

Port of Muskegon Infrastructure & Organizational Analysis Executive Summary



Prepared for:

*WEST MICHIGAN SHORELINE REGIONAL
DEVELOPMENT COMMISSION*

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1. Introduction

Martin Associates, in conjunction with sub consultant JH Consulting, was retained by the West Michigan Shoreline Regional Development Commission (WMSRDC) to perform an infrastructure and organizational analysis of the Port of Muskegon (Port). The study includes a conditions assessment of the Port facilities as well as other transportation assets such as highway, rail and airport. A cargo market analysis focuses on traditional cargoes in which the port competes, particularly the historical flows of base cargoes which include coal, aggregates, cement and salt, and assesses the Port's current market conditions and future outlook. In addition, potential new cargo market opportunities for the Port are also discussed. These markets include cross-lake ferry operations and regional agricultural logistics hub operations.

Secondly, the potential structure of a Port authority is analyzed. The assessment includes a review of other port structures, particularly those that deal with interaction with private terminals. The analysis discusses the benefits and challenges of the proposed language changes to Michigan's existing Hertel-Law-T. Stopczynski Port Authority Act (PA 639). The organizational assessment concludes with a recommendation of a port authority structure that would be advantageous for Muskegon.

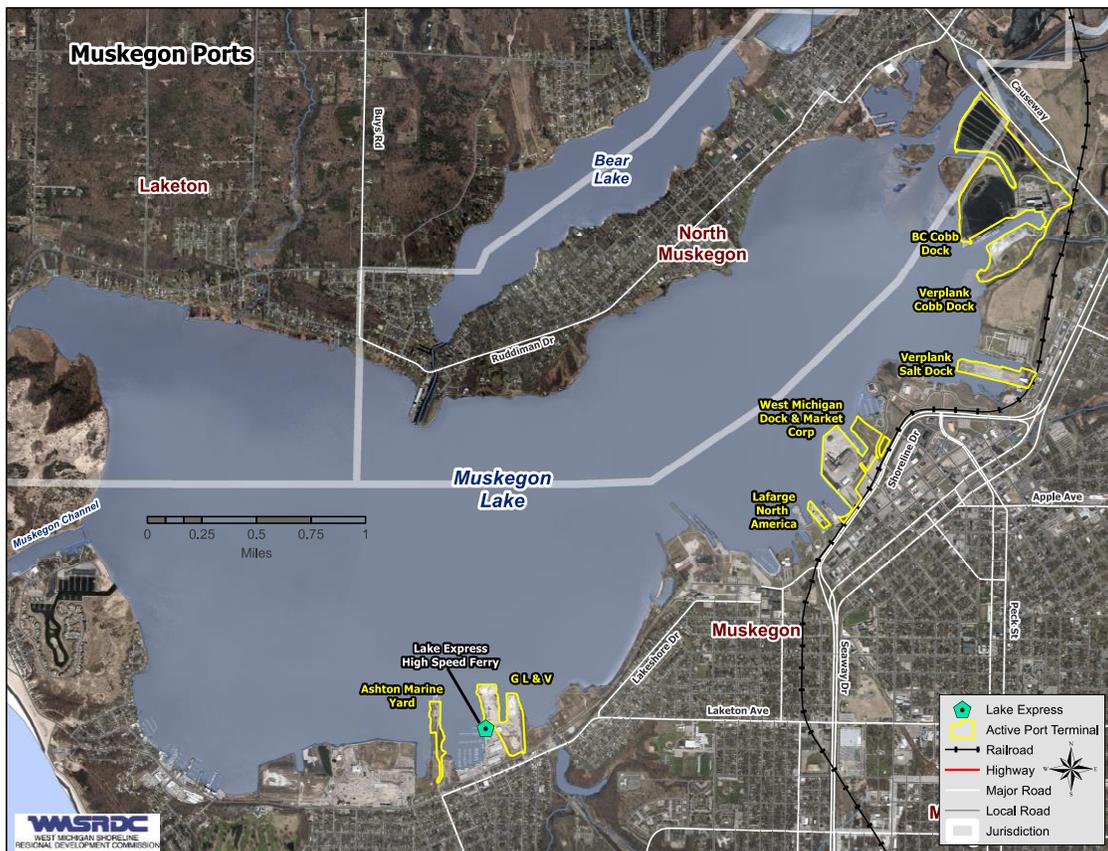
2. Analysis of Existing Infrastructure

An initial task of the **Port of Muskegon Infrastructure and Organizational Analysis** was to develop an inventory and infrastructure assessment of the existing commercial marine terminals and other transportation facilities and operations in the study area. As part of this infrastructure analysis, the Martin team conducted a site visit to each terminal and at each terminal general observations were made and discussions with the various marine terminal owners and operators were held. Additionally, the site review team evaluated the general condition of the marine terminals and noted any deficiencies and noted any deferred maintenance issues. A summary of the Team’s findings follows.

2.1 Marine Terminals

There are five general marine cargo terminals that were included in this analysis.

Exhibit 1- Muskegon Lake and Existing Marine Terminals



The West Michigan Dock & Market Corporation (Mart Dock) was built in 1933 and was originally used for fruit storage until about 1991. Today the terminal is used as a “Lay Berth” for several “mothballed” vessels and the warehouses are used for vehicle and recreational vehicle/small boat storage. Small areas of the open storage yard are currently being used for the open storage of various bulk materials, mostly various types/sizes of aggregates.

The Terminal has a dock frontage of 2,500-ft., with the marine structure of heavy sheet piles, of undetermined condition. The depth at the berth area is 27-ft. There are several older warehouses and other storage buildings with an indoor storage capacity of 200,000 sq. ft. The open storage laydown area is approximately 20 acres. There is rail access to the terminal, so cargo types that might require transloading to/from rail could use the terminal. Five concrete silos occupy a part of the yard adjacent to Building 2.

With 20 acres of open storage, the Mart Dock has the capacity to store 200,000 to 250,000 tons of rock/aggregates. The annual capacity of the bulk storage would depend on the average “dwell” time that the cargo is stored on the terminal. If the average dwell time for bulk aggregates is 90 days, then the overall annual capacity would be 800,000 to 1 million tons.

No significant deficiencies were noted or reported, and the terminal appears to be functioning adequately for its current uses. The berths would benefit from an improved fendering system.

Conclusions & Recommendations: This facility remains functional despite its age and seems best suited for general and dry bulk cargoes. When required, it appears that one or more of the current warehouses could be made available for general cargo storage, but would require extensive renovations.

The Verplank Salt Dock is used almost exclusively for salt storage. The terminal has a dock frontage of approximately 1,000-ft. with an allowable draft of 25-ft. The dock frontage is a steel pile structure that allows for the cargo to be loaded onto the terminal by self-unloading vessels. The terminal is approximately 14.5 acres in size, with a capacity of 250,000+ tons. This terminal was observed to be functional for the current use of salt storage and distribution by truck. The truck scale, the terminal’s major equipment item, seems to be reliable and in good repair

Conclusion and Recommendations: This facility is functional and well suited for dry bulk cargoes. There is available space at the east end for expansion if needed. The Terminal is also quite near to the main north-south rail line, but it does not currently have a spur for access. Constructing a rail spur appears feasible and could improve business opportunities.

The Great Lakes & Verplank (GL &V) Terminal is located towards the southern side of Muskegon Lake and is the most westerly of the marine terminals evaluated for this report. The marine products handled at the terminal are limestone, slag, coal, furnace coke, all brought to the terminal by self-unloading vessels. The terminal has a dockage area length of approximately 950-ft. The dockage area has no real structure, but faced with rock rip-rap. The allowable draft at the terminal is 25-ft. There is approximately 15 acres of improved open storage space. Depending on

the types of cargo being stored at the terminal, total static capacity of the terminal could range from 100,000 tons to 200,000 tons.

The terminal facilities appear to be in good condition and serviceable for the current use. The metal building appears in very good condition and is suitable for cargo storage. The bulkhead located within the slip was observed to be serviceable for the current use and potentially for cargo handling if required. Some ponding of storm water on an area of the yard indicates that minor drainage improvements may be needed.

Conclusions & Recommendations: This facility is functional and best suited for dry bulk cargoes. There is available space at the southerly end for expansion if needed. The Terminal is also quite near to the main rail line, but it does not currently have a spur for access. Constructing a rail spur into the terminal would be difficult due to wetlands easterly and the Lake Express Ferry terminal and a marina westerly.

The B.C. Cobb Dock is a 109-acre site that is becoming available for other uses as Consumers Energy closes and dismantles the existing coal fired Power Plant. The dismantling of the power plant is scheduled to be completed in 2018. Consumers and City of Muskegon have agreed that the terminal site will be included in a Port PUD zoning once Consumers is finished with the site clean-up. The existing dock is an 1,800-ft. long structure supported by steel piles. The berth depth is 27-ft., with dredging of approximately 40,000 yd³ required approximately every 7 years. The Coal Storage Yard was a 35-acre site located adjacent to the dock structure and the power plant.

The future capacity of the B.C. Cobb facility will depend on the final redevelopment proposals received. The existing dock structure and coal storage site could be developed as a new marine cargo terminal for containers, general cargo, roll-on/roll-off and bulk cargoes, or some combination of each depending on market demand.

Terminal capacity for container storage is based on the container handling equipment being used and that equipment's ability to stack containers. Container throughput is usually measured in TEUs, or "Twenty-Foot Equivalent Units". Most containers in the United States are a mixture of 20-ft. and 40-ft. units, with the latter counting as 2 TEUs. The type of equipment used to store containers directly impacts the number of containers that can be stored per acre. As a wheeled storage yard (containers stored directly on truck chassis), the "static" capacity would be based on an average of 90 - 95 TEUs per acre.

If the proposed marine terminal at the B.C. Cobb Dock utilized the existing 35-acre storage area for containers, and a third of the container yard (CY) was used for stacked (grounded) empty storage (stored at a density of 275-300 TEUs per ac.) and the remained used for wheeled storage of loaded containers, the static storage capacity of the terminal would be approximately 5,400 TEUs. Depending on the dwell time of the containers (e.g., the amount of time each container stays in the terminal), the annual throughput capacity of the CY could be as much as 100,000 TEU (per year).

If used for bulk storage, the capacity would again be dependent on the type of bulk material stored in the yard and the proposed stacking equipment and operations. Assuming an average of

30-foot-high by 100-foot long stacks, using bull-dozers and small, mobile hopper/conveyor systems, the capacity of the terminal would be similar to Muskegon's other bulk terminals in terms of tons per acre of storage for each commodity. Overall capacity of a new marine terminal at the BC Cobb Terminal would be dependent on the final size of the storage area and the type of commodity/cargo stored on the terminal.

While the existing berth appears to be in very good condition, conversations with several locals familiar with the facility's history report that the design of the berth structure might not be adequate for future heavy lift cargo operations. The situation, if factual, would affect a developer's ability to use shore-based cranes for cargo handling. This issue needs further investigation by a structural engineer as it could render the current berth unsuitable for future containerized and general cargo operations, and thus require significant investment to replace or strengthen the bulkhead.

Conclusions & Recommendations: The waterside (westerly coal storage yard) portion of this facility is arguably the best suited in the harbor for redevelopment for container and possibly general cargo operations. The site is large enough to also accommodate several types of cargo if sufficient demand materializes. The easterly portion of the site, essentially north and east from the power plant building footprint is probably better suited for industrial uses particularly warehousing, but preferably those requiring some access to waterside transport.

The Verplank-Cobb Dock is also owned by Consumer's Energy and has been leased to the Verplank company until 2019. The terminal is used to store various types of aggregates to be used in Michigan road construction. The terminal has a dock frontage of 1,000-ft., with an allowable vessel draft of 27-ft. The capacity calculations indicated that, approximately 7,000-7,500 tons of rock/aggregates can be stored in approximately a ½ acre storage area, or 15,000 tons per acre. The "static" capacity of the terminal is therefore approximately 150,000 tons, however during the road construction season the various aggregates being stored and turn over 3-4 times per construction season. A realistic capacity for the existing terminal would be 400,000 to 450,000 tons of aggregate per year.

Conclusions & Recommendations: This facility is functional and well suited for dry bulk cargoes. There is available space at the easterly end for expansion if needed, although it is currently utilized for recreational boat parking and waterside marina slips. The Terminal is also quite near to the main rail line, but it does not currently have a spur for access. Constructing a rail spur into the terminal would be difficult and expensive due to the Muskegon River and wetlands to the east.

Exhibit 2: Summary of the Lake Muskegon Marine Terminals:

Terminal	Wharf (length)	Open Storage Area	Covered Storage Area	Capacity (Static) ¹	
				Bulk Cargos	Other
Mart Dock	2,500 – ft.	20- Ac.	20,000 ft. ²	200 k – 250 k Tons (limestone, Aggregates, Other)	Autos, Recreation Vehicles, Boats, general cargo
Verplank Salt Dock	1,000 – ft.	14.5- Ac.	N.A.	250,000 Tons (Salt)	N.A.
GL & V Terminal	950 – ft.	15- Ac.	N.A.	100,000 -200,000 – Tons (Limestone, Aggregates, other)	N.A.
B.C. Cobb Dock	1,800 – ft.	35- Ac.	N.A.	400 k – 500 k Tons	Containers 92 TEUs /Ac. (Static, Wheeled); 250-300 TEUs/Ac. (Empties, Stacked) If 12 Ac. Empty, 23 ac. Wheeled total static capacity = 5,400 TEUs
Verplank – Cobb Dock	1,000 – ft.	8.5- Ac.	N.A.	150,000 – Tons (Stone, Aggregates, etc.)	N.A.

¹ Static Capacity is the capacity of the site to storage a cargo type at any one time. Annual capacity would be dependent on how on many times the cargo is “turned” through the site. If bulk cargoes are turned 3-4 times a year, the annual capacity would be 3-4 times the static capacity. For containers, annual capacity is dependent on the average “Dwell Time” that each container stays within the terminal.

2.2 Other Transportation Infrastructure Facilities in the Region

Rail

Some of the Muskegon Lake marine terminals are served by an onsite “short line” railroad, the Michigan Shoreline Railroad (reporting mark MS). The MS hauled around 6,300 carloads in 2008. Rail usage appears to be steady and the MS has additional capacity to handle additional cargos if the opportunities are developed.

Highways and Interstates

Truck access to and from the Port area is via several major arterial and interstate highways serving the area. According to MDOT representatives, there are no significant capacity issues noted on any of these roadways. The only potential roadway constraint within the Study Area is that some highways and railroad bridge clearances are slightly less than the required 14' 6" min standard. Furthermore, MDOT is currently working with local city and county agencies on resolving these issues.

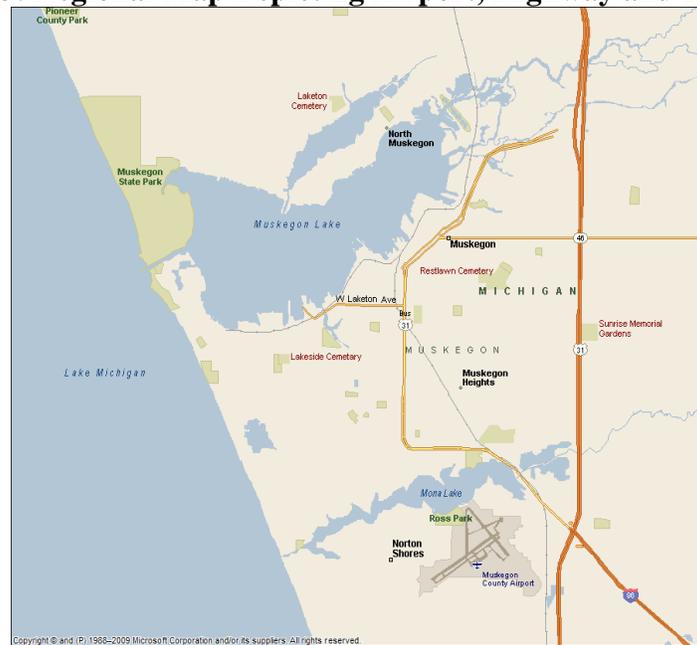
Airport

Muskegon County Airport (MKG) has two asphalt paved runways: Runway 6/24 is 6,500-ft. long by 150-ft. wide (1,982 x 46 m) and Runway 14/32 is 6,100-ft. long by 150-ft. wide (1,859 x 46 m).

Approximately 95% of the current aircraft operations are general aviation/corporate in nature, and the remaining 5% is commercial airline service. The airport has a CAT III-IV Instrument Landing System, with Instrument Landing on both runways. Based on the airport's elevation of 629-ft. above sea level, a runway length of 6,500-ft. can accommodate various commercial Regional Jets and other commercial aircraft up to the small versions of the Boeing 737, such as the 737-500 and the 737-400 (base take-off weight of 150,000 lbs. or less).

Capacity calculations for the airport were developed based on FAA Advisory Circular (AC) 150/5060-5 Airport Capacity and Delay procedures. For the Runway configuration at MKG the airport has a capacity of 57-59 operations per hour and approximately 200,000 operations per year. Based on the airport's current traffic of between 30,000 to 35,000 operations per year (including Touch & Go), the operations at the airport are well under the airport's calculated capacity.

The Airport's Capital Improvement program has a budget of approximately \$16 million in various maintenance and improvement projects for the over the next five years.

Exhibit 3: Regional Map Depicting Airport, Highway and Rail Assets

Adjacent to the Airport is the Muskegon County Airport Business Park. This existing facility was developed as a high technology industrial park, with warehouse distribution and air transportation capabilities. The Park provides sites that could serve as potential expansion for any potential “multi-modal” or “just in time” cargo operation that could link the airport facilities to the marine terminals. Exhibit 3 shows the regional transportation assets in relation to the Muskegon County Airport

3. Cargo Market Assessment

3.1 Base Cargo Market

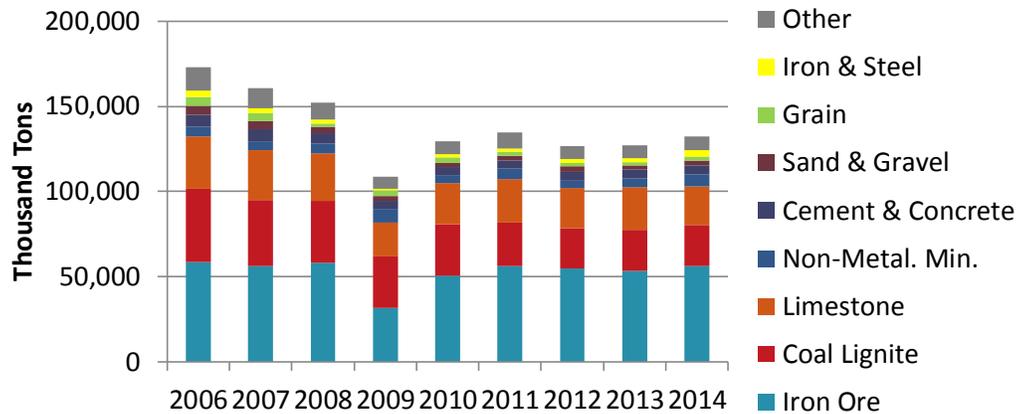
Historically, the Great Lakes cargo market has been driven by the demand for bulk commodities that are typically tied to a single local producer or user such as a mine, farm, manufacturing or utility plant, essentially creating a “captive” supply chain. This includes both raw materials such as iron ore, coal, limestone used in manufacturing, as well as finished and semi-finished outbound products such as steel and grain. These industries, typically dealing in dry and liquid bulk materials, have taken advantage of the economies of scale that can be achieved by using large waterborne shipments in order to compete in their respective markets. These market tend to be non-dynamic growth markets.

Conversely, the Great Lakes ports have been at a disadvantage to compete for discretionary cargoes - those that are subject to competition which is influenced by transportation costs and transit time – due to the seasonality and size limitations of the St. Lawrence Seaway. For example, general cargo commodities such as steel, that historically moved via break bulk carriers via Great

Lakes ports, have continually shifted to coastal ports in favor of more competitive costs, transit times and levels of service.

From 2006 through 2014, the total Great Lakes tonnage exhibited a 23.5% decline in total tonnage from 173 million tons in 2006 to 132 million on 2014. Great Lakes ports were particularly impacted heavily by the recession in 2009. And during subsequent recovery, tonnage has remained relatively flat. Over the same time period, Lake Michigan ports were off by 18.5%.

Exhibit 4: Total Great Lakes Tonnage U.S. Ports



Similarly, in terms of foreign tonnage moving through the St. Lawrence Seaway, cargo volumes have not returned to pre-recession levels. In fact, from 2006 through 2015, international cargo has declined from 47 million tons to 36 million – representing a 23% decline. Furthermore, the share of general cargo (including steel products) has declined from 10% to 7.5%.

The Port of Muskegon competes with numerous other ports/terminals along Lake Michigan. These include: Holland, Manistee, Grand Haven, Ludington, St. Joseph, Detroit and Monroe. Exhibit 5 depicts the Port’s key competitors in the region and a 50-mile radius from each. As shown, Muskegon’s green shaded circle is nearly encompassed by competing ports. This stresses the fact that although Muskegon is the deepest port on Michigan’s western coast, the local niche markets served by its competitors make it difficult to simply capture another port’s cargo since the longer inland move – truck or rail - from port to user would most likely not be cost effective.

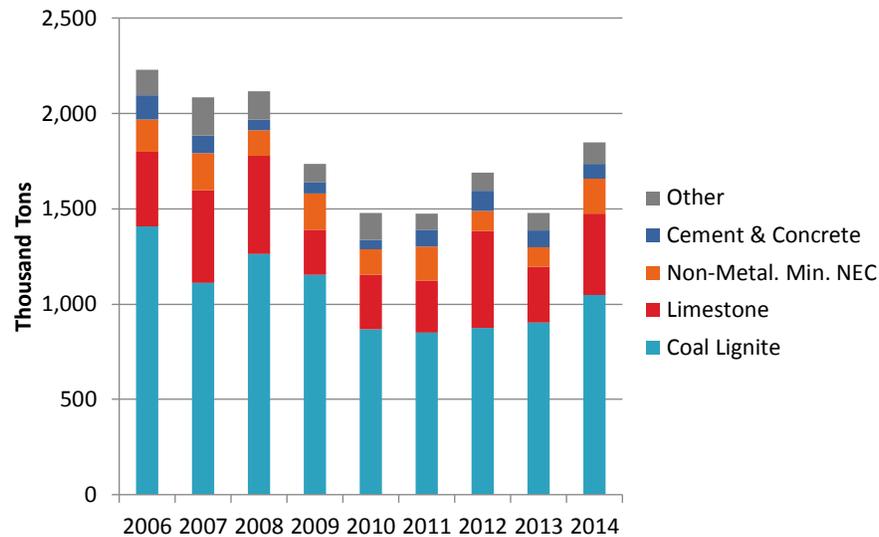
Exhibit 5: Muskegon’s Lake Michigan Key Competitors



Port of Muskegon Base Cargo Market

As shown in Exhibit 6, the Port of Muskegon handles over 1.5 million tons annually. About 60% of the Port’s tonnage is coal destined for the Consumers Energy power plant, while limestone has accounted for 20% in recent years. Salt, cement and other bulks comprise the remaining 20% of the total tons. The decline in tonnage over the 2008-2010 period is attributed to a decline in limestone due to the effects of the recession on the construction industry as well as a decline in coal tonnage. In subsequent years, limestone volume has been sporadic reflecting the continued recovery, and coal tonnage has remained below the pre-recession average. Coal tonnage will cease in 2016 with the closure of the Consumers Energy plant. Non-coal tonnage has fluctuated between 575,000 and 815,000 tons over the 2010-2014 period.

Exhibit 6: Historical Muskegon Tonnage Throughput by Commodity Type



Source: USACE Waterborne Commerce Statistics

Summaries of each commodity group is as follows:

Coal:

- Historical throughput: 850,000 – 1.4 million tons annually through the Port of Muskegon.
- The Port’s coal business will cease in 2016 with the closure of Consumers Energy Utility Plant.
- The loss of coal tonnage potentially places the Port of Muskegon at risk for losing U.S. Army Corps of Engineers (USACE) funding to maintain the federal channel. However, through the efforts of Michigan State Representative Bill Huizenga, this risk has most likely been mitigated.
- Forecast: Tonnage discontinued immediately.

Limestone, Cement, Slag and Aggregates:

- Historical throughput: Limestone – 400,000-500,000 tons; Cement - 50,000-125,000 tons.
- Used in local construction activity.
- These commodities are typically consumed in local 50-100-mile radius.
- Key local end users include construction companies and redi-mix plants.
- These commodities are also handled at competing ports such as Holland and Grand Haven.
- However, somewhat captive market since it is difficult to penetrate into competing markets, and likewise difficult for competitors to make inroads into Muskegon’s hinterland.
- Outlook: Throughput is tied to construction projects and future volume will be influenced by the health of the economy.

Salt:

- Historical throughput: 100,000-200,000 tons annually.
- Used for winter road deicing – usage varies depending on weather conditions.

- Outlook: Assumed to remain flat through the long-term.

In addition to the base commodities already handled at the Port of Muskegon, potential opportunities for the Port exist as described below:

Consolidation of regional terminal operations in Muskegon:

- Current terminal operator in Muskegon operates multiple facilities along Western Michigan.
- Unique situation to Muskegon, where terminal operator is trying to consolidate existing cargo from their other regional port terminals to Muskegon to allow for more efficient operations (not marketing to capture additional business).
- Most likely dependent on land swap with City (in discussions).
- Full potential could reach 200,000+ tons annually.

Foundry coke and pig iron:

- Current terminal operator indicates the key issue is that deep draft is needed to handle foreign international vessels.
- Potential market is estimated at 50,000-125,000 tons.

Scrap:

- One regional scrap consolidator loaded outbound scrap at Port of Muskegon in the past.
- Interviews with scrap consolidators indicate there is an interest in Port of Muskegon.
- Converting this opportunity will require on-going discussions with regional scrap handlers that have mentioned an interest in the Port.
- Potential market is estimated at 30,000 - 80,000 tons.

Fertilizer via the Inland Waterway:

- Interviews conducted with fertilizer distributors indicate that there are potential market opportunities for Port of Muskegon.
- Local/regional fertilizer distribution market currently uses rail for receipt of fertilizer.
- Inbound port terminal in Muskegon, but not in use; also, facility improvements in Bay City.
- While inland barges are permitted to call the Port of Milwaukee, USCGE has prohibited their use to transit from Chicago to Muskegon.
- Transloading from river barge to lake barge in Chicago is cost prohibitive.
- Given the USCG's ruling, this is not a near-term or high-potential market, but it is necessary for Port stakeholders to stay abreast of any developments on this issue.

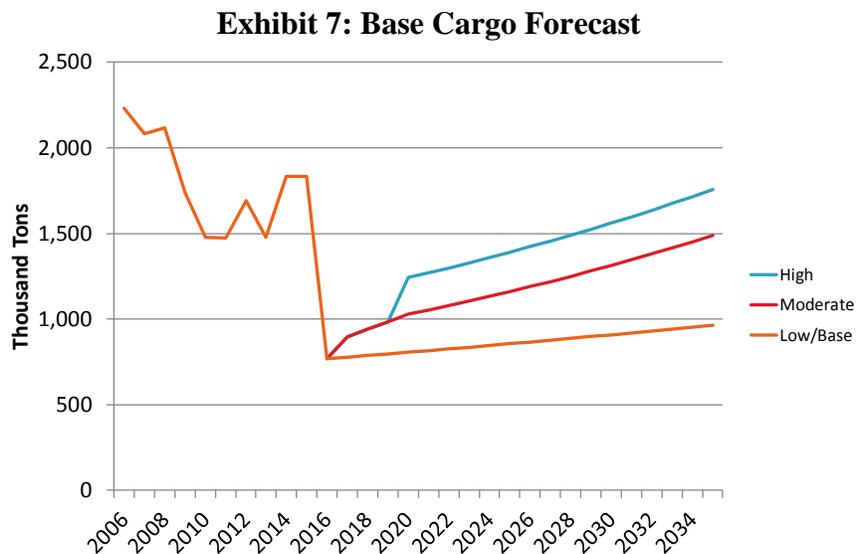
Non-Cargo Opportunity – Cruise Market:

- Scheduled 10 cruise ship calls in 2016.
- Heritage Landing – public facility – development of commercial public dock for non-cargo operations.
- Potential economic impact - 200 passengers in Port 4-8 hours spending money in the local economy on shore excursions, dining, etc.
- Revenue potential for the County - dockage and passenger fees – County should investigate fee structure at Holland.

- It is advised that the city/county conduct passenger survey to gain feedback to ensure future operations.

Port of Muskegon Base Forecast Summary

Exhibit 7 presents the low (base), moderate and high forecast of the existing commodities handled at the Port as well as the aforementioned potential bulk opportunities. If the potential market opportunities come to fruition it is expected that the Port would reach 1.5-1.75 million tons in the long-term. Based on the capacity analysis, it is estimated that the static storage capacity of the existing terminals, not including the B.C. Cobb Dock (estimated at 500,000 tons), is about 850,000 tons/yr. If the cargo is turned twice per year, actual storage can reach 1.7 million tons. Furthermore, this does not factor into account additional land availability as a result of the potential land swap with the City.



Source: USACE; Martin Associates

Implications

Due to the nature of the Great Lakes market, while there is opportunity for the Port of Muskegon to grow, there is not a “silver bullet” single traditional commodity that will simply fill the void left from the closure of Consumers Energy and subsequent loss of coal tons.

3.2 Non-traditional Market Opportunities

As mentioned in the previous section, while there is potential growth base market bulk cargoes, pursuing non-traditional markets will be key in the future success of the Port of Muskegon.

Cross-Lake Ferry Operation

In recent years, the idea of a cross-lake ferry has been discussed in Muskegon. The concept is aimed at reducing transit time resulting from delays prevalent around Chicago – both highway and rail. In fact, a passenger ferry, the Lake Express, already operates between Milwaukee and Muskegon for the same reason.

This study analyzed the feasibility of a proposed cross-lake ferry operation by examining 3 distinct markets:

- Michigan origin for exports through USWC/Canada to Asia;
- Michigan origin for exports through Cleveland to Europe; and
- Michigan origin for domestic cargo destined for Wisconsin/Illinois/Minnesota.

In order to develop a successful ferry operation, demand for the service is paramount. Two key industries that were investigated include Michigan-based agribusiness and consumer goods manufactured in Michigan.

Martin Associates conducted interviews with stakeholders in both industries in order to gauge demand for a potential service. In addition, previous studies conducted for the Grand Rapids Chamber of Commerce – “West Michigan Logistics Hub Assessment and Strategy Recommendations” (2014) and Muskegon Area First – “Port of Muskegon Expansion, Port of Muskegon to Asia Competitive Analysis” and Port of Muskegon Expansion, “Port of Muskegon to Europe Competitive Analysis” were also reviewed to glean market demand for the service.

Data supplied by MDARD was used to develop a database of flows of exports originating in Michigan. The analysis focuses on historical export data, including market share by world region, for key crops including soybeans, corn, apples, cherries and dried beans.

Summary of the data analysis shows that overall export value from Michigan has been increasing, although Canada has been a dominant player in Michigan sourced exports. It appears that soybeans represent the greatest future opportunity for Asian exports given their volume and increasing share destined for Asia. Apples and cherries also show some promise for future Asian exports, albeit at much lower volumes.

Since 2002, agricultural exports from Michigan have grown at 8.6% annually. Furthermore, in 2002 the ratio of containerized to non-containerized exports was 50/50; in the most recent five years, containerized shipments have maintained 90+% share. This is significant since inland transloading of agriproducts for export is growing – facilities have been built in Omaha, Savannah, Kansas City and Newark. East coast ports have been actively pursuing containerized exports, specifically Baltimore and Norfolk. For a service of this nature to be successful, availability of containers in the region is critical. A similar service operated at the Port of Milwaukee exporting to Asia until CP discontinued intermodal service to the Port.

In terms of flows of locally manufactured consumer goods into/out of Western Michigan, Martin Associates used data supplied by GRACC, which was developed by a detailed survey of

regional shippers and was ultimately used in the study entitled, “West Michigan Logistics Hub Assessment and Strategy Recommendations”, May 8, 2014 prepared by Michigan State University. The database provided key origins/destinations by truck load, container and rail. This data was then used to determine size of market available for diversion to cross-lake ferry.

With respect to inbound moves into Michigan, approximately 60% of the 50,000 truck moves originated in IL, OH and IN – suggesting these are moves from distribution centers (DCs) in Chicago and Ohio. Of the 1,300 container moves, 45% originated in IL and 45% from western states including CA, WA, UT and OR again suggesting DC activity. Over 50% of the 46,000 railcars (converted for comparison purposes) originated in CA and WA indicating long-haul transport of Asian imports.

Outbound truck moves from Michigan is concentrated in neighboring states – over 52% of the 27,000 loads are destined for OH, IN and IL. Of the nearly 26,000 containers, over 20% are destined for CA, indicating possible export cargoes. Of the 30,000 converted railcar moves, a majority of known outbound rail moves are destined for the Pacific and Western Canada, again suggesting possible export cargoes. A large portion of the rail moves are classified as “unknown, but appears that it is cargo consolidated in Chicago prior to moving on to final destination.

Based on this data, which was developed from a survey of 10 regional shippers, approximately 30%-35% of the inbound and outbound volume moved to the U.S. West Coast or Canadian West Coast as well as Wisconsin and Minnesota. Developing a potential capture scenario of this cargo that could be diverted to a ferry service would be inconclusive, since this only represents a sample of the flows into-out of Michigan. In order to identify a true capture volume for the service, a detailed cargo flow analysis using published data bases such as Transearch or Surface Transportation Waybill Sample is necessary. Furthermore, the capture volume necessary to make the service breakeven is unclear given the uncertainty of the type of vessel proposed for the ferry service.

The viability of a cross-lake ferry service will be dependent on the ability to compete with current routings in terms of total landed cost. When conducting a landed cost analysis, the following elements must be considered:

- Dray from Western Michigan origin to Port of Muskegon;
- Port and terminal charges;
- Wharfage & dockage;
- Stevedoring;
- Handling/truck loading;
- Equipment usage;
- Warehousing;
- Gate charges;
- Cross-lake line haul voyage;
- Port, terminal and handling at Port of Milwaukee;
- Harbor Maintenance Tax (HMT);
- Inventory Carrying Cost (ICC);

- Surface transportation costs (truck/rail) from Port of Milwaukee;
- Intermodal rail to west Coast port for Asian exports or truck cost for domestic delivery.

Ferry Service Serving Asian Export Market:

In terms of landed costs, in addition to the operating costs of the ferry operations which include crew and fuel, port labor stevedoring and terminal charges are critical factors in competing under currently proposed cost structure and assumptions. As origin moves away from local Western Michigan east to Lansing, traditional routings through Chicago via rail will remain more attractive. In addition to cost there are several soft factors that need to be addressed including year-round option during winter months, additional dwell and drayage time and queue at port. For example, if a mobile crane on a lift-on/lift-off service, can pick at a rate of 10 picks per hour, it would take 5 hours to load and 5 hours to discharge 50 containers per voyage.

Furthermore, viability of this service is dependent on re-establishing CP Intermodal Rail connection at Port of Milwaukee. It is highly unlikely that this service can be supported without on-dock connectivity. Shipper interviews suggest that while congestion exists in Chicago, service is still reliable and shippers remain satisfied. Additionally, the following factors must be considered for a ferry service to compete with current modes:

- Reliability of service;
- Agility;
- Frequency; and
- Individual logistics chain needs of BCOs.

Ferry Service to Serve European Exports:

Similar to the Asian export market, in terms of landed costs, liner operating cost as well as stevedoring and terminal charges are critical factors in success. Furthermore, ILA labor in Cleveland is significantly more costly than non-union labor. As point of origin moves away from local Western Michigan east to Lansing, trucking direct to Cleveland is more cost efficient. Another key issue is that the Cleveland-Europe express only operates twice per month. For shippers desiring agility and flexibility and who are sensitive to transit times, this infrequency would stress delivery lead times.

Ferry Service to Serve Domestic Moves to Wisconsin:

Service appears more viable to Madison or local Milwaukee from local Muskegon rather than Origins/destinations to the east, such as Grand Rapids or Lansing. As point of origin moves away from local Western Michigan east to Lansing, cost differential is exacerbated. Again, stevedoring and terminal charges are critical factors and loading and discharge dwell times must be factored in to ensure a time competitive option to current routing around Chicago.

Furthermore, domestic trucking moves are more sensitive to changes in truck rates. For example, an increase in trucking rates would result in increased competitiveness of a Muskegon to

Madison routing. A number of factors could possibly contribute to a rate hike, including: driver shortage, equipment availability/unavailability, seasonality, fuel prices or tightened capacity.

For the service to be viable, a balanced, two-way trade is necessary. If the head haul routing is westbound, and there is no eastbound return, the cost of the head haul liner move will need to be increased to cover operating costs of the vessel. Depending on the volume of the service, this may make the service cost prohibitive. Also, equipment availability is key. If empty containers are unavailable locally, the cost of drayage may render the service unfeasible. It is difficult to “fabricate” a short-sea shipping market where current modes are sufficient, however, two-way trade for non-time-sensitive cargoes may be the best opportunity for a service of this nature.

Implications

Developing a successful cross-lake ferry service will need to address and overcome the following challenges:

- Cost structure: Stevedoring, line haul transport, port and terminal charges need to be identified and ensure that service remains cost competitive.
- Flexibility and agility in transit time: Needs to maintain dependable schedule, only one sailing per day may not fit into shippers’ schedules.
- Need to change mindset of current modes of transportation: For Asian exports - Despite congestion claims, frequency of service in Chicago still used by shippers.
- On-dock intermodal at Port of Milwaukee for Asian exports: Additional dray to off-dock intermodal yard will exacerbate cost competitiveness and invite transit time delays.
- Year-round service: Need to ensure continuation of service when lake freezes.
- Availability of empty containers: Majority of empties land in Chicago and a cost is incurred to move to Michigan to load for an outbound move. Equalized eastbound-westbound ferry trade requires imports destined to Michigan from West Coast.
- Need to secure anchor customer: Volume commitment, balanced eastbound/westbound trade is ideal.

Development of a Regional Logistics Hub

Logistics hub concept is designed to leverage critical mass of industry to benefit all involved stakeholders. Logistics hubs encourage the use of multi-modal transportation and drive ancillary services by providing opportunities for value-added services on site. Ultimately, regional benefits are realized by industry stakeholders in terms of transportation cost savings, increased visibility and agility in the supply chain. Local and regional governments benefit by and increased economic impact – jobs, income and taxes, and investment in the region.

It is necessary to stress that this is a regional concept, rather than a mode-specific concept. That is, hub activity is not necessarily all related to waterborne commerce and the Port’s marine terminals. Rather, all modes of transportation - port, rail, highway and airport - work in concert to meet the needs of the industry’s logistics chain. In addition to transportation assets, other key attributes for successful development of a hub include location on a rail-served parcel, FTZ

capability, ample acreage for expansion and a dominant anchor tenant to attract ancillary value-added service providers.

The leading candidate for logistic hub activity is the Western Michigan agribusiness sector. As mentioned in the previous section, Michigan agribusiness is strong, and in particular agribusiness exports are increasing, especially soybeans destined for the Asian market. Michigan Ag MDARD supporting initiatives for continued growth. Key logistics hub stakeholders for agribusiness include:

- Growers;
- Co-ops;
- Processors;
- Distributors;
- Third Party Logistics (3PL) providers;
- Food hub operations;
- Brokers;
- Wholesalers; and
- Government inspection services.

To bring the development of a logistics hub for agribusiness to fruition, initial stakeholder input and reconnaissance is necessary. At the outset, key stakeholders should include MDARD, MABA, potential tenants and service providers, local USDA representative and regional economic development agencies. Initial challenges to assess include USDA/FDA regulatory and inspection policies, identifying ideal potential users as some larger farms already perform own value-added services and chain of custody from grower to buyer can vary.

Another industry, which is currently under study by Michigan State University, that could potentially benefit from logistics hub activity is Recycling/Reuse/Deconstruction. A deconstruction study is underway (MSU) which focuses on development of a strategy for reclaiming and salvaging deconstructed building materials. A deconstruction hub is slated to be built in Detroit. Market for a Muskegon hub would focus on bringing material from other states into Michigan since it is mandated that deconstructed material stays in Michigan. Further investigation is necessary to determine if stevedoring/handling charges are too costly for the low-value deconstructed materials. Future viability will be identified once the MSU study is released.

4. Organizational Structure Analysis

The organizational structure analysis will assess the need for the development of a port authority under Act 639 – “Hertel-Law-T. Stopczynski Port Authority Act” at the Port of Muskegon. Currently, in the state of Michigan, only the Port of Detroit-Wayne County is enabled under Act 639. The situation in Michigan is slightly unique in that the vast majority of the state’s marine terminals are private facilities. This analysis will explore port authority structures with similar circumstances, as well as describe the pros and cons of the Port of Muskegon requesting authorization under the existing Act 639 as well as under the proposed language changes to Act 639.

4.1 Port Operating Structures

Public port authorities have been traditionally classified into three different categories: landlord ports and operating ports. Landlord ports are those in which the port authority builds the wharves, and then rents or leases the terminal to a terminal operator (usually a stevedoring company). The port authority acts as a regulatory body and as a landlord, while port operations, including cargo handling, are carried out by private companies. This landlord port structure is common in the United States.

Operating ports are those in which the port authority builds the wharves, owns the cranes and cargo-handling equipment and retains a stevedore to hire longshore labor to lift cargo between the ship and the dock. Port-hired laborers (port authority employees) then handle the cargo in the port warehouses and on-dock transit sheds. Operating ports typically have a large number of employees and also incur large overhead and capital expenditures. Some notable examples of operating ports include the South Carolina State Port Authority (Port of Charleston) and Georgia Ports Authority (Port of Savannah and Port of Brunswick).

A third category of port authorities is those who neither operate or lease terminals but act as an advocate on behalf of the maritime community, including private terminals, within their jurisdiction, offer financing packages to assist in improvements and promote and encourage economic development. Examples of these types of port authorities are as follows:

Detroit/Wayne County Port Authority

- Enabled under existing Port Authority Act 639;
- 5-member Board of Directors;
- 7 staff;
- Funding -
 - \$250,000 from both City and County;
 - \$500,000 match from State.

Port of Pittsburgh Commission

- Falls under PennPORTS, liaison to Governor of the Commonwealth;
- 15-member Board of Commissioners;
- Funding:
 - Appropriation from Multimodal Fund \$1.0-\$1.4 million;
- Key functions:
 - Act on behalf of private terminals;
 - Seek grant funding;
 - Attend roundtable discussions; and
 - Promote waterway (speeches, press conferences, etc.).

Port of Greater Cincinnati Development Authority

- Formed under Ohio Revised Code Section 4582.22 – City/County;
- 10-member Board of Directors;

- 17+ staff members;
- Funding: \$700,000 from both City and County, plus operating income from functions;
- Focus:
 - Economic development of non-port lands; and
 - Bond financing.

Port of Monroe

- Enabled under 1925 Port District Act;
- 5-member Commission, appointed by Mayor of Monroe;
- 2 staff;
- Funding:
 - Millage from city;
 - Lease agreements;
 - Tariff;
- Focus:
 - Promote water transportation – throughput; and
 - Create jobs and taxes.

4.2 Proposed Language Amendments to Act 639

At the time of this report, PA 639 is under proposed amended language changes. Several of the proposed amendments are geared specifically to the development of a port authority in Muskegon. A summary of key language changes includes:

- Redefines “Port Facilities” and “Project”: Under the amended change, a Port Authority will have the opportunity to provide a financing mechanism (tax-exempt debt) for non-port owned assets. This is extremely advantageous to a Port Authority (including the Port of Detroit) where the terminals are private, by having the ability to promote investment and economic development essentially through public-private partnerships.
- Requests incorporation of authority by City or County – single constituent: Under the amended language change, a port authority is provided the ability to focus on one unit of government and reduce competing interests.
- Creates a 9-member Board (for “an authority established in a county having a population of 165,000 or more than but less than 195,000”): Under the amended language change, Board members would increase to 9, of which 6 members would come from owners and operators of port facilities in the city and county. This language amendment is specific to a port authority established in Muskegon County.
- Stipulates that for certain actions of the Authority, and initial bylaws to take effect, all members must concur: Under the amended language change, a port authority established in Muskegon County would be subject to veto power to a single member.

- Eliminates property condemnation for newly established port authorities: Under the amended language change, a port authority established after January 1, 2016 will not have the ability to condemn property.
- Provides the Authority to levy an ad valorem tax up to 2 mills: Under the amended language change, the port authority may levy a tax, however, any port authority established after January 1, 2016 the state will not provide 50% of the operating budget. The ad valorem tax must be voted on by a majority of electors.

At this time, it is unclear which of the proposed changes will be incorporated into Act 639, if any. If a port authority was to be established in Muskegon, the benefits of incorporating under the amended language would be the ability to offer financing to non-port authority owned property. This encourages the potential for public-private partnerships that stimulate economic development and generated sustainable economic activity. Further, the development of a port authority necessitates the formulation of port development plans which must be coordinated with the local municipal development plans. As a result of this planning effort, the optimal use of waterfront land comes to the forefront, which is in and of itself a valuable step in carefully promoting the future development of the limited waterfront land. The development of a port authority provides a focused vehicle to pursue transportation-related grants. While the City or County of Muskegon could be the public sponsor on grant applications, there is also a potential for conflict of interest or special interests. A dedicated port authority will work solely to promote waterborne commerce.

The amended language does guarantee port facilities owners - commercial dock and terminals - participation on the Board, two-thirds of the members will come from that community. The ability for any single Board member to essentially have veto power, whether it is a terminal, land owner or government official, the potential for individual special interest and ultimate counter-productivity will exist. It is recommended that this language be deleted from the proposed changes.

4.3 Roles of the Port Authority

It should be envisioned that a port authority in Muskegon would ultimately work as a public agency that assists in economic development for the region. Roles of the authority would be to:

- Promote Port of Muskegon waterborne transportation and commerce. The port should sponsor public relations activities and also work with local and regional EDCs to ensure that the Port is visible in the community.
- Support private terminal initiatives to increase economic benefit to local and regional community. Financing programs that offer tax-exempt debt are critical to capital infrastructure projects.
- Advocate on behalf of the private terminals within its jurisdiction, however does not interfere with private terminal operations.

- Inform the state legislature on the importance of the port, and the value of individual projects and of their economic development impacts.
- Sponsor and pursue federal and state grant monies in conjunction with private terminal operators and landowners. The ability to find and access federal grant money earmarked for the maritime industry - USDOT, TIGER, Fastlane - will be critical.
- Essentially, a public entity that assists in economic development under the guise of a Port Authority.

4.4 Recommended Structure

As mentioned, there are several language amendments proposed for Act 639. It is recommended that language redefining “Port facility” and “Project” is pursued since it allows for potential P3s, and does not limit the Port Authority’s financing capabilities to port-owned property. Secondly, language specific to Muskegon County, including composition of Board members and language stipulating veto power (for any member) is not advised and should be omitted from Act 639.

Assuming, other changes to Act 639 are accepted, it is recommended that a port authority in Muskegon be:

- County-lead effort: Muskegon County owns Heritage Landing (current cruise ship dock) and Muskegon County Airport. A County-lead effort promotes more regional appeal;
- Board should be comprised of members from:
 - Regional EDCs;
 - Regional government (County and City);
 - Financial institutions; and
 - Exercise caution not to create special interests.

In terms of port authority staffing and funding, it is recommended that the staffing structure remain lean. One composition is an Executive Director to act as the liaison to the state and local governments. A Marketing/Business Development Manager that works continually with regional EDCs and other parties such as Muskegon Area First and The Right Place to stay abreast of all of the developments in Muskegon County as well as neighboring counties. It is also critical to have a Funding Specialist that can seek maritime specific grants as well as other earmarked federal and state sources of funds. For other operations, it is recommended to follow a similar structure in place at the Port of Monroe, where sub-consultants are retained for most activities on as as-needed basis.

With respect to sustainable funding, Act 639 amendments might abolish the 50% state match to operating budgets of port authorities established after January 1, 2016. If that is the case,

the operating budget of the authority will need to be supplemented by the County via an appropriation or a millage voted on by electors. In addition, it is advised that the County investigate revenue stream structure pertaining to the cruise vessels calling Heritage Landing. Typically, port authorities receive revenue from cruise ship dockage and passenger fees. It is anticipated that a small staff will keep the annual operating budget lean.

Implications

A proposed port authority will ultimately promote commercial waterborne and logistics activity as a whole. Rather than getting involved in terminal operations, the authority will stimulate economic development through promotion of the port to the community and legislators, develop P3s with private entities by offering attractive financing options which will encourage investment and pursue logistics-based ideas that benefit the region.