

FREIGHT

Freight transportation, whether by rail, truck, or ship, contributes significantly to both traffic and economic activity in the southwest Michigan region. With the global extent of supply chains, changes in freight movement well outside the region may have tremendous impacts on the quantity and type of freight moving through the region, as well as the types of economic activity in Southwest Michigan.

Freight movement and large-scale infrastructure in nearby major metropolitan centers may have a substantial spillover effect in increasing traffic in southwest Michigan. Interstate I-290 in Illinois in 2011 was found to have the worst truck bottleneck of any freight-significant highway in the United States. Given that I-94, a major transportation link in Berrien County, connects directly to I-290, it is likely that a large portion of that traffic travels through the southwest Michigan region. In addition, transnational border crossings in Detroit and Port Huron, the busiest in the nation, send a large amount of truck traffic through this region, both into and out of Canada.

This section covers new federal legislation as well as the effects that all modes of freight transport have on the region, including recent projects far beyond the planning boundary of NATS.

MAP-21'S FOCUS ON FREIGHT

Moving Ahead for Progress in the 21st Century (MAP-21), which took effect on October 1, 2012, includes a renewed focus on the efficient movement of freight, and a goal of using effective freight planning to spur and support economic growth across the country. Freight provisions open up new possibilities for funding as well as promote the creation of a national framework for freight. In particular, MAP-21 provides for the following:

- The development of a report by USDOT by October 1, 2014 which assesses the current condition and performance of the nation's freight system.
- The development of national performance goals related to freight by April 1, 2014.
- The development of state performance measures related to freight movement on the Interstate system by one year after federal goals and measures are released.
- The development of state freight plans and progress reports on performance measures every 4 years.
- New freight activity eligibility under core highway programs.
- The completion of a nationwide truck parking facility survey by April 1, 2014

- Funding opportunities for states, MPOs, and local agencies that wish to upgrade truck parking facilities.
- An expansion of the Marine Highways program and increased funding for harbor upgrades.
- The establishment of a National Freight Policy Council, made up of state DOT officials and other freight stakeholders, to help develop a national freight policy¹⁰.

FREIGHT RAIL

The CSX Corporation is based in Jacksonville Florida and is one of the nation's largest rail transportation providers. There are operations and networks in 23 states, the District of Columbia, and the Canadian provinces of Ontario and Quebec.

In Michigan, the CSX line is a class one carrier that connects the east to the west making many stops including Detroit, Lansing, and Grand Rapids. The CSX line from Grand Rapids travels along the lakeshore through southwest Michigan and onto Chicago. There are seven to eight trains traveling along the tracks on a daily bases. There is a mix of both passenger and freight. Use of CSX tracks has been on the decline in southwest Michigan. CSX still transports a wide variety of products including coal, iron, steel, passenger vehicles, and auto parts to points both east and west. Coal is the most heavily shipped product by rail. Major companies in the area that use CSX include TechniSand Inc. in Bridgman and Arlington Metals Corporation in Sawyer. In addition, Amtrak operates its Blue Water, Wolverine, and Pere Marquette passenger routes on CSX tracks.



A rendering of the proposed Detroit River International Crossing between Southwest Detroit and Windsor, Ontario.

On a national scale, two major railroad expansions may already be increasing the amount of freight that enters the southwest Michigan region. CSX's National Gateway Project, completed in 2011, allows freight trains from Maryland, Virginia, North Carolina Pennsylvania, West Virginia, and Ohio to be double-stacked with containers, dramatically increasing the amount of freight that can be moved. As part of the project, CSX also opened a new multi-modal freight terminal in North Baltimore, Ohio¹¹. In addition, the Heartland

¹⁰ http://www.fhwa.dot.gov/planning/freight_planning/talking_freight/12talking.cfm

¹¹ http://www.nirpc.org/media/5588/nirpc_freight_report_final_updated_8_30_2010.pdf

Corridor allow the routing of double-stacked trains from the port of Norfolk, Virginia to Columbus Ohio, and then onward to Chicago.

While neither of these projects will directly impact railroad tracks or services in southwest Michigan, they will each substantially increase the quantity of freight that moves across the country. Some of the increased number of trucks needed to move that freight away from their rail destinations will no doubt cross through or deliver freight into the Southwest Michigan region, perhaps along with an increased number of freight ships on the St. Joseph River or Lake Michigan.

TRUCKING

The efficient movement of freight within and through the NATS area is important to industry, retail, and agriculture for international and regional trade. On a national scale, over-the-road trucking still makes up the largest modal share of domestic freight transport, both in terms of volume of freight and dollar value. While there has been a reduction in total freight moved by truck in the wake of the 2008 recession, USDOT still projects that trucking movement will increase and continue to be the predominant mode of freight travel in 2040.¹²

The recession did not appear to slow down truck freight movements to and from Canada, as both exports and imports increased between 2005-2011. The Ambassador Bridge in Detroit is currently the most active commercial transnational border crossing in North America. It is likely that much of the freight that crosses the Ambassador Bridge passes through this region before reaching its end user. With the proposed Detroit River International Crossing, the capacity to haul freight across the border will increase, likely leading to an increased number of trucks passing through the southwest Michigan region en-route.

Regions adjacent to NATS also see a substantial share of truck traffic. The Northern Indiana Planning Commission (NIRPC) found trucking to be the predominant mode of freight movement within its planning boundaries, accounting for nearly double the volume of freight moved through all other modes combined. Similarly, the Michiana Area Council of Governments (MACOG) found in its 2004 study that regional producers of non-metallic minerals, a major economic base in the region, were heavily dependent on trucks to export their goods¹³.

¹² [Federal Highway Administration, Office of Freight Management and Operations. \(2012\). Freight Facts and Figures 2012.](#)

¹³ <http://www.macog.com/PDFs/MPO/D05stfnl.pdf>

THE CHICAGO EFFECT

The proximity of this region to Chicago will continue to have profound impacts on freight movement through the TwinCATS region. Chicago is in a unique position nationally as it continues to be both a rail and trucking hub. Chicago is the busiest port in the Western Hemisphere in terms of twenty-foot equivalent unit (TEU) container traffic. According to Chicago Metropolitan Area's Freight Drill-Down Report, Chicago's status as a freight center allows it to experience a multiplier effect. For example, when there is growth in the air transport sector, demand in the rail transport sector. With this multiplier effect, it is inevitable that many products seen in Chicago's freight distribution facilities will pass through the NATS region, or reach end users here, at some point in the supply chain¹⁴.

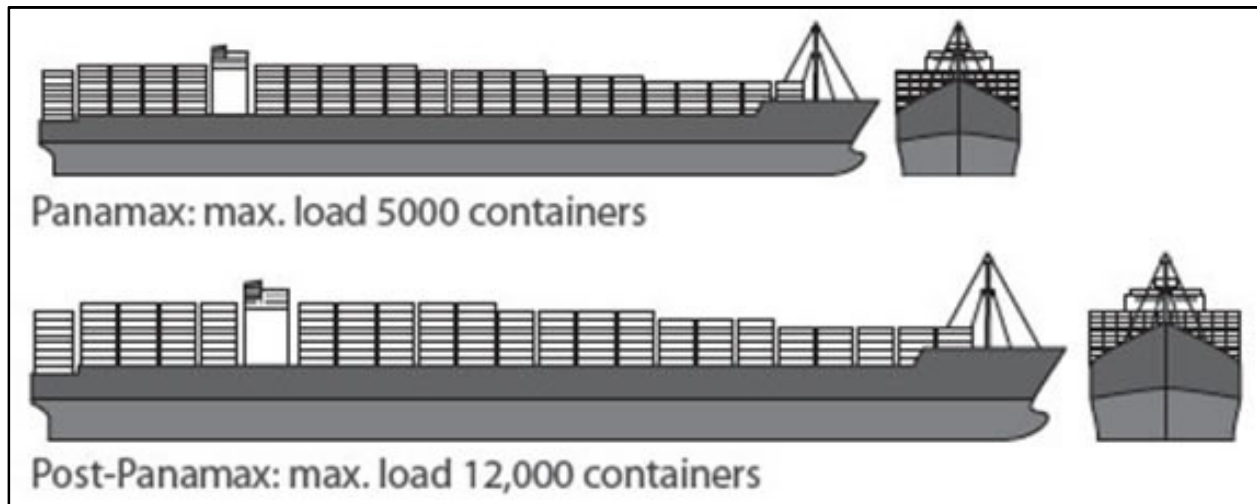
THE PANAMA EFFECT

Unlike Chicago, Panama may seem a world away from southwest Michigan. Yet an ongoing expansion of the Panama Canal, known as Panamax, will increase the speed and efficiency of freight movement across the globe, and will create significant new freight traffic in southwest Michigan. With the expansion of the Panama Canal, larger ships will be able to pass through, doubling the number of containers that can be sent in a single shipment. By 2015, the ports of Norfolk, Baltimore, New York, and Miami will all have the capacity to accommodate these larger container ships in their ports, earning the designation of "post-Panamax ready, Figure 17 displays what the new Panamax vessels will look like. The arrival of these larger ships will also increase demand among suppliers to quickly and cost-effectively distribute those goods to their end destination, over road, rail, air and inland waterways. The commonplace existence of global supply chains means that the end markets or destinations for these goods are increasingly dispersed. In southwest Michigan, the Panamax expansion would likely mean a greater number of trucks on the road, and possibly increased weight carried by these trucks¹⁵.

¹⁴ http://www.cmap.illinois.gov/c/document_library/get_file?uuid=80610300-0acd-4e57-8d74-293ddc637c14&groupId=20583

¹⁵ http://www.colliers.com/en-us/us/~media/files/marketresearch/unitedstates/colliers_portreport_2012q2_final.ashx?campaign=Colliers_Port_Analysis_NA_Aug-2012

Figure 17 - Post Panamax Ship Capacity



Within the region, portions of US-31 and I-94 are already showing wear from constant traffic of heavy trucks. In order to maintain these important routes for suppliers and other roadway users alike, careful monitoring and enforcement of established truck weight limits will be necessary.

FREIGHT IN NATS

Within the NATS region trucking has been a significant mode of freight movement. The Table 20 shows average daily traffic volumes of commercial vehicles for selected major roadway segments within the NATS region in 2000, 2007, and 2011. Not surprisingly, I-94 is the dominant roadway on which the commercial traffic travels. The overwhelming dominance of I-94 indicates that freight trucks may stop at points off the highway for mandatory rests or to drop off goods at retail establishments. Trucks are also helping move agricultural products to markets both within and beyond our region, and no doubt help connect suppliers in our region with end users. Yet the predominant use of the interstate by freight traffic does suggest that the NATS region is not itself a major hub or distribution center for freight operations.

Table 21 also shows a possible significant effect of the economic recession of the late 2000s on truck freight movement both on I-94 and on regular roadways. While most roadway segments saw a decline in commercial traffic between 2000 and 2007, many roadway segments saw a steeper decline between 2000 and 2011, and all experienced a net decline between 2000 and 2011. The closure of additional manufacturing facilities in Chicago, northern Indiana, and the NATS region in response to the economic downturn may have contributed to the decline in freight trucking movement in recent years.

Table 21 - NATS Region Commercial Average Daily Traffic: Sample of Major Roadway Segments

Route	From	To	2000 CADT	2007 CADT	2011 CADT	Percent Change from 2000-2011
US-31	BUCHANAN RD	US-31 BR (WALTON ROAD)	2139	2353	1870	-12.58
US-31	JCT US-12	BUCHANAN RD	2139	2353	1870	-12.58
US-31	US-31 BR (WALTON RD)	SNOW RD	2307	1840	1814	-21.37
US-31	SNOW RD	JCT M-139	2307	1840	1814	-21.37
US-12	JCT M-51 (OLD US-33)	JCT M-60	1412	1144	789	-44.12
US-12	JCT M-60	WCL EDWARDSBURG	653	525	275	-57.89
US-12	JCT M-40	JCT M-103	653	525	275	-57.89
US-12	JCT M-62	OLD M-205	653	525	275	-57.89
US-12	MASON ST	JCT M-40	653	525	275	-57.89
US-12	WCL EDWARDSBURG	JCT M-62	653	525	275	-57.89
M-60	END DIVIDED S OF LEET RD	SCL CASSOPOLIS	590	392	348	-41.02
M-60	JCT M-60 BR NILES	BEGIN CONCRETE SURFACE	590	392	348	-41.02
M-60	JCT US-12	JCT M-60 BR NILES	977	965	653	-33.16
M-60	N JCT M-62	ECL CASSOPOLIS	635	541	473	-25.51
M-60	S JCT M-62	N JCT M-62	573	541	473	-17.45
M-60	SCL CASSOPOLIS	S JCT M-62	590	392	348	-41.02
M-60	BEGIN CONCRETE SURFACE	END DIVIDED S OF LEET RD	590	392	348	-41.02
M-62	JCT US-12	NCL EDWARDSBURG	364	276	345	-5.22
M-62	N JCT M-60	NCL CASSOPOLIS	193	217	101	-47.67
M-62	NCL EDWARDSBURG	SCL CASSOPOLIS	364	276	345	-5.22
M-62	SCL CASSOPOLIS	S JCT M-60	364	276	345	-5.22
M-62	SCL EDWARDSBURG	JCT US-12	464	353	174	-62.50

* Source: Michigan Department of Transportation Traffic Monitoring Information System (TMIS). The figures represent the estimated mean daily traffic volume for commercial vehicles. Values are calculated using the same procedures as AADT. Major Roadway Segments were defined as roads with AADT of over 10,000.

FREIGHT MOVEMENT BY RAIL

Currently, southwest Michigan has two Class I railroads operated by Canadian National Railway and CSX Transportation. Class I railroads are national companies that primarily offer services for national and intermodal shippers and markets. Table 22 highlights the Class I railroads in southwest Michigan and the main commodities that are transported. In addition, Map 17 highlights the locations of the Class I Railroads throughout the state of Michigan and their impact within the planning region.

Table 22 - Class I Railroads and Commodities

	Canadian National	CSX Transportation
Main Commodities	Petroleum, chemicals, grain, fertilizers, coal, metals, forest products, minerals, automotive parts	Agricultural products, automotive products, chemicals, coal, food, machinery, metals, minerals, paper, pulp, transportation equipment
Number of Miles in MI	1,017	569

Source: MDOT Rail Plan

The MPO does not have sufficient data to suggest how the Class I railroads directly impact southwest Michigan. The Michigan State Rail Plan has more detailed information regarding how rail impacts the state. As part of the implementation of this plan, the SWMPC will be working to gather more information regarding the impacts of rail in southwest Michigan.

Map 17 - Michigan's Railroad System



BENEFITS OF RAIL IN MICHIGAN

The Michigan State Rail Plan offers more information regarding the benefits of rail transportation than what the MPO currently has access to. Rail transportation has the potential to provide significant benefits for the State of Michigan. Both passenger and freight rail services provide an alternative to less efficient transportation modes. By diverting passengers from automobiles and freight from trucks, rail provides significant benefits from reducing congestion and wear and tear on roadways, to reducing fuel consumption and reducing emissions of pollutants. Passenger and freight rail service in Michigan provides significant economic and environmental benefits to the state.

Economic Benefits

Efficient freight and passenger rail service provides important economic development benefits to Michigan communities. Industrial development can be thwarted by the lack of freight rail service. Freight rail service is a key location factor for many new companies seeking to locate or expand in Michigan. Enhanced passenger rail service can provide important economic development benefits to Michigan communities by providing improved accessibility, connectivity and travel efficiency. An economic impact analysis has been prepared for the MWRRRI Plan which recommends 110 mph high-speed rail service in the Chicago-Detroit/Pontiac corridor and enhanced service in other Michigan corridors. This analysis estimates that improved passenger rail service in Michigan will result in 6,970 new permanent jobs, \$680 million in increased property values around Michigan stations and a \$138 million increase in annual household income statewide.

Rail transportation is also a catalyst for economic development and job creation. Access to freight rail transportation helps to encourage the development of new businesses and the expansion of existing businesses. Passenger rail services can be an important catalyst for shaping communities and spurring growth around rail stations

Environmental Benefits

Rail service provides important environmental benefits to Michigan residents. Rail can move freight three times more efficiently than trucks on a per ton-mile basis. The U.S Environmental Protection Agency (EPA) estimates that a typical freight train emits only one-third the pollution of a truck on a ton-mile basis. Transportation by rail saves approximately \$266 million annually in pavement damage and reduces truck congestion on Michigan roadways. Passenger rail travel has similar environmental benefits. Data from the Oak Ridge National Laboratory indicates that intercity passenger rail consumes 17 percent less energy per passenger mile than airlines and 21 percent less energy per passenger mile than autos. Intercity passenger rail produces 60 percent fewer carbon dioxide (CO₂) greenhouse gas emissions per passenger mile than the average auto and about half (50 percent) of the greenhouse gas emissions per passenger mile of an airplane. Intercity passenger rail also generates fewer emissions per passenger mile of other pollutants such as oxides of nitrogen (NO_x), volatile organic compounds (VOCs) and carbon monoxide (CO). Intercity passenger rail service provides “downtown to downtown” connectivity that encourages urban infill and downtown redevelopment. This type of “transit-friendly” development is more energy efficient, resulting in fewer

harmful emissions and the ability to more efficiently provide urban services than in areas of low-density suburban sprawl¹⁶.

Preservation in Roadway Pavement

“There is a logical connection to be made between more people and products being moved by rail and the extension of pavement life on our roads, highways, bridges, and interstates. According to an article about the benefits of rail; “Amtrak removes 8 million cars from the road...A single intermodal freight train can take up to 280 trucks or 1,100 cars off of the highway. Without rail as an option, freight shippers would have to add 50 million additional trucks on the roadways¹⁷”. Additionally the American Association of State Highway and Transportation Officials, Transportation Invest in America Freight-Rail Bottom Line report of 2002 states; “that if all freight-rail were shifted to trucks tomorrow, it would add 92 billion truck vehicle-miles-of-travel to the highway system and cost federal, state, and local transportation agencies an additional \$64 billion for highway improvements over the next 20 years. This \$64 billion is a conservative figure that does not include the costs of improvements to bridges, interchanges, local roads, new roads or system enhancements. If these were included, the estimate could double”¹⁸.

SAFETY ALONG RAIL CORRIDORS

Amtrak has partnered with the FRA and the State of Michigan to develop a radio-based train communication system, called the Incremental Train Control System (ITCS), which is designed to allow trains to operate safely at higher speeds. The ITCS is currently in place for high-speed revenue service on Amtrak-owned track in Michigan and works to prevent train-to-train collisions, train overspeed conditions, and protect on-track roadway workers.

Incremental Train Control System (ITCS), developed by General Electric Transportation Systems (GETS) is a communication-based signaling system overlaid on an existing signal system. This is one class of PTC that was designed to prevent train collisions and overspeed derailments. The program of upgrading 66 miles of Amtrak owned Michigan Line between Kalamazoo and New Buffalo, Michigan to allow 110-mph operation with this PTC system was initiated with a co-operative effort among FRA, Michigan Department of Transportation, and Amtrak. The program started in 1996 with a contract for Harmon Electronics, which has since been acquired by General Electric, to develop the first ITCS demonstration on this corridor. The main function of the system is to enforce signal authorities, civil speed limits and temporary speed limits. It was designed as a vital overlay to an existing CTC system with a wireless computer network of servers along these 66 miles with radio communication. The servers communicated with the equipped

¹⁶ Michigan State Rail Plan, 2011

¹⁷ http://www.amtrak.com/ccurl/216/645/CriticalLink2007_5.pdf

¹⁸ <http://rail.transportation.org/Documents/FreightRailReport.pdf>

locomotives through the communication system consisting of a UHF radio network based on ATCS Spec 200 frequencies. Unique to this system is the employment of TDMA (Time Division Multiple Access) scheme to reduce the message collisions while in transmission. With this scheme, the communication to a number of locomotives can be conducted with greater ease. Unlike an office-centric system like IDOT PTC, all the communication tasks are performed locally device-to-device. Most of the decision-making processes are made with the host processors on-board the locomotives. A computer in the office however is necessary to transmit the temporary speed restrictions to the server and to download the health of the system when it is necessary. The train tracking system is based on GPS (Global Position System).

ITCS, being vital, means that it will ensure that all the messages are delivered properly and accurately, and will continuously perform surveillance of all devices and interfaces of the system to ensure they are in proper working conditions, and if not, a fail-safe fall back will be enforced. Another feature that is critical to high-speed operation is the advanced grade crossing activation. When the train approaches a crossing, continuous location tracking and calculation are performed and will activate the crossing gates using wireless communication, instead of the conventional track circuit, at the appropriate time to insure the optimum advanced activation time¹⁹.

The system has been in revenue service since September 2000. At the beginning, the speed limit of 79 mph was kept to gain experience and confidence with the system. The maximum speed limit was subsequently raised to 90 mph in January 2002 and then to 95 mph in September 2005. The goal is to increase the speed to 110 mph in the 4th quarter of 2007.

AIRPORT FREIGHT SERVICE

The South Bend Regional Airport is north central Indiana's major airport handling airfreight. Three main carriers, FedEx, Airborne Express, and UPS, handle airfreight at the Airport. There are two other minor carriers of airfreight at the airport as well, Ameriflight and Mountain Air. Some of the passenger airlines also carry freight. These carriers include American Connection, ACA-Delta Connection, ASA-Delta, Air Wisconsin, Air Wisconsin ACA, US Trans State, Comair, Northwest, Pinnacle, Mesaba and PSA. As a true multi-modal facility the South Bend Regional Airport provides passenger service via inter- (ex: Greyhound) and intra-city Transpo-South Bend city bus service) buses, and the Chicago South Shore and South Bend interurban commuter railroads²⁰.

¹⁹ <http://www.fra.dot.gov/Page/P0287>

²⁰ <http://www.flysbn.com/>