

EUPRPDC Transportation & Logistics Strategy Feasibility Analysis

prepared for

EUPRPDC

prepared by

Cambridge Systematics, Inc.

and

Global Logistics Development Partners

report

EUPRPDC Transportation & Logistics Strategy

Phase 2: Attraction Plan

prepared for
EUPRPDC

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1.0 Recommended Strategies

1.1 REVIEW OF PHASE I FINDINGS

From our review of the region's economic condition, its unique assets and competitiveness matching, we believe that the region could be competitive to sustain growth in some specialized investment areas. This growth would be enabled by capitalizing on a series of special economic characteristics and would be developed by building a larger-market platform developed from creating a fundamentally distinct binational delivery model.

Focal Areas

Our analysis suggests that there are five focus areas where the EUP region should concentrate efforts to attract investment to the Sault International Investment District.

1. **Create a unique and specialized binational investment district** - Including the EUP region and the Sault Ste Marie, ON region, the District would be a specialized strategic rural NAFTA investment hub, which would promote binational border investment in a market that has been historically economically isolated and underdeveloped. This may be the first of its kind formal strategic border economic partnership in North America. Combined, the region can portray itself as a vital combined community with a series of key market attributes including:
 - A population of 100,000+ with a diversified and skilled labor force and consumption market which is categorized as a (lower tier) mid-sized market.
 - A region with a series of regional assets or advantages that distinguish it from an investor perspective, key objectives of the District would be:
 - Investment attraction coordination with an international seaport which is situated on the Great Lakes/St Lawrence Seaway System, providing inbound and outbound maritime service to large markets along the Seaway System and to global markets in Europe and South America. The Port of Algoma is privately owned and has developed substantial economic development relationships in Sault Ste Marie, ON.
 - Two comprehensive four-year universities which can form a custom skills development partner backbone; the attraction and retention of talent in region. Consideration should be given to provide special status encouragements to make the region uniquely attractive to prospective students, especially in key skill areas.
 - Financial incentives for investment in key infrastructure and for targeted sectors, special consideration for in-district investments

- Two regional commercial airports providing connecting service to international hubs in Toronto and Detroit, and Minneapolis-Saint Paul, and as a system, can coordinate route service development, cargo development
 - With a combined labor base that rivals some larger US or Canadian Midwest communities, as a system the District can compete for projects that would be out of reach to the US-side on its own
 - With proximate access to valuable natural resources; forestry stocks, extraction minerals the District has the breadth to develop feedstock to manufacturing investment strategies
 - Collaboration between regions, province/state and federal governments such that from an economic planning and development perspective.
2. **Focus on creating new property and infrastructure assets** – In order to attract investment in key sectors, it will be critical that risk capital has confidence in the market to support purpose-planned/built industrial assets. It will not be possible to attract investment in the target markets without modern, fit-for-purpose industrial property assets. We see the need for both development ready sites and vertical building assets that are advantageously located with access to key transport infrastructure (port, rail, road and potentially airport).
 3. **Investment Attraction – Steel Product Manufacturing** – Leveraging the District’s access to raw and semi-processed feedstocks, develop marketing and target-specific business development to key business category targets.
 4. **Investment Attraction – Wood Products Manufacturing** – Leveraging the District’s access to raw feedstocks, develop marketing and target-specific business targets.
 5. **Investment Attraction – Regional Distribution** – Focusing on the expanded binational consumption market, craft site and target category marketing for new consumer goods regional distribution investments.
 6. **Investment Attraction – Cold Weather Testing and Development** - Pursue specific CIU and other location development and investment attraction opportunities, specifically around expanded cold-weather and endurance testing and development facilities.

Implementation

The following represents a roster of recommended implementation tasks and business development strategies for the EUPRDC and its regional community and economic development partners.

- Develop foundational support from Government for the Sault International Investment District
 - Gain support regionally and at both State and Provincial levels for Sault International Investment District; including special legal

status, joint governance structure and special incentives to businesses and for talent development and retention

- Natural allies would be city/county partners, business representative/chamber/economic development organizations, educational leaders/universities, and business leaders
- Following local and State support and commitment, it is important to engage both federal governments and request pilot joint federal economic zone status. This could include the following: alteration of border management practices, expanded work permission for both US and Canadian workers, streamlining for customs inspection, assignment of focused rural development funds.
- Focus on strategic property/infrastructure investment in the Sault International Investment District
 - To attract risk capital to support purpose-planned/built industrial assets, a special focus should be made to identify investment opportunities on both sides of the border
 - Create a range of sites/infrastructure that can offer the market a diverse set of products that can cater to the targeted areas
- Focus on user investing businesses: manufactured steel products, manufactured wood products, cold-weather testing, regional distribution
- Take marketing and target-specific business development forward
 - Develop brand awareness plan for the new investment district – this is new and different and would receive a lot of press attention across a range of news, trade journal and transportation & logistics audiences.
 - Assign responsibility for local (US-side) joint business development strategy; common brand, product marketing and government policy and incentives supports
 - Agree on responsibilities with allies for regional (binational) business development plan; mutual targets, brand, coordinated investment targeting
 - Focus is on steel products manufacturing firms; component manufacturers in the following priority segments: industrial machinery, transport equipment, structural building products
 - Focus is on secondary wood products manufacturing firms
 - Focus is on cold weather testing users in target-specific sectors
 - Focus is on creating site and investment opportunities for risk capital investors/property interests

- Coordinate a brand and product-specific plan with the State and regional economic development marketing organization
 - Establish the EUP as a strategic investment product for the entire UP
 - Establish the EUP as a strategic investment product for the Michigan Economic Development Corporation; rural, border/binational, port-centric emphasis

1.2 REVIEW OF BUSINESS DEVELOPMENT ACTION PLAN

Phase II of the study focused on detailed action and implementation activities, including a business development plan. The development plan and associated activities are detailed further in section three and four. An overview of the recommended action plan is described below.

the EUP exists within a wider product system and it is important to understand those external factors as they are an important component of the project's overall business propositions and how they should be marketed. The EUP's brand is tightly tied to the factors that define Michigan and the entire Upper Peninsula.

Successful economic development investment attraction strategies draw on the expertise and connections of other organizations to achieve their vision. To be successful EUP will need to rely on developing an integrated product with its partners at the State and regional levels and intensively focus its efforts on each of its sectors creating relationships, expertise, capacity, networks, support structures, academic linkages as well as a range of other specialized programs.

Recommendation 1: Pursue the creation of a federally-recognized bi-national investment zone that extends into both Canada and the U.S.

Recommendation 2: Position the EUP's forest products industry for growth in three identified emerging opportunities

Recommendation 3: Position the EUP's cold weather testing industry for growth through the unique demand that vehicle advanced technology applications is creating in the testing environment.

Recommendation 4: Pursue targeted business investment in the Specialty Metals Manufacturing Sector

Recommendation 5: Develop a clear understanding of the disruptive impact that e-commerce is having upon the warehouse and distribution sector.

Recommendation 6: Pursue targeted business investment across the four recommended key business segments

Additional recommended activities and research because of phase II include:

- Actively participate in the Michigan Department of Transportation Statewide Long-Range Transportation Plan Update to represent EUP interests and promote transportation improvements that can facilitate key capacity improvements in the region.
- Conduct a detailed business survey that thoroughly documents current and anticipated transportation system needs for the region's business partners.
- Pursue a Sault Area rail condition report, in coordination with Canadian National Railroad to understand current track ratings in the region, what role EUP area trackage plays in broader supply chain movements, and highlight potential rail-served site development opportunities.
- Continue propping for state and Federal funding, and consider building business cases that quantitatively and qualitatively describe how lack of broadband access impedes economic development in the region.

2.0 Industry Targets

Investment

At the outset of the study, a great deal of stakeholder interest surrounded expansion of the warehousing and distribution sector. During the work, the team developed a wider perspective on potential investment for the region. In addition to the warehouse and distribution sector, several other sector targets were identified as meaningfully appropriate, given the special advantage offered by close access to natural material feedstocks and the Port of Algoma.

Generally, an increase in warehouse and distribution sector would come from significant demand of some sort. This could mean a rapid influx of new residents or shift in age or demographics, a change in the regional businesses, or other types of surges to the regional economy. In the EUP, none of these phenomena appear to be happening, as population has slightly decreased over the past several years, and the number and make-up of businesses has remained relatively consistent. The region is also not proximate to large-scale consumer bases that would cause such demand. The remainder of this section discusses the trends in the warehouse and distribution sector, as well as two possible industry targets based on existing raw goods availability: specialty lumber manufacturing, and steel. Lastly, the section discusses opportunities to build upon cold weather testing facilities.

Understanding the Warehouse and Distribution Sector

As manufacturers become more focused on reducing costs, increasing customer satisfaction, and optimizing their supply chain to resources, suppliers and customers, they are paying much more attention to the number and location of their distribution facilities and the functions they perform. Physical distribution involves a spectrum of activities involved in the movement of goods from points of production to final points of sale and consumption. Physical distribution is comprised of the functions of movement & handling of goods, specifically transportation services (trucking, freight rail, air freight, inland waterways, marine shipping, and pipelines) and transshipment and warehousing services (consignment, storage, inventory management). Distribution activities are classified in under NAICS 493100 - Warehousing and Storage.

Distribution centers are the main facilities from which most logistics are coordinated and these assets include a facility or a group of facilities that perform consolidation, warehousing, packaging, decomposition and other functions linked with handling freight. Their main purpose is to provide value-added services to freight, which is generally stored for relatively short periods of time. DCs are often in proximity to major transport routes or terminals.

DCs or their variations can also perform light manufacturing activities such as assembly, kitting, labeling or packaging. In contrast, a warehouse is a facility designed to store goods for longer periods of time. Distribution centers tends to

focus on the demand requirements while a warehouse is generally driven by supply considerations.

Today, technology is the driving force behind growth, development, and increased productivity around the world and in the distribution and logistics industries. Technology has produced a wide range of innovations, including barcode scanning, automated storage and retrieval systems, state-of-the-art material handling equipment, computerized freight tracking, voice recognition and advanced communications systems, and the automated purchasing, production and sales systems that support just-in-time inventories and distribution.

The location goal of most warehouse/distribution/logistics centers is to select a site that offers the lowest possible transportation costs with the easiest access to the greatest number of customers. The location process typically used in the selection of an appropriate site takes into consideration the products for which a distribution facility is desired; the market area or areas that are to be served and the degree of market penetration necessary. Just-in-time has increased significantly the importance of being within a day's travel time (500-mile maximum) of suppliers and customers.

There are a variety of company structures that comprise the distribution sector. Distribution operations serve both retail and wholesale supply chain support functions. Many DCs are operated directly by or for retailers (or wholesalers), while others are operated by outsourced logistics firms. These third-party firms will generally operate facilities and in some cases, they will also perform other logistics functions such as transportation planning, transport carriage and as mentioned above, some manufacturing functions.

Transportation Requirements

Interstate, highway, and truck access are critical for the delivery of raw materials, supplies and other input materials in the distribution of products. Distribution-related operations seek locations with access via truck routes on an interstate, limited access or other 4-lane highway, and they should be within 15 miles of an interchange of these types of roadways. Access routes must be designated for travel by 53' trucks. Travel to the highway should avoid congested commercial, retail, or residential routes. The site should have dual road access and separate auto and truck access points or entrances, and at least one traffic light should control ingress and egress to the site. Major highway visibility can be a plus.

Rail service is important for some operations. The growth of intermodal service, i.e., containers and truck trailers carried on trains over long distances, has meant additional options for cost conscious shippers as fewer distribution centers are needed to cover much larger areas. Therefore, sites served by rail, or in close proximity to rail that have the capability of access by a spur, have a competitive advantage.

Air transportation is more important for some users than for others. It is especially critical for operations handling products with a limited shelf life that are needed

by just-in-time manufacturers, such as pharmaceutical companies. Air service is also used by operations that handle products of limited weight and whose shipping costs are relatively low. Surface access within 60 minutes to a commercial airport with jet service is preferred.

For projects involving water-based shipping, there should be direct access to a navigable waterway or express access to a coastal port within 240 miles.

Proximity of Support Facilities

Warehouse/Distribution/Logistics centers prefer locations with proximity to trucking companies, truck mechanics, and other service providers; technology, computer, and telecom specialists; temporary staffing services; office and industrial supply warehouses; and courier services.

Competition/Sector Evolution

Increasingly, distribution operations are being outsourced to third-party logistics management firms. This trend is significant, with 3PL outsourcing growing by up to 20% annually (depending on specific area). Many retailers and manufacturers have found that logistics and inventory management is outside of their core competency and they have integrated purchasing and production management with outside firms that handle transportation and inventory.

Globally and especially over the past three years there has been a trend for third-party logistics firms to purchase or merge with other third-party logistics firms. These transactions have allowed firms to grow physically and in geographic coverage. These combinations have also provided substantial levels of synergy and efficiency that are allowing some of these larger outsourced logistics firms to provide services beyond their historic core service offerings.

As technology advances, third-party warehousing and logistics providers are increasingly able to offer services beyond basic storage. These value-added services include cross-docking, precise inventory management, advanced labelling and ticketing, and even order fulfilment and shipping. It is increasingly likely that many of the global 3PL companies will offer a range of value-add services to their clients.

Location Issues

Distribution centers are a critical component of the national logistics apparatus. With that, DCs play very different kinds of roles. Some DCs serve small radius catchment areas, while other DCs serve wider regional markets. Most distribution centers in the US are served by motor carriers for both inbound and outbound movements and because of this most DCs locate in close proximity to major highways.

Due to a range of issues, the distribution sector has changed and is continuing to evolve quite rapidly. The following factors are some of the key issues driving the future of distribution in the US:

- Large vessels calling on fewer seaports – Increasingly trans-oceanic maritime transport is fueled by larger container ships and the newest generation of mega-vessels are calling on only the major load center seaports. This dynamic has implications for distribution as cargo is being unloaded in larger “batches” and needing transport to market regions.
- Locations - Warehouses are now more frequently located in urban areas, such as California’s Inland Empire region, due to proximity to ports as well as to an urban population that can provide a supply of seasonal workers during the September to December holiday season.
- Ecommerce – Has changed the underlying fabric of the nation’s distribution network and has fueled the majority of new DC construction in recent years. The rapid evolution in the B2C ecommerce business model is causing more and smaller facilities closer to consumption markets.
- Nearshoring manufacturing to Mexico – At the expense of imports from China, Mexico has become an increasing manufacturing power. This fundamentally is changing the flow of raw inputs and finished product outputs. Due to this dynamic, logistics patterns have incrementally shifted from heavy import loads on the West Coast at a few seaports to increasing north-south traffic along the US-Mexico border.
- Reliability challenges – A range of extraordinary events have caused structural shifts in the overall logistics system and this is affecting the distribution sector quite significantly. Labor strikes and disruptions at major seaports caused companies to revise their logistics planning – and therefore their domestic supply chain/distribution points.
- Increased integration between manufacturing and logistics operations - With the amount of analytics and agile information being employed by manufacturing plants today, there is increased evidence that manufacturers are becoming very intelligent in using data to drive logistics operations both inbound and outbound and fewer products are going to DCs and instead are moving directly to consumers and users.

Specialty Manufacturing – Lumber

Capitalizing on Forest Products Sector Potential

In reviewing existing economic sector value-added opportunities in the EUP, the wood products industry stands out for (1) its large raw material base and (2) its very high commodity flows out of state with very low value creation for the economy. To create more value in the economy, the EUP for several years has identified the diversification of the Forest/Wood Products industries as a priority, based on the opinion that this unique natural resource has been underutilized and that its potential for greater wealth generation has been unrealized.

To begin the process of evaluating and identifying opportunities in the value-added wood processing industry in the EUP, it is instructive to understand the

strength of the raw material base in Michigan and the EUP as well as the existing industry base and the products that are currently being produced.

The Michigan Forest Resource Alliance reports that:

- Michigan forests are growing 2.5 times more timber than is being harvested each year
- Forests are a major feature in Michigan's landscape, covering more than 52% of the state
- Michigan public forest ownership includes 3 national forests and boasts the nation's largest state forest system which accounts for 6.5 million acres
- Michigan industry forest ownership is over 2 million acres
- Michigan private forest ownership accounts for 10.5 million acres, representing approx. 55% of Michigan's total forests. These private parcels are generally less than 100 acres
- Most Michigan private forests produce one half or less than their potential
- 19 million acres of forest land contribute directly to Michigan's economy through timber production which is marketed through the forest products industry
- More than 100 different species of trees grow in Michigan
- Michigan timber products include Christmas trees, logs for lumber, pulpwood for the paper industry, and raw materials for post, piling and the home building industry.

As we evaluated opportunities, we conducted interviews by phone with businesses and took advantage of existing industry research available from leading authorities in wood products manufacturing. We have learned that there is tremendous competition in this industry as many geographical areas/states in the United States have vast resources of raw timber stock and are all looking for ways to monetize these resources to create economic opportunities in areas that are currently not experiencing job and economic growth.

There are some exciting potential opportunities in the enhancement of value-added (secondary) wood manufacturing. But there is competition from other areas of the country and these opportunities will require a commitment by both the region and the state to follow the industry closely, develop a strategy and adopt policies and initiatives that could support the growth of these industry opportunities

Opportunities:

- ✓ **Pressure Treated Lumber**
- ✓ **Wood Thermal Insulation**
- ✓ **Mass Timber Production**
 - **Glulam and CLT**

Pressure Treated Lumber

Pressure treated lumber is wood which has been surface coated (non-pressure treated wood), where the application of preservative is by brushing, spraying or dipping the piece. Pressure treatment is a process that forces chemical preservatives into the wood. The lumber is placed inside a closed cylinder, the vacuum and pressure are applied to force the preservatives into the wood. The preservatives protect the wood from attack by termites, other insects and fungal decay. Preservative treatment processes do not alter the basic characteristics of the wood but provide a much-improved service life for wood building materials in severe weather conditions.

The wood used in the pressure treated process comes from a saw mill and there are numerous active chemicals used to treat the wood. The list of approved chemicals for preserving residential lumber in the United States includes: ACQ, borates, copper azole, copper aphthenate, copper-HDQ and colymeric betaine. Of these chemicals, ACQ is currently the most widely used wood preservative for residential applications. ACQ is a water-base preservative that prevents decay from fungi and insects. It also has relatively low risks based on its components of copper oxide and quaternary ammonium compounds.

Treated wood is sourced for retail, residential or industrial construction including maritime applications, and for agriculture use. Industrial uses include railroad ties and telephone/hydro poles. Pressure treated lumber for retail is delivered from lumber yards by either big box stores or through local businesses.

In speaking to a wood manufacturer, based upon the market demand the investment cost for an initial entry into this business with no land acquisition costs would be \$3-\$5 million and could employ up to 8 full time employees.

Wood Thermal Insulation

Currently there are very few manufacturers of wood based thermal insulation in North America as its use has not been widely adopted in North America. In Europe, it has gained acceptance as it is cost effective where energy prices are high and the use of it can reduce energy consumption.

This product, if adopted into North America, would be a disruptor to the traditional fiberglass insulation that is currently found in the marketplace. However, it is not unreasonable to assume that with the eco-friendly movement and the consumer's interest in green products that in time this product could find its way into the market. In fact, several European manufacturers have been quoted as saying that they are currently evaluating the prime US West Coast markets as investment locations as eco-friendly product acceptance is high on that coast.

There are two processes for creating wood fiber insulation. The wet process insulation is that chips and shavings from typically spruce and fir are retrieved as waste from the manufacture of other wood products.

- The chips are ground down into wood fiber pulp
- The pulp is mixed with water and paraffin or latex added as a binder

- The mix is pumped into a forming box as a continuous fiber mat
- About half the water is removed through pressing and vacuum pumping
- The board material is dried in an air drier
- The boards are cut to size and the edges milled
- These sheets are about 0.975 inches, but thicker sections can be built-up by gluing together sheets with white glue.
- The dry process is somewhat similar but without the use of water.
- Waste chips and shavings are retrieved from other timber manufacturing processes
- The fibers are sprayed with paraffin
- The fibers are sprayed with polyurethane as a binder
- The fiber mats are placed in a unit where the resin is cured and hardened

This is a product for the future but with the massive timber resources in both the EUP and Michigan, it is an opportunity that should be followed closely. We would also recommend that connections be made to European manufacturers, such as Steico and Gutex in Germany, so that the EUP is considered when these manufacturers start to look at investing in a North American facility.

Mass Timber Production

Glulam (glue laminated timber) and CLT (cross laminated timber) are separate products but a manufacturer of CLT can produce glulam at a small additional cost as the equipment and expertise to make the product is already in place, therefore we are treating them as one opportunity.

Glulam is a structural timber product that is manufactured by gluing together individual pieces of dimension lumber under very controlled conditions. The qualities of this wood product account for its use as an attractive architectural building material and its exterior weather-exposed applications. However, it is important to note that modern building codes are quite specific on the quality of these structures.

In the manufacture of glulam, the wood pieces are end jointed and arranged in horizontal layers to form a beam. The lumber used for the manufacture of glulam is a special grade (lamstock) which is purchased directly from lumber mills. Most of the time these beams are meant to be exposed and that is the reason that the lamstock is selected because of its qualities and esthetics. It is also desired for its strength to weight ratio being two-thirds the weight of steel and only 1/6th the weight of concrete.

As the world moves towards the all wood construction of tall buildings the glulam product will be integrated along with other mass timber panelized products into prefabricated building systems.

Cross Laminated Timber (CLT)

CLTs are large engineered wood panels that are manufactured by cross laminating lumber with adhesives or fasteners. Because of CLT's structural properties and dimensional stability, the product is well suited to floors, walls and roofs and is economically competitive as a structural framing product for multi-story, even high-rise building construction: a market previously dominated by concrete and steel. The panels are used as prefabricated building components which can speed up construction practices or allow for off-site construction in remote locations.

CLT has gained traction since 2000 in the emerging green market movement. While cost will continue to be the driver in the adoption of the CLT product, the environmental advantages of mass timber over steel or concrete are significant. It has been suggested that the carbon footprint offered by mass timber is smaller than that of similar building materials of equal strength/weight characteristics. Thus, engineered wood products offer a strong combination of environmental performance and sustainability, design flexibility, cost competitiveness and structural integrity.

To date in North America, customers who would consider using CLT are developers building mid-to-high rise industrial complex because the economics do not work for smaller structures. In Europe however, where the market was established in the late 1980's, companies are moving into multi-family dwellings because this type of development is increasing. Economies of scale in the cost of CLT can be realized in multiple dwellings over a single-family dwelling.

Global supply of this product has been dominated by European suppliers. Some of this dominance is the result of European universities with strong capabilities in wood engineering producing graduates to move the industry forward. And even today the European companies are claiming that they will continue to control the CLT market in the US because of the high U.S. dollar and the continued pressure on Canadian suppliers because of the softwood lumber trade dispute.

However, CLT products are poised to expand tremendously. It is not unrealistic to assume that the North American market growth could outpace the growth in CLT use globally. At the Governor's 2015 Forest Products Summit, CLT and mass timber production were highlighted as potential products for Michigan's future.

The next step would be to conduct a round of research to provide a realistic assessment of CLT's market potential in the EUP, identify the barriers to entry, and create a value proposition that would provide tangible and actionable outcomes to grow and strengthen this industry and the EUP economy.

Specialty Metal Manufacturing - Steel

The steel industry has a strong presence directly adjacent to the EUP. Sault Ste. Marie, Ontario, is the home of Essar Steel, which is a fully integrated steel producer offering high strength steels for demanding applications. They offer a wide range of hot and cold rolled steel sheet and plate products for the following industries:

- ✓ **Automotive**

- ✓ **Construction**
- ✓ **Infrastructure**
- ✓ **Energy**
- ✓ **Defense**
- ✓ **Transportation (rail cars and shipbuilding)**
- ✓ **Manufacturing**

Essar Steel is served by the Port of Algoma which is strategically located on the St. Mary's River at the tip of Lake Superior, an integral part of the Great Lakes St. Lawrence Seaway System. The location is a key point of connection between Lake Superior, Lake Huron and Lake Michigan. The port is situated in the heart of the North American continent on the Canada-U.S. border making it a globally competitive location that provides direct access to many international markets.

Sault Ste. Marie, Michigan, with its direct transportation connectivity to the Essar Steel plant, has an opportunity to attract the investment of metal manufacturing firms to the EUP to take advantage of this rich raw material as well as the locational advantages of its excellent business climate.

According to the United States Department of Labor, metal manufacturing is the process of transforming raw metallic material into products partially or wholly comprised of metal. The industry involves the production of metal for use in a variety of other industries. Metal is used to make machines and structures and is widely used in the building industry for developing structural frames. Metal products are also used for automotive parts and equipment, weaponry and surgical equipment.

Common metal components include sheet metal, structural steel, tube stock, casting, hardware and welding wire. Metal industry companies are grouped either on the fabrication side (where metal preparation and assembly are carried out) and/or the machine manufacturing side (where metal is used to produce machine tools). Metal manufacturing is a specialized process using both manual and automated labor, necessitating a high level of security in processes such as torching, cutting, sawing, welding and shearing.

So, in short, the general term 'metal manufacturing' accounts for hundreds of industries that involve some type of manufactured metal, depending on the type of metal and the type of construction activity being performed.

Metal manufacturing is predominantly located in the Great Lakes region where coal, iron ore and copper are most plentiful, and the water system serves as a useful transportation network for heavy loads. The region also accounts for approximately 48.3 percent of the Iron and Steel Manufacturing industry in the U.S. Within this region, Indiana produces 29 percent of the iron and steel, and Ohio produces 10 percent.

The global economic crisis in 2008 caused revenue in Iron and Steel Manufacturing to drop 43.8 percent by 2009. This was largely associated with a loss in revenue

from the construction and automotive manufacturing industries, which were crucial buying industries for metal manufacturing, especially steel and iron.

In 2009, the recession slowed the growth of these industries, which led to a significant decline in revenue. However, demand has dramatically improved and is rising as the automotive, electrical and construction industries have rebounded after the economic downturn. Current challenges to the metal manufacturing industry include less expensive imports and fluctuating prices of aluminum and steel.

Site Requirements

Metal manufacturing site requirements depend on several factors, including the type of manufacturing facility and size of the company.

Based on interviews conducted with metal manufacturers, larger companies with an expansive customer base tend to transport manufactured products locally, nationally, and in some cases internationally. For instance, Pacific Metal is an Oregon metal distributor that transports over 85,000 different products globally. The company has over 25 plants but only two are in Oregon. For these specific sites, interstate access is a key component to manufacturing operations.

Transportation logistics are also important to the metal manufacturing industry. Interviews conducted noted that a rail connection is presently not a primary concern, but access to interstate is vital for local businesses. However, this is dependent on the location of customers and whether they were most accessible via interstate. This presumes that if the location of rail connections was more conducive to the customer-base, and less conducive for interstate, rail connection would be favorable.

The type of manufacturing facility determines the needs for natural resource requirements, including access to natural resources (water, natural gas for heating and cooling, and electricity). Based on interviews these site requirements are important but state and local regulations for the use of natural resources, especially the consumption of water, are the most important factors impacting operating costs in metal manufacturing.

Next steps would involve staying informed about existing and future advancements in the metal manufacturing industry. Metal manufacturing market research will provide awareness of emerging opportunities, changing market demands for products, materials and emerging technology.

Another valuable course of action would be to partner and collaborate with the Sault Ste. Marie Ontario EDC to develop a strong value proposition to attract metal manufacturers to invest in a binational region

Cold Weather Testing Opportunities

The EUP currently hosts two major cold weather testing facilities: GM's proprietary facility at Chippewa County Airport and Smithers Winter Test Center in Racoon, MI, about 25 miles south of Sault-Ste Marie. Both facilities provide an ideal environment for testing and conducting performance evaluations on

vehicles, tires and components under the special challenges of extreme cold and hazardous road conditions.

The Smithers facility is owned by the Ohio-based Smithers Group which is a rubber, plastics, and polymer testing firm that works with clients in the energy, healthcare, medical, transportation, consumer products, and the auto industries. Because of confidentiality agreements, the test center can not disclose its clients, but they can say that the center is used by vehicle, tire and component manufacturers from around the world, including OEMs based in Detroit.

The EUP has proven itself as excellent center for cold weather testing with guaranteed extreme temperature conditions, a sparsely populated region which ensures confidentiality, quality hotel accommodations, and good communication links to home offices.

As the technology in the auto industry rapidly changes there are new demands on the industry as well as the support system for the industry. The technology advances in propulsion, autonomy, information systems, and computing and processing power are creating new global centers of excellence in the industry and new global players.

As the largest global market, China will increasingly dominate the industry and will continue to invest in the United States. Even in the U.S., the auto technology explosion has created a second auto center of excellence in the Silicon Valley in California. But as the industry continues to grow there are a limited number of research, testing and manufacturing centers.

With the advent of autonomous vehicles technology, winter conditions will create challenges for autonomous vehicle operations. There will be many more technology applications to test which will be on-going as the technology continues to evolve.

We believe that this creates an opportunity for the cold weather testing industry to grow in the EUP, both with additional facilities and the inclusion of Lake Superior State University in working with the industry on research projects related to cold weather testing. Component manufacturers, technology companies as well as OEMs will have an entirely new array of tests to perform as the autonomous cars are readied for the market.

The time to act is now. A working committee should be formed, a strategy developed, and contacts made with both OEMs and suppliers to position the EUP for future testing opportunities.

One specific site for expanded automotive testing strategy consideration is the Continental Teves facility in Brimley near the intersection of M-28 and M-221 (Figure 4.5). Currently the site is used for testing tires, brake systems, and autonomous vehicle sensors, and has been in operation for over 20 years.

Figure 1.1 Continental Teves - Brimley



3.0 Business Development Action Plan

The EUP exists within a wider product system and it is important to understand those external factors as they are an important component of the project's overall business propositions and how they should be marketed. The EUP's brand is tightly tied to the factors that define Michigan and the entire Upper Peninsula.

Successful economic development investment attraction strategies draw on the expertise and connections of other organizations to achieve their vision. To be successful EUP will need to rely on developing an integrated product with its partners at the State and regional levels and intensively focus its efforts on each of its sectors creating relationships, expertise, capacity, networks, support structures, academic linkages as well as a range of other specialized programs.

Recommendation 1: Pursue the creation of a federally-recognized bi-national investment zone that extends into both Canada and the U.S.

Composed of the EUP region of Michigan and the Sault Ste Marie, ON region, the bi-national investment district would be a specialized strategic rural NAFTA investment hub, which would promote bi-national border investment in a market that has been historically economically isolated and underdeveloped. The two regions would work collaboratively together to plan and leverage the region's resources as an integrated mega region. Numerous initiatives will be needed to capture these opportunities such as the integration of supply chains in the region; the development and implantation of an integrated bi-national workforce

development strategy; and the creation of an infrastructure/utility plan that is dictated by the mega region's economic development strategy.

- **Action 1:** Creation of a governing Binational Coordinating/Advisory Board structure for the Investment District
- **Action 2:** Development of a single economic development plan specifically for the District, instead of having a series of regional, disjointed efforts, where the different cities/counties are acting in independent disjointed silos.
- **Action 3:** Development of a strategy to attract and retain talent to the region, and to allow free-flow of labor in a special binational labor zone
- **Action 4:** Explore and pursue implementation of an integrated International Metropolitan Statistical Area
- **Action 5:** Establish a corridor along the Michigan Ontario border in which products and manufactured goods within the corridor meet the certification requirements of both nations, as though they had been made in both the U.S. and Canada for trade purposes.
- **Action 6:** Create a defined, secure area extending across the Michigan-Ontario border in a zone designated free of border entry procedures and payments of duties within the zone, allowing for free movement of raw materials, components, semi-finished goods and finished goods, as well as personnel, as long as such goods and persons remain within the zone.
- **Action 7:** Create state and federal financial incentives for in-district investment in key infrastructure and targeted sectors
- **Action 8:** Aggressively seek federal, provincial and state grants
- **Action 9:** Focus on strategic property/infrastructure investment in the Sault International Investment District
 - To attract risk capital to support purpose-planned/built industrial assets, a special focus should be made to identify investment opportunities on both sides of the border
 - Create a range of sites/infrastructure that can offer the market a diverse set of products that can cater to the targeted areas
- **Action 10:** After a clear value proposition for land use, workforce availability, and supply chain efficiencies in the region, approach shippers, manufacturers, and logistics companies in more congested areas (particularly the Upper Midwest) to discuss opportunities for EUP-based operations.

Recommendation 2: Position the EUP's forest products industry for growth in three identified emerging opportunities:

- ✓ Pressure Treated Lumber

- ✓ Wood Thermal Insulation
- ✓ Mass Timber Production
 - Glulam and CLT

For several years the EUP has identified the diversification of the Forest/Wood Products industries as a priority, based on the opinion that this unique natural resource has been underutilized and that its potential has been unrealized. The development of this industry serves two important objectives: creating a new market for struggling saw mills and promotes rural economic development.

There are some exciting opportunities in the enhancement of value-added (secondary) wood manufacturing, but competitor states and provinces have already invested significant resources in support of researching and developing these new technologies. While uses of mass timber in construction are still evolving, it has emerged as a clear alternative to both traditional wood framing and to concrete construction options.

The U.S. market has been slow to materialize but the market potential is huge and with a strong commitment from the region and the state to follow the industry closely, develop a strategy and adopt policies and initiatives that could support the growth of these industry opportunities, there is an excellent chance that a strong initiative could be successful.

In March of 2017 legislation was introduced in the US Senate by Senator Debbie Stabenow, the Timber Innovation Act, which would establish a performance driven research and development program for advancing tall wood building construction in the United States as well as other incentives to accelerate mass timber production and use in the United States. Unfortunately, the legislation has not moved forward and is strongly opposed by the concrete industry throughout the US. A companion bill was introduced in the House of Representatives.

The introduction of this legislation by Senator Stabenow furthers the recognition of the potential for the adoption of these new technologies and provides the EUP with a major supporter in developing these industries in the EUP.

- **Action 1:** Solicit the support of Senator Stabenow in identifying and securing funding to accelerate the development of these new technologies in the EUP
- **Action 2:** Conduct industry-wide market research on each of the identified opportunities
- **Action 3:** Produce an overarching forest products industry business development prospectus, which will feature each of the opportunities with specific content for each target group. The prospectus should include:
 - site criteria and availability,
 - scalable capital investment requirements,
 - domestic and international markets,
 - fiber sources and supply,

- domestic and international transportation needs compared with existing capacity
- detailed labor requirements,
- partnership potential and
- an all-in total landed cost “offer”.
- **Action 4:** Partner with the job training organizations to develop a workforce strategy that focuses on recruiting, retraining, and training a highly qualified and skilled labor force for the forest products industry.
- **Action 5:** Pursue strong relationships and collaborative programs with the US leading forestry schools at Michigan Technological University and Michigan State University

Recommendation 3: Position the EUP’s cold weather testing industry for growth through the unique demand that vehicle advanced technology applications is creating in the testing environment.

The EUP currently hosts cold weather testing facilities which provide an ideal environment for testing and conducting performance evaluations on vehicles, tires and components under the special challenges of extreme cold and hazardous road conditions. The EUP has proven itself as an excellent center for cold weather testing with guaranteed extreme temperature conditions, a sparsely populated region which ensures confidentiality, quality hotel accommodations, and good communication links to home offices. The EUP’s proximity to Detroit also makes the region more attractive than other winter test centers.

Electric cars, autonomy, and propulsion systems innovation are presenting new technology applications for vehicles and as a result an entirely new array of testing opportunities will arise as these vehicles are readied for the market. Component manufacturers, technology companies as well as OEMs are just beginning to assess what challenges winter conditions will create for autonomous vehicle operations and there will be many more technology applications to test as the vehicle technology continues to evolve.

- **Action 1:** Form a working group to develop a strategy on identifying and approaching the new industry players that will need cold weather testing facilities for their products whether the testing is done on the existing facilities or the possibility of developing proprietary facilities for individual companies. See Recommendation 6 for industry contacts
- **Action 2:** Develop strong working relationships with the existing cold weather testing facilities in the EUP especially GM as they are a leader in autonomy among the OEMs.
- **Action 3:** Work with the existing testing facilities to identify and develop opportunities for collaboration with Lake Superior State University

- **Action 4:** Develop an EUP cold weather testing brand.
 - Build brand awareness within Michigan to enhance support for the industry and present a consistent external message.
 - Create a web portal for the EUP cold weather testing brand to act as the one-stop-shop for information on cold weather testing in the EUP.
- **Action 5:** Pursue a collaboration agreement with the American Center for Mobility in Detroit to provide a site for the extremes of cold weather testing.
 - The American Center for Mobility is a non-profit testing, education and product development facility for future mobility, designed to enable safe validation and self-certification of connected and automated vehicle technology, and to accelerate the development of voluntary standards. Several of the OEMs and technology companies are currently using the ACM testing facilities. As cold weather testing is limited in the Detroit area, a collaboration with ACM could be a win for all parties.

Recommendation 4: Pursue targeted business investment in the Specialty Metals Manufacturing Sector

The steel industry has a strong presence directly adjacent to the EUP. Sault Ste. Marie, Ontario, is the home of Essar Steel, which is a fully integrated steel producer offering high strength steels for demanding applications.

Essar Steel is served by the Port of Algoma which is strategically located on the St. Mary’s River at the tip of Lake Superior, an integral part of the Great Lakes St. Lawrence Seaway System. The location is a key point of connection between Lake Superior, Lake Huron and Lake Michigan. The port is situated in the heart of the North American continent on the Canada-U.S. border making it a globally competitive location that provides direct access to many international markets.

Sault Ste. Marie, Michigan, with its direct transportation connectivity to the Essar Steel plant, has an opportunity to attract the investment of metal manufacturing firms to the EUP to take advantage of this rich raw material as well as the locational advantages of its excellent business environment.

Table 1.1 Key Industries in Precision Metals Manufacturing

NAICS Code	Description
332312	Fabricated Structural Metal Manufacturing
336211	Motor Vehicle Body Manufacturing
336212	Truck Trailer Manufacturing
332721	Precision Turned Product Manufacturing
332912	Fluid Power Valve and Hose Fitting Manufacturing
336399	All Other Motor Vehicle Parts Manufacturing

Table 1.2 Support Industries in Precision Metals Manufacturing

NAICS Code	Description
332710	Machine Shops
331315	Aluminum Sheet, Plate, and Foil Manufacturing
331316	Aluminum Extruded Product Manufacturing
331210	Iron and Steel Pipe and Tube Manufacturing
325510	Paint and Coating Manufacturing
331221	Rolled Steel Shape Manufacturing
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing
336120	Heavy Duty Truck Manufacturing
336214	Travel Trailer and Camper Manufacturing
336350	Motor Vehicle Transmission and Power Train Parts Manufacturing

- **Action 1:** Partner with Lake Superior State in the evaluation of emerging fields in the metal manufacturing industry; changing demands for products and materials in the sector and emerging technologies.
- **Action 2:** Develop a strong business proposition for this sector based on competitive costs, freight/logistics modelling, and an in-depth workforce analysis that articulates the region’s attractiveness as a high-end, small product specialty center for high-finish steel products.
- **Action 3:** Regularly research auto industry publications as well as Detroit area publications to learn about pending company moves or expansion needs to identify potential targets
- **Action 4:** Partner and collaborate with the Sault Ste. Marie Ontario EDC to develop a strong value proposition to attract metal manufacturers to invest in a binational region
- **Action 5:** Identify manufacturers of equipment for the forest products industry as targets for relocation. See Recommendation 6 for industry contacts

Recommendation 5: Develop a clear understanding of the disruptive impact that e-commerce is having upon the warehouse and distribution sector.

As manufacturers and retailers become more focused on reducing costs, increasing customer satisfaction, and optimizing their supply chain to resources, suppliers and customers, they are paying much more attention to the number and location of their distribution facilities and the functions they perform. But today an even more dramatic change is occurring as e-commerce is changing the underlying fabric of the nation’s distribution network and is dictating how and where the

majority of new DCs are being built. The rapid evolution in the e-commerce business model is causing more and smaller facilities closer to consumption markets.

Only 10 years ago reducing costs, rather than convenience was the rule. Warehouses were in the middle of the country and away from the major population centers to take advantage of cheaper real estate and LTL shipments. But with e-commerce, after a customer places an order you have a narrow window of time to get that package delivered and customers don't want to pay extra for expedited shipping via air. After all, Amazon Prime offers free shipping with delivery in just two days. The question for companies today is how to compete against Amazon, get the product to the customer in just two days and not lose money on the shipping costs.

The EUP is disadvantaged as the population has slightly decreased over the past several years, and the number and make-up of businesses has not seen much growth. The region is also not proximate to large-scale consumer bases that would cause demand for e-commerce activity. But with the surging e-commerce demand, there is a new breed of third-party (3PL) logistics providers that must be creative and think out of the box to provide their customers value added services for less money.

- **Action 1:** Develop a business proposition designed specifically for the 3PL sector with an emphasis on the time, cost and reliability for the delivery of products
- **Action 2:** Identify and solicit 3PL service providers with an EUP business proposition that would be designed to attract companies that could centralize operations in support of multiple clients. See Recommendation 6 for industry contacts
- **Action 3:** Partner with the job training organizations to develop a workforce strategy that focuses on recruiting, retraining, and training a highly qualified and skilled labor force for the logistics industry.

Recommendation 6: Pursue targeted business investment across the four recommended key business segments

The EUP's success will require that it proactively make its case directly to specific companies that have requirements that match the EUP product offer. Specific and company-specific propositions will be key, and the underlying focus should be on the total landed cost bottom-line proposition. The EUP will likely not be seen by most decision-makers as a player but rather as a longshot, so it is incumbent on the organizations to make the business case as a competitive overall business package, including land, building, labor, cost, regulatory, investment risk/security, etc.

- An overall business cost structure that is relatively low as compared to key Upper Midwest market urban regional competitors

- Competitive proximity to natural resources which can serve as raw feedstocks to the wood products (wood harvesting) and steel products (steel production)
- Local presence of an important public university; where the relationship between academic, business and economic development communities could be further developed to support key investment sector opportunities
- The region is served by substantial freight transport infrastructure to markets and supply chain points to the south; and is a strategic connector between raw materials source points in Canada, and to the production base in portions of Ontario.
 - The EUP enjoys freight cross-border rail connections by Canadian National Railroad, and to the Escanaba and Lake Superior railroad. The rail system offers connections to the Western UP, to Northern and Eastern Wisconsin and onto the national Chicago rail hub.
 - Via I-75 southward through Michigan and onward to the Ohio Valley and other Midwest US markets and to Canada Route 17 which connects natural resource extraction source points and to Sudbury and points east.
 - The Port of Algoma is located just across the International Bridge in Sault Ste Marie, Ontario, and serves as an inbound/outbound logistics hub, largely for the movement of agricultural products, iron ore and steel products. The Port's Saint Lawrence Seaway access provides the EUP region an efficient maritime connection to markets through the entire Seaway System (SE Michigan, Indiana, Ohio, New York, Ontario, Quebec and Nova Scotia) and extending into distant markets on the US East Coast, South America and Europe.
- Enjoys ongoing public and private regional partner support
- Specialized labor qualifications; existing workforce scale, but also a clear system to upgrade skills
- High degree of reliability for operations – clear history of low downtime due to weather, labor strife, crime, and infrastructure failure

Recommendation 7: Develop a presence in important industry trade associations

Participation in certain trade associations and their trade events can offer the EUP an opportunity to gain more industry knowledge, stay current in sector trends and develop meaningful industry relationships. By participating in certain industry trade associations in the United States and Canada, the EUP can develop a level of sector legitimacy to which most other competitor organizations don't even aspire.

Within these organizations, becoming an active participant in appropriate committees gains technical understanding of the industry and its issues but also establishes pertinent personal relationships within the companies that may later be comfortable and receptive to an EUP business proposition. Participate in association committee activities as well as seminars and annual conferences. Cultivate relationships with member companies.

Potential Trade Groups include:

- **Specialty Steel Industry of North America** is a voluntary trade association representing virtually all the producers of specialty steel in North America. Our members produce a variety of products including bar, rod, wire, angles, plate, sheet and strip, in stainless steel and other specialty steels. Information available at: <http://www.ssina.com/>
- **Precision Metalforming Association - (PMA)** is the full-service trade association representing the \$137-billion metalforming industry of North America – the industry that creates precision metal products using stamping, fabricating, spinning, slide forming and roll forming technologies, and other value-added processes. Its more than 800 member companies also include suppliers of equipment, materials and services to the industry. Information available at: www.pma.org/home/
- **Wood Component Manufacturers Association** represents manufacturers of all type of dimension & wood component products made from hardwoods, softwoods and engineered wood materials for the building products, furniture, cabinet and decorative wood product markets. Association services include educational, promotional and research activities for members. Information available at: www.wcma.com
- **Society of Wood Science and Technology - SWST** is a technological and professional organization for scientists and engineers working in academia, government, consulting, and the forest products industries. SWST is “dedicated to providing education and expertise in finding better ways to use and produce wood products”. Information available at: www.swst.org
- **American Forest & Paper Association (AF&PA)** is the national trade association of the forest, paper and wood products industry. We represent member companies engaged in growing, harvesting and processing wood and wood fiber, manufacturing pulp, paper and paperboard products from both virgin and recycled fiber, and producing engineered and traditional wood products. Information available at: www.afandpa.org
- **Forest Products Society** is an international not-for-profit technical association founded in 1947 to provide an information network for all segments of the forest products industry. The Society's Mission is to foster innovation and research in the

environmentally sound processing and use of wood and fiber resources by disseminating information and providing forums for networking and the exchange of knowledge. Information available at: www.forestprod.org

- **Great Lakes Timber Professionals Association** represents the forest products industry in Michigan and Wisconsin by supplying member services to large and small businesses, professional loggers, professional landowners, haulers, truckers and training specialists. Information available at: www.gldtpa.org
- **Hardwood Plywood and Veneer Association** is the authoritative resource for information on hardwood plywood, veneer, and engineered flooring. Information available at: www.hpva.org
- **Michigan Forest Products Council (MFPC)** represents the state's entire forest product industry value chain. Information available at: www.michiganforest.com
- The **Michigan Association of Timbermen** is a non-profit trade association, representing the forest products industry of Michigan. Founded in 1972, MAT has provided effective representation of Michigan's forestry community, including those who grow, harvest and process forest products. Information available at: www.timbermen.org
- The **Connected Vehicle Trade Association (CVTA)** is a non-profit business league established to facilitate the interaction, and advance the interests, of the entities involved in the vehicle communication environment. The Connected Vehicle Trade Association enables the collaboration of companies, organizations, and governmental bodies engaged in developing bidirectional vehicle communications. Membership is open to any corporation, public entities, standards and specification organizations and educational institutions. Information available at: www.connectedvehicle.org

4.0 Additional Activities and Research

In addition to the six aforementioned recommendations, there are a number of potential activities that can promote and advance logistics success in the EUP:

Actively Participate in Michigan Department of Transportation (MDOT) Long Range Transportation Plan (LRTP) Update

The Michigan Department of Transportation is updating its Long Range Transportation Plan in 2018-2019. The purpose of the plan is to project trends and issues, and guide transportation-related investments into the foreseeable future. Public and agency involvement is a major component of the effort, and it will be important for representatives of the EUP to actively represent the unique needs and concerns of the region within the context of the broader plan.

Business Survey

While the transportation and logistics study included stakeholder outreach, the EUPRPDC could consider a detailed business survey that thoroughly documents current and anticipated transportation system needs for the region's business partners. The purpose of the survey would largely be to identify specific improvements that could be implemented to maximize efficiency of the regional transportation system. Ideally this will include waterway, railway, air cargo, and roadway users. The survey could naturally inform LRTP input for the region as well.

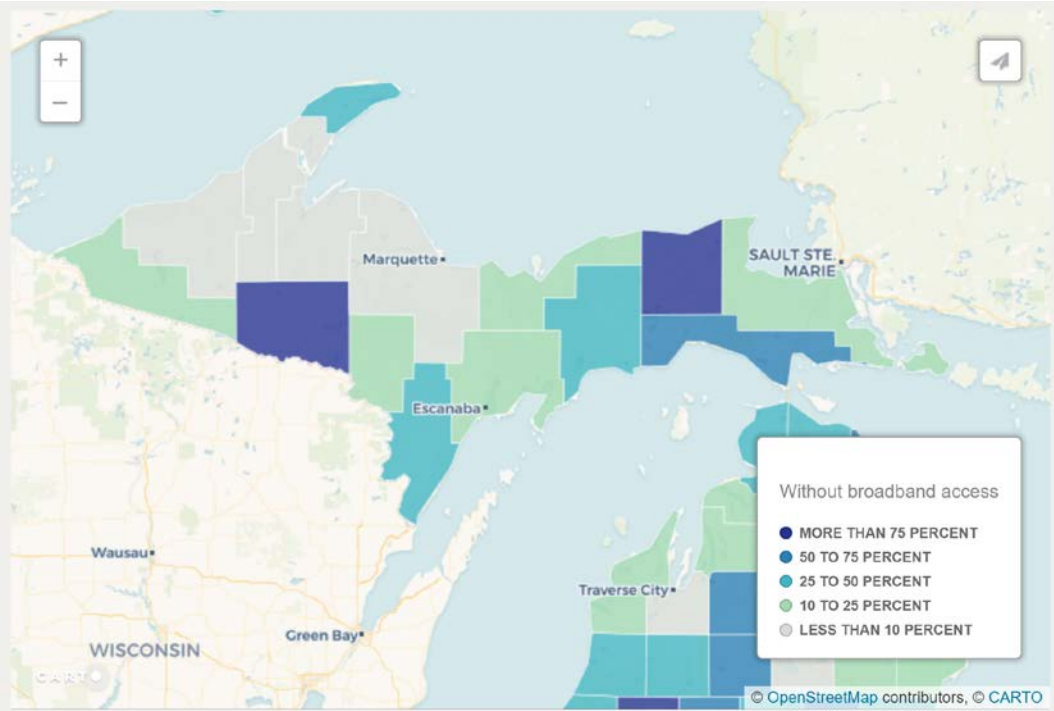
Sault Area Rail Condition Report

The study found that rail capacity in the EUP was limited, in part, by poor track conditions. While rail demand in the EUP is relatively low, there are also limited opportunities for EUP businesses to access the network. To address this issue the EUPRPDC could work with Canadian National Railway representatives to understand current track ratings in the region, what role EUP area trackage plays in broader supply chain movements, and whether there are potential rail-served site development opportunities available in the EUP.

Devise Business Case for Broadband Upgrade(s)

In the modern economy, high-speed internet access has become nearly as important as access to traditional utilities. Rural broadband access is a common concern for prospective businesses when considering Upper Peninsula sites, both for commercial and residential reasons. Bridge Magazine recently published an article in November 2017 outlining gaps and issues around broadband accessibility throughout the state. Figure 1.2 displays percent of residents in each county without broadband access. EUP residents, in particular, lag in access. The EUPRPDC has already begun proposing for state and Federal funding to improve the issue, and if necessary could consider building business cases that quantitatively and qualitatively describe how lack of broadband access impedes economic development in the region.

Figure 1.1 Michigan Rural Broad Band Access



Source: Bridge Magazine, Federal Communications Commission