Charting our Course: Using zero-based thinking to guide the future of the Great Lakes/St. Lawrence Seaway System.
Seagate Center in Toledo
Toledo-Lucas County Port Authority & the Great Lakes Seaway Review

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Session Facilitator
Charting our Course:
Using zero-based thinking to guide the future of the Great Lakes/St. Lawrence Seaway System
Then... Now

Envision the Future!
Using “zero-based thinking” guide the future of the Great Lakes/ St. Lawrence Seaway System... **Look down at our system from 50,000 feet, elevate our thinking, be positive, constructive and solution oriented.**

**Envision the end state in 2050** and create a “**Road Map**” to move forward.
VISION STATEMENT

From the springboard of the Great Lakes/St. Lawrence Seaway System's 50th Anniversary, stakeholders will envision the next 50 years of sustainably connecting the System's ports to its future international and domestic markets, tapping the System's underutilized capacity and unrealized potential for the enhancement of the System, all of its partners and for the benefit of future generations. The creative thinking utilized in this process will not be based upon past successes or failures; there are no limits, only possibilities.
Audience industry experts will give us mini presentations on their Vision for the future and spur discussion.

Our Focus Today: The future of short sea shipping and the Great Lakes with the emphasis on new technologies, efficiencies and productivity, including new environmental considerations.
Our Audience Presenters are organized into Three Affinity Groups:

1. Port of Toledo Terminal Operators
2. Environmental/Vessel/Fuels Experts
3. Short Sea Shipping/Maritime Experts
Jim Pugh
Director, Marine Highways & Passenger Services
Intermodal System and Development
U.S. Maritime Administration
Water – The First Component of Surface Transportation
Growing Congestion

• Between 1983 and 2003, total vehicle miles traveled in the US has increased almost 90%.

• Today, the Interstate System, which comprises just over 1% of the Nation's total miles of roadway, carries almost 25% of all traffic.

• Highway congestion increased dramatically between 1983 and 2003, in both extent and duration. In the 10 most congested urban areas of the country, each rush hour traveler “pays” an annual virtual “congestion tax” of between $850 and $1,600 in lost time and fuel and spends the equivalent of almost 8 work days each year stuck in traffic.
North American Rail Network (Bottlenecks & Congestion Areas)
Major Freight Truck Bottlenecks
Annual Cost of Congestion

(In billions of ’05 dollars, per population groups)
Emissions - Particulates

Particulate Matter Emissions
(Grams/Ton-Mile)

- Inland Towing
- Railroads
- Truck
Emissions – Nitrogen Oxide

Nitrogen Oxide Emissions
(Grams/Ton-Mile)
Emissions - Hydrocarbons

Hydrocarbon Emissions
Grams/Ton-Mile

Inland Towing
Railroads
Truck
Emissions – Carbon Monoxide

Carbon Monoxide Emissions (Grams/Ton-Mile)

- Inland Towing
- Railroads
- Truck
All the modes work hard to prevent accidents, human errors and other causes of spills, including groundings in the case of barge transportation. Spill rates are very low, as shown in gallons per 1 Million ton-miles.
Fuel Efficiency

Ton-miles per Gallon of Fuel

Ton-miles/gallon shows how far each mode moves a ton of cargo for every gallon of fuel consumed.
Comparative Efficiency

**MARINE HWY**
1 Barge = 456 40’ Containers

**RAIL**
228 Railcars DBL Stacked = 456 40’ Containers

**TRUCK**
456 Trucks = 456 40’ Containers

**ENERGY**

= 15 Barrels
Relationship Between Trade and Prosperity

Source: U.S. Department of Transportation based on U.S. Department of Commerce data
The Capacity Solution

- International trade will at least double by the year 2020, further stressing our already congested landside transportation system.

- Existing landside infrastructure can not support growth projections. Landside expansion is costly, protracted, and can be controversial.

- The Nation’s Marine Highway system offers unlimited growth potential.

- The U.S. moves approximately 2% of our domestic freight by water:
  - Europe - 44%
  - China - 61%

- The Maritime Administration is developing initiatives to increase the marine domestic freight market share.
America’s Marine Highways: A Solution
2008 Marine Highways Program

- **Designate Marine Highway Corridors**
  * Focus efforts and resources of multiple state, Transportation planners, local entities

- **Designate Marine Highway Projects**
  * Identify projects that would offer best public benefit (congestion, emissions, energy & infrastructure savings)
  * Provide support to expand or start new operations (promote, coordinate, research, identify federal cargos. Remove impediments)

- **Identify Incentives, Impediments and Solutions – Report to Congress December**
  • Establish Marine Highway Advisory Board
  • Identify & propose short term incentives

- **Conduct Research**
  * Identify environmental and transportation benefits
  * Vessel design, technology, emissions, fuel economy & increase efficiency
  * Studies to identify and implement solutions for specific projects

- **Capital Construction Funds are available for vessels in Marine Highway trade.**
America’s Marine Highways

As we seek solutions to congestion, air quality, and infrastructure capacity, we must view the Marine Highways as a vital part of the surface transportation system.

America’s Marine Highways offer immediate benefits to everyone:

- Reduced Congestion
- Better Air Quality
- Fuel Conservation
- Infrastructure Cost Avoidance
- Safer HazMat Transportation
- Improved Highway Safety

Jim Pugh
Director, Marine Highways & Passenger Services
Intermodal System and Development
U.S. Maritime Administration
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David White
President
American Biodiesel

AMERICAN BIODIESEL, INC

COMMUNITY FUELS
Statement

American Biodiesel is constructing a facility at the general cargo facility at the Port of Toledo.

While no “vision statement” was provided, Mr. White will describe the concept behind building a biodiesel plant within the Port of Toledo as part of a alternative fuels discussion.
Alex Johnson
President
Midwest Terminals of Toledo

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Mr. Whit Johnson will describe how Midwest Terminals has aggressively grown cargo and improved infrastructure at the general cargo facility since entering into the lease to operate the terminal in 2004. Recently they have entered into a lease to operate and develop a 180 acre site adjacent to the existing facility for port expansion.
Vision Statement:

“Midwest Terminals of Toledo, Inc’s goal will become the largest port on the Great Lakes and a top 25 port in the United States.”
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Dick Gable
VP Atlantic Coast District
International Longshoremen’s Association
Mr. Gable has long been an advocate for growth at the Port of Toledo and facilitating productive relations between labor and terminal management.
Vision Statement:

A. “Waterfront workers unions stronger as workforce embraces flexibility and technology. US Ports gaining global market share.”

B. Waterfront pay and productivity hit new highs once again and are captured in new labor agreement. Latest five year pact negotiated in cooperative and strike free environment for Great Lakes waterfront labor and employers”
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Dave Knight
The Great Lakes Commission
Dave Knight’s expertise is environmental interface with industry.

Vision Statement: 2020: Great Lakes Governors laud industry, the public and environmentalists for delivering clean air and bountiful waters in the Great Lakes Basin. Mr. Knight will elaborate on identifying the steps needed to achieve this statement by 2020 to facilitate collaboration and trust between industry and environmental interests.
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Jim McKinstray
General Manager Grain
The Andersons Inc.
Mr. McKinstry manages The Andersons and Cargill’s grain terminals in Toledo. He is an expert on grain transportation, production and supply.
Vision Statement:

A. “Rising prices fail to slow worldwide demand for oil seed. Expanding affluence and dietary shift will be unrelenting. Transportation’s role is critical.”

B. “Chicago loses but Midwest wins – the alternative fuels revolution is driving changes all across agriculture as farmers choose what to plant based on volatile and rising prices of the raw materials for alternative fuels.”
Vision Statement:

B. ... “Ethanol and its alternative fuel cousins are creating dislocation and relocation, new cargos, routing and markets, new acreage values, new millionaires, new farming and new byproducts. Maritime transportation is both a sharply growing user of the fuels and an efficient facilitator of the new markets.”
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Vision Statement:

C. “Worldwide agriculture product market makes partners in prosperity of the producers and marine transportation. Ag multinationals acquiring worldwide shipping assets.”

D. “Value, not simply pricing, drives business decisions across the board. Combined value of timing, volume, grade, price, mode considerations. The value of moment in time execution of volume, destination and mode has never been greater.”
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Steve Smigelski
General Manager
Kuhlman Corporation
Kuhlman Corporation operates a terminal for fertilizers, road salt, aggregates and agricultural products at the Port of Toledo served by lake trading vessels. Kuhlman could discuss niche markets, future cargos, opportunity for expansion.
Vision Statement:

“Toledo’s Kuhlman Marine Facility marks 10th consecutive year of across the board growth generated by the willingness to take, or create, opportunities and consistently providing outstanding customer service. The Facility and its satellite sites are handling more ships and greater cargo volumes than ever before while at the same time enhancing customer service! Regional family incomes are assured”
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Dennis Donahue
Great Lakes
Environmental Research Lab, NOAA
Mr. Donahue has done work related to future vessel designs such as a ballast free design, alternative fuels in vessels, and engine conversions.
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Vision Statement:
Growth in B100 Biodiesel

A. B100 Biodiesel is a cost effective renewable fuel alternative that helps meet emissions requirements, reduces total operating costs and supports regional agriculture. Commercial and recreational markets will benefit from increased bio fuel usage and support regional environmental goals and national energy independence.
Vision Statement:

**Recreational Marine**

B. Marine power plants and fuel technologies will be heavily influenced by advances in the automotive industry. Direct transfer of ethanol, hybrid, hydrogen and electric systems to marine propulsion will improve the recreational boating experience and provide new opportunities in a cost sensitive market. Innovations can be scaled to larger marine power plants.
Vision Statement: Capital Improvements and Infrastructure

C. The trends towards greater emissions reductions and energy security will be best addressed through a coordinated development of engines and fuels. The Great Lakes region’s agricultural and engineering bases create a unique center for transportation innovations. The growth of the bio fuel industry in the upper Midwest, partnered with engine manufactures will create regional economic growth and support technology transfer to allied industries.
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Hans William Van Sureren
Naval Architect
Great Lakes Water Studies Institute
Mr. Van Sureren has experience in vessel design, vessel technology, and has special interest in marine officer training.
Vision Statement:

A. “US Maritime Training Academies challenged to provide enough ship officers for the growing American flagged fleet plus international demand. The Great Lakes fleet is offering enhanced incentives and the attraction of new ships employing the latest design and technology”
Vision Statement:

B. “The launching of ‘ballast free’ ships marks the beginning of the renewal of the Great Lakes fleet, introduces operating efficiencies cutting fuel costs dramatically and removes ships from being carriers of unwelcome invasives. Innovative design developed in the Great Lakes region is fast becoming an international success!”
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Tim Downey
International Trade Specialist
Saint Lawrence Seaway Development Corporation
The SLSDC has a major role in the management and future of the Seaway. Under Administrator Terry Johnson the SLSDC has managed to secure funding for needed infrastructure improvement and has advanced several initiatives to promote short sea shipping and other opportunities for the Seaway.
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**Vision Statement:**

**A. The System is on the cusp of the development of container shipping in the Great Lakes that will utilize short sea services to move large volumes of goods to America’s heartland. Moreover, as alternative energy sources are emerging, the Seaway stands to benefit from the increased volume of project cargoes that support them such as wind turbines.**
Vision Statement:

B. Now, more than ever, the maritime industry must reaffirm its commitment to responsible stewardship of our environment and incorporate ‘green’ policies into every aspect of our operations.

C. Infrastructure renewal is on the agenda and the Seaway will begin its long term asset renewal plan at the U.S. locks as soon as next year.
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Pierre Cecile
Manager, Revenue and Forecast
Saint Lawrence Seaway Management Corporation

The St. Lawrence Seaway Management Corporation
The SLSMC has recently introduced cargo incentives such as a reduced toll structure for new cargo to stimulate use of the Seaway System. The SLSMC has also launched a successful marketing program for stakeholders in the system called Highway H2O.
STRATEGIC OVERVIEW

Toledo Conference
September 17th, 2008
Strategic Initiatives For Sustainability

- Live Values
  - Integrate CSR
  - Establish a Healthy Work Environment
  - Develop New Skills
  - Manage Knowledge

- Promotion & Awareness
  - Cargo Focus
  - New Toll Structure
  - One Stop Shopping
  - Optimize draft & season
  - Hands Free Mooring
  - Integrate Nav Services
  - Define System Benefits
  - Secure Funding
  - Long-term Maintenance
  - Attract New Cargo
  - Maintain Existing Cargo
  - Attract New Vessel

- Expand sphere of Influence
- Secure Funding

- Ensure Reliable Infrastructure

- SUSTAINABILITY
  - Maximize benefits
  - Minimize impact
  - Manage costs

- Grow the Business
Sustainability Key Pillars

- Attracting & Maintaining Cargo
- Capacity Utilization
Sustainability

Cargo Initiatives
- Promotion & Awareness
- New Toll Structure
- One Stop Shopping
- Cargo Flows/Trends
- Containers
- Project Cargo

Capacity Utilization
- Short Sea Shipping
- Attract New Vessels
- Hands Free Mooring
- Modal Shift
- Sphere of Influence
- Other Incentives
Existing & New Cargo Initiatives

• Promotion & Awareness
  • Advertising-Market segment specific
  • HWY H2O Conference
  • Trade Mission
  • Trade Exhibitions

• Toll Structure
  • New Business Incentive
  • Volume Incentive
  • Variable Lockage Fees
  • Broader Classification of Domestic Cargo
  • Toll Freeze 2008-2010

• One Stop Shopping
  • Continue to work with stakeholders to streamline information flows

• Ongoing Review of Cargo Flows/Trends
  • Workshop Feedback
  • Ongoing contact with Stakeholders
  • Piers

• Containers
  • Gateway Development/Partners i.e. Halifax, Melford, Port of Sydney

• Project Cargo
  • Promote Gateway to North America’s Heartland
  • Promote available capacity and ease of access to Alberta Oilsands
Increase Capacity Utilization

- Short Sea Shipping
- Attract New Vessels
- Hands Free Mooring
- Modal Shift
- Sphere of Influence
- Other Incentives
Vision Statement:

The following statements were taken from a power point supplied by the St. Lawrence Seaway Management Corporation for this exercise.

The key pillars to future Seaway Sustainability are attracting and maintaining cargo and utilizing the full capacity of the Seaway System.
Vision Statement:

Cargo Focused Initiatives include a new toll structure, one stop shipping, and a focus on containers and project cargo. Capacity Utilization issues involve short sea shipping, attracting new vessels into the system, hands free mooring, modal shift to marine, and increasing the Seaway’s sphere of influence.
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**Richard Martinko**

*Director, Intermodal Transportation Institute, University of Toledo*
The University of Toledo has been a long term partner with the Port Authority on studying and developing intermodal connectivity in the region and promoting economic development as a result of the associated employment derived from intermodal initiatives. Mr. Martinko is an excellent resource for data pertaining to intermodal activity in the Toledo region.
Vision Statement:

Mr. Martinko would like input from industry on his statement below as some believe this is not the role of a University while others feel economic development provides more opportunities for University graduates. He would also like feedback on Universities acting as information clearing houses for industry and discuss industry’s willingness to cooperate and share information with Universities.
Vision Statement:

“Universities should become an essential resource for Transportation & Logistics economic development initiatives.”
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Trish Koman
US EPA Office of Transportation and Air Quality,
Clean Ports USA Program Manager
Ms. Koman is an expert on implementing clean air programs and reducing diesel emissions in Ports around the world. These programs often offer grant money to assist in converting engines or obtaining new equipment. The Federal EPA offices in Ann Arbor and associated research lab is studying and testing emissions from various types of diesel engines.
They are also studying and beta testing hydraulic hybrid technology for delivery trucks that are 70% more fuel efficient than the non hydraulic vehicles with minimal cost for producing the hydraulic components for these vehicles. When compared with the cost of purchasing a non hydraulic vehicle, the hydraulic hybrids essentially pay for themselves in fuel savings over time.
“Cost-Effective”
Clean and Efficient Trucks
Are On The Way!

Trish Koman
US Environmental Protection Agency
National Clean Diesel Campaign
Hydraulic Hybrid Vehicle Technology

Projected fuel savings
– 40% for typical urban delivery (like UPS truck)
– 30% for port yard hostler operation

Proven cost-effective vehicle technology
– Addresses both climate change and priority criteria pollutants

Provides economic incentives
– Significant fuel savings will help retire vehicles with older, dirtier engines faster

HHV commercialization status
– Peterbilt/Eaton pre-production refuse trucks currently being evaluated in Texas
– EPA, Navistar/Eaton, Freightliner/Parker, Kalmar/Parker, Carrier Crane/Bosch-Rexroth, and HybraDrive all have active programs
– Other possible urban truck applications include shuttle and school buses, beverage delivery, regional delivery, drayage, and refuse
Series
Hydraulic Hybrid Vehicle

“Daily Planet” (Discovery Canada) video describing operation of Hydraulic Hybrid UPS Truck:
U.S. Transportation GHG Emissions Projections and Illustrative Targets Based on Proportional Reductions

Transportation = 28% of US GHGs

- Business-As-Usual without 2007 EISA
- Business-As-Usual with 2007 EISA, 35 mpg and 36 billion gallons renewable fuels
- President's goal to stabilize GHG emissions growth by 2025
- 450 PPM IPCC stabilization scenario
- 70% below 2005 levels by 2050
• Public-private partnership to accelerate diesel emission reductions in the Midwest
  – Started in 2004
  – Reducing emissions from ~3.3 million diesel engines operating in 6 states

• Create actions that stir the imagination
  – 33 Members Signed Collaborative Principles
    • Co-Chairs: Cummins, Illinois EPA, American Lung Association of Upper Midwest, US EPA

http://www.epa.gov/midwestcleandiesel
International External Industry Pressures Driving Today’s Logistics
World Bank’s 2010 “Global Economic Prospects”

World Output will Increase 33% in 10 years

- 2000: $30 Trillion
- 2010: $40 Trillion
Poll of the Top 1000 “Blue Chip” Multinational Shipper Priorities

- **38%** Competitive Freight Rate
- **43%** Schedule Reliability & Consistency
- **12%** Transit Time & Speed
Today’s Logistics Truth:

“The customer wants more and is willing to pay less for it.”
Lengthening Supply Chains Create Opportunity
World GDP & Containerized Traffic Growth

World Container Traffic Has Been Growing at 3 Times World GDP Growth.

Rebased to 100 for 1980 figures, percentages are CAGR (1980-2006)

Source: Morgan Stanley Research
World Container Forecast to 2024 in TEUs
(186% Increase in Next 20 Years)

Source: Global Insight

2007: 96 Million
2024: 243 Million

Growth Rate (CAGR)
1994 to 2004: 8.3%
Cargo Vessel Macro Econometric Drivers
(9-Year CAGR)

• **World Economic Growth Has Peaked and is Slowing** – A Recession When Real GDP is < 2% (Currently at 3.4%)

• **US is Near-Recessionary Levels** (Mild)

• **US Imports Will Slow** to 7.6% (and **Exports Will Accelerate** to 8.1%)

• **The US East, Gulf Coast and “4th Coast” Gateways Will Gain Share**
Southeast Asian Manufacturing Centroid Shift

Current Inbound U.S. Cargo Flow

- **Eastbound:** All Water Flow
- **Western Centroid Shift**
- **Eastbound:** US Intermodal Rail Flow

U.S. Intermodal Rail Flow
Southeast Asian Manufacturing Centroid Shift

Current Inbound U.S. Cargo Flow

U.S. Intermodal Rail Flow

If The Manufacturing Centroid Shifts Into Vietnam and/or India The US East & Gulf Coast will See Dramatically More Suez Traffic

Vickerman & Associates
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Great Lakes Constraint
St. Lawrence Seaway

- Maximum vessel size (Seaway-Max)
  - 740 feet (225.6 m) LOA
  - 78 feet (23.8 m) beam
  - 26.5 feet (8.15 m) draft
  - 1,050 TEUs
Existing Transportation Issues
Great Lakes Realm

- Existing Roadway and Rail Connections at Capacity
- Border Delays are Common

Unreliable Supply Chain Connections
Great Lakes Constraint
Icing Conditions – Seasonal Passage

• All areas subject to highly seasonal weather

• Lake Erie, as the shallowest Great Lake, can completely cover with ice, limiting western movement to central Canada & U.S.
Water Transportation Conserves Fuel

Barge transportation is the most fuel efficient method of moving the raw materials needed by the nation.

How far one gallon of fuel moves one ton of freight, average by mode...

- Truck: 70 miles
- Rail: 420 miles
- Barge: 575 miles
Canada’s Intermodal Rail Network
New Terminals Are Being Built on All Three Coasts to Support Asian Trade
Great Lakes Short Sea Connections

Atlantic Maritime Trade Lane

St. Lawrence Seaway Route
The Emerging CN Transcontinental Land Bridge to the US

- Prince Rupert
- Melford International Terminal
- Chicago: 105 Hours
- Detroit: 139 Hours
- Memphis: 133 Hours
- Toronto: 104 Hours
- Chicago: 62 Hours
- Detroit: 60 Hours
- Memphis: 90 Hours
- Toronto: 43 Hours
Faster Service to New York Upstate Consumption Zones than Calling New York’s Front Door!

Class 1 Railroad Mainlines:
- CN & CP Route
- CSX Sea level Route
Closest North American Mainland Deep Water Port to Europe and the Suez Asian Route

• **29 Hour Advantage** on New York
• **36 Hour Advantage** on Norfolk
“Few marine projects in the history of the St. Lawrence Seaway have offered an opportunity to significantly expand the waterway’s marketing potential … All Great Lakes Seaway Systems ports and terminals could benefit…”
“We see (The Strait of Canso & Melford) as a tremendous opportunity to harness the promise of a feeder service for the growing Asian Container traffic”

Lloyd A. Jacobs, President of the University of Toledo

“I believe the Melford Project has the potential to transform Toledo, indeed the entire Midwest”
A New Day is Dawning....
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