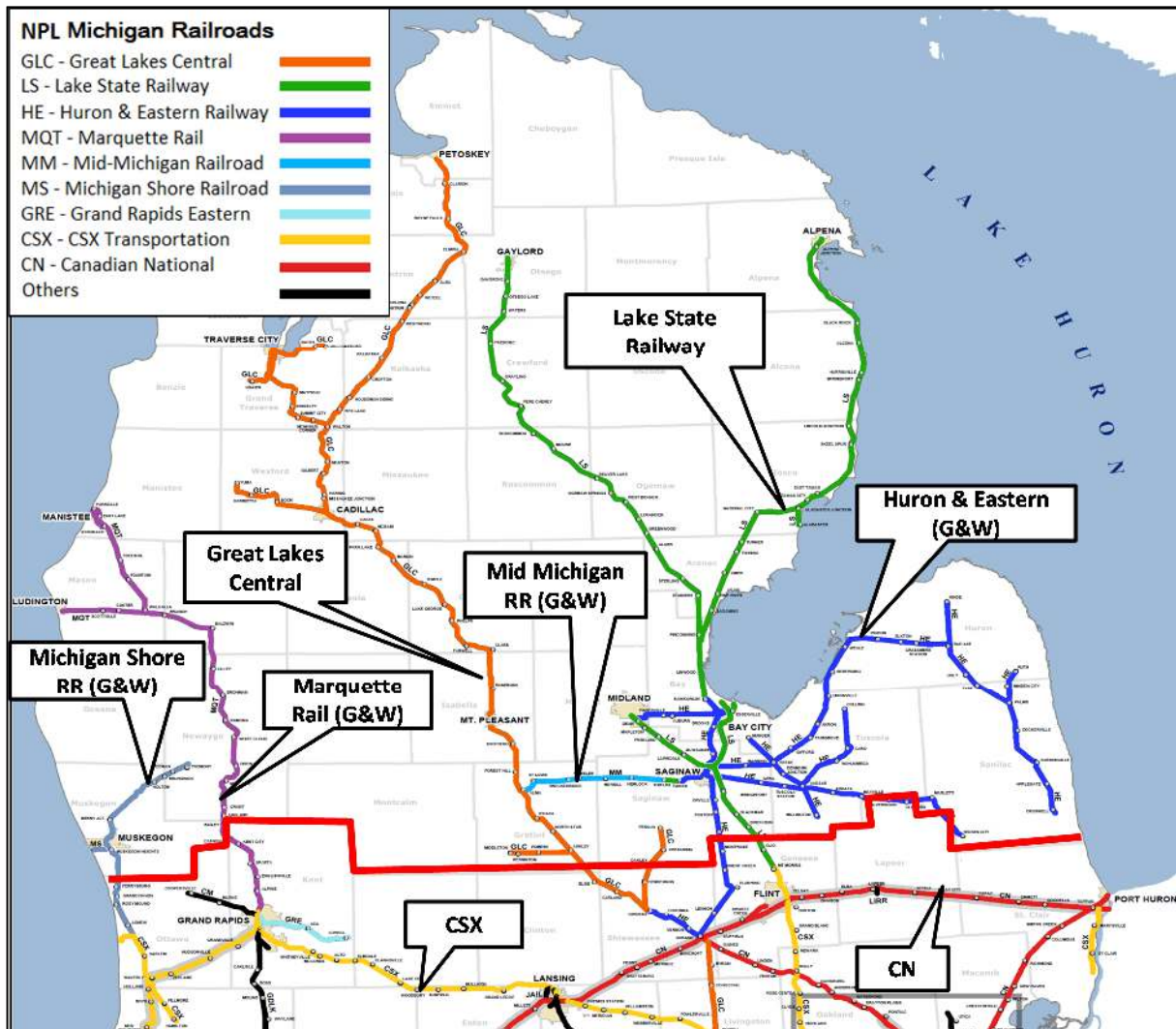
Rail Carrier	Total Miles	Owned	State Owned	State Share
Great Lakes Central Railroad	365	12	353	97%
Lake State Railway Company	295	190	105	36%
Genesee and Wyoming (GW)				
Huron & Eastern Railway (HESR)	318	273	45	14%
Mid-Michigan Railroad (MM)	30	30	0	
Michigan Shore Railroad (MS)	54	54	0	
Marquette Rail (MQT)	126	126	0	
Special Circumstances				
HESR/LSRC (Bay City-Essexville)	3	3	0	
Detroit Edison (Rail Banked)	18	18	0	
CSX (MS Trackage Rights)	10	10	0	
CSX (MQT Trackage Rights)	4	4	0	
CSX (LS Trackage Rights)	3	3	0	
Sub-Total	1,226	723	503	41%

Most of the NLP system (public and private) operates at speeds of 25 mph and rail can accommodate rail car weights of 286,000 lb. The study found that due to MDOT's rail service preservation program, the state owned portion of the rail system is in average or good condition. The condition of privately held portions of the rail system varies from good to poor. The least capable portions include the Huron Subdivision on LSRC and the Middleton District on GLC. Both rail segments have speeds limited to 10 mph and rail car weights limited to 263,000 lb. In addition the Michigan Shore railroad is rated at 266,000 lb. Specific recommendations regarding infrastructure investments are presented later in this report.

NLP railroads move about 95,000 NLP carloads annually.³ That amounts to 80 carloads per rail mile, which falls below the industry norm for long term financial viability, 100 annual carloads per rail mile. Becoming more competitive and growing rail volume is a prerequisite for both the long term financial health of the rail carriers and successful rail oriented economic development in the future. At 80 carloads per rail mile there is significant unused rail capacity to support both these objectives.

The demand for rail service is not evenly distributed over the region. The rail lines in the far northern portion of the region are the least used at present. For example, the GLC north of Cadillac (over 135 rail miles) operates with less than 5 annual carloads per rail mile. Clearly, there is capacity available for significant growth and shippers on these segments currently rely on the state’s rail preservation program for their continued rail service. The rail lines of the NLP are illustrated in Exhibit 3.

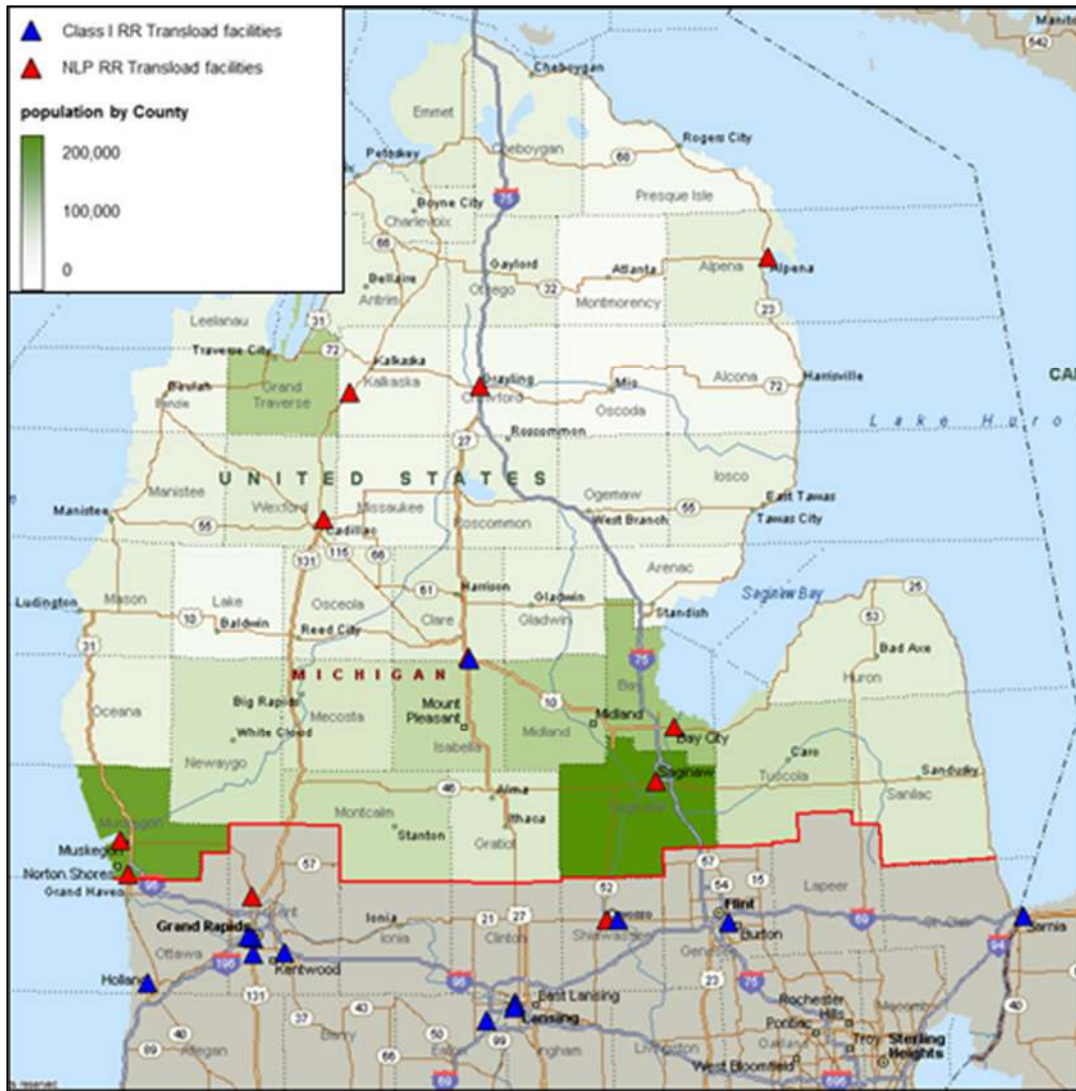
Exhibit 3: NLP Rail System 2014



In order to extend their customer base beyond the immediate proximity of their rail lines, NLP railroads provide truck to rail transload service, partnering with local trucking firms that provide a local delivery

service.⁴ Transload terminals vary significantly depending upon their volume and commodity. For durable commodities like lumber, the transload terminals may be simply an open outside area with access to a track. Conversely, the premier transload facility in the NLP is the GLC/Northern Dry Bulk Transload Terminal in Clare which specializes in plastic pellets. Plastic pellets are the raw material used in manufacturing plastics products. It is fenced, lighted, paved, and capable of holding 100 rail cars and storing another 100. The facility also has adjacent warehouses. Exhibit 4 displays transload facilities serving the NLP that are advertised by the NLP or Class I rail carriers.⁵

Exhibit 4: Transload Facilities Serving the NLP



In addition to the advertised facilities, there are numerous private, commodity specific transload facilities in the region. Grain elevators and sand loading facilities broadly fit this category.

Class I Rail Carriers

Michigan's large rail carriers; CSX, Canadian National (CN), and Norfolk Southern (NS) are simultaneously business partners and competitors to the NLP railroads. Given Michigan's peninsular geography, almost all NLP rail traffic originates or terminates in the region and moves to or from a Class I Railroad connection outside of the region. The regional/short lines rely on connections to Class I rail carriers to reach shippers and receivers throughout the continent. Functionally, the NLP rail system serves as a series of independent extensions of the Class I rail carriers.

Concurrently the large rail carriers view their motor carrier business partners as extensions of their long haul freight service in roughly the same way they view their NLP rail partners. In this context, the Class I rail carriers have established a series of bulk transload facilities just south of the NLP along I-69/96 near the major population centers of Port Huron, Flint, Lansing, and Grand Rapids as illustrated in Exhibit 4. These facilities' service area includes not only the Interstate corridor but extends as much as 150 miles north into the NLP (as far north as Gaylord). In combination with Michigan's heavy trucks, these facilities provide real competition to the NLP railroads in the movement of several bulk commodities.

Finally, the large rail carriers would typically prefer to locate new businesses directly on their rail lines rather than serve them via a NLP rail carrier. This is an important competitive issue negatively impacting development of new rail served industry in the NLP.

NLP Rail Dependent Industries

Railroads play an important role in the Northern Lower Peninsula's (NLP) economy by providing transportation service for industries which are critical to the economic health of the region. Technical Report II describes these industries and their transportation requirements in greater detail and is summarized below.

Agriculture

The agriculture industry accounts for about one third of all current rail traffic in the NLP. Extraordinary growth in agricultural production is occurring and is projected to continue to grow over the next several decades. Provision of efficient and reliable unit train rail service is a necessary condition for full development of this vital economic development opportunity. This condition is not fully met at present.

Unit grain train rail service needs to be expanded northward and significantly modernized. Currently, the largest grain movement from the NLP is corn in unit grain trains moving from the "Thumb" to the southeastern United States to provide animal feed. The typical process is relatively slow and inefficient. An ordinary transportation scenario involves breaking a 90-car unit grain train into pieces to provide service to several local elevators in the Thumb on the Huron & Eastern. HESR assembles the train and interchanges it with LSRC at Saginaw Yard, which is configured inefficiently for the purpose. LSRC then delivers the train to CSX at Flint which moves the unit train to the southeastern markets.

Specific recommendations are included later in this report. In part they include replicating the investment in the new grain elevator at Standish, pictured on the cover of this report, which is noteworthy for a number of exceptional and positive reasons. It is uniquely positioned in the market as the most northerly large elevator in Michigan. It is designed to accommodate full 90 car unit trains that will move efficiently and directly to CSX at Flint without intermediate interchange. The development of the Standish elevator was supported by MDOT's Freight Economic Development Program which contributed nearly a million dollars to rail infrastructure to complete the project.

Power Production

Consumers Energy at Essexville produces power by burning coal and is the largest rail user in the region. Most of the coal moves to Essexville by rail in unit trains via Chicago using two alternative routings (CSX with LSRC) and (CN with HESR). The service faces intense marine competition; about a third of Essexville's coal moves via BNSF railroad to a marine terminal in Duluth/Superior where the coal is handled off to a Great Lakes marine carrier for final delivery to Essexville.

Other Heavy Industries

Other key Michigan industries supported by NLP railroads include chemicals and salts (Midland and Manistee), cement production and stone quarrying (Alpena), forest products (Manistee and Grayling), and foundry and frac sand mining at several pits near Lake Michigan. The study found that there is opportunity for NLP railroads for market share growth within many of these heavy industries.

Future Prospects

NLP railroads are not exclusively focused on mature industries. Prospective development of Michigan's natural gas and recently rediscovered potash resources and their related industry clusters are likely to require increased NLP rail service. Both GLC and MQT reported recent traffic increases related to energy development.

NLP Industrial Transportation Options

Shippers and receivers in the NLP of Michigan enjoy a wide variety of transportation options which are more fully described in Technical Memorandum III. Shippers make modal and carrier choices on the basis of price and service. The practical relationships between price and service are illustrated in Exhibit 5, which is based on the analysis of interviews, public meeting comments, previous studies, transportation movement data, and modal cost comparisons more fully described in Technical Memorandum VII. The graphic shows the relationship between price and service level for various modes; air freight is fast, reliable and expensive while barge transport is slow but very low cost. The service level component is a more complex combination of speed, reliability, and flexibility. In addition modal choices may also be influenced by the availability of ancillary services.

Exhibit 5: NLP Shipper Options - Price Service Comparison

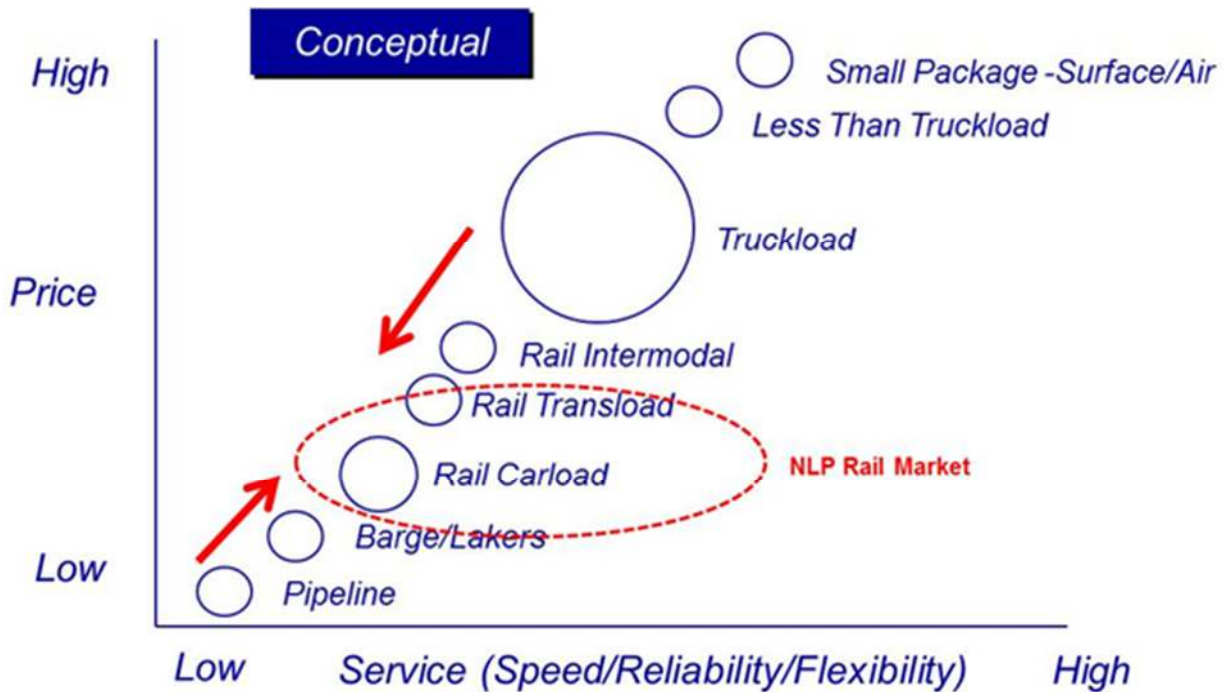


Exhibit 5 further illustrates the fact that NLP railroads face unusually intense pressure from other modes both higher and lower on the value chain. Michigan’s liberal truck size and weight laws constrain the ability of regional rail carriers to compete successfully for heavy loading commodities like grain, frac sand, and forest products. At the other end of the value chain Great Lakes marine carriers provide a competitive option for shippers moving bulk cargos such as of coal, cement, and stone.

The study found that NLP railroads provide shippers a most useful value proposition when serving Michigan's core industries by originating or terminating long distance unit train or multiple car shipments of core commodities from/to large industrial or agricultural facilities or transload terminals.

Economic Development

Rail service is essential to ensuring that the NLP continues to sustain and grow a diverse economy which generates a wide variety of attractive employment opportunities.

MEDC Logistics Strategy

Michigan Economic Development Corporation (MEDC) recently published a statewide logistics and transportation strategy for industrial development⁶ which identified five main objectives as follows:

- Enable logistics and supply chain solutions to create more and better jobs.
- Collaborate with industry and regional partners to identify and prioritize initiatives to improve regional competitiveness in Michigan and the Great Lakes MEGA region.
- Develop strategic marketing programs and campaigns that promote Michigan's supply chain capabilities and leverage its location and natural resources.
- Prioritize infrastructure and policy initiatives that will increase our competitive advantage, reduce cost, save time, and support value-added supply chain activity.
- Support the growth of Michigan's innovative industry base with world class supply chain infrastructure and talent.

Several of Michigan's core industries, featured in that strategy, are prominent in the NLP and are rail dependent. These industries include agriculture, chemicals, and mining. Manufacturing, wood products, and energy are also on the core industries list and are served by NLP railroads. A key action item included in that strategy was the following: "Identify and deliver the infrastructure enhancements that capitalize on and support the growth of our core Michigan industries."

An important finding of this study is that there is a strong alignment of interests between economic developers and NLP rail carriers. The rail carriers are focused on serving the same industries MEDC views as critical to the health of the economy and is seeking to promote.

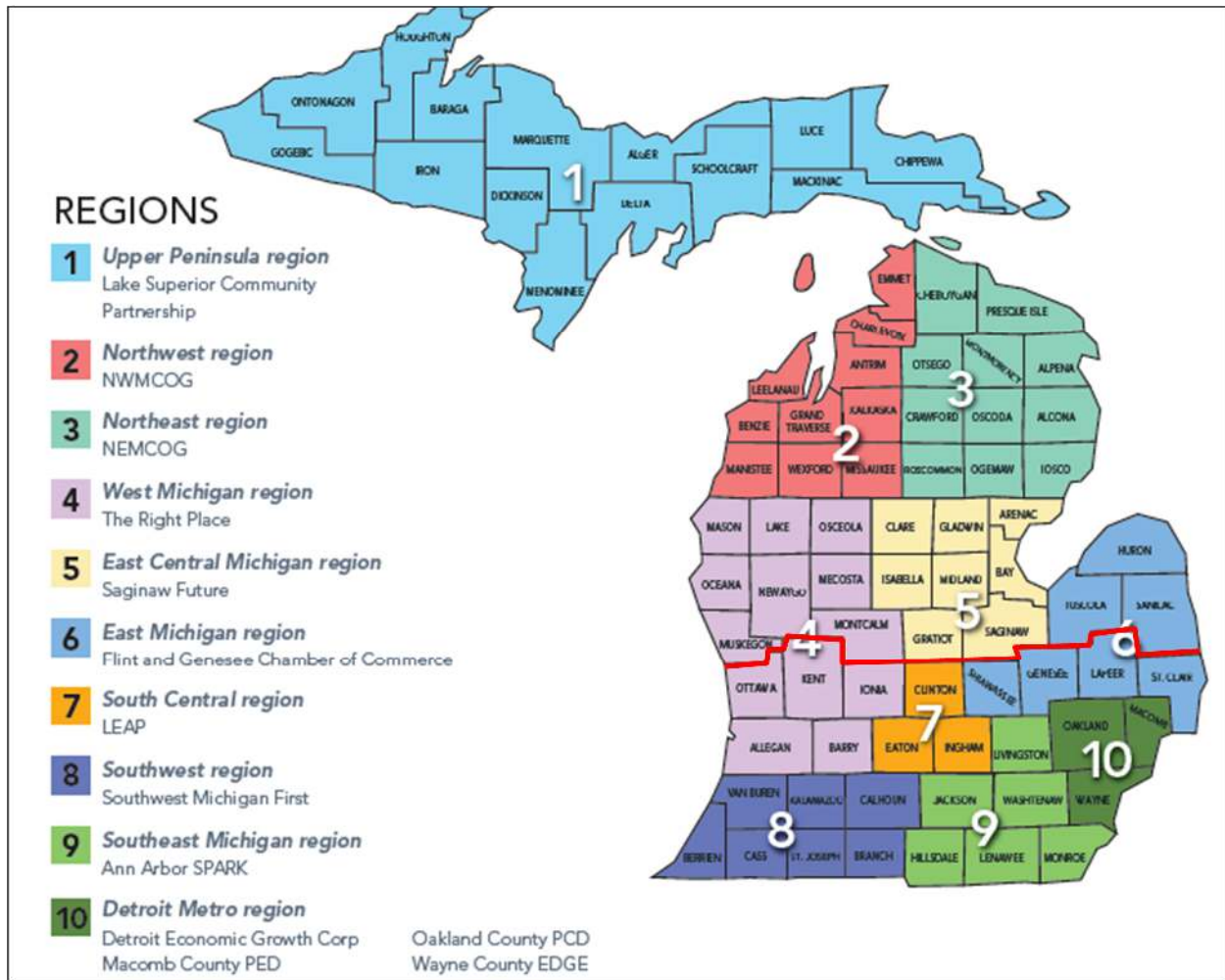
MEDC Regions and Approach

Michigan Economic Development Corporation (MEDC) has established a structure of ten collaborative regions within the State to coordinate economic development. Each region is led by a coordinating agency, either a county EDC or some other organization that is active within the region and can manage the leadership role. The NLP study region is coincident with all or portions of EDC regions 2, 3 and 5 and parts of regions 4 and 6 as illustrated in Exhibit 6.

MEDC is generally the first point of contact for a company or site location consultant looking to locate in the State. MEDC will typically assign a "packager" or project manager who will coordinate the effort

within MEDC and the local EDCs. The project manager will develop the incentive package and prepare the State’s response to an RFP from a business or site location consultant. MEDC will identify funding sources for infrastructure development. MEDC also has a budget for cash investments required to close the projects.

Exhibit 6: Michigan Economic Development Collaborative Regions



Additional Findings Relative to MEDC and the NLP Rail Carriers

During the course of this study, interviews were held with representatives of the NLP rail carriers and several economic development agencies. In addition, a number of outreach meetings were held in the MEDC regions. Relevant findings from those outreach activities can be summarized as follows:

- Better partnerships are required between EDC Regions and NLP rail carriers. The study team found an inconsistent level of rail industry knowledge in the regions
- Regional agencies will fiercely protect any existing rail lines based on the understanding that certain regional industries must have rail service to be

competitive. Many were able to cite examples where rail access was given as a critical requirement for economic development projects.

- Regional agencies generally understand that agribusiness and food processing are key industries for future growth and that automotive is becoming less important.
- Regional agencies use local property brokers, access to proprietary real estate data bases and personal contacts to identify available industrial property.
- Regional economic developers often hear shipper concerns about the timeliness and reliability of rail service; this was particularly true for Region 6 as related to the Huron and Eastern lines.

Specific recommendations are included in the final section of this document.

Investment in the NLP Rail System

Preservation of NLP rail service has been shown to be very important to Michigan's core industries and the economies of regional communities. Preservation also permits prospective economic development and protects the prospect of development of rail passenger services in the future. Given this context, the NLP railroad's and the state of Michigan's continuing shared challenge is to retain a viable NLP regional rail service capability in a competitive transportation market that does not allow the railroads to generate enough revenue to sustain significant portions of their rail network. The history and resulting evolution of the NLP rail system, the primary subject of Technical Report V, is a critical context for understanding this situation and is summarized below.

NLP Rail History

The railroad infrastructure of the Northern Lower Peninsula of Michigan was developed in the late 19th century to move lumber and natural resources from the region. The rail system also served east/west through traffic using the car ferry system across Lake Michigan. The 20th century brought increased competition, economic regulation, and ultimately the financial bankruptcy of large segments of the rail system in the North Eastern United States in the early 1970s.

NLP railroads experienced a major restructuring on April 1, 1976 when the U.S. Railway Administration (USRA) reorganized the bankrupt portions of the nation's rail industry. At that point, the State of Michigan established a freight service continuation effort which subsequently purchased significant portions of the NLP rail system to protect them from abandonment.

Economic deregulation in the 1980s resulted in an economically viable national rail industry, but the policy has not produced a similar positive result in the NLP. Regular public investment in the Northern Lower Peninsula's rail freight infrastructure has continued since 1976 has totaled approximately \$250 million over the period.

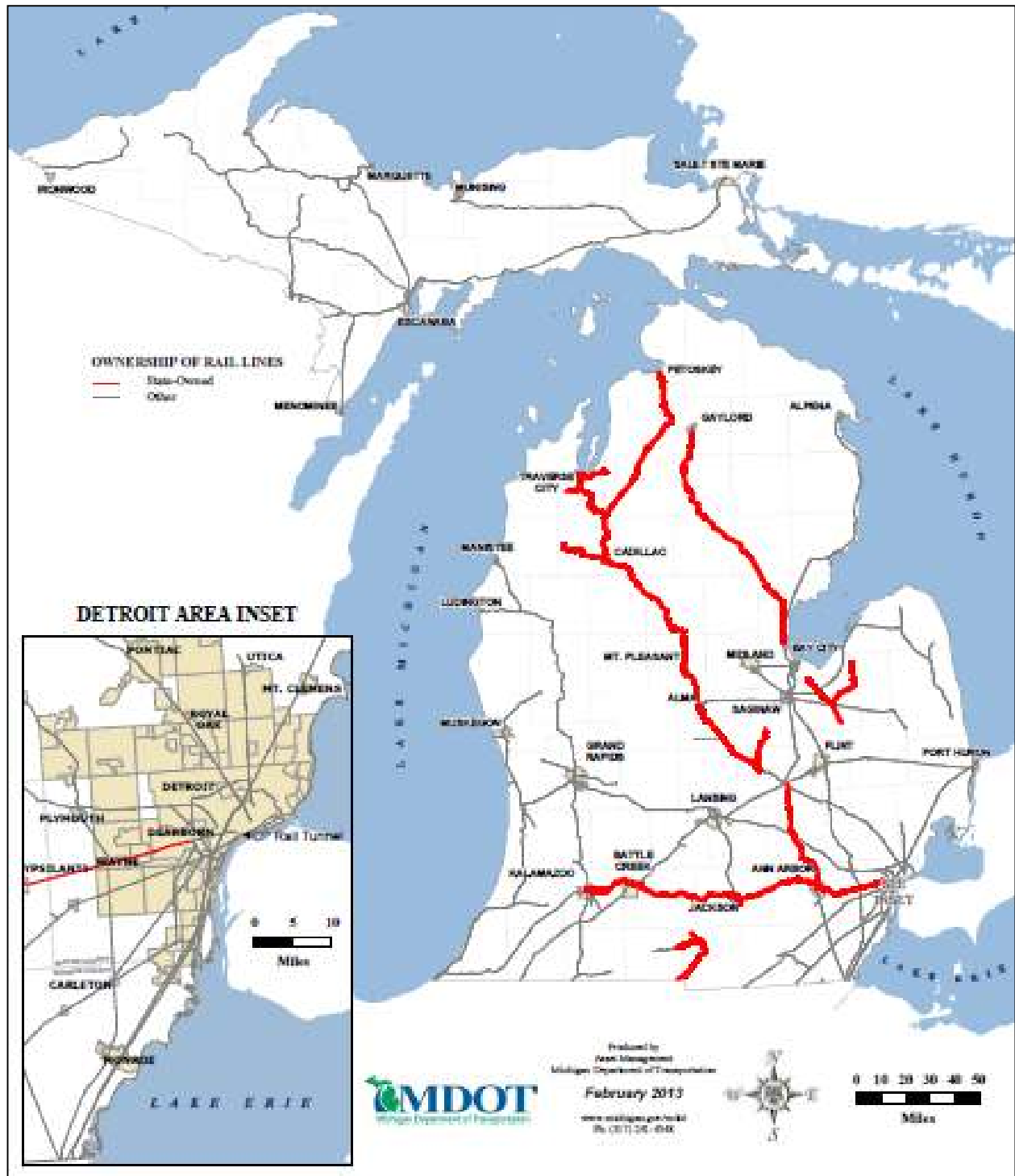
Public Investment History

Michigan's public investment strategy for railroads experienced two distinct phases. The first phase, 1976-1985, was characterized by purchases of rail lines and the operating subsidies needed to keep them operating. The State owned rail lines are shown in Exhibit 7⁷. This policy softened the blow of the Northeast/Midwest rail bankruptcies and restructuring of Michigan's economy, and it preserved a major portion of the region's rail service.

The lessons learned during the Phase I period led Michigan to significantly alter its funding strategy for the preservation and enhancement of the state's rail infrastructure in Phase II. The investment strategy which has evolved since 1985 is a combination of several investment initiatives, with emphasis on two

programs: (1) extensive rail rehabilitation projects for the state-owned rail lines and (2) rail-related economic development loan programs.

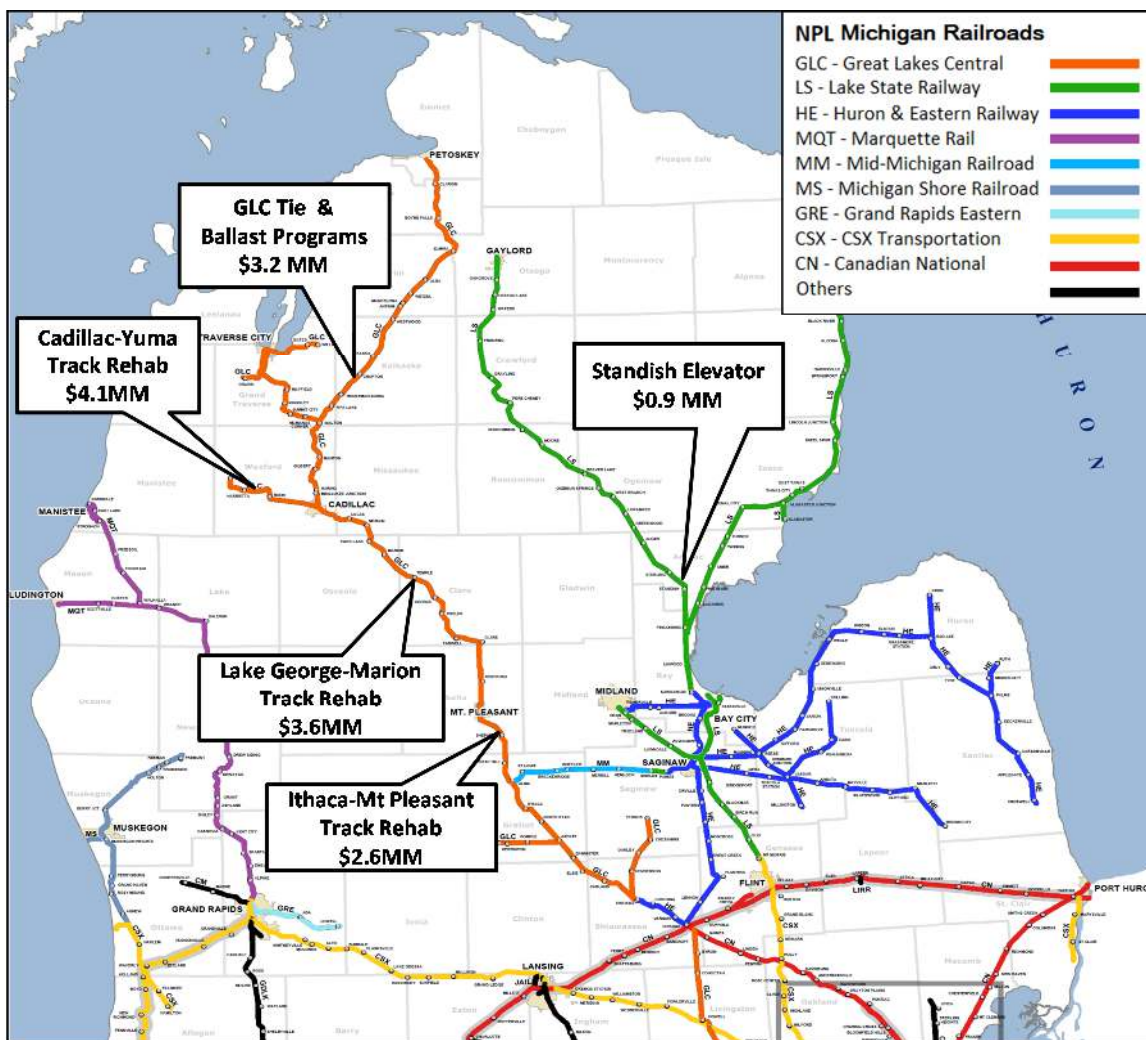
Exhibit 7: Michigan State Owned Rail Lines



The primary benefits of the Phase II investments have been the continuation of rail service without the need for operating subsidies, the preservation of active rail lines, and the capability to use the rail system to support future economic development in the NLP.

As illustrated in Exhibit 8, five major spending investments in the NLP accounted for about 90% of \$16 million spent on track and economic development projects over the past five years. Projects included maintenance of the state owned GLC, rehabilitation needed to support fracking and foundry sand movements from Yuma, and establishment of a large, modern grain elevator in Standish. Investments anticipated in FY 14 include contributions to expansion of a transload facility in Saginaw.

Exhibit 8: MDOT NLP Spending FY 09-FY 13
Five Major Projects Account for 90% of Investment



The primary benefit of the investments over the past four decades has been the preservation of rail service for rail dependent NLP industry with the retention of the associated jobs. In addition, retaining the rail lines that might have been abandoned preserved the opportunity to use the rail system to support future economic development in the NLP.

NLP Rail Carrier Investment

During the course of this study railroads were asked about their capital spending levels. Those responses varied in completeness and are included in Technical Memorandum IV. From that data and from the evidence of investment based on current track conditions, the Tioga team estimated the regular annual spending of NLP railroads on the railway at \$8-10 million annually. In addition the rail carriers invest year by year in the locomotives, rail cars, and systems infrastructure necessary to provide continuing and new rail services. This investment is tied to the expectation of future business levels.

Private investment in the state owned rail lines is strongly influenced by the provisions of the contracts under which the railroads are operated.

The GLC operates approximately two thirds of the state owned portion of the NLP rail system under a contract which requires the GLC to spend between 20% and 25% of its estimated annual operating revenue on an Annual Maintenance Program. In addition, the contract gives the state immediate ownership of improvements made by GLC and the State Transportation Commission the right to sell the railroad. The railroad views these provisions as a significant disincentive for private investment.

Lake State's contract provides the railroad a permanent, non-exclusive easement to provide rail freight service on the Mackinaw subdivision. LSRC is responsible to maintain the railroad to a FRA Class II standard. It may use and improve the property as it sees fit for "its general railroad business." The railroad may make capital improvements to the rail facilities at its own expense, and such improvements remain the railroad's property, similarly, new industrial sidetrack construction on the state-owned right-of-way remain in railroad ownership.

HESR's contract to operate the Vassar Wye has a mix of provisions. It has the right to operate the railroad and provide rail freight services. HESR is solely responsible for all facility maintenance and must maintain trackage at Federal Railroad Administration Class II standards. The contract is cancellable on 60 days' notice by either party.

Recommendations

Collaboration around core businesses

Recommendation 1: NLP Railroads, MDOT, MEDC and Michigan Department of Agriculture and Rural Development (MDARD) should expand their collaboration aimed at increasing the competitiveness of Michigan core businesses through investments in Michigan’s rail logistics infrastructure.

Recommendation 1a: NLP Railroads, MDOT, MEDC and MDARD should establish a regular task force whose first task is to identify and promote a set of shared goals.

Regional economic developers and railroads share many goals, activities, and interests. All parties would be well served by increased knowledge and awareness of their mutual endeavors. This includes both development of new industry and expansion or retention of existing industry. The following understandings are areas of common interest identified during this study:

- The agriculture industry is thriving and is a clear current opportunity for economic growth for the region and traffic growth for the NLP railroads. Ideally the agriculture industry and NLP railroads will expand synergistically, each providing the other needed efficient economic inputs.
- For Michigan’s other “Core Industries”, the primary rail related economic opportunity comes from improving the cost and service performance of the NLP rail carriers. Improvement would result in conversion of traffic from truck to rail improving the competitiveness of Michigan industry.
- Long term promotion and retention of Dow Chemical and Dow Corning is important for the economic wellbeing of the region. Long term conversion of hazardous shipment from the highway to rail mode is in the interest of public safety.
- Prospective future economic opportunities for growth may come from the development of Michigan’s natural gas and potash resources.

The Task Force could be expected to expand this list.

Recommendation 1b: MDOT and MEDC should establish an aggressive awareness and education program for both railroaders and regional economic development personnel with the goal of enhancing rail oriented industrial development. As a minimum, MDOT and MEDC should sponsor a rail oriented business development conference at least once a year.

A key prerequisite for the successful use of rail infrastructure as an economic development tool is for economic developers to be aware of the practical ability of the rail carriers to support their efforts (and for rail firms to be aware of the abilities of economic development agencies to support their marketing activities). For example, economic developers should be strongly aware that NLP railroads are most

effective as economic development assets when the transportation requirement involves a heavy industry regularly moving a very large amount of cargo a long distance. That “sweet spot” of the rail value proposition appears to a NLP railroader like a regular unit train or multiple car shipment from/to a large industrial or agricultural facility or transload terminal.⁸

The study’s outreach activities were a good step toward mutual information sharing and the strengthening the personal relations needed to convert mutual interests into practical economic development activity.

Invest/Reinvest in Infrastructure-

Recommendation 2. Private and public investors should collaborate to recapitalize the NLP rail system and develop new facilities in response to changing market conditions.

Invest in Grain Infrastructure

Recommendation 2a. Immediate priority should be given to investments in infrastructure supporting increasing agricultural production. Private firms should identify worthy market driven projects for partial funding under available public sector investment programs.

Promoting the region’s agricultural industry is the most important strategic rail related regional economic development priority at the present time. Investments are required to restore, reconfigure, and establish needed grain elevators loading facilities, rail yards, and rail lines.

Grain Elevators. Most of the grain elevators in the region do not have the rail track capacity to handle 90-car unit trains. As a result, smaller cuts of cars must be consolidated into a 90-car train. This limitation associated with the size of grain elevator loading facilities increases handling cost and slows service. Modernizing rail loading facilities at existing NLP grain elevators is a clear priority. In addition, there is clear need for the development a new generation of efficient, large grain elevators of which Standish is an example. MDOT should continue to encourage the private sector to identify and forward worthy projects.

HESR Restoration. In January of 2013, the HESR was sold by RailAmerica to Genesee & Wyoming. Deferred maintenance and capital investment conditions were inherited. Genesee & Wyoming has a longer term view of capital investments, taking into consideration the business case. The HESR’s current timetable speeds are FRA Class II (25 MPH freight) with several temporary 10 MPH slow orders. The temporary slow orders are due to tie condition, old rail, and surface issues. The HESR has a capital plan to prioritize and address slow orders in 2014 and beyond. While the HESR is investing in the infrastructure, longer term answers to get the railroad up to a sustainable maintenance level are still needed.

Legacy Rail Yards. Reconfiguration and/or expansion of legacy rail yards should be evaluated with the goal of determining the investments needed to increase the speed and efficiency of area rail service and interchanges.

Invest in Transload Facilities

Recommendation 2b. Private and public investors should collaborate in the development of regional transload facilities. Private firms should identify worthy market driven projects for partial funding under available public sector investment programs.

During the course of this work the study team became aware of a number of new/expanded transload facility initiatives which are at various stages of evaluation by private investors. While each potential transload must ultimately stand or fall on its own merits, the level of activity and initiative is very encouraging.

A positive example of this strategy is MDOT's planned 2014 investment in the expansion Zilwaukee Properties transload terminal to permit the handling of full unit trains. The expanded terminal will support a variety of industries, including agriculture, by handling of fertilizer, salt, and other bulk commodities in efficient unit train service.

Invest in the Huron Subdivision

Recommendation 2c. MDOT, MEDC, and LSRC should explore the creation of a public private partnership that would provide the needed assets to restore and upgrade the Huron Subdivision.

As indicated previously, this line is the most seriously functionally deficient extended rail segment in the NLP. The Huron Subdivision of the LSRC runs from Pinconning to Alpena a distance of about 90 miles along the Lake Huron coastline. The line is FRA excepted track and limited to speeds of 10 miles per hour. Its track capacity is rated at 263,000 lb. due to light weight rail which has never been upgraded and is in poor condition. 286,000 lb. capacity is the standard in the industry and much new rail infrastructure is being built to handle 315,000 lb. rail cars.

LSRC is working within its means to restore the line segment. It developed a capital program for 2014 that calls for investment of approximately \$ 2.5 Million to be spent on the Huron Subdivision, well over the investment required for normal maintenance. While LSRC believes that the 2014 program is a significant step to improving the Huron Subdivision it is clear that much more will be needed to ensure that traffic moving over the Huron Subdivision can be increased and sustained for the long-term. LSRC estimates the cost of restoring and upgrading 90 miles of rail on the Huron Sub at \$20-\$25 million. The LSRC takes the view that, while the current traffic levels on the Huron Subdivision do not support this type of investment, there is significant potential on this line to recapture traffic from motor carriers.

The connection to economic development is direct. The Huron Subdivision connects to the deactivated Air Force rail yard at the Oscoda-Wurtsmith Industrial Airport. Improved rail service would permit development opportunities for new classes of business tenants for the industrial park. Redevelopment of the Oscoda-Wurtsmith site is a very high regional priority; rail related industry has yet to play any role in the redevelopment activity in spite of the fact that rail served land is available in abundance.

Monitor Other Critical Infrastructure Elements

Recommendation 2d. MDOT and NLP Railroads should identify and monitor vulnerable/high risk private and state owned rail infrastructure elements and act as may be necessary to avoid public calamity or catastrophic failure of the rail system. A source of insurance or emergency funding should be identified to address this type of crisis should it occur.

The prospect exists for a very costly failure of critical NLP rail infrastructure which would be beyond the financial ability or insurance protection of NLP railroads to address. Such a failure could be the result of an accident, weather event, age, or the combination of any of these factors.

Aging Rail Bridges. The vulnerability of rail service to bridge failure was illustrated in spring of 2013 when the CSX Bridge in Grand Rapids was closed for an extended period due to high water. The consequence was that 126 miles of Marquette Rail was completely shut down and communities including Ludington and Manistee were without rail service. The Federal Rail Administration has primary responsibility for monitoring the condition of rail bridges. MDOT should monitor their activity and findings.

Accidents. In spite of the fact that railroads offer a safety advantage over highway transportation in the movement of hazardous commodities, 2013 was a year of several highly visible rail accidents. Most of these were associated with the movement of crude oil. The worst resulted in the deaths of 47 people and the bankruptcy of the regional railroad that serves the Canadian town of Lac-Megantic, Quebec.

In the NLP, the most obvious parallel situation is the rail movement of hazardous chemicals to/from Dow in Midland. Action on this recommendation could identify actions and investments which may improve public safety by converting hazardous shipments to the rail mode coincident with investment in the best possible rail safety technology on the lines that serve Dow.

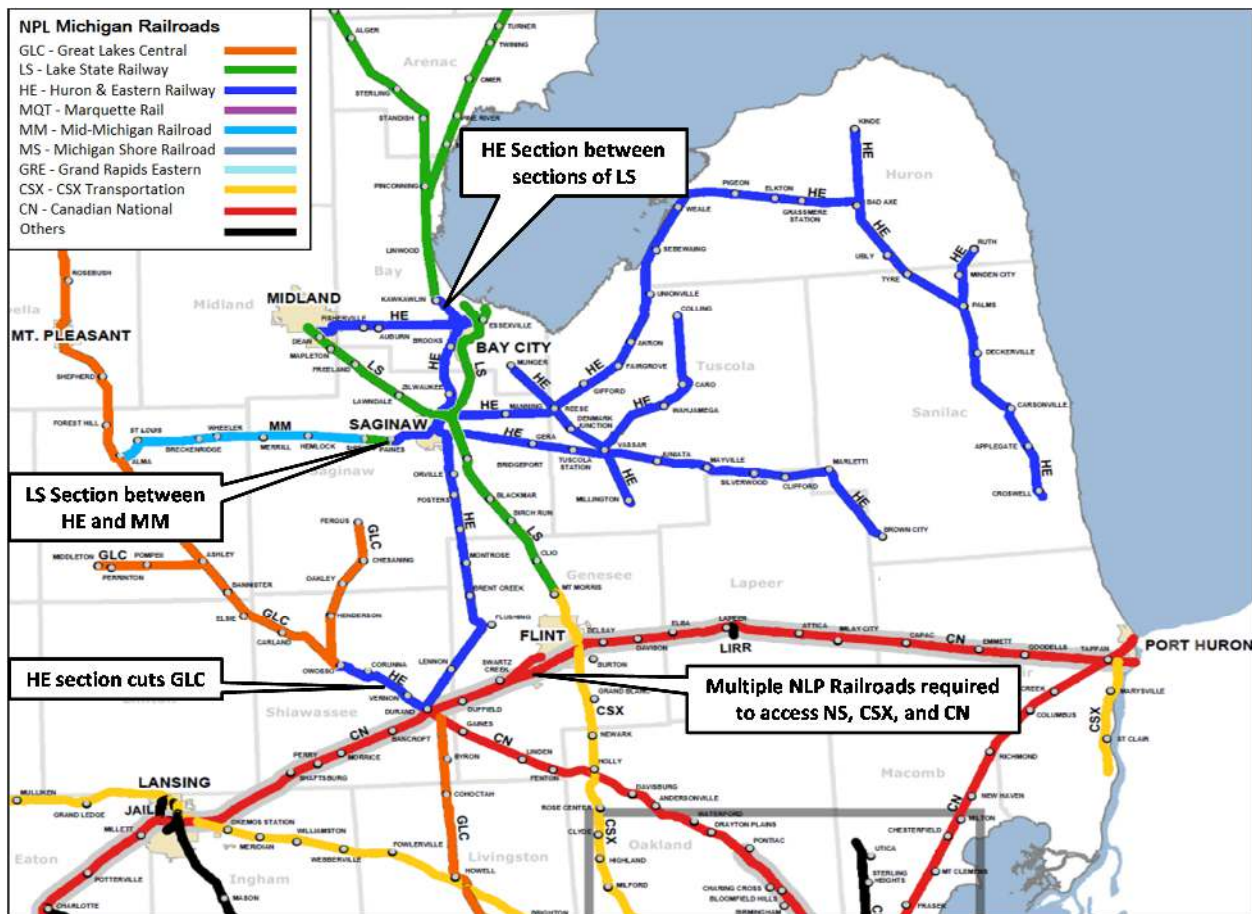
Cost Reduction

Recommendation 3. MDOT should use its position of influence to encourage changes which promote efficiency, cooperation, and collaboration among NLP and Class I railroads. More specifically, MDOT should work with rail carriers to foster changes needed to reduce the cost, complexity and fragmentation of rail operations. Such an initiative would clearly be in the long term interest of the State and the rail shippers.

This recommendation covers systematic and operational factors, not related specifically to infrastructure, that increase the cost of NLP rail operations.

MDOT does not exercise direct control of rail facilities or the commercial relationships of the Class I and NLP railroads. However, as the economic promoter of the rail mode in Michigan, MDOT has a unique position of influence with the rail carriers. Further, MDOT has standing and the opportunity to comment on rail regulatory matters that are the jurisdiction of the Federal Government, including mergers and acquisitions.

Exhibit 9 Fragmentation of the Tri-Cities Corridor



The NLP rail network suffers the institutional weaknesses associated with fragmentation. Shipments often require the close collaboration of two or more competitive short line railroads to reach the Class I system. This institutional weakness adds complexity, cost, and potential service delay to these multi-line movements. The fact that the system works as well as it does is a credit to those rail officers and firms involved. Exhibit 9 illustrates the fragmentation associated with rail ownership in the Tri-Cities section of the NLP. The situation is actually more complex with multiple, sometimes inefficiently configured interchange points between NLP and Class I carriers and costly trackage rights agreements.

Simplification of the NLP rail network could result in cost reduction and service improvement. A streamlined rail network could reduce the number of interchanges and improve operations resulting in cost reduction and service improvement. A prime example of this matter is the very significant movement of corn from the “Thumb” to CSX for delivery to markets in the Southeastern United States. While the combined rail system is able to capture the unit train cargo moving to the southeast, it is not able to capture a significant share of the large volumes of grain which are moving from the “Thumb” approximately 150 miles to Toledo by truck.

MDOT Rail Preservation Guidance

Recommendation 4. Evolve Michigan’s rail preservation policy and investment programs in more “local” and “shipper oriented” direction.

Michigan’s rail preservation investment program, subject to a cost benefit analysis, should seek to address the above issues and evolve in the following policy directions:

- The capital needs for NLP rail infrastructure should not be met by MDOT alone, but rather using programs that emphasize shared risk and the use of public/private partnerships. These public private partnerships should include the railroads, state and local agencies, plus the involved shippers. Any new programs should include a provision for a modest “local match” where circumstances warrant.
- Increased capital funding levels are necessary to permit the agency to effectively drive economic development and correct the consequences of long term deterioration. For example, there is not enough money in the MDOT rail budget at this time to reverse the deterioration in the condition of the Huron Subdivision.
- Funding guidelines should be flexible enough to provide equipment, terminals, and all types of infrastructure required to operate a railway. The most immediate need is for the extension of existing rail loading facilities.
- Communities and EDC agencies should be able to sponsor projects, not just shippers or railroads. Funding should require a cost benefit analysis for each applicant project requiring the endorsement of the stakeholders with a specific requirement to include the shipper and railroad stakeholders.
- GLC and Huron and Eastern rail operating contracts on State owned rail lines need to be rewritten to encourage private investment.

Recommendation 5. MDOT and MEDC should invest in a public private partnership to establish a demonstration project to test the concept of carless technology rail intermodal service in the NLP.

Conventional Intermodal Service

In “Conventional” intermodal service, railroads move trailers or containers on specialized rail cars in dedicated intermodal unit trains operating between large terminals. Conventional intermodal service is available to shippers in the NLP from rail intermodal terminals in Chicago and Detroit. Motor carriers

complete the service to NLP origins and destinations. Examples of users of intermodal rail service include Dow in Midland, several country grain elevators, and Martin Marietta in Manistee.

There is much local and shipper interest in establishing intermodal terminals and extending rail intermodal train service into the NLP. This interest is increasing as there is growing use of containers to move soybeans.

Unfortunately, NLP volumes are too small and too dispersed to meet the typical prerequisite conditions for successful development of conventional intermodal rail service. The typical markets which support conventional intermodal rail terminals are in metropolitan population centers of over one million people, major international container ports, or associated with manufacturing operations on the scale of a very large auto plant. None of these conditions exist in the NLP.

Because of the strong interest in this subject, Tioga studied a number of exceptional cases of conventional intermodal services provided in smaller cities. Those case studies are presented in Technical Memorandum I. These cases do not change a negative conclusion regarding conventional service in the NLP.

Carless Technology Intermodal Service

In carless technology, an intermodal cargo container is moved over the rails but does not have to be carried on a conventional railcar. Rail wheels are attached directly to the trailer or container chassis for movement over the railway in an ordinary rail train.

Because conventional service appears infeasible, Tioga introduced the concept of using unconventional carless intermodal technology in conjunction with regular freight car service to the NLP rail carriers. This capability is advertised as being applicable for low density intermodal services fitting the demand levels in the NLP. Unlike conventional intermodal service this system may be designed to be integrated with standard freight trains and to operate from simple, low cost terminals, which significantly reduces the scale of operations required to provide a positive return for the service provider. This innovative technology may make intermodal service feasible in certain NLP markets. For example carless loading facilities are simple and economical enough to be constructed at individual, large grain elevators.

GLC and Ann Arbor railroads and are currently discussing establishment of an unconventional intermodal rail service between Toledo and Clare. Details are also included in a Case Study presented in Technical Memorandum I. This initiative could be fostered to provide the test case needed for a successful intermodal demonstration project.

Exhibit 10: Example of Carless Intermodal Technology



End Notes

¹ Five additional segments accounting for 38 miles are included in the system. Details are included in Exhibit 1 of Appendix II.

² 1226 miles reflects the total ownership each of the railroads that serve the NLP. Approximately 90% of this mileage is within the study area.

³ The team reviewed data generated from the waybill sample, which is a normally reliable source for this type of information. In this case, however the waybill sample substantially and inconsistently misreports rail volume in the region. For example, it fails to report coal moving to Essexville. For this analysis the study team relied on data provided by the rail carriers.

⁴ Transload terminals differ from rail intermodal terminals in that the cargo is physically handled at a transload rather than remain in a shipping container. Prospects are not good for the establishment of a conventional intermodal terminal in the NLP as intermodal service typically requires freight volumes and rail service levels not available in the NLP. Technical Memorandum I addresses this issue in detail.

⁵ The facility in Clare, MI is advertised by both GLC and Norfolk Southern.

⁶ http://www.michiganbusiness.org/cm/files/reports/logistics_strategic_plan-12.pdf

⁷ Michigan State Rail Plan:

http://www.michigan.gov/documents/mdot/MDOT_MI_SRP_public_review_draft_2011-05-23_600dpi_353776_7.pdf

⁸ A positive example may be GLC's important agricultural industry related growth opportunity located in Ithaca, MI, where Zeeland Farm Services has announced plans to build a large soybean processing plant in 2015. Full development of the 435 acre includes a large new grain elevator and an agribusiness transload terminal.