PORT OF MUSKEGON
INFRASTRUCTURE AND ORGANIZATIONAL ANALYSIS

FINAL REPORT

Prepared for:

WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

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Study Elements

- **Infrastructure analysis**
  - Port terminals
    - Capacity
    - Conditions assessment
  - Road, rail and airport
    - Capacity
    - Accessibility
- **Market analysis**
  - Base cargoes (traditional markets)
  - Non-traditional markets/opportunities
- **Future organizational structure of Port Authority**
  - Review of other organizational structures
  - Review proposed language amendment to Hertel-Law-T. Stopcyznski Port Authority Act
  - Recommendation on structure

1) INFRASTRUCTURE INVENTORY AND ASSESSMENT

Port of Muskegon Marine Terminals and Facilities

Terminals Reviewed:

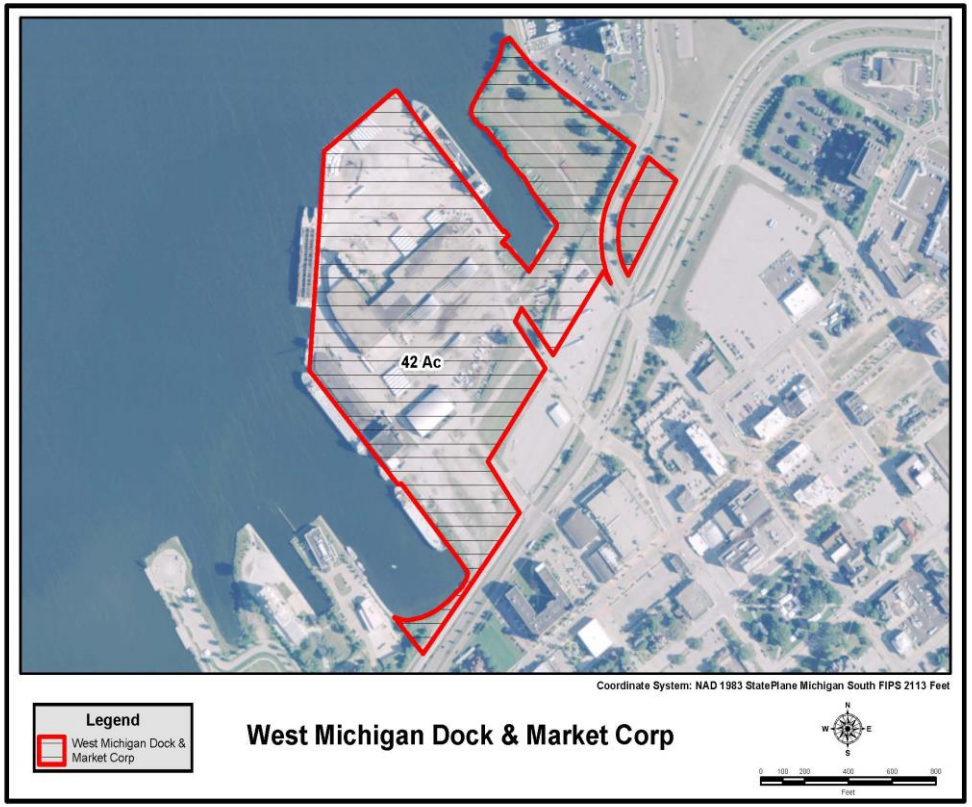
- West Michigan Dock & Market Corporation (Mart Dock) Terminal
- Verplank – Salt Dock
- GL&V Terminal
- B.C. Cobb Dock
- Verplank – Cobb Dock

Other Waterfront Facilities (Not Reviewed)

- Fisherman's Landing Park
- Heritage Landing
- Lafarge Terminal

West Michigan Dock & Market Corp Terminal (Mart Dock)

- Dock frontage of 2,500 -ft
- Open storage laydown area of approximately 20 acres , used to store a variety of bulk materials, including aggregate.
- Existing buildings used to store cars, boats and other recreational vehicles.
- Mart Dock has the capacity to store 200,000 to 250,000 tons of bulk material



Mart Dock Maintenance Review:

- Obvious deficiencies noted: **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.
- Issues of concern: The waterfront structures are quite old. Their condition is a concern that **should be addressed by an underwater inspection** to determine the extent of corrosion and remaining practical life.
- 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 likely require extensive renovation**.

Verplank Salt Dock

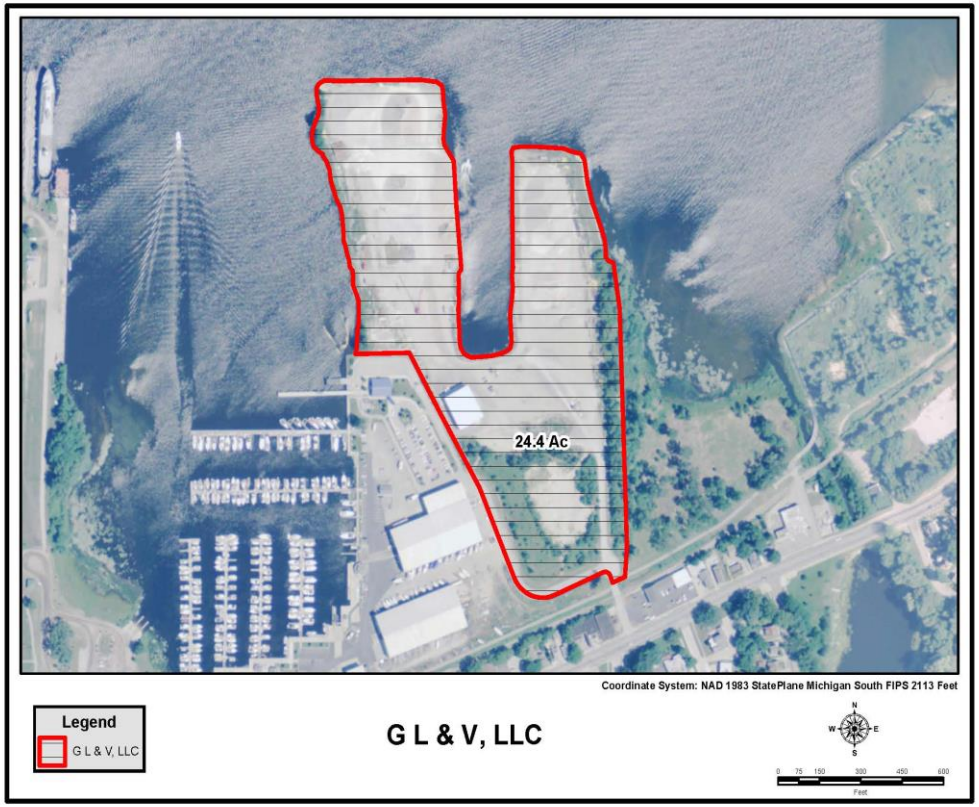
- The Verplank Salt Dock is used almost exclusively for Salt storage
- Dock frontage of approximately 1,000 feet with an allowable draft of 25 feet
- Approximately 5 acres of paved land
- Capacity of terminal is approximately 250,000+ tons.

Verplank Salt Dock Maintenance Review

- Obvious deficiencies noted: **No notable deficiencies were observed and none were reported by the terminal's representative**. The deeper side of the peninsula of the terminal is on the North side, which does not have a properly improved berth for vessels delivering salt to the facility. These vessels must stand-off of the unimproved shoreline while unloading.
- Issues of concern: **The unimproved shoreline on the north side**, and lack of a proper berth, limits the flexibility and usefulness of the site for other than dry bulk cargoes delivered by self-unloading vessels.
- 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**

G L & V Terminal

- The marine products handle at the terminal are limestone, slag, coal, furnace coke,
- There is approximately 15 acres of improved open storage space.
- The terminal has a dockage area length of 950 feet.
- Total static capacity of the terminal ranges from 100,000 tons to 200,000 tons depending on type of cargo

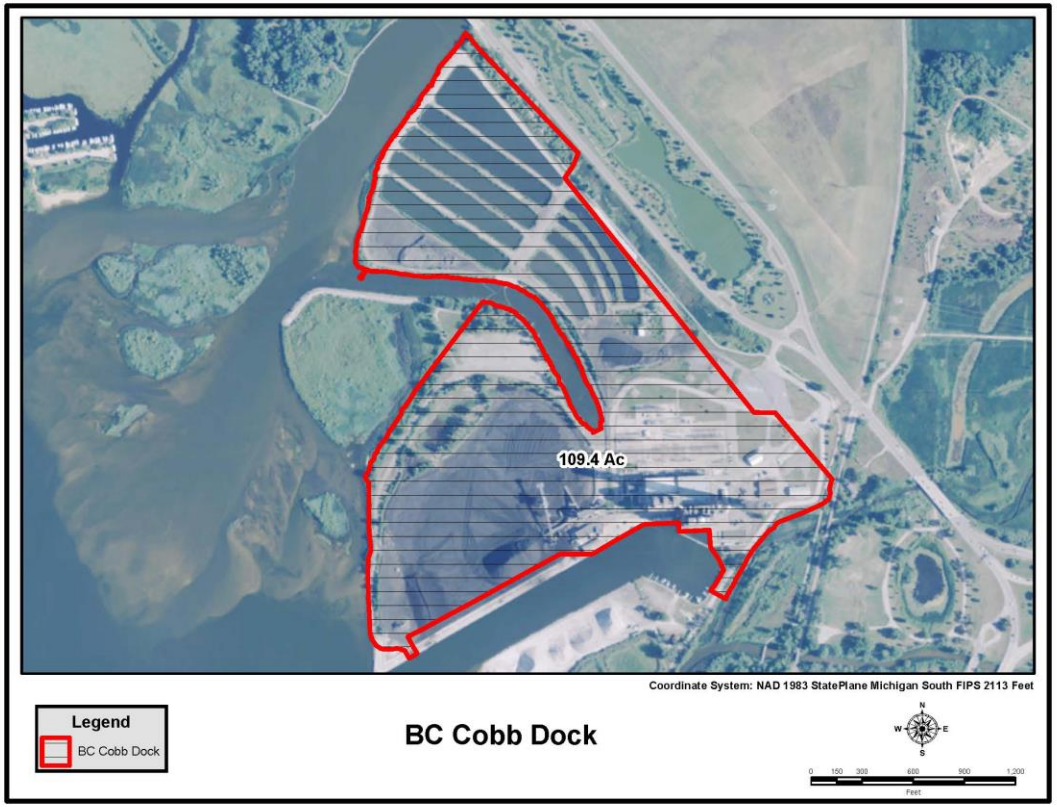


G L & V Terminal Maintenance Review

- Obvious deficiencies noted: **No notable deficiencies were observed and none were reported by the terminal's representative**. The north side of the terminal does not have a properly improved berth for vessels delivering cargo to the facility. These vessels must stand-off of the unimproved shoreline while unloading.
- Issues of concern: **The unimproved shoreline on the north side**, and lack of a proper berth, limits the flexibility and usefulness of the site for other than dry bulk cargoes delivered by self-unloading vessels.
- 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.**

BC Cobb Terminal

- A 109 acre site that is becoming available for other uses
- The existing dock is an 1,800-foot long structure supported by steel piles.
- The berth depth is 27 feet,
- The Coal Storage Yard was a 35-acre site located adjacent to the dock structure and the power plant.



BC Cobb Terminal Potential Capacity

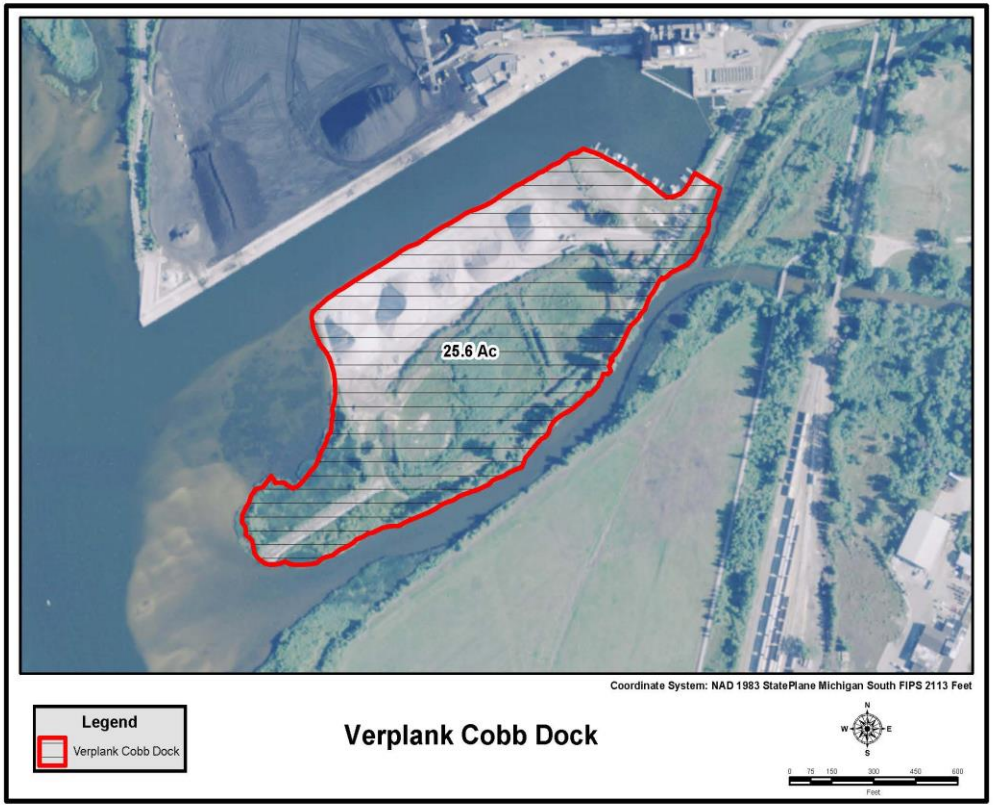
- **Container Yard (CY) Storage capacity is based on the type of container handling equipment being used.**
  - Wheeled Storage – 92 TEUs/Ac.
  - Reach Stackers (2h,4w)- 220 TEUs/Ac.
  - Empty Container w/ High Pick Forklift – 300-400 TEUs/Ac.
- **35 Ac. CY that is partially wheeled w/ empties - 5,400 TEUs Static Capacity**

BC Cobb Terminal Maintenance Review

- Issues of concern: While the existing berth appears to be in very good condition, conversations with several locals familiar with the facility's history **report that that construction was based on a designed focused on only supporting the existing operations until the plant closing. 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 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 other types of cargo if sufficient demand materializes**.

Verplank – Cobb Dock

- Dock frontage of 1,000-ft.
- Approximately 8-9 acres of the site is used for cargo storage of aggregates and other bulk commodities used mostly for highway construction
- Rest of site is used as a Confined Disposal Facility (CDF) for dredged material.
- The “static” capacity of the terminal is approximately 150,000 tons
- Annual capacity is 400k-450k, assuming several turns per year.



Verplank – Cobb Dock Maintenance Review

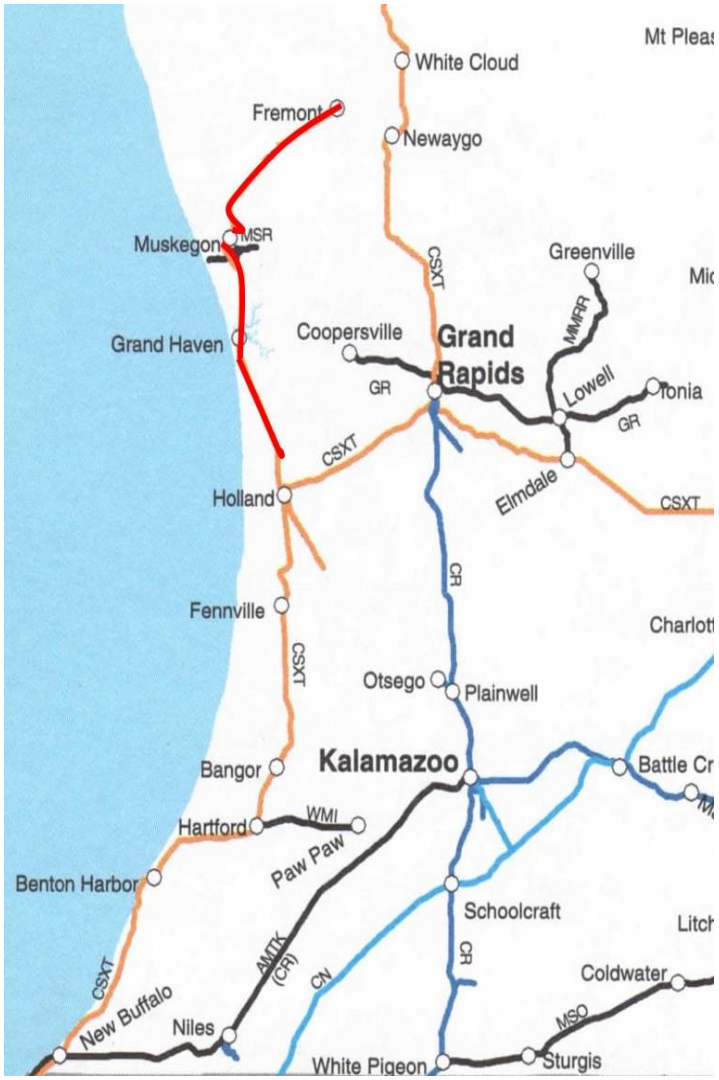
- Obvious deficiencies noted: **None were noted or reported during the visit.**
- Issues of concern: **The unimproved shoreline on the north side,** and lack of a proper berth, limits the flexibility and usefulness of the site for other than dry bulk cargoes delivered by self-unloading vessels.
- Conclusions & 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 due to wetlands easterly and the Lake Express Ferry terminal and a marina westerly.**

Static Capacity Summary

Terminal	Wharf (length)	Open Storage Area	Covered Storage Area	Capacity	
				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); 250-400 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.

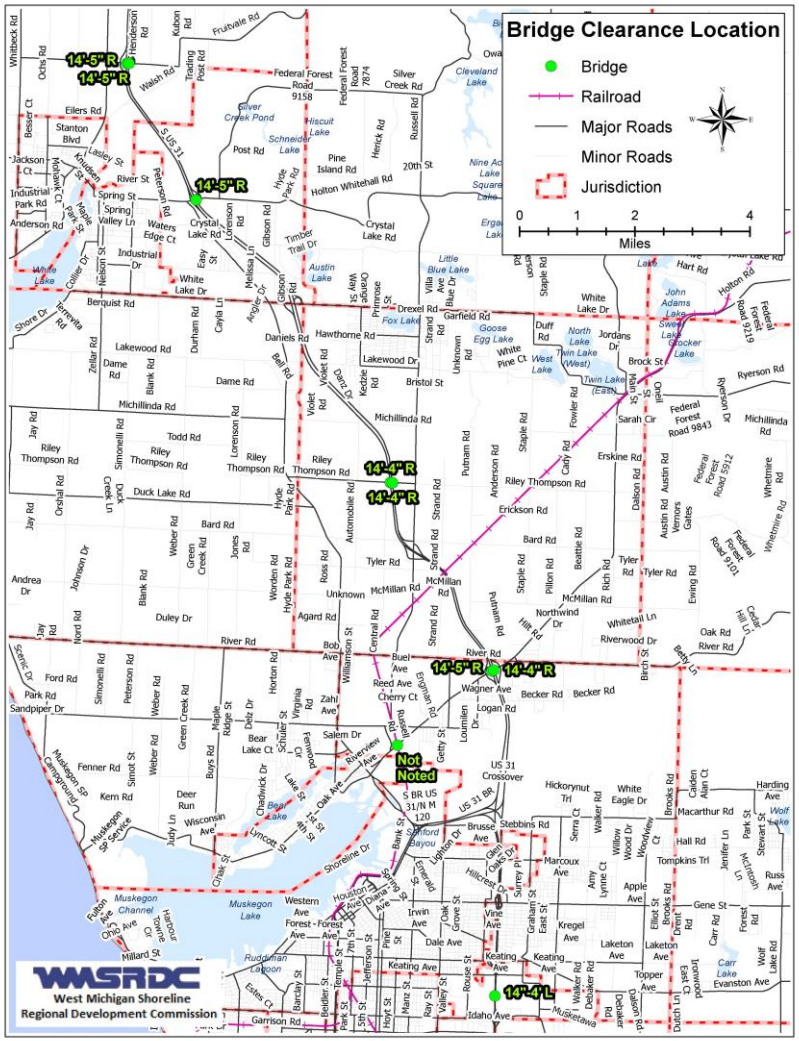
Other Infrastructure - Rail

- Rail Service is provided by Michigan Shoreline Railroad (owned by the Genesee & Wyoming (G&W));
- Operates 52 miles track connecting to the CSX Transportation (CSXT) yards at West Olive, Michigan.
- Serves terminals located at northeastern end of Lake Muskegon
- Currently carries primarily sand and chemicals and hauls 6,000 -6,500 carloads per year.



Other Infrastructure - Highways

- Major Highways serving Lake Muskegon Terminals include:
  - US 31
  - M- 46
  - M- 120
  - I-96
- **MDOT reports no major "deficiencies" in region**.
- Some **local bridge clearances** were identified less than the required 14' 6" min standard



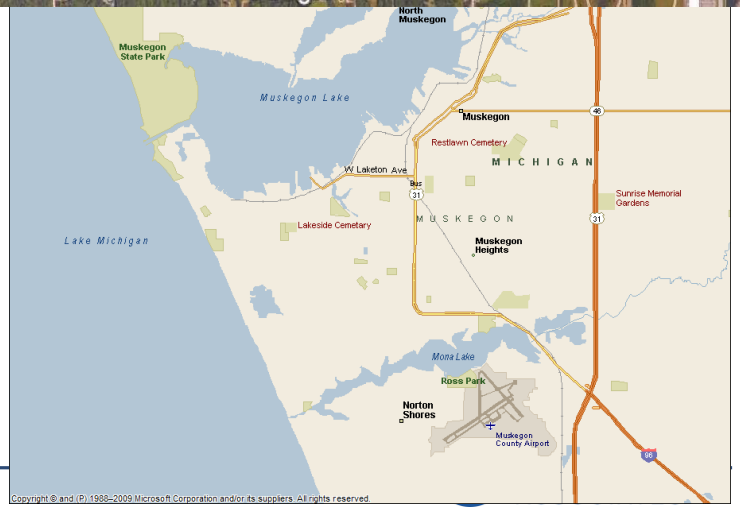
Selected Local Highway Traffic Counts

Route	From	To	AADT	CAADT
US-31	Jct. M-120	Russell Rd	41,000	1,500
US-31	N. Jct. M 31BR	Jct. M-120	37,800	1,800
US-31	Getty St.	Norton St.	26,200	1,000
Us-31	Fourth	Skyline Drive	14,400	1,200
M-46	Pine St.	Getty St.	10,300	330
M-120	Jct. US31BR	Turn @ Lake Av.	25,000	280

Data from MDOT 2014 Traffic Map

Other Infrastructure - Airport

- Muskegon County Airport (MKG) has two asphalt paved runways:
  - 6/24 is 6,501-ft
  - 14/32 is 6,100=ft
- Current operations are well under FAA operational ratios, **indicating significant unused traffic capacity.**
- Adjacent to the Airport is the Muskegon County Airport Business Park, which provides opportunities for aviation related industrial development



Infrastructure Conditions Assessment Summary

- **Port Infrastructure**
  - No critical deficiencies found
  - Age of the terminals may require underwater inspections to determine operating life
  - Unimproved berths limit flexibility and marketability
  - No rail on south end can limit market opportunities
  - Capacity appears adequate for future cargo opportunities
  - Non-bulk cargo opportunities better served at BC Cobb Dock
- **Rail**
  - No critical deficiencies found
- **Highway**
  - No critical deficiencies found
  - Few local bridges fall below clearance standard; investigating solutions
- **Airport**
  - No critical deficiencies found
  - Excess capacity

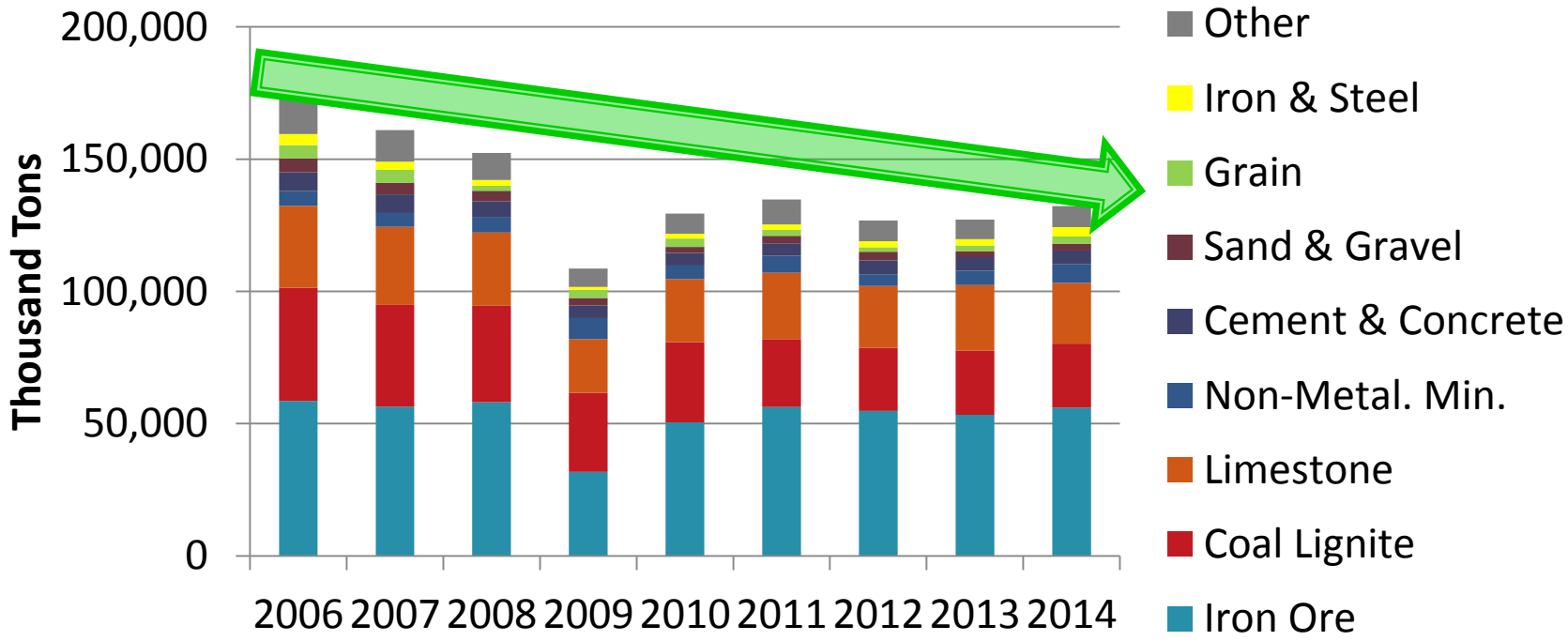
2) MARKET ASSESSMENT – MARKET OVERVIEW

Defining Types of Cargo Markets

- **At the outset it is necessary to define the types of waterborne cargo markets in which the Port of Muskegon currently competes; and those markets in which the Port can potentially compete for market share**
  - **Captive cargo markets**
    - Tied to a single user/producer
    - Proximity to plant, mine or farm
    - Typically dry and liquid bulks
    - Staple of Great Lakes and Inland Waterway System
    - Not dynamic
  - **Discretionary cargo markets**
    - Hinterland reach - competition
    - Containerized and breakbulk cargo
    - Competitive vessel, port and inland transportation services
    - More dynamic (influenced by cost and transit time)

Great Lakes total tonnage handled 2006-2014

The recession impacted total tonnage handled at Great Lakes ports was impacted heavily by the recession in 2009; During subsequent recovery, tonnage has been flat. In 2014, total tonnage is still down by 23.5% over 2006 pre-recession levels



Source: USACE, Waterborne Commerce Statistics

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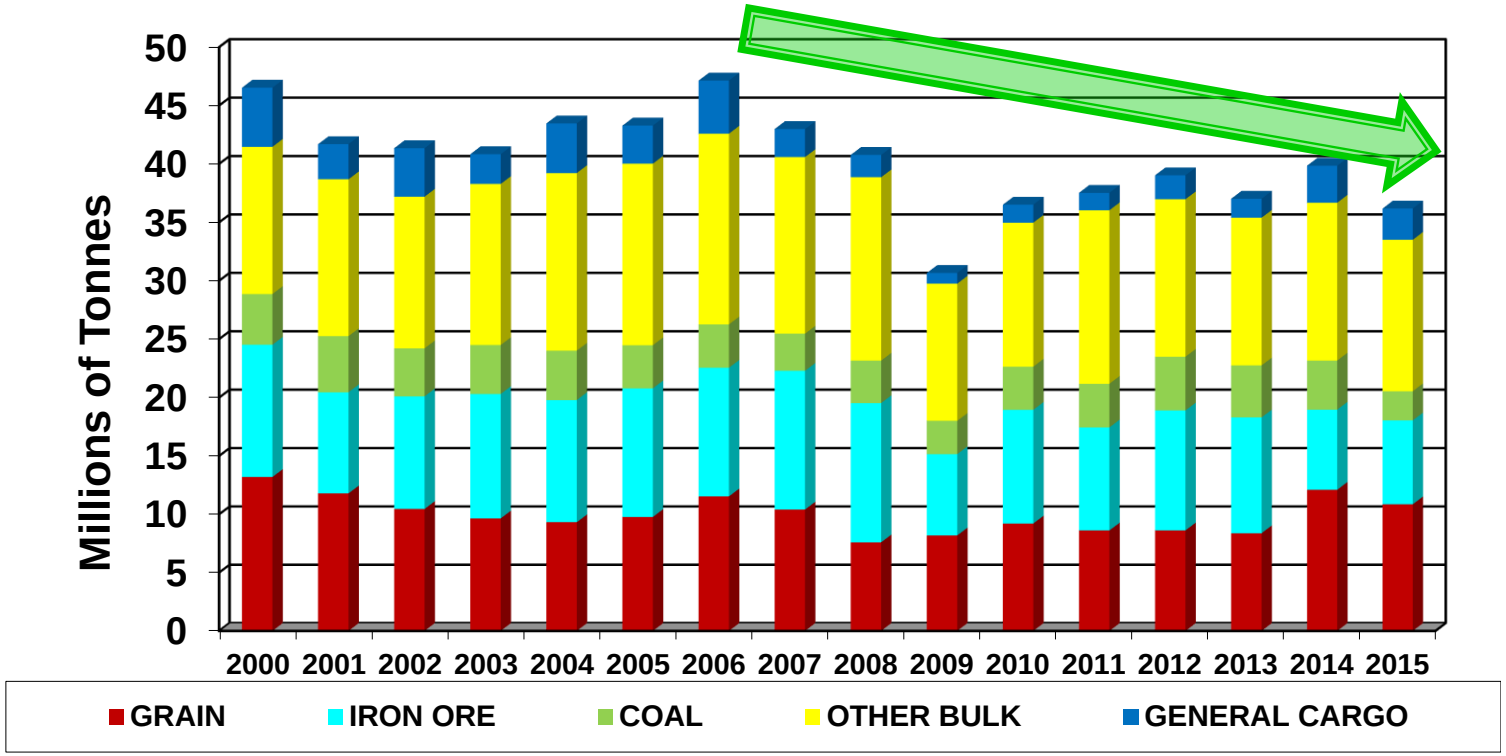
Historical St. Lawrence Seaway Tonnage 2000-2015

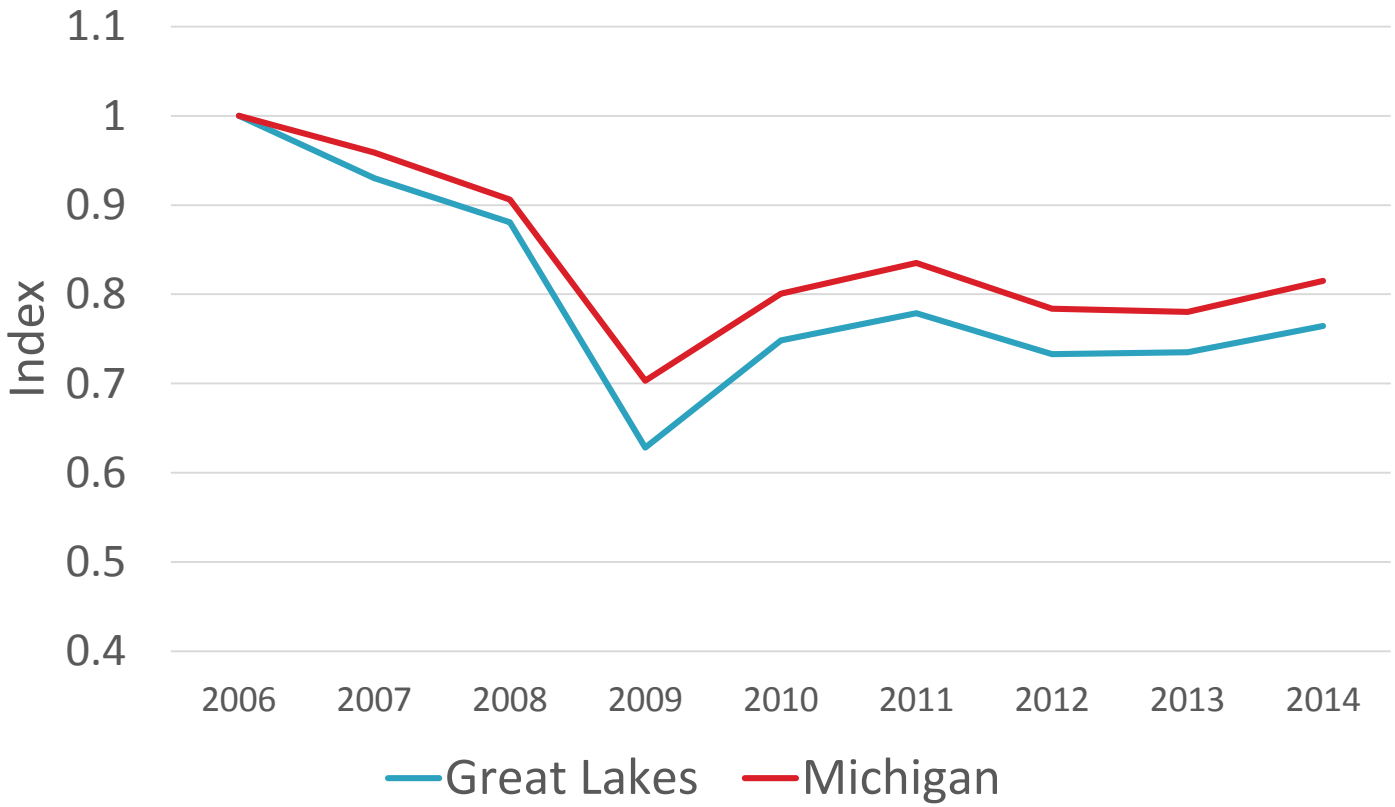


International cargo moving via the St. Lawrence Seaway Transits has declined 23% since 2006 reflecting 1) economic downturn during recession and 2) Increased competition from coastal ports.

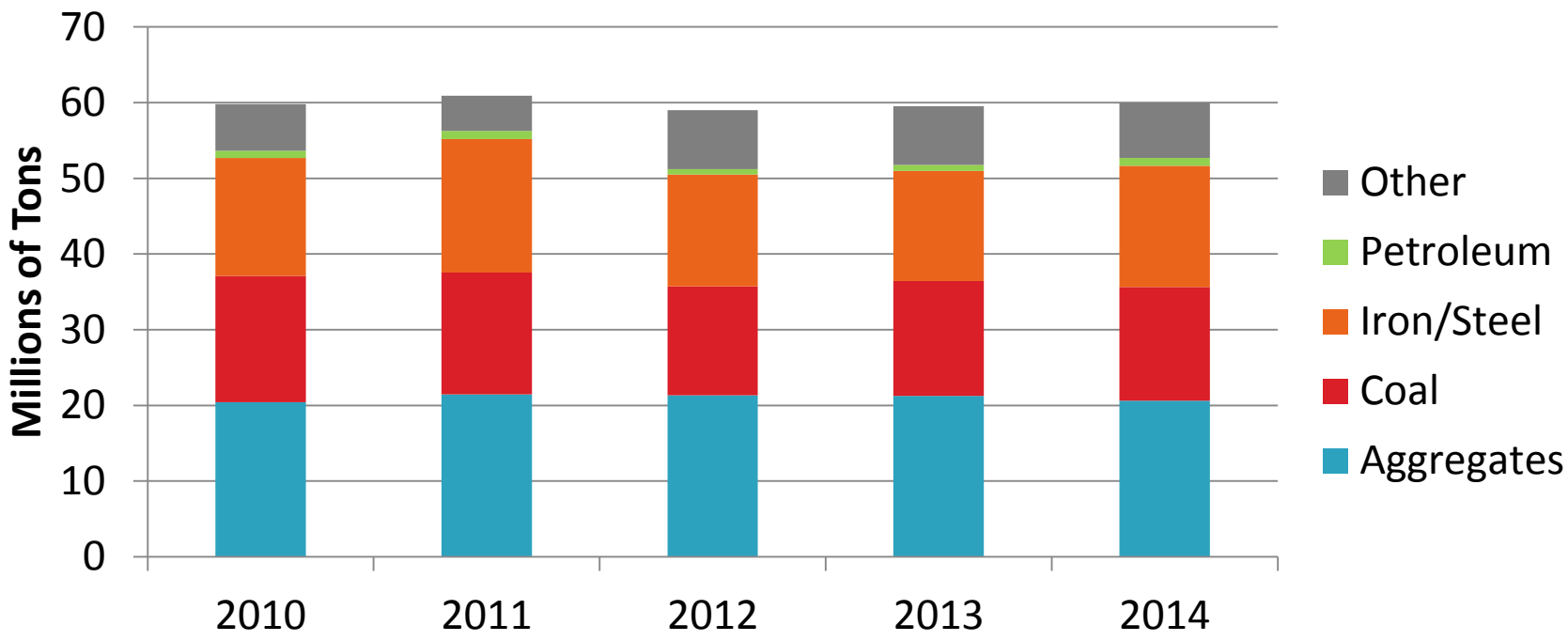
International general cargo share of total Seaway traffic has declined from 10% to about 7.5%.

Source: St. Lawrence Seaway Management Corporation (SLSMC)

Michigan ports' tonnage has tracked with the Great Lakes total; Tonnage is off by 18.5% since 2006



Michigan Statewide Tonnages by Commodity; Essentially stable over past 5 years



Source: USACE, Michigan State Profile

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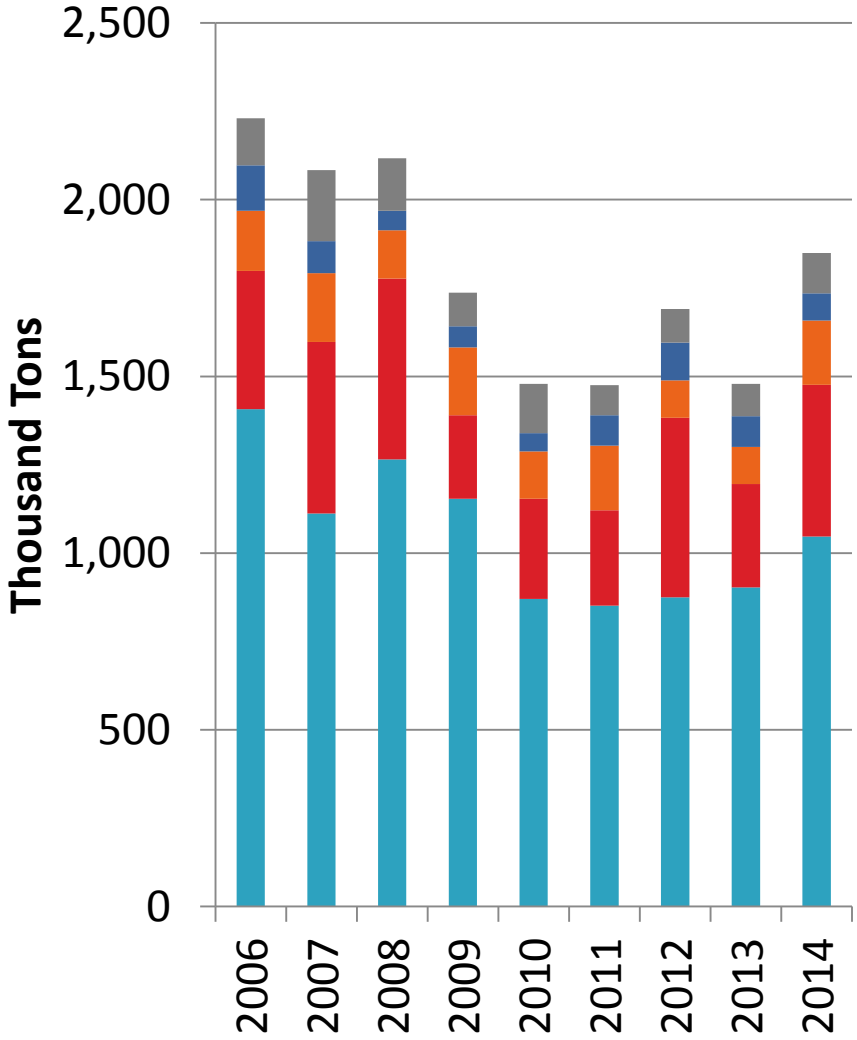
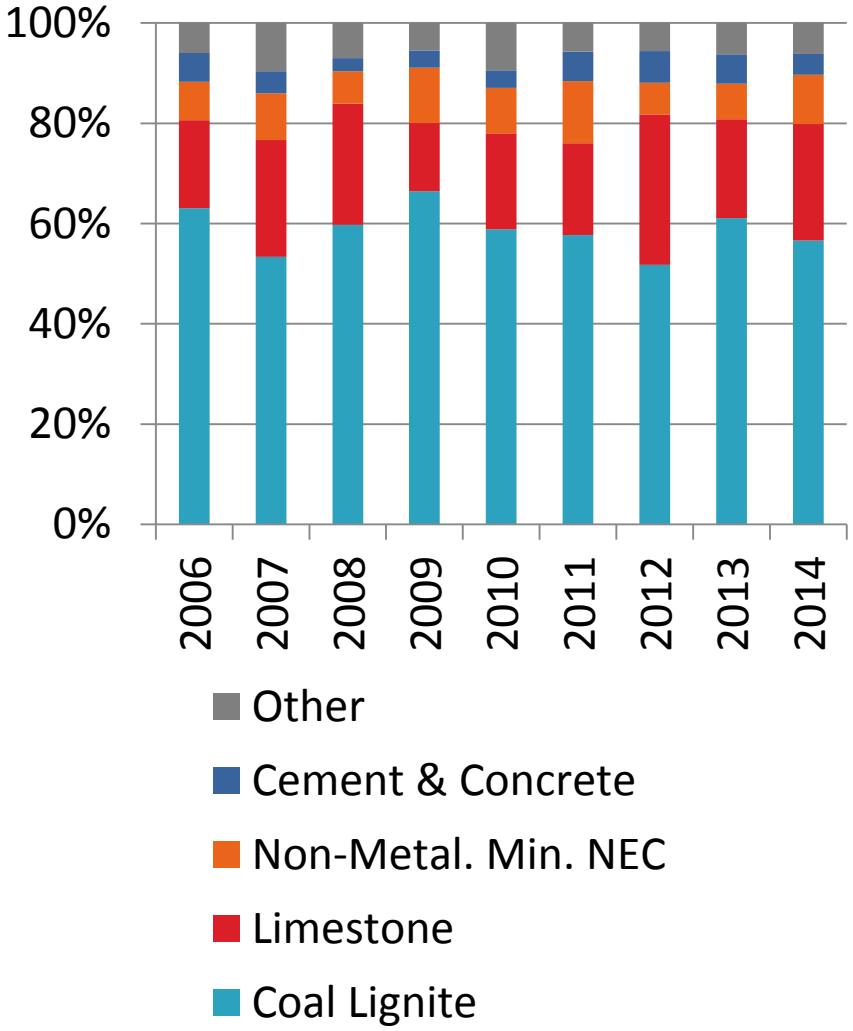
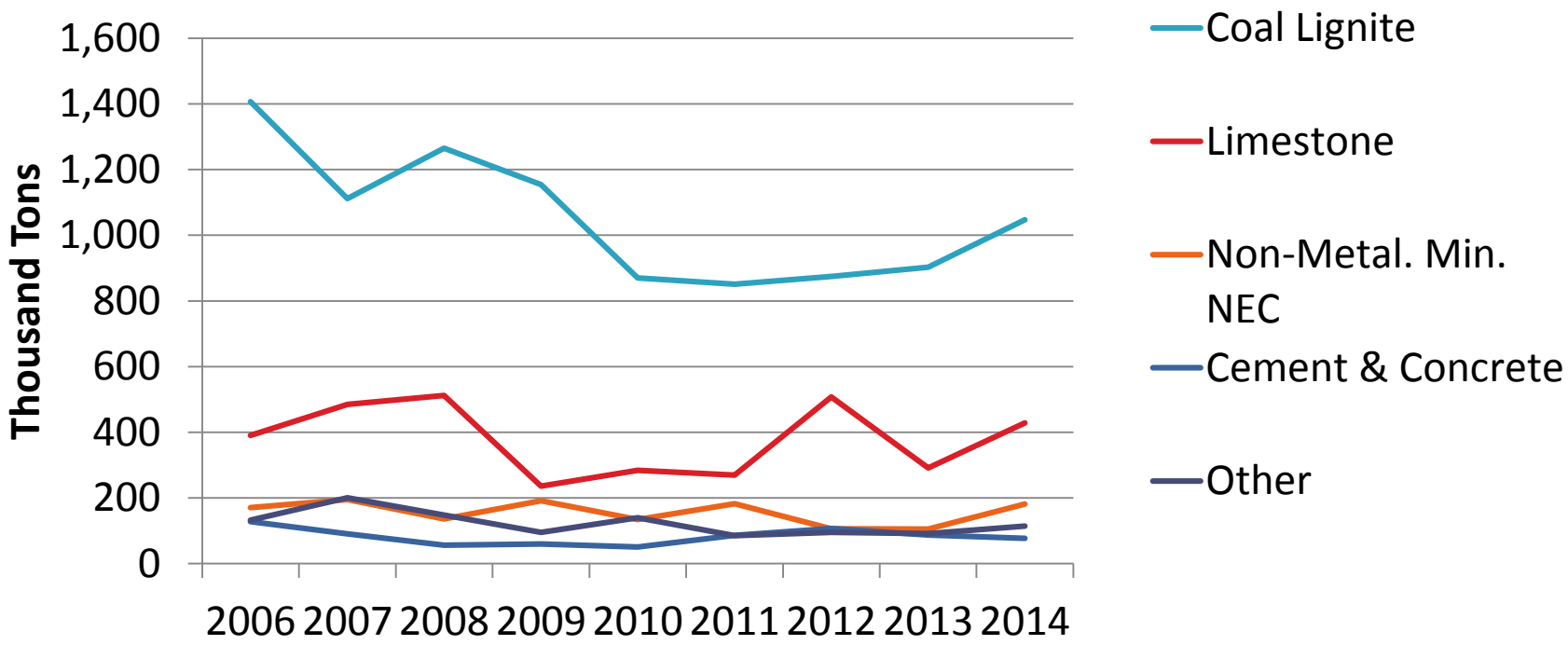
Port of Muskegon
Waterborne Tons by Commodity Group – 2006-2014





Source: US Army Corps of Engineers (USACE) Waterborne Commerce Statistics

Port of Muskegon
Waterborne Tons by Commodity Group – 2006-2014



Historically coal has been the dominant commodity handled at Muskegon; Limestone, cement and concrete tonnage was heavily impacted by the recession, however sporadic gains have been made in recent years during recovery;

Source: US Army Corps of Engineers (USACE) Waterborne Commerce Statistics

Port of Muskegon Competing Ports and 50-mile Hinterland

Competing facilities in Michigan:

- Holland
- Manistee
- Grand Haven
- Ludington
- St. Joseph
- Detroit
- Monroe

The shaded circles represent a 50-mile radius from key port facilities. As demonstrated, Muskegon's competitive reach is impacted by other ports, most notably Holland and Grand Haven.

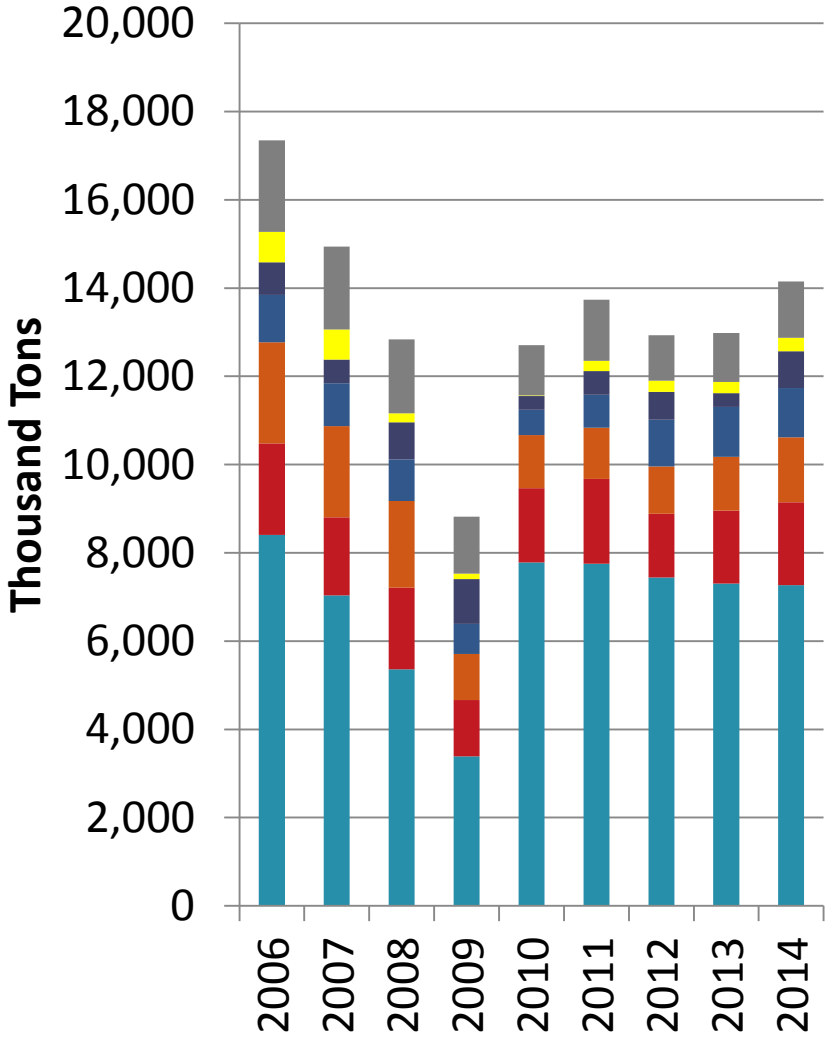
Port of Muskegon Competing Ports and 100-mile Hinterland

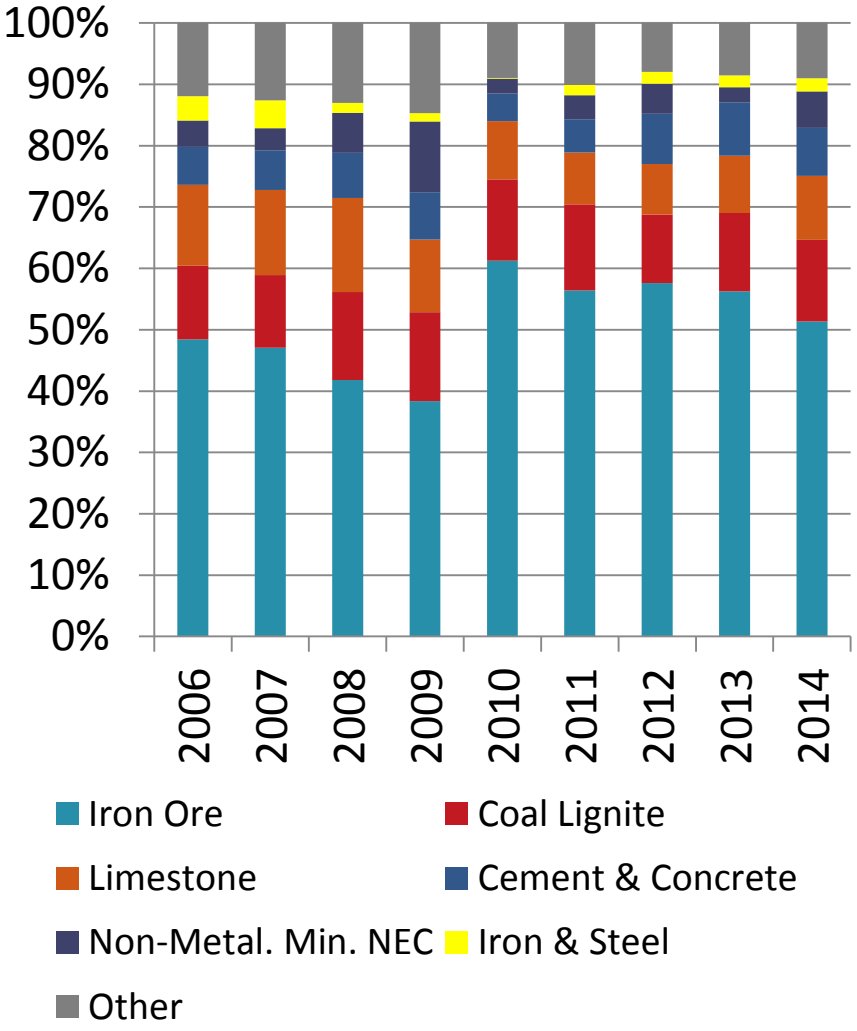
Competing facilities in Michigan:

- Holland
- Manistee
- Grand Haven
- Ludington
- St. Joseph
- Detroit
- Monroe

The shaded circles represent a 100-mile radius from key port facilities. Muskegon's competitive reach is impacted by western Michigan ports as well as Detroit for the central part of the state including Lansing.

Competing Ports: Port of Detroit – Decline through recession; sporadic recovery





Source: USACE, Waterborne Commerce Statistics

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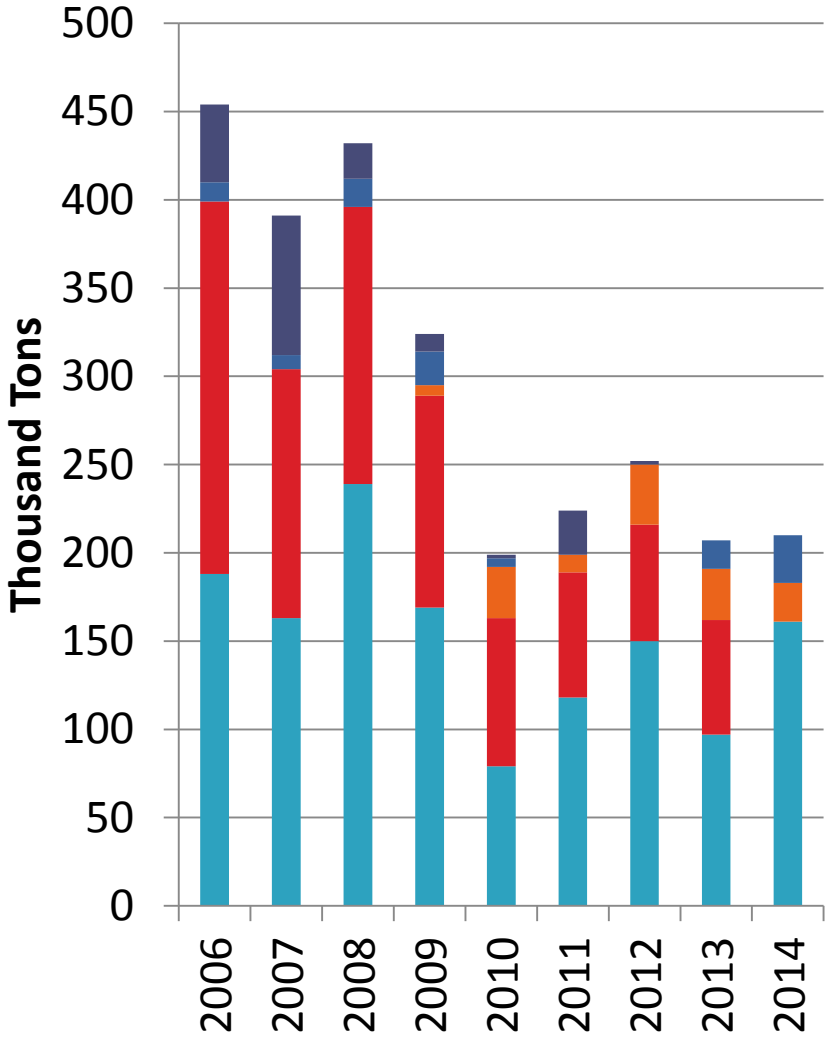
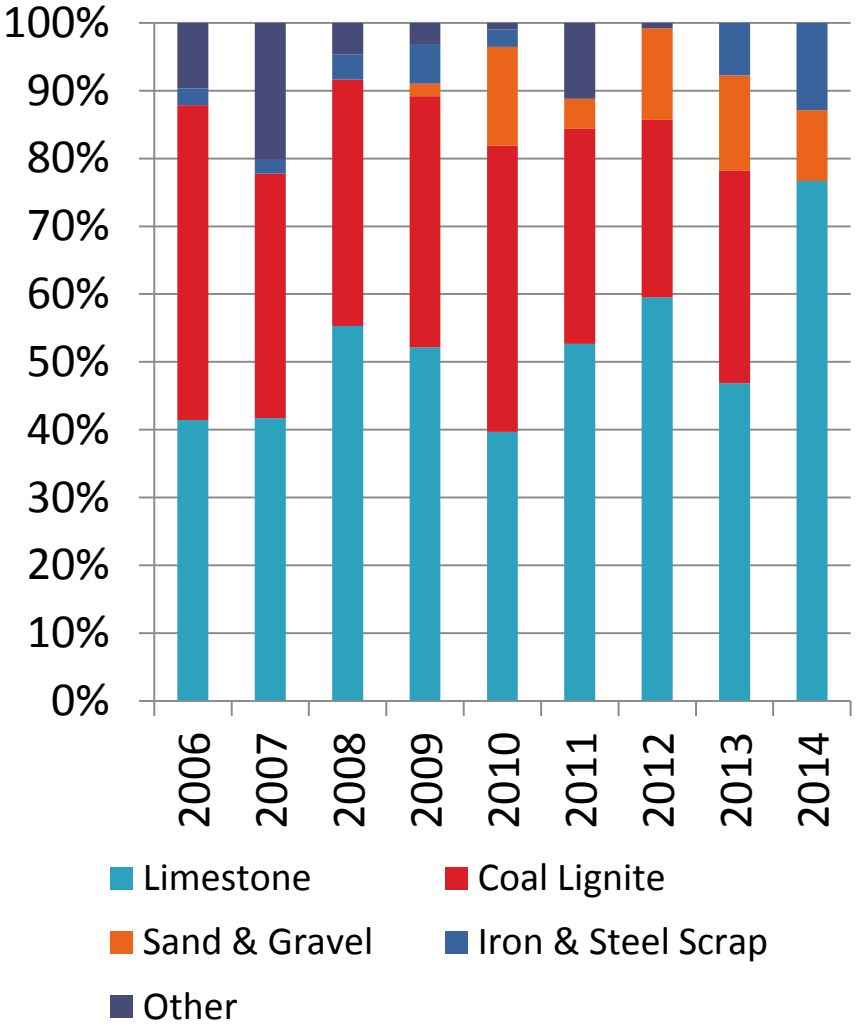
Competing Ports: Port of Holland – Smaller volumes; Decline in coal; limestone tonnage unstable





Source: USACE, Waterborne Commerce Statistics

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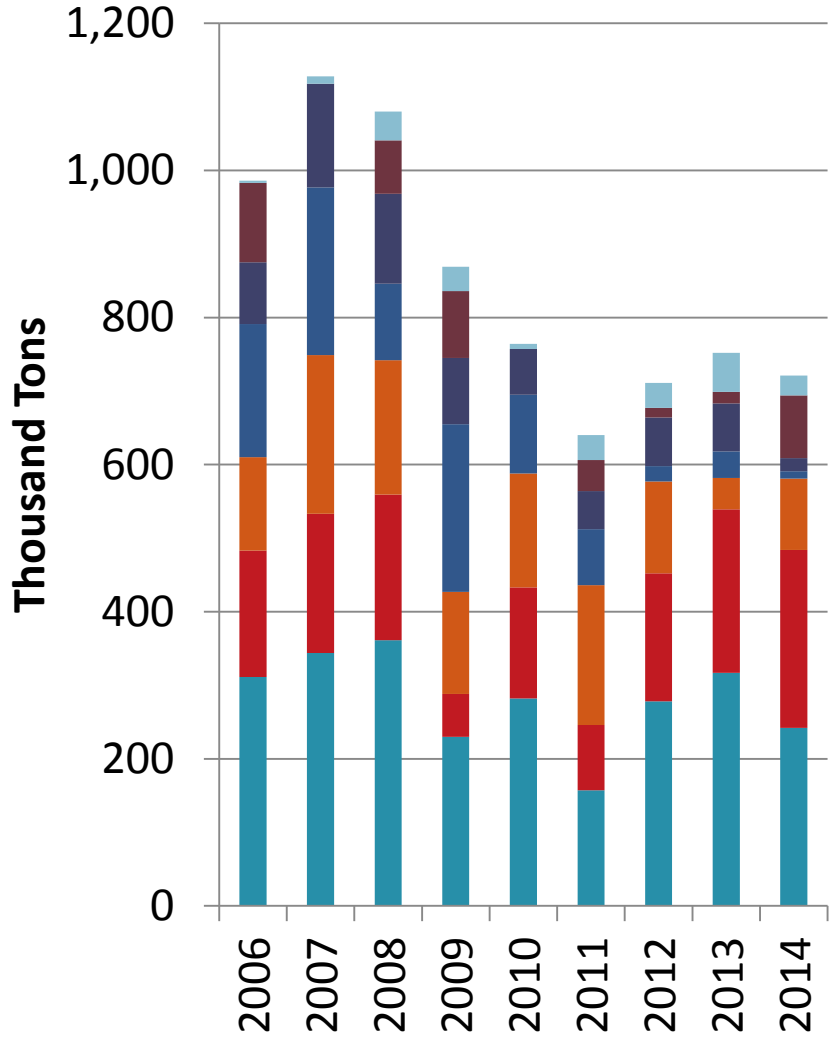
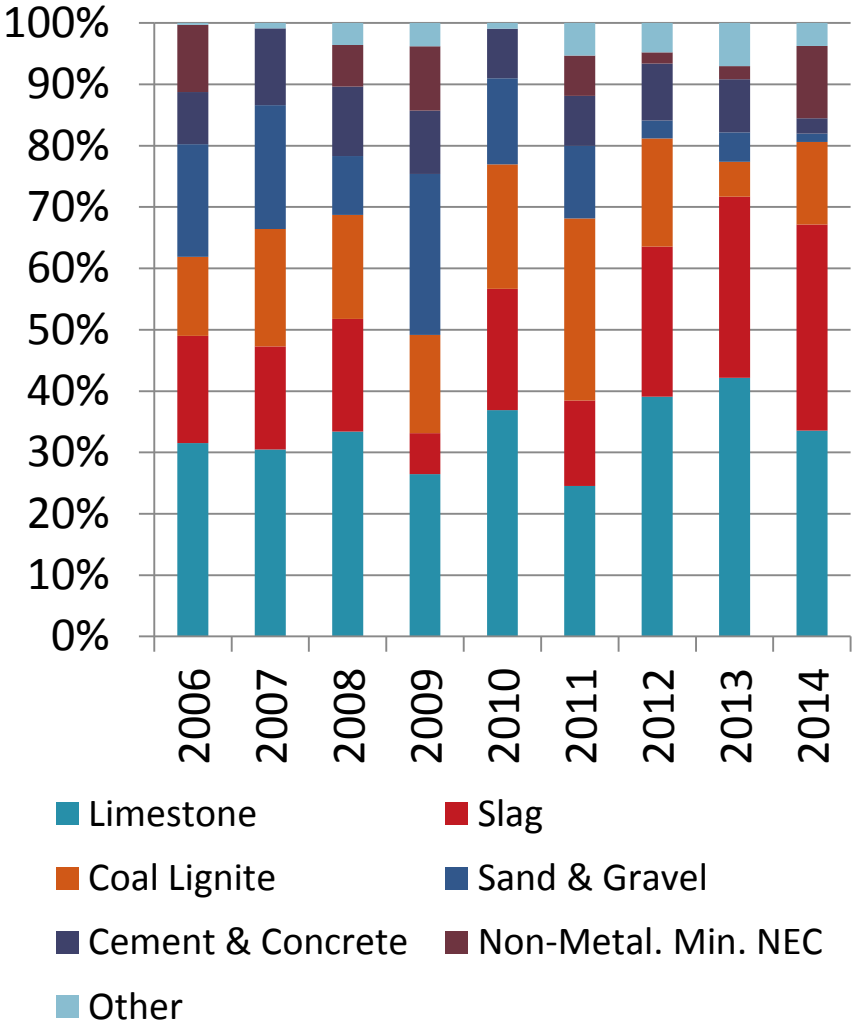
Competing Ports: Port of Grand Haven – Decline through recession; limestone and slag account for majority of tons





Source: USACE, Waterborne Commerce Statistics

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Market Overview Summary

- **Staple of Great Lakes market has been bulk cargoes**
  - Raw materials and feedstocks
  - Typically captive to producer or user
  - Market hit hard by recession, recovery has been slow
- **International tonnage through the St. Lawrence Seaway has been in decline**
  - Discretionary cargoes, including steel, have not returned to pre-recession levels
- **Port of Muskegon will lose about 60% of tonnage due to closure of Consumers Energy plant**
- **Regional competition from Holland and Grand Haven for bulks such as limestone, salt, aggregate and potentially scrap**

2A) MARKET ASSESSMENT – WATERBORNE BASE CARGOES

Base Waterborne Cargo Market Assessment

- **Focus on the current waterborne markets in which the Port of Muskegon currently competes**
  - Coal
  - Limestone
  - Aggregates
  - Slag
  - Cement
  - Minerals

- **Assessment of each major commodity group that identifies:**
  - Competitive position
  - Future outlook

- **20-year forecast of current base cargo market**

Muskegon's Competitive Position: Coal

- **Between 850,000 and 1.4 million tons handled annually over past decade**
- **Port's coal business will cease in 2016 with the closure of Consumers Energy Utility Plant**
  - Plant is slated for demolition in 2018
  - No alternative fuel source (natural gas) replacing coal
  - Places Muskegon at risk for USACE to discontinue maintaining channel depth
    - Although this risk most likely mitigated through efforts of Representative Huizenga
- **Terminal area will become available for future use**
- **Forecast: Tonnage discontinued immediately**

Muskegon's Competitive Position: 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**
  - Somewhat captive market since it is difficult to penetrate into competing markets, and likewise difficult for competitors to make inroads into Muskegon's hinterland
  - However these commodities are handled at competing ports such as Holland and Grand Haven
- **Outlook: Throughput is tied to construction projects**
  - Health of the economy will influence tonnage
  - Have witnessed growth in recent years

Muskegon's Competitive Position: Minerals and Other Dry bulk

- **Historical throughput**
  - Minerals (salt) – 100,000-200,000 tons
- **Salt used for winter road conditions**
- **Outlook: Assumed to remain flat through the long-term**

- **Potential opportunities:**
  - Foundry coke
  - Pig iron
    - Need deep draft to handle foreign international vessels
    - Potential for 50,000-125,000 tons
  - Scrap – handled at Muskegon in the past
    - Will require ongoing discussions with regional scrap handlers
  - Consolidation of terminal operations in Muskegon
    - Most likely dependent on land swap with City

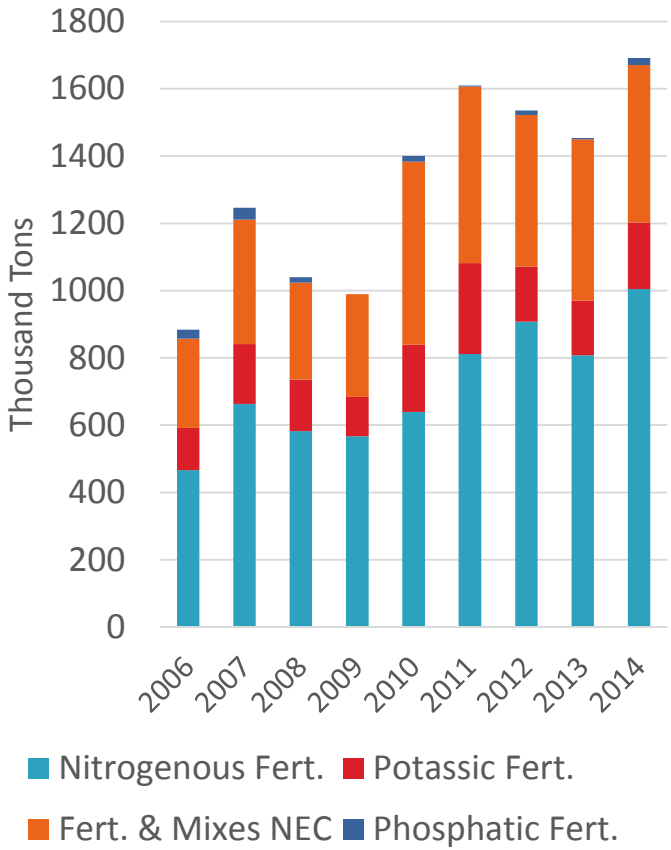
Muskegon's Competitive Position: Potential Opportunities

- **Consolidation of terminal operations in Muskegon**
  - Current terminal operator in Muskegon operates multiple facilities along Western Michigan
  - Allows for more efficient operations
  - Most likely dependent on land swap with City (in discussions)
  - Potentially 200,000+ tons
- **Foundry coke and pig iron**
  - Need deep draft to handle foreign international vessels
  - Potential for 50,000-125,000 tons
- **Scrap – handled at Muskegon in the past**
  - Will require ongoing discussions with regional scrap handlers

Port of Muskegon Summary Forecast
Base Cargo - Assumptions

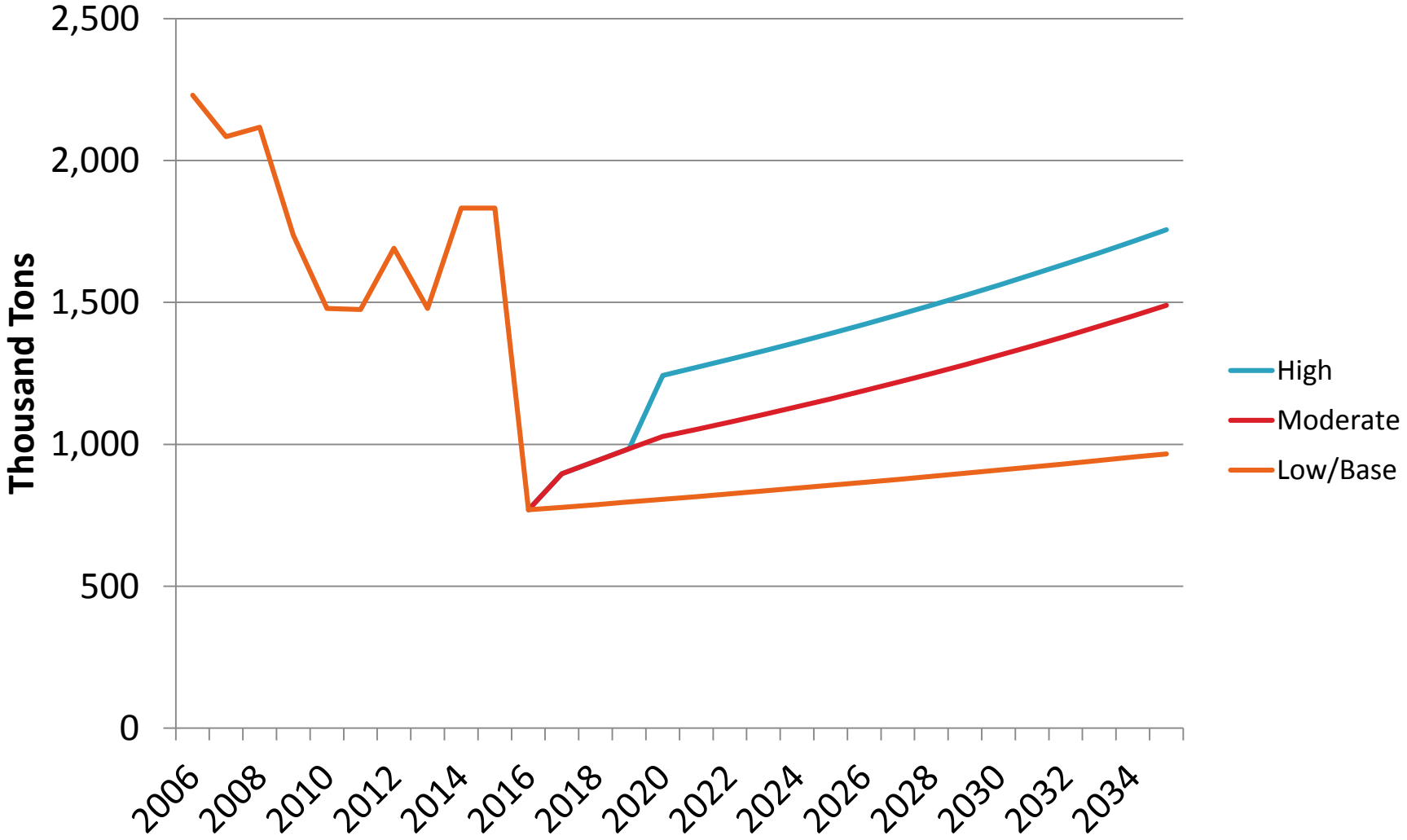
- **Coal**
  - Discontinued in 2016
- **Limestone, Cement and Aggregates**
  - Low: 1.5% CAGR based on 2014 tonnage
  - High: Return to pre-recession in 2020; 3% CAGR thereafter
- **Minerals & Salt**
  - High/Low: 5-year average, flat growth
- **Slag**
  - Low: 1.5% CAGR based on 2014 tonnage
  - High: Return to pre-recession in 2020; 3% CAGR thereafter
- **New opportunities**
  - Low: No capture, no incremental tons
  - Moderate: Capture 100,000 tons in 2017, 2% CAGR thereafter
  - High: Moderate + 200,000 tons by 2020, 2% CAGR thereafter

Lake-to-River Barge Activity – Fertilizer Tons via Illinois Waterway



- **USCG/USACE have prohibited the use of Inland Waterway barges to transit from Chicago to Muskegon**
  - Inland barges are permitted to call Milwaukee
- **Interviews conducted indicate that there could be potential market opportunities for Muskegon**
  - Agribusiness – inbound fertilizer
  - Agribusiness - outbound bulk grain
  - Local/regional fertilizer distribution market exists
    - Currently uses rail for receipt of fertilizer
- **Transloading from lake barge to river barge in Chicago is cost prohibitive**
- **More investigation is needed**
  - Would be a key topic for a port authority

Forecast of Traditional Commodity Base



Source: US Army Corps of Engineers (2006-2014), Martin Associates

Non-cargo Opportunity – Cruise Market

- **Scheduled 10 cruise ship calls in 2016**
  - Heritage Landing – public facility
- **Economic impact**
  - 200 passengers in Port 4-8 hours
  - Shore excursions, dining, etc…
- **Revenue potential**
  - Dockage and passenger fees
- **Development of a public dock for non-cargo operations**
- **Conduct passenger survey to gain feedback to ensure future operations**

SWOT Summary of Base Cargo Market

- **Strengths**
  - Deep water
    - Deepest on western shoreline
    - Ability to handle international vessels for potential opportunities
  - Established terminal operations
  - On-dock rail
  - Available capacity
    - Existing docks (not including BC Cobb) = 850,000 tons static
    - Turned 2x = 1.7 million tons
    - Does not factor in land swap property or BC Cobb
- **Weaknesses**
  - Unlikely that coal tonnage will be replaced
  - Short line connectivity
  - Terminals without rail spur: Salt, GL&V, & Verplank Cobb
  - CAPEX improvements needed for some terminals

Summary of Base Cargo Market

- **Opportunities**
  - Tonnage tied to construction activity
  - Potential land swap
    - Ability to consolidate terminal operations increasing efficiency
  - Potential to handle new cargoes for regional foundry operations
- **Threats**
  - Declining Great Lakes market (domestic and international)
  - Competing ports' ability to serve local hinterland
  - Inability to bring river barges to Muskegon limits marketing of certain bulk products – particularly fertilizer

2B) MARKET ASSESSMENT – NON-TRADITIONAL WATERBORNE MARKETS

Waterborne Cargo Market Assessment – Non-traditional & Discretionary Cargoes and Opportunities

- **Traditional bulk markets cannot replace loss of coal tonnage**
  - Need to focus on non-traditional opportunities
- **Focus on potential waterborne cargo opportunities in markets in which the Port does not currently compete:**
  - Cross-lake Ferry Service
    - Export
    - Domestic
  - Logistics Hub Activity
    - Agricultural products
    - Deconstruction materials
  - Barge
    - Agribusiness
    - Specialty bulk products
- **Perform data analysis is presented identifying cargo flows into/out of Michigan**
- **Develop Landed Cost Analyses to demonstrate Muskegon's competitive position and advantages**
- **Identify key issues influencing market competitiveness**

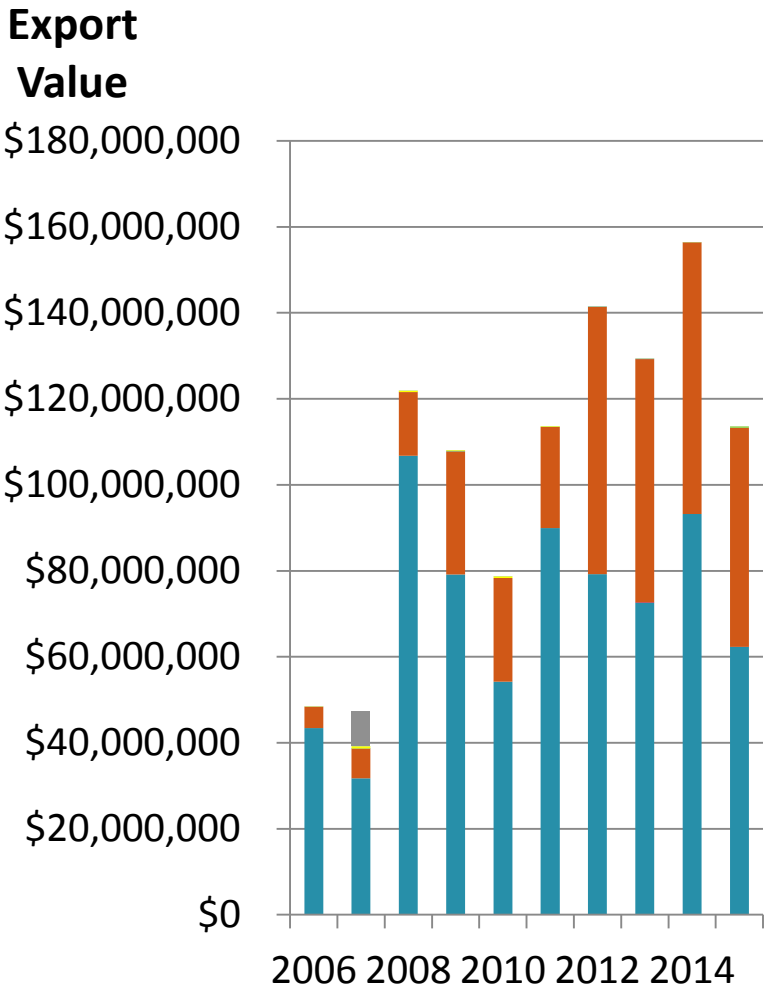
Analysis of a Cross-lake Ferry Service

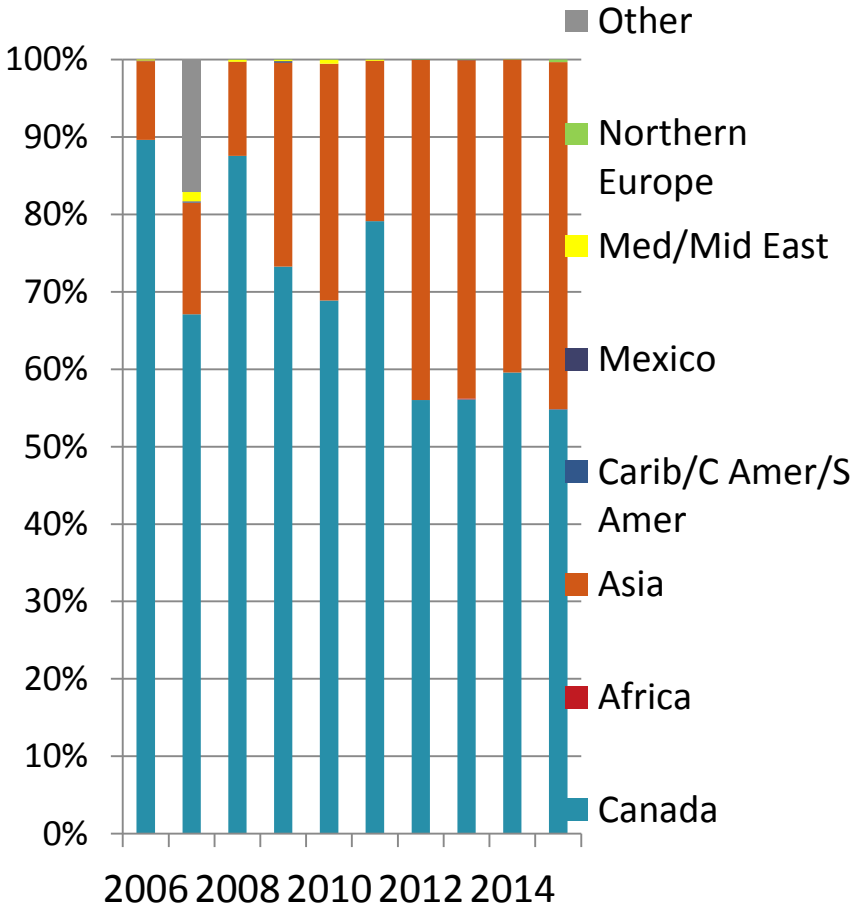
- **Determine feasibility of proposed cross-lake ferry operation**
- **Cross-lake Ferry has been discussed as a relief to Chicago congestion**
  - Rail
  - Highway
- **Potential markets to investigate:**
  - Michigan origin for exports through USWC/Canada to Asia
  - Michigan origin for domestic cargo destined for Wisconsin/Illinois/Minnesota
  - Michigan origin for exports through Cleveland to Europe
- **Key industries to investigate:**
  - Agribusiness
  - Consumer goods

Agricultural products – Data analysis to assess feasibility of Diversion to cross-lake Ferry Service

- **Develop database of flows of exports originating in Michigan**
  - Data supplied by MDARD
- **Historical export data for key crops**
  - Soybeans
  - Corn
  - Apples
  - Cherries
  - Dried Beans
- **Assess Trends**
  - Volume
  - Market share by world region
- **Identify key flows to determine percent available for diversion to cross-lake ferry**

Soybean Exports from Michigan – Trending upward sporadically; Canada and Asia are dominant markets; Asian share has increased to 44.5%

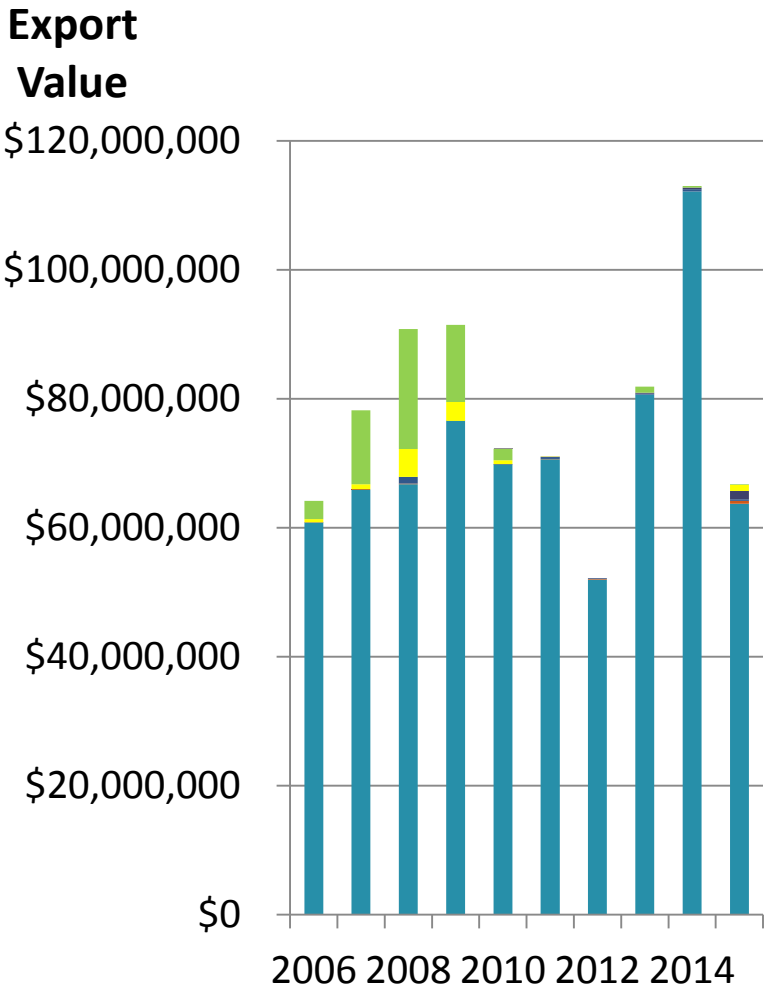


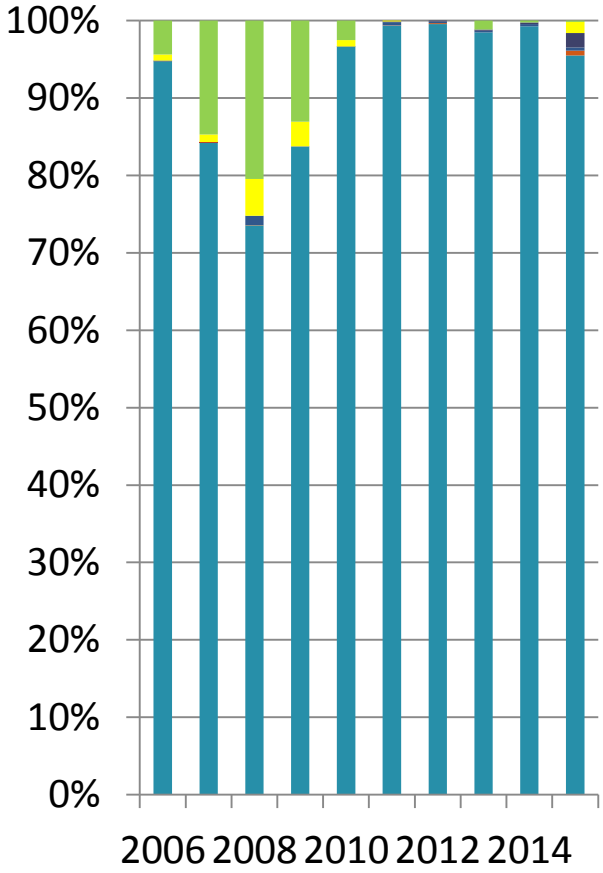


Source: MDARD

MARTIN ASSOCIATES

Corn Exports from Michigan – Dominated by exports to Canada; Not exhibited growth trend; loss of European market





Source: MDARD

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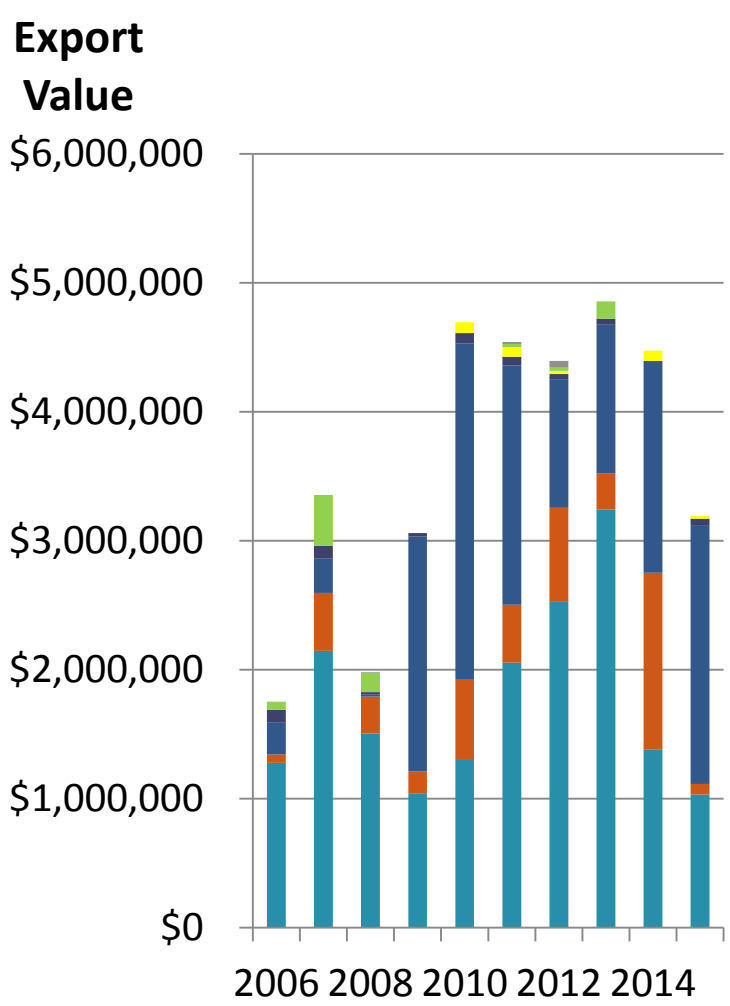
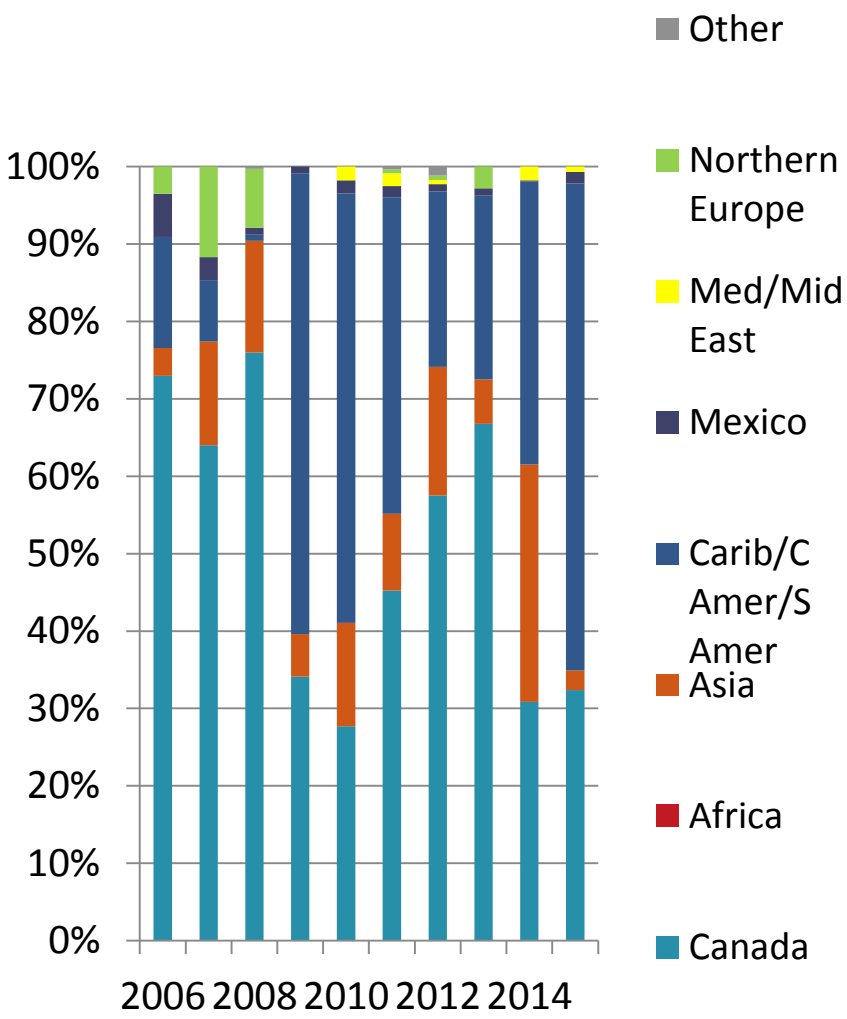
Apple (Fresh & Dried) Exports from Michigan – Mexican and Canadian markets dominate; With exception to 2014, Asian market has not been significant





Source: MDARD

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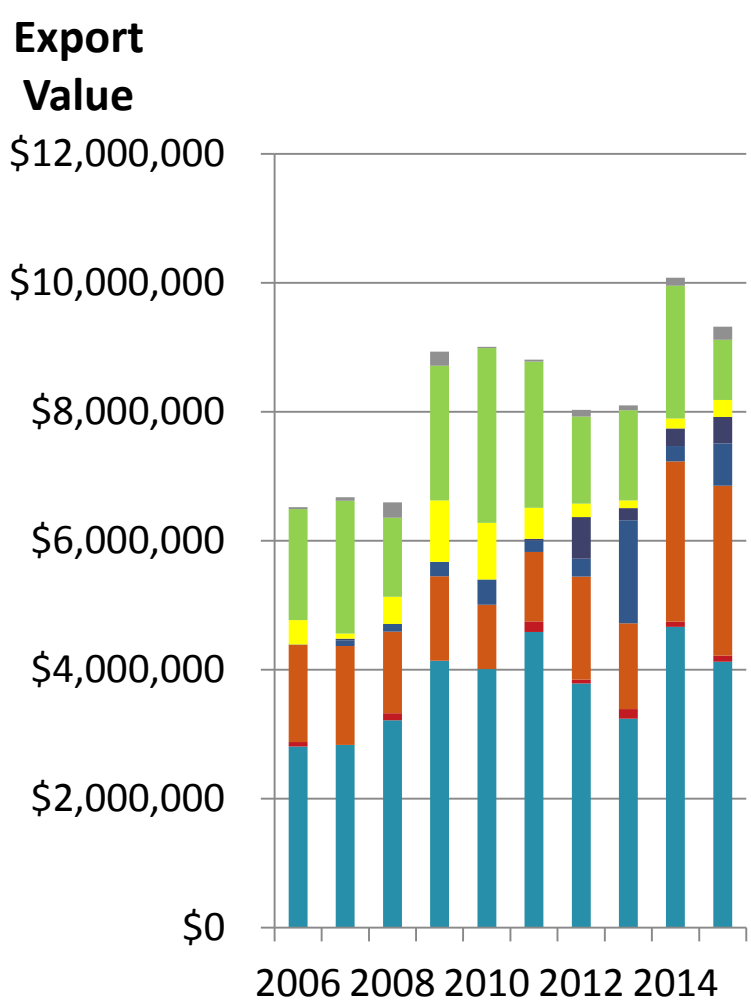
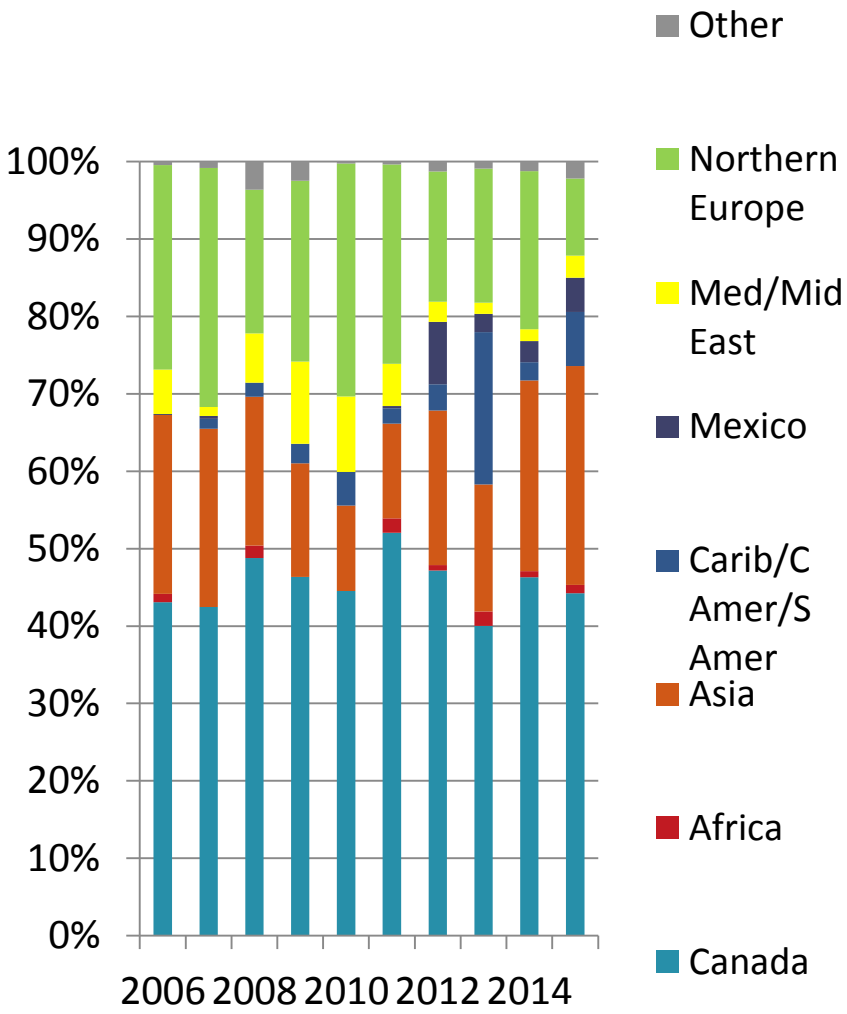
Cherry (Sour, Preserved & Prepared) Exports from Michigan – Trending upward; Asian market has been growing





Source: MDARD

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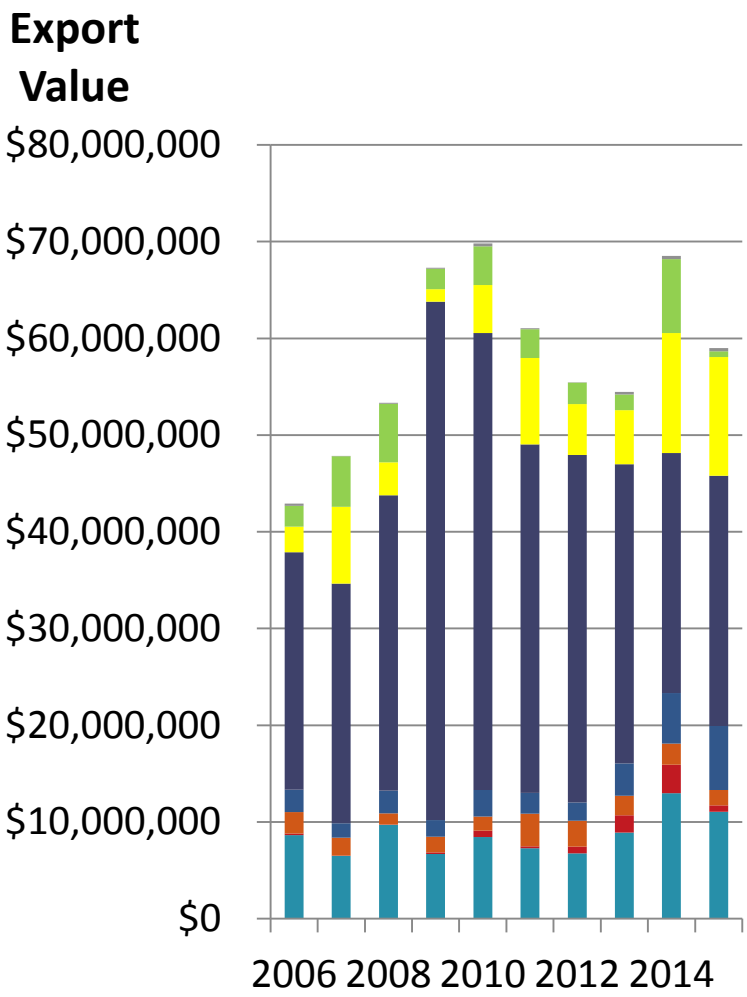
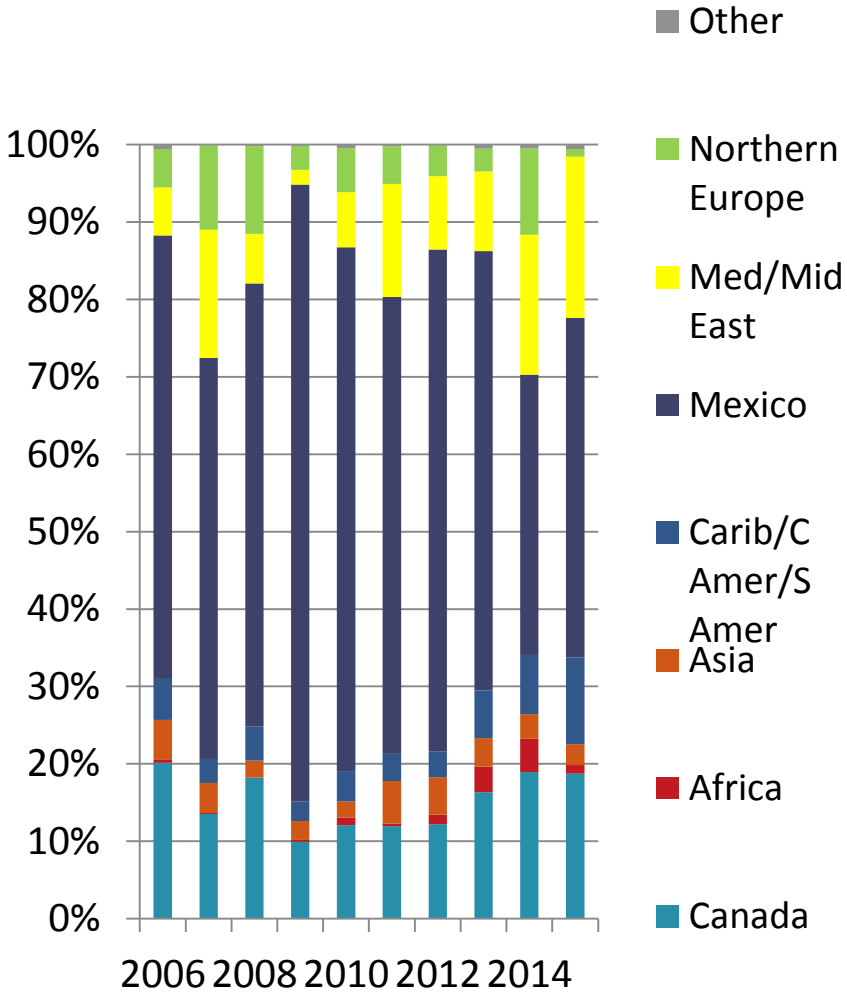
Dried Bean Exports from Michigan – Med and Middle East markets have been gaining market share





Source: MDARD

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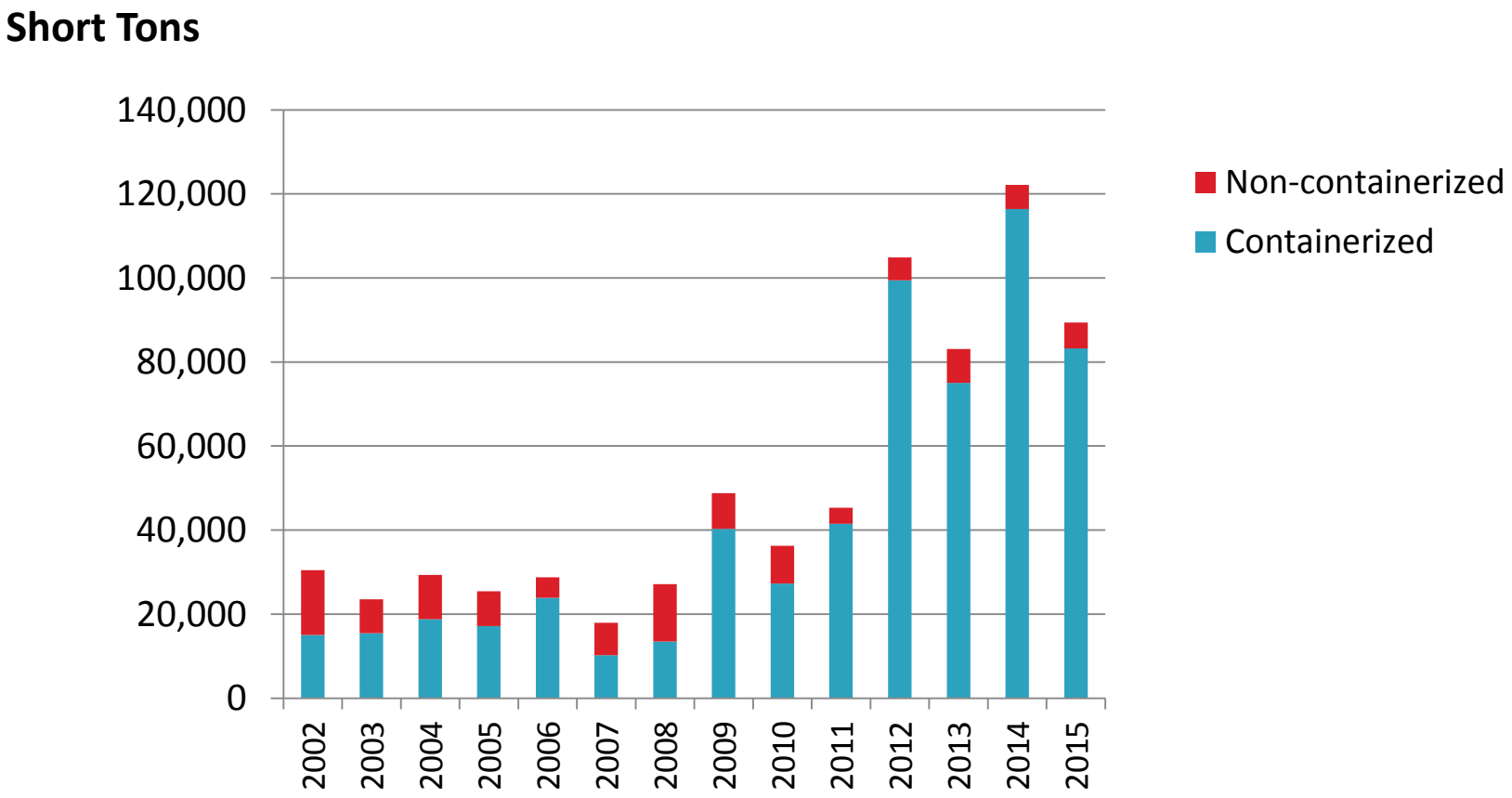
Michigan Agricultural Export Tonnage: Growth in containerized shipments



Source: MDARD

MARTIN ASSOCIATES

Agricultural Exports Data Summary

- **Canada has been dominant player in Michigan sourced exports**
- **Soybeans represents the greatest future opportunity for Asian exports**
  - Volume
  - Increasing share
- **Apples and cherries also show some promise for future Asian exports, albeit at much lower volumes**
- **Growth has occurred in containerized exports**

Competitive factors influencing the potential to move agricultural products on Cross-lake Ferry for export

- **Key competing move is intermodal rail to USWC and Western Canada to serve Asian market**
- **Cross-lake ferry must compete on**
  - Cost
  - Time
  - Responsive versus efficient supply chain
- **In addition to hard (quantifiable) costs such as transportation, other factors (soft costs) may influence logistics routing and sourcing decisions**
  - Equipment availability
  - Peak seasonality

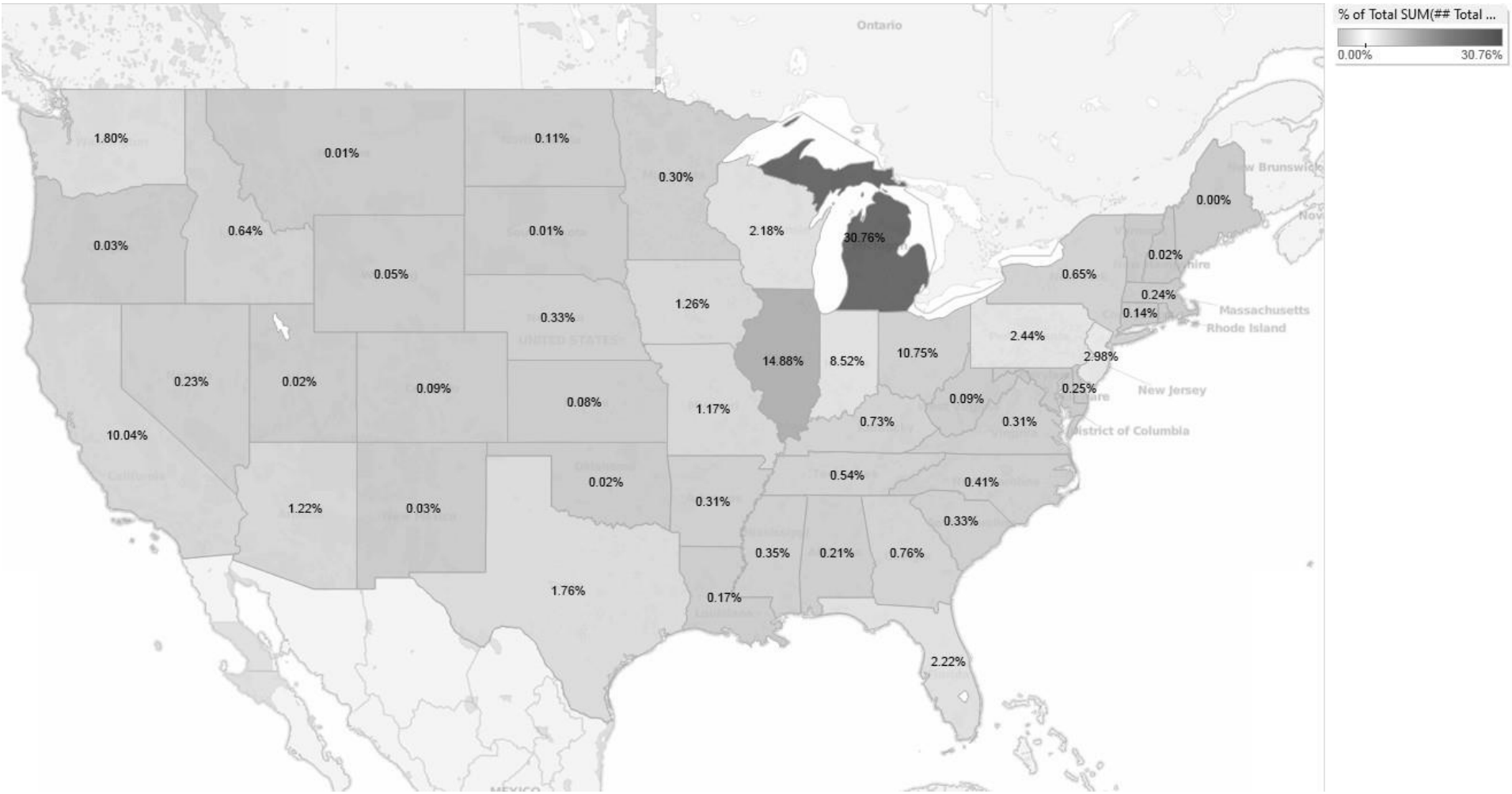
Intermodal Grain Transshipment/Transload Examples

- **Inland transload for export is growing – new facilities are being built in Omaha, Savannah, Kansas City and Newark**
- **East coast ports are actively pursuing containerized exports, specifically Baltimore and Norfolk**
- **An example of a transloading facility in Omaha:**
  - Empty container headed westbound for repo for export to Asia;
  - Cost associated to repo, but no/limited revenue to rail carrier;
  - Cut westbound haul, stuff container with grain in Omaha;
  - Class I picks us railcar and continues on to West Coast port;
  - Shipper pays reduced freight rate, but Class I gets adequate revenue on the haul
- **For a service of this nature to be successful, availability of containers in West Michigan is critical**
- **Independent shipper is evaluating cost structures to identify feasibility**
- ***Similar service operated at Port of Milwaukee until CP discontinued service***

Consumer goods – Data analysis to assess feasibility of Diversion to Cross-lake Ferry Service

- **Examine database of flows into/out of Western Michigan**
  - Data supplied by GRACC
  - Developed from survey of key regional shippers
    - "West Michigan Logistics Hub Assessment and Strategy Recommendations", May 8, 2014 prepared by MSU
- **Key Origins/Destinations by**
  - Truck load
  - Container
  - Rail
- **Identify key flows to determine size of market available for diversion to cross-lake ferry**

Traffic Distribution Inbound to Michigan



Source: West Michigan Logistics Hub Assessment and Strategy Recommendations, Michigan State University, May 8, 2014

Percent of Inbound Shipments to Michigan by mode and key state Origins

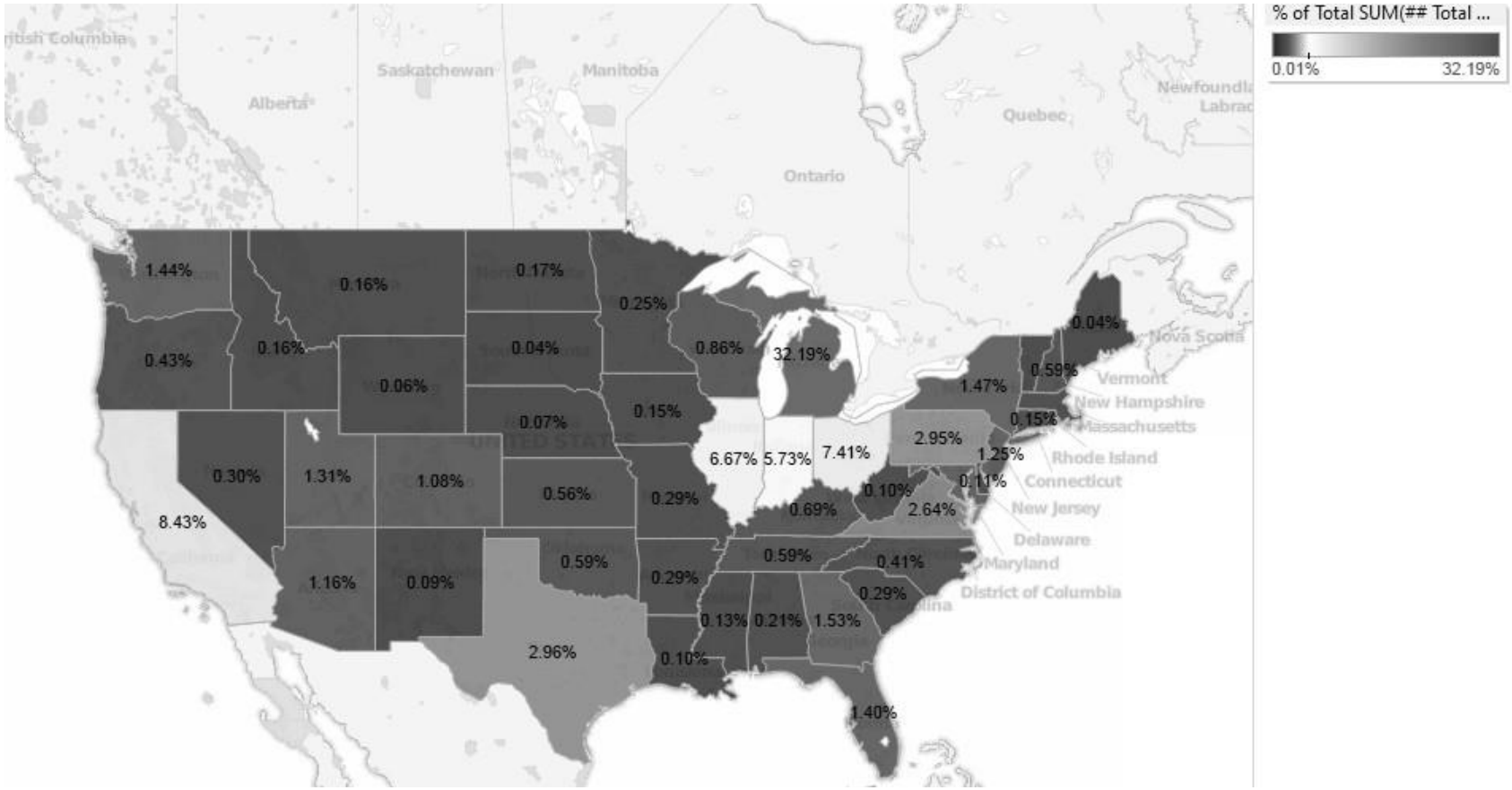
Origin State	Truck Loads	Percent	Top 10 Cumulative
Inbound Loads	**50686**		
IL	12476	24.6%	
OH	10447	20.6%	
IN	8195	16.2%	
CA	3115	6.1%	
NJ	2212	4.4%	
WI	2094	4.1%	
PA	1978	3.9%	
IA	1229	2.4%	
MO	1143	2.3%	
TX	944	1.9%	86.5%

Origin State	Containers	Percent	Top 10 Cumulative
Inbound	**1318**		
IL	587	44.5%	
CA	557	42.3%	
VA	100	7.6%	
AR	26	2.0%	
UT	16	1.2%	
OR	12	0.9%	
WA	10	0.8%	
LA	6	0.5%	
IN	2	0.2%	
OH	1	0.1%	99.9%

Origin State	Rail Cars (converted)	Percent	Top 10 Cumulative
Inbound	**46179**		
CA	18297	39.6%	
FL	5127	11.1%	
WA	4941	10.7%	
IL	4254	9.2%	
AZ	2787	6.0%	
TX	2295	5.0%	
NJ	2073	4.5%	
ID	1734	3.8%	
PA	1185	2.6%	
GA	834	1.8%	94.3%

- **Truck –majority of moves from DCs in Chicago and Ohio**
- **Container moves from IL, CA and VA**
  - DC influenced
- **Rail moves long-haul markets –**
  - Imports from CA
- **Green highlight indicates states that might benefit from a cross-lake service**

Traffic Distribution Outbound from Michigan



Source: West Michigan Logistics Hub Assessment and Strategy Recommendations, Michigan State University, May 8, 2014

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Percent of Outbound Shipments from Michigan by mode and key state Destinations

Destination State	Truck Loads	Percent	Top 10 Cumulative
Outbound	**27380**		
OH	5755	21.0%	
IN	4839	17.7%	
IL	3738	13.7%	
CA	1747	6.4%	
PA	1646	6.0%	
TX	1126	4.1%	
UT	1032	3.8%	
GA	603	2.2%	
NJ	496	1.8%	
MD	494	1.8%	78.4%

Destination State	Containers	Percent	Top 10 Cumulative
Outbound	**25653**		
CA	5174	20.2%	
IL	2469	9.6%	
VA	2325	9.1%	
TX	1632	6.4%	
PA	1096	4.3%	
NY	961	3.7%	
WA	958	3.7%	
FL	828	3.2%	
GA	816	3.2%	
CO	706	2.8%	66.1%

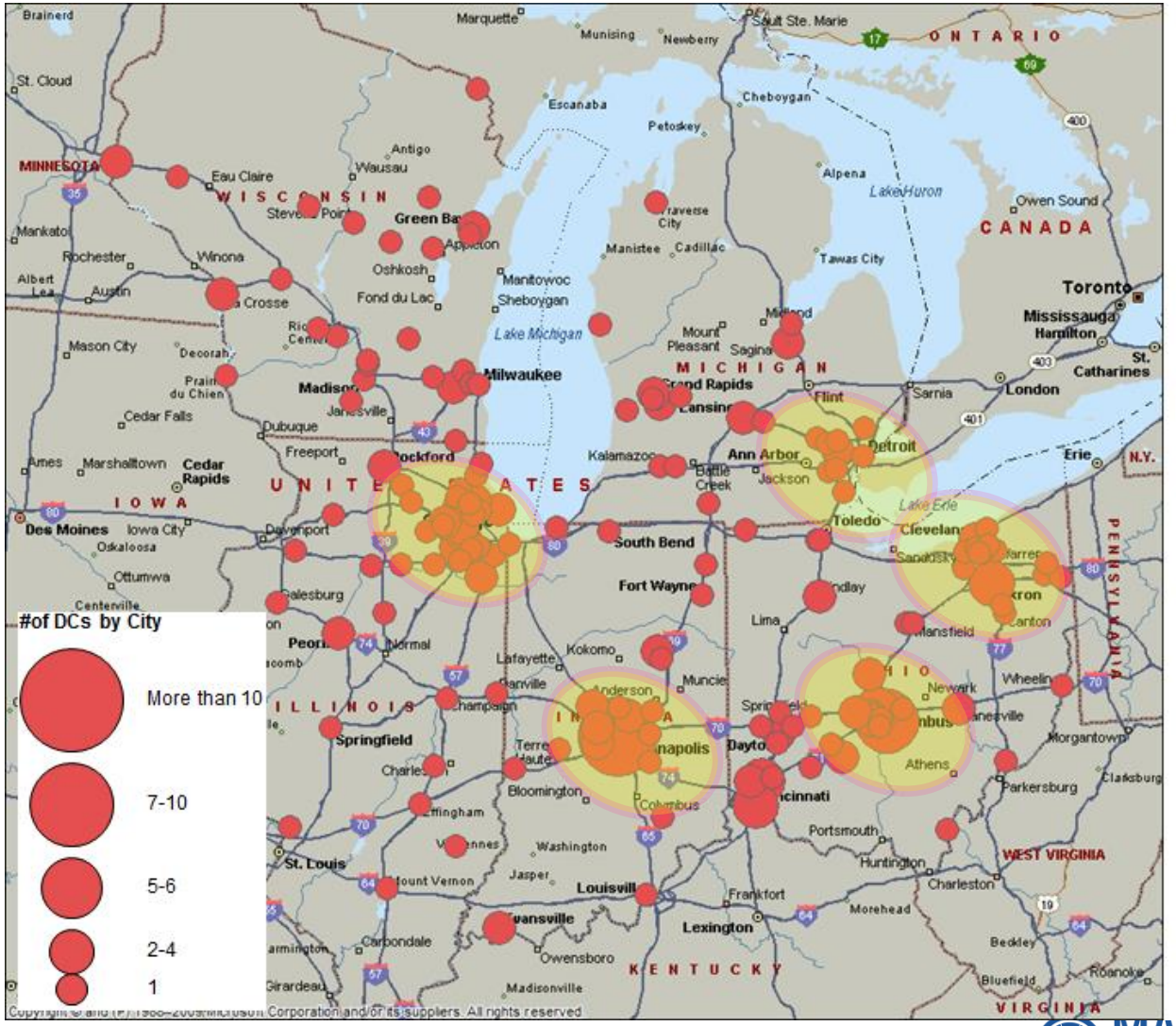
Destination State	Rail Cars (converted)	Percent	Top 10 Cumulative
Outbound	**30120**		
Unknown	18627	61.8%	
CA	2913	9.7%	
Western Can	1758	5.8%	
TX	1620	5.4%	
OH	1482	4.9%	
FL	1287	4.3%	
MN	972	3.2%	
CO	738	2.5%	
IN	363	1.2%	
VT	129	0.4%	99.2%

- **Truck – Concentrated in neighboring states**
- **Containers outbound to CA**
  - Indicates possible export cargoes
- **Rail - majority of known outbound rail moves are destined for the Pacific and Western Canada**
  - Indicates possible export cargoes
  - "Unknown" data (62%) is believed to be consolidated in Chicago
- **Green highlight indicates states that might benefit from a cross-lake service**

Consumer Goods Data Summary

- Based on this data, which was developed from a survey of 10 regional shippers, approximately 30%-35% on 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
- Martin Associates reached out to EcoShips to gather detailed data on the service and markets, however, EcoShips would only provide data for a fee, which was unaffordable under the scope of this study

Chicago, Indianapolis, Toledo and Columbus are key distribution clusters serving Michigan; Detroit is home to a smaller DC market, however the balance of the state is an inbound consumption market



Source: Chain Store Guide, National Retail Federation

Total Landed Cost Analysis - Components

Total Landed Costs consist of:

- 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
  - Truck for domestic delivery

Logistics Cost Analysis – Asian Exports Implications

- **In terms of landed costs, labor and terminal charges are critical factors**
  - *Unclear if factored into previous analyses*
  - Could be potential deal breaker
- **Unexperienced in documentation process etc…**
- **Year-round option during winter months??**
- **Cross-lake ferry adds additional leg**
  - Handling
  - Additional dwell
    - Drayage time
    - Queue at port
    - Loading - If lift-on/lift-off service, at a rate of 10 picks per hour would take 5 hours to load and 5 hours to discharge 50 containers
- **As origin moves away from local Western Michigan east to Lansing, traditional routing through Chicago via rail remains more attractive**

Logistics Cost Analysis – Asian Exports Implications

- **Viability of this service is dependent on re-establishing CP Intermodal Rail connection at Port of Milwaukee**
  - Highly unlikely service can be supported without on-dock connectivity
- **While congestion exists in Chicago, service is still reliable and shippers remain satisfied**
- **As shown in the shipper interviews, the following factors must be considered:**
  - Reliability of service;
  - Agility;
  - Frequency; and
  - Individual logistics chains of BCOs
  - *Not all supply chains are created equal*

Logistics Cost Analysis – European Exports Implications

- **In terms of landed costs, Labor and terminal charges are critical factors**
  - *Unclear if factored into previous analyses*
- **Year-round option during winter months??**
- **Cross-lake ferry adds additional leg**
- **Handling**
  - ILA labor in Cleveland, significantly more costly than non-union
- **As origin moves away from local Western Michigan east to Lansing, trucking direct to Cleveland is more cost efficient**
- **CEE only operates twice per month**
  - Shippers desiring flexibility and are sensitive to transit times, the infrequency would stress delivery requirements
  - Unplanned issued such as weather conditions could be deal breakers for shipments

Logistics Cost Analysis – Domestic Moves Implications

- **In terms of landed costs, cross-lake ferry appears potentially viable to Madison or local Milwaukee only from local Muskegon**
  - Labor and terminal charges are critical factors
- **Cross-lake ferry adds additional leg**
  - Handling
  - Loading and discharge dwell times must be factored in
- **As origin moves away from local Western Michigan east to Lansing, cost differential is exacerbated**
- **Difficult to "fabricate" a short-sea shipping market**
- **However, two-way trade for non time-sensitive cargoes may be the best opportunity**

Logistics Cost Analysis – Domestic Moves Increased Rate Implications

- **Increase in trucking rate would result in Muskegon to Madison routing becoming more cost competitive**
- **Factors possibly contributing to an increase:**
  - Driver shortage
  - Equipment availability/unavailability
  - Seasonality
  - Fuel prices
  - Tightened capacity
- **Specialized products can be impacted**
  - Containerized
  - Bulk

Cross-lake Ferry – Market Summary and Implications

- **Challenges**
  - Cost structure
    - Port and Terminal charges
    - Labor
  - Flexibility and agility in transit time
    - Asian -Despite congestion claims, Frequency of service in Chicago
    - European - CEE service call Cleveland only 2x per month
  - On-dock intermodal at Port of Milwaukee for Asian exports
  - Year round service
  - Empty containers land in Chicago
    - Cost to move to Michigan to load outbound
    - Equalized eastbound-westbound ferry trade requires imports destined to Michigan from West Coast
      - Create empty container surplus in Michigan
  - **Need to secure anchor customer**
    - **Volume commitment**
    - **Balanced trade EB/WB**

Cross-lake Ferry – Market Summary and Implications

- **Opportunities**
  - Specialty bulk operations
    - Domestic and export market expansion
  - Roll-on, Roll-off chassis drop may provide another option
    - Fleets, not single owner-operators
    - 15 trucks/shipment
    - Estimated $600-$1000/trailer – not including local drayage

Development of Logistics Hub

- **Logistics Hub concept can leverage critical mass of industry**
  - Agricultural products
  - Deconstruction/recycling/reuse
- **Don't have to place all eggs in Cross-lake Ferry basket**
- **Hub stakeholders for agribusiness:**
  - Growers
  - Co-ops
  - Processors
  - Distributors
  - Third Party Logistics (3PL) providers
  - Food hub operations
  - Brokers

Development of a Logistics Hub

- **Regional concept, rather than mode specific concept**
  - Not necessarily all related to waterborne commerce
- **All modes of transportation working in concert**
  - Port
  - Rail
  - Highway
  - Airport
- **Key attributes for success:**
  - Rail served facility
  - FTZ capability
  - Ample acreage to expand
  - Dominant anchor tenant

Development of a Logistics Hub

- **Key Opportunities**
  - Strong Agribusiness market in Western Michigan
  - Exports growing, especially soybeans
    - Asian market
  - Michigan Ag MDARD supporting initiatives for growth
    - American Farm Bureau: TPP will boost annual net farm income by $4.4 billion
    - USDA arrangements helped organic sales grow by more that 78% over 2009-2015 period
    - Export opportunities highlighted in reports www.miagexport.com

Development of a Logistics Hub

- **Stakeholder input and further investigation mandatory**
  - MDARD
  - MABA
  - Potential tenants and service providers
  - Economic Development agencies
- **Challenges**
  - FDA regulations and inspections
  - Some larger farms already perform own value-added services
  - Chain of custody from grower to buyer can vary

Development of a Logistics Hub

- **Deconstruction Study underway (MSU)**
- **Focus on development of strategy for reclaiming and salvaging deconstructed building materials**
  - Value-added services
  - Warehousing
- **Low-value commodities**
  - Need low-cost transportation
- **Deconstruction Hub slated to be built in Detroit**
- **Market for Muskegon Hub:**
  - Deconstructed material stays in Michigan
  - Inbound material from other states via barge a possibility???
  - Stevedoring/handling charges may be too costly
- **Most likely grant monies available to subsidize operations???**
  - Sustainable
  - Go green concept

Strategies to Increase Port Usage

- **Work with current terminal operators to grow base business**
  - Specifically land swap opportunity
- **Develop industry-specific stakeholder groups to discuss needs to develop logistics hub operations**
  - Agribusiness, Deconstruction/recycling/reuse
- **Continue to work with state government with respect to key industries in the region**
  - Agricultural products
- **Stay informed of potential businesses requiring multi-modal logistics services**
  - Work with EDCs
- **Grow relationship with cruise line operators**
  - Ensure future cruise calls – same or higher level of service
- **Develop port authority structure to pursue Federal and State grant opportunities**

3) ORGANIZATIONAL STRUCTURE ANALYSIS

Types of Port Authorities in the United States

- **Operating Port:**
  - Owns land, enters into lease agreements and provides labor for port operations
    - Georgia Ports Authority
    - South Carolina State Ports Authority
    - Virginia Port Authority
- **Landlord Port:**
  - Owns land and enters into lease agreements where tenants operate terminals
    - Jacksonville
    - Cleveland
    - Milwaukee
- **Port Authority/Port Commission (Non land-owning):**
  - Does not own land, promotes port and waterborne activity
    - Cincinnati
    - Pittsburgh
    - Detroit

Examples of Port Authority Structures Involving Private Terminals

- **Detroit**
  - Under existing Port Authority Act
    - 5 member board
    - 7 staff
  - Funding
    - $250,000 from both City and County
    - $500,000 match from State
  - Focus on maritime and water transportation
- **Pittsburgh**
  - Commission, not authority
  - Under PennPORTS, liaison to Governor
  - 15 member board
  - Funding:
    - Appropriation from Multimodal Fund $1.0-$1.4 million
  - Key functions:
    - Act on behalf of private terminals
    - Seek grant funding
    - Attend roundtable discussions
    - Promote waterway (speeches, press conferences, etc.)

Examples of Port Authority Structures Involving Private Terminals

- **Cincinnati**
  - Formed under Ohio Revised Code Section 4582.22 –City/County
  - 10 member board
    - 20+ staff
  - Funding
    - $700,000 from both City and County, operating income from functions
  - Focus:
    - Economic development of non-port lands
    - Bond financing
- **Monroe**
  - Under 1925 Port District Act
  - 5 member board, appointed by Mayor of Monroe
  - 2 staff
  - Funding:
    - Millage from city
    - Lease agreements
    - Tariff
  - Key focus:
    - Promote water transportation – throughput
    - Create jobs and taxes

Key Elements of Proposed Language Amendment

- **Redefines "Port Facilities" and "Project"**
  - Port Authority will have opportunity to provide financing for non-port owned assets
- **Requests incorporation of authority by City or County – single constituent**
  - Provides the ability to focus on one unit of government and reduce competing interests
- **Creates a 9-member board**
  - 6 members would come from owners and operators of port facilities in the city and county
- **Stipulates that for certain actions of the Authority, and initial bylaws to take effect, all members must concur**
  - Hands veto power to a single entity
- **Provides the Authority to levy an ad valorem tax up to 2 mills**
  - Voted on by electors

Requesting Incorporation Under Current Language

- **Pros:**
  - Incorporation can be requested immediately as Heritage Landing is considered a port facility
  - City and County agree on board appointments
    - 5 or 7 member
  - Dedicated sponsor to pursue Federal transportation grants
  - 50% of budget provided by the state

- **Cons:**
  - Reduces guaranteed input from private land owners & terminal/port facility operators
  - May increase perception of public authority competing with/encroaching on private operations
    - May limit willingness to participate in P3s

Requesting Incorporation Under Proposed Amended Language

- **Pros:**
  - Redefines port facilities to include private terminals
  - Guarantees private terminal operators a seat on the board
  - City and County both set board appointments
  - Dedicated sponsor to pursue Federal transportation grants

- **Cons:**
  - Two-thirds of the board is comprised of port terminal operators
    - Excludes other transportation entities which may have impact on Logistics Hub concept
  - With veto power, board may become geared toward individual special interests and result in counter-productivity

Roles of the Proposed Port Authority

- **Promotes waterborne transportation and commerce**
- **Supports private terminal initiatives to increase economic benefit to local and regional community**
- **Advocates on behalf of the private terminals within its jurisdiction, however does not interfere with private terminal operations**
- **Sponsors and pursues Federal and state grant monies in conjunction with private terminal operators and landowners**
- ***Essentially, a public entity that assists in economic development under the guise of a Port Authority***

Keys to Success

- **Work with existing terminals**
  - Advocate on behalf of the maritime interests (port)
    - State legislatures
    - Local/county officials
    - Community groups
    - Complimentary businesses and industries
- **Develop synergy**
  - Economic development
- **Promote P3s with existing terminals and stakeholders**
- **Pursue grant monies**
  - USDOT
  - TIGER
  - Fastlane
  - Federal Highway

Recommended Port Authority Structure

- **County-led effort**
  - County owns Heritage Landing and Muskegon County Airport
  - County lead promotes more regional appeal
- **Language redefining "Port facility" and "Project" allows for potential P3s**
  - Continue to pursue
- **Board should be comprised of members from:**
  - EDCs
  - Regional government
  - Financial institutions
  - Exercise caution not to create special interests
- **Language stipulating veto power (for any member) is not advised**

Recommended Authority Staff and Funding

- **Keep lean**
  - Executive Director
    - Liaison to the State and local governments
  - Marketing/Business development
    - Work with EDC
  - Funding specialist
    - Grant writing
- **Follow Port of Monroe structure**
  - Retains subconsultants for most activities
  - As needed
- **Funding**
  - No match from the state under language amendment
  - Tax levy
  - County funds
  - Revenue from cruise dockage and passenger fees

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
    - Promotion of the port to the community and legislators,
  - Develop P3s with private entities
    - Offer attractive financing options
    - Encourage investment
    - Pursue logistics-based ideas that benefit the region