

Eastern Maine Development Corporation (EMDC)

Searsport - Bangor Logistics Corridor Project

Logistical study and report prepared for:



by:



Maine Maritime Academy

Loeb-Sullivan School of International Business & Logistics

Master of Science Program

Global Logistics & Maritime Management (GLMM) Graduate Class - 2012

Final Report

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Executive Summary

For several years, in an effort to stimulate new business growth within the state, the Eastern Maine Development Corporation (EMDC) has researched the possibility of an Eastern Maine Logistics Corridor between Searsport and Bangor (henceforth referred to as the 'Corridor' in the report). Although numerous studies and reports have been prepared for specific industries, no comprehensive overview strategy has been completed. There has been little movement forward on the Corridor due to the fragmented studies and lack of direction.

In November 2011, after an Action Committee of 50 meeting, EMDC met with Maine Maritime Academy's International Business and Logistics (IBL) School faculty. The Global Logistics and Maritime Management (GLMM) graduate students agreed to perform a strategic analysis to assist EMDC in completing further research on the potential utilization of the Corridor and to answer the following research question:

“Can the logistics assets of the Searsport-Bangor Corridor be developed to facilitate a prosperous, competitive Eastern and Northern Maine economic region?”

Subsequently, and in support of the required research, the GLMM students gathered data through attending informational meetings and presentations given by EMDC members, professional consultants, Maine Port Authority representatives and Corridor business stakeholders, as well as through extensive tours of facilities related to the Corridor and the Port of Los Angeles. In addition, the students also completed secondary research on current and future global impacts that could affect the economic growth of the Corridor, along with developing a marketing plan for a biomass pellet company. Finally, the GLMM students identified four industry sectors to determine if companies would use a logistics corridor, given the corridor met all of their logistical needs. Anecdotal data was collected from companies within the industries chosen which consisted of perishable and time sensitive products, industrial and consumer products, logistics providers and forest products.

Using key findings from the research conducted, the GLMM students believe the logistics assets of the Corridor can be developed to facilitate a prosperous, competitive Eastern and Northern Maine economic region. This belief is founded upon:

- the probable future utilization of the seaport for forestry biomass export provided the necessary bulk handling equipment is available;
- the potential capture of European-US East coast marine traffic because of other more frequently utilized seaport congestion issues resulting from larger vessels transiting the expanded Panama Canal;
- the potential capture of Caribbean marine transload traffic (i.e., larger Post Panama Canal Expansion vessels transiting the canal that require transshipment to smaller vessels more easily accommodated by the US East Coast);
- the establishment of a Corridor spokesperson or “champion”, along with the guidance of an “oversight” committee, to more aggressively market the capabilities of the Corridor:
 - thereby securing a larger customer base that has more confidence that the corridor and its components will provide consistent, long term service; continue operation;
 - utilize cargo consolidation techniques and opportunities to provide reduced transportation costs to customers while increasing the volume to carriers (air, rail, truck, deep sea and short sea shipping); and,
 - fostering a more symbiotic open, working alliance between stakeholders thereby increasing customer confidence and satisfaction.

Project Overview

Logistics is an industry that operates behind the scenes affecting every aspect of our daily lives. The importance of logistics has been highlighted in recent years. Without logistics, the world economy cannot achieve its full potential. Logistics provides the ability to move products from producers to consumers as efficiently as possible.

As a state with just over one million people, Maine relies heavily on tourism to fuel Maine's economic needs. However, the tourism industry has struggled in recent years as a result of the economic downturn; therefore Maine has been struggling to compete. While tourism provides considerable support to the state, tourism alone will not provide the growth Maine needs. Ten percent of the state's residents are living under the poverty level, while one-third are considered poor or near-poor (maine.gov). For the state to thrive, and for its people to succeed, Maine must make a change.

In the past, the state has attempted to make the necessary improvements to strengthen the economy, such as the proposed development of Sears Island in Searsport, ME. However, a common phenomenon, the "not in my backyard" (NIMBY) mind-set, has prevented these developments. Maine is a state with many strengths, physical assets, and a determined people, which need to be better utilized.

As a result, for several years, EMDC has researched the possibility of an Eastern Maine Logistics Corridor between Searsport and Bangor, which could stimulate new business growth within the state. Numerous studies and reports have been prepared for specific industries, yet no comprehensive summary has been completed. As such, there has been little movement forward on the Corridor due to the fragmented studies and lack of direction.

After an Action Committee of 50 meeting in November 2011, EMDC met with the MMA-IBL School faculty. At this point, the IBL faculty suggested the MMA-GLMM graduate students could perform a strategic analysis to assist EMDC in completing further research on the potential utilization of the Corridor. The MMA-GLMM graduate class, a group of students specializing in the field of logistics, was provided with the following research question:

“Can the logistics assets of the Searsport-Bangor Logistics Corridor be developed to facilitate a prosperous, competitive Eastern and Northern Maine economic region?”

The GLMM students have gathered data through attending informational meetings and presentations given by EMDC members, professional consultants, Maine Port Authority representatives and Corridor business stakeholders, as well as through extensive tours of facilities related to the Corridor. In addition the students toured the Port of Los Angeles (POLA), including the “Alameda Corridor”, POLA’s logistical freight corridor.

The students also completed additional secondary research on current and future global impacts that could affect the economic growth of the Corridor as part of the creation of a marketing plan for a biomass pellet company.

Finally, the GLMM students identified four industry sectors to research to determine if there is a sufficient interest in utilizing a logistics corridor within Maine. Anecdotal data was collected from various companies within the selected industry sectors which consisted of perishable and time sensitive products, industrial and consumer products, forest products and logistics providers.

Research Methodology

The research effort included the performance of telephone/email surveys of current established businesses, preferably in the Corridor region to establish an understanding of their potential use of the Corridor (e.g., as a producer, carrier, consumer, freight forwarder, logistic provider, etc.).

In addition, the research material included publicly available published data sources such as trade publications, journals, reports and online resources along with presentations provided to us from EMDC, consultants, Maine Port Authority, etc.

Using this research methodology, information pertinent to the research question was obtained and reviewed and included in this report.

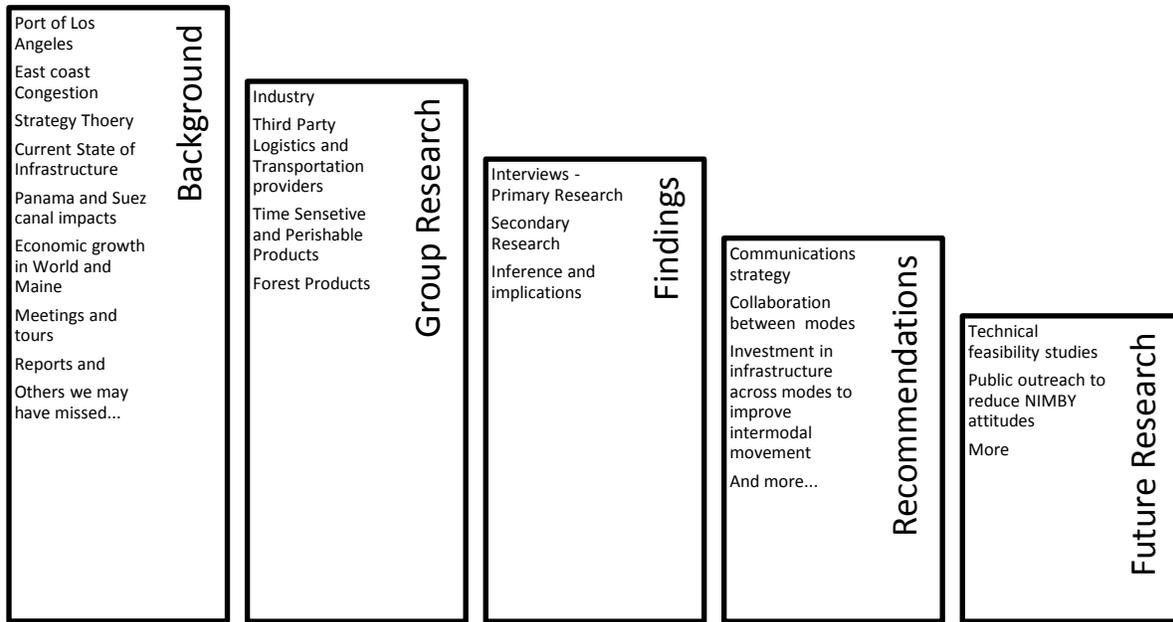


Figure 1.

Research Limitations

The research performed was broad in scope but narrow in depth. Many facets of the logistical aspects of the Corridor were reviewed but with limited depth. In many instances, and because of compressed time constraints, the ability to perform follow up interviews was limited. In addition, no statistically valid surveys were performed. All surveys, although performed with professionals within their fields of business, were anecdotal in nature.

Background Research

In this section we will introduce and analyze the significant background research pieces and why they have a direct impact on the ‘Corridor’.

US Port Developments

Some U.S. ports have traditionally developed due to consumer demand derived from the population base. Port infrastructure has grown over the years in a gradual manner, to facilitate the increased growth in population. The transition from U.S. manufactured products to foreign imports has increased the need for a variety of terminals, which have reshaped the East and West Coast ports.

Increased demand for renewable energy sources in Europe and raw materials in China have increased U.S. exports to these regions. Due to the need for such products, the U.S. is in a position to facilitate the market demands for renewable energy sources and raw / recyclable materials. Maine is in a position to seize the opportunity with a supply of the available renewable energy sources. For example, the biomass industry has the potential for job creation and new export markets, which will bring economic growth to the area.

Global, US & Maine Economic Outlook

The global economic outlook is weak, but overall in 2012 global GDP is expected to grow by 3%. The strongest performers will be the developing nations, such as China, which is expected to have a growth rate of 8.5% in 2012. The debt crisis in Europe is expected to deepen with the rest of the world's economies lying between China's stronger growth and Europe's continuing recession.

The United States is expected to have slower growth in 2012. There will be increased repercussions this year because of Europe's recession, which will cause more fiscal restraints in the U.S. However, the U.S. may not revert to recession; it simply means that growth may be slower.

New England's GDP increased by 1.5% however, Maine's GDP fell by .4% in 2011, making it the only state in New England to report a negative growth (Mainebiz). For more detail pertaining to this section see Appendix 1.

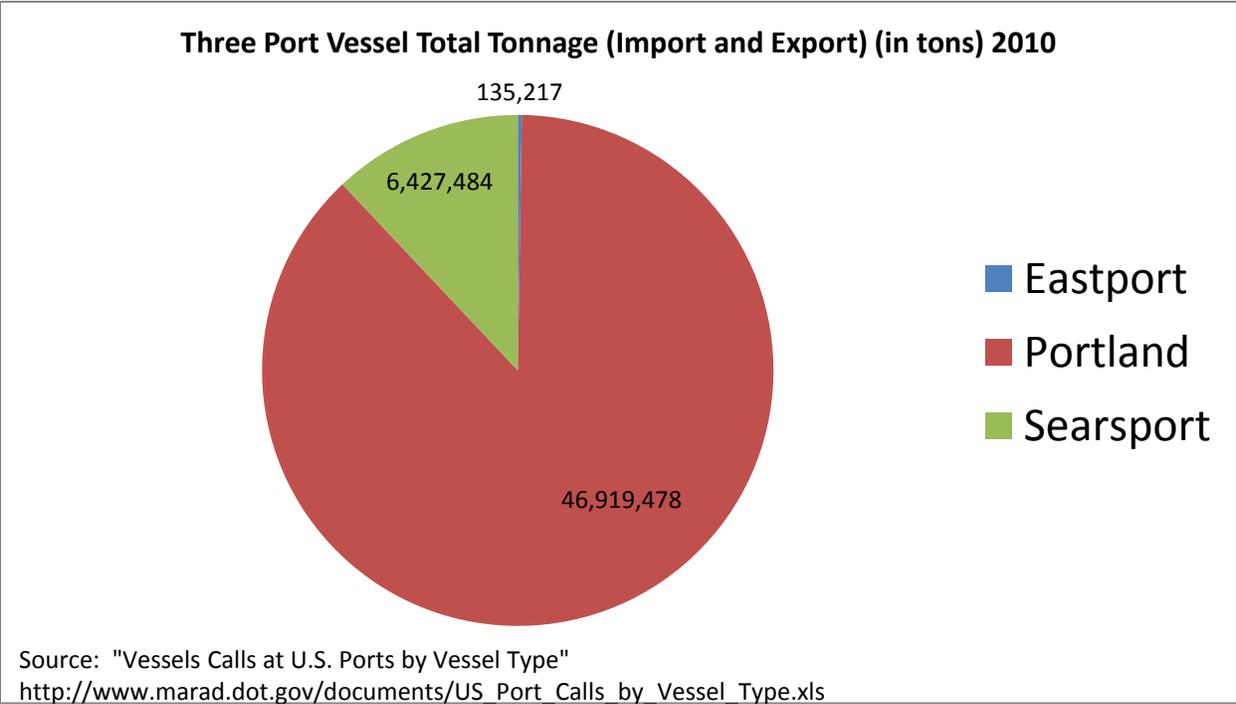
Panama Canal/Panama Canal Expansion/Suez Canal

The true effect the Panama Canal Expansion will have on commerce is still unknown and widely debated. However there is no doubt the expansion project will change the transportation flow (air, sea and land) for North and South America for years to come with the Searsport-Bangor Logistical corridor able to benefit in potentially two different ways.

- The Corridor may benefit if transmodal transfers (transfer of cargo from larger ships to smaller ships), attributable to larger vessel sizes transiting the Panama Canal as a result of the expansion, increases in the Caribbean area. These

smaller vessels are more easily accommodated by most US East Coast seaports (especially those that are draft restricting) and thus are widely accepted.

- In addition, while Maine's ports are some of the closest to US East Coast – European/Suez shipping traffic, it has failed to capture any significant freight tonnage from this traffic (see following 2010 tonnage chart). However, the ability to capture a portion of the US East Coast maritime traffic, in particular the US East Coast – European/Suez traffic as a result of the Panama Canal Expansion needs to be evaluated. It should be noted that the larger ships capable of transiting the expanded Panama Canal and their increased cargos may result in the “glutting” (e.g., at or exceeding capacity) of the select ports that can accept these deeper draft vessels. As such, Searsport is ideally situated to capture the potentially displaced marine traffic that either would have resulted in a port being “over capacity” or resulted in the vessel to delay its arrival (i.e., by slowing down or going to anchorage) until the vessel's cargo could be accepted without exceeding the original port's capacity.
- To gain a further foothold into the maritime traffic, the Searsport seaport should consider becoming the preferred seaport of choice for potentially diverted maritime traffic. This would be traffic that may have been bound for another seaport but, due to unforeseen circumstances, (e.g., weather, port difficulties with another ship, strikes, etc.), arrival and unloading of the vessel may not be able to proceed as planned. As such, to prevent increased costs due to delayed offloading (e.g., required to go to anchorage, slow steaming, increased spoilage of perishable cargo, etc.) diverting to Searsport and offloading there may be desirable for the shipping company For more detail, see Appendix 2.,



East Coast Congestion & Implications for Maine

Currently the U.S. transports over 1,000 truckloads per day between Florida and the Northeast, which is expected to double within a few years consequently increasing road congestion (Frankel, 2011). The I-95 corridor is the main traffic corridor linking the Northeast to the major East Coast population centers. I-95 is almost 2000 miles in length, with more than half of the interstate passing through urban areas. Currently, more than 60 percent of this corridor suffers from heavy congestion from both commercial and commuter traffic. It is expected, without any additional infrastructure improvements that the restriction of transportation as a result of the congested I-95 corridor will only increase. However, if Maine’s East-West Highway becomes a reality, Maine may be uniquely situated to provide access to large population centers while avoiding the congested I-95 corridor that slows travel along the East Coast.

Maine’s link to the Northeast/Midwest Population Centers

Maine offers a variety of transportation opportunities, making it suitable for providing an access link to the Northeast/Midwest Population Centers. The Montreal,

Maine, and Atlantic (MM&A) Railroad offers a direct route, via other rail lines, from the port of Searsport to Montreal, and then to Chicago and other Midwestern markets. It is more efficient to transport commodities by rail to the Midwest, rather than using the congested US highway networks. Searsport is in a unique location near the northeast population centers, featuring a deep water port, direct rail and highway access (See Appendix 13). Bangor International Airport also boasts a longer than average runway length with heavy-lift aircraft handling capabilities and the highest rated instrument landing system (ILS) rated by the FAA (FAA).

Meetings & Tours

Over the course of the semester, the GLMM class has had the opportunity to interact with several Maine industry leaders to gain insight and knowledge regarding Maine’s transportation systems, ports, airports and industries.

The below table represents professionals and industry leaders the class interacted with during the semester.

Meeting Table

Meetings/ Conferences	Name	Company
Eastern Maine Development Corporation	Michael Aube	EMDC
	Jennifer Brooks	EMDC
	Rebecca Hupp	Bangor International Airport
	John Porter	Bangor Region of Commerce
	David Colter	GAC Chemical Corporation
	John Henshaw	Maine Ports Authority
	Jim Therrialt	Sprague Energy

Maine's Gateway to International Trade	Craig Starnes	LL Bean
	Robert Grinrod	Montreal, Maine & Atlantic Railway
	Percy Pyne	American Feeder Lines
	Gerhardt Muller	Author of <i>Intermodal Freight Transportation</i> Professor, US Merchant Marine Academy (retired)

Maine International Trade Conference	Dr. Ceasar Hidalgo	MIT Assistant Professor
	Mary Ann Lindeman	Coffee By Design
	Sandro Giovanni Valeri	Embraer
	LuAnn Ballesteros	Jackson Lab
	Ed Flanagan	Wyman's and Sons
GLMM	David Cole	David Cole Consulting (Former Maine DOT Commissioner)
	John Henshaw	Maine Ports Authority

The class also visited several pertinent areas within the proposed corridor. Relevant tours included Bangor International Airport (BGR), MM&A, Sprague Energy, and GAC Chemical in Searsport. The purpose of the tours were to gain further insight into what roles the airport, railroad and seaport play currently and how they could best be utilized within a logistics corridor. For more detail, see Appendix 5.

Bangor International Airport (BGR) is a full service domestic and international airport. BGR can handle any size aircraft presently flying. Handling services include most services required by an airline (e.g., ground power units (GPU), lavatory and water service, aircraft cleaning, air conditioning and heat, and arrangements for airframe and power plant maintenance). The airport is a 24-hour facility with Customs and Immigration services, a 33-acre Free Trade Zone (FTZ) and is the closest US Airport of Entry from Europe. BGR has uncongested airspace and land transport access with room for growth. Its strategic location, FTZ, 50,000 sq. ft. heated storage space and 24 hour Federal Inspection Services make BGR a viable option for air cargo. Galt Block Warehousing also has 250,000+ sq. ft. of refrigerated warehouse storage in the Bangor Area.

The Montreal Maine & Atlantic Railway (MMA) is the rail system that services the Port of Searsport. The MMA is headquartered at Northern Maine Junction in Hermon, which has an onsite 123,000 sq. ft. warehouse, 300 acres available for development and direct access to warehouse and transload facilities operated by Logistics Management Systems (LMS), a subsidiary of MMA. The MMA system services Searsport, Millinocket and Montreal with connections to all major rail lines including Canadian Pacific (CP), Canadian National (CN), Norfolk Southern and CSXT. These connections provide access to all of North America and most notably an MMA/CP route to Chicago that can be transited in 40 hours. In addition, the MMA routes currently have unrestricted double stack container clearances.

The Port of Searsport consists of two terminals. Sprague Energy owns 100 acres of land at the Port of Searsport with 40 acres still developable. Sprague's pier is 615 feet long with a berth of 850 feet and a draft of 37 feet at low water. The Maine Port Authority owns the second terminal. Its pier is 800 feet long with a ship berth on both sides and drafts ranging from 32 feet to 40 feet at low water. The MMA railway services the port. There is 90,000 sq. ft. of indoor storage available. Products shipped through the port include petroleum, road salt and paper products, with a growing market for wind power equipment. Another emerging market for the Port of Searsport is biomass fuel as a result of the increasing demand from Europe due to the 20/2020

legislation which mandates that by 2020, twenty percent of EU energy must come from renewable or sustainable sources (European Climate Foundation). Liquid bulk storage at the port is provided by 30 tanks equaling approximately 1.6 million barrels of capacity. There is an abundance of available storage creating opportunities in commodity trade. Equipment at the port consists of a Mobile Harbor Crane capable of servicing Post Panamax vessels and two smaller cranes which can assist with dry bulk products.

GAC Chemical is another landowner adjacent to the Port of Seaport. They own 150 acres, of which they are utilizing 40 acres. GAC produces approximately 9 products including products for the food, paper and pharmaceutical industries. Products are primarily liquid based with the exception of one dry material. GAC benefits from the location within the port and the access to infrastructure, utilizing shipping, rail and truck modes of transportation. The company is heavily involved in both import and export and they operate a barge facility.

Port of Los Angeles

The GLMM class had the opportunity to tour the Port of Los Angeles (POLA) and gain a comprehensive firsthand perspective of the freight operations within one of the most significant U.S seaports and its corresponding transportation corridor. The hands-on experience allowed the class to view a world class port operation from all aspects. The class was exposed to multiple facets of logistics operations including, multiple container terminals, break-bulk handling facility, a dry bulk manufacturing and shipping facility, several rail yard operations, and distribution/import facilities.

The opportunity to see the multiple phase process a container transits; from being unloaded from a vessel to storage, rail car, truck chassis, to warehousing, was significant because no single transportation mode has the ability to handle all stages of the process. The Port of LA operates with a “systems” approach to logistics. All components allow the port to function in a fluid and efficient manner. The port relies on all of these transportation modes being readily available and reliable to ensure its operations are completed expeditiously and efficiently in order to maintain its

competitive position. The following table is a summary of the findings, perspectives, and insights of the experience, which could be applicable to the Searsport- Bangor Corridor.

POLA Table Findings

Findings	Perspectives	Insight
Collaboration between modes	Competing POLA/LB and transportation mode accepting the necessity of working together to ensure prosperity of each entity.	One mode cannot do all transport on its own. Must have channel partners and amicable relationships to promote economic growth.
Third party rail operator	Challenges of competing rail lines resulted in necessity of POLA/LB purchasing all on-dock rail systems, and hiring a third party rail operator Pacific Harbor Lines(PHL).	Resulting effect of the purchase increased efficiency, improved rail relationships and streamlined outbound cargo.
Environmental justice	Ensuring that POLA operations do not have a detrimental effect on the regional areas and communities.	Compromises must be made in order to ensure the economic growth of POLA does not come at a cost to neighboring communities.
State/Governmental Regulations	A port has limited control over new regulations being imposed by governing bodies, i.e. environmental, port state (USCG) and federal.	The Port Authority needs to have the ability to oversee policy implementations that affect the ports operations and regulations.
Long-term strategy.	All improvements made	The importance of

Forward thinking	within the port are carefully planned to include potential growth for the future.	unrealized potential in an area for future growth opportunities need to be included in the development to accommodate future growth potential. Create opportunity not out of necessity, but through forward thinking.
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Biomass marketing as it relates to the logistics corridor

Forestry products have historically been one of Maine’s top exports by tonnage. There is a cultural paradigm shift towards using sustainable energy resources. Coupled with recently approved environmental regulations in the EU has created a new market opportunity for renewable fuel sources, which the forestry industry (both in Maine and Southeastern states) is beginning to target with new biomass fuel products. There is a growing domestic and international market for biomass fuels used both as a substitute for coal, and to fuel both residential and industrial boilers. A number of startup companies are utilizing Maine’s extensive natural resources, existing forestry infrastructure, and available forestry feedstock to produce biomass pellets for domestic consumption and export (Maurizio ,2011).

Identified Industries

In order to identify if there would be enough freight volume generated within Maine to support continuous operation of the proposed logistics corridor between Searsport and Bangor, the GLMM chose to focus on four distinct industry sectors. The industries included the following:

Industrial & Consumer Products (determined by monetary value): The top imports and exports include: electronics, footwear, aircraft components, and paper products. In this sector, the following nine companies were contacted; Fairchild Semiconductor, Hancock

Lumber, Matthews Brothers, Bath Iron Works, Verso Paper, Falcon Performance Footwear, L.L. Bean, General Electric, Hussey's Seating. See Appendix 9.

Time-sensitive and Perishable Products (determined by monetary value): The top sectors identified as seafood, fruit, animal products, vegetables, coffee, dairy and scientific products, the following 12 companies were contacted; Calendar's Maine Lobster, Brown's Trading, Atwood's Lobster, Ricker Hill Farms, Bradshaw Cranberry, Wyman's Blueberries, Delhaize, Quality Egg, Backyard Farms, Maine Seaweed, Jackson Laboratories, Jeanie Marshal Food. See Appendix 7.

Logistics Providers & Industry Interests: Companies located in the geographical area of the proposed logistics corridor or that would have a potential stake in the activity within the corridor were contacted for this industry, as it would directly affect their business. Through primary research, the following nine companies were contacted for questioning;

Galt Block Warehouse, Sprague Energy, Schneider, Pottle's Transportation, Maine Motor Transportation Association, OCEANAIR Inc., MM&A Railway, American Feeder Lines and Penobscot Bay & River Pilots Association. See Appendix 10.

Forest Products: For this project, a biomass fuel producer and Cate Street/Thermogen located in Millinocket, were researched. The two companies are both strategically located on the rail line that connects to the port of Searsport. See Appendix 6.

The information gathered through questioning of the above companies was a qualitative and anecdotal analysis of the potential logistical aspects that could sustain the continuous operation of the corridor. Results generated by the research provide vital information on the current logistics network, as well as insight on what may be required to remain competitive.

Results Summary

The overall information received during the primary research, highlights that there is a lack of communication between producers and logistics providers. Maine has valuable products with demand from both domestic and international markets. The

state also has an established logistics network that is not being utilized to its full capacity. A majority of Maine's products are being shipped using out-of-state infrastructure. Yet conversely, the local logistics partners are struggling to find sufficient volume to compete with other logistics hubs, and the in-state infrastructure is unable to grow and improve. The irony of this situation is that companies are going out of their way, and exhausting extra effort to utilize out-of-state shipping methods when their needs can be met in state. This situation creates additional costs for shippers and reduced revenue for the logistics providers.

Many of Maine's primary products are derived from its abundant natural resources. Maine's top exports include forestry products, seafood, other perishable agricultural products, as well as industrial and consumer goods (see appendix 8). European legislation supports this through their 20/2020 Plan. A number of entrepreneurial firms are utilizing Maine's extensive natural resources and forestry products to produce biomass pellets for both domestic and export consumption.

A New Hampshire based venture capital company, Cate Street Capital, has a subsidiary, Thermogen Industries LLC, which is establishing a site at a paper mill in Millinocket to produce torrefied wood pellets. They currently have a letter of intent from a utility company in the United Kingdom and hope to have a 10-year contract by the end of the summer of 2012. The utility will use the pellets to co-fire with coal in their coal burning facilities. The company's first production unit is expected to be online by the 3rd quarter of 2013 and will have 100,000-ton/year capacity. They expect to increase capacity to 500,000-tons/ year within the next 2-4 years. The torrefied pellet company is weighing two logistics options for shipping their product to the United Kingdom. Both options utilize bulk shipping from Maine ports to the UK. If the ships left from Searsport, the company could utilize the rail network to move the product from Millinocket to the port. Shipping from Eastport would require trucking the product from the mill to the port. Searsport is uniquely desirable because of the efficiencies offered by the rail network and infrastructure of the port. This company has the potential to provide 500,000 tons of product moving through the Bangor/Searsport corridor per year for at least ten years.

Improved bulk-handling capacity at Searsport would facilitate the improved efficiency of shipping this product.

In addition to the Cate Street project, the students recently worked in-depth with a startup biomass pellet company that utilizes a patented production process developed by researchers at the University of Maine Orono. The process offers unique value-added qualities that traditional wood pellets cannot match. The product burns hotter, is more durable, and offers the consumer a better overall product at a lower cost. The company currently has a partnership with a Searsport based company to establish a production facility with the capacity to produce 30,000-tons/ year, 75% of which will be available for export. The production facilities are easily expandable should the demand for the product grow. The site's proximity to the port infrastructure in Searsport makes it a viable product to utilize the port and near dock rail facilities.

Seafood and other perishable goods, many of which are fruits, vegetables, and animal products, are important commodities derived from the state of Maine's abundant natural resources. Live lobster is the state of Maine's fourth largest export. Fresh and frozen fish, as well as mollusks and bivalves such as oysters, clams, mussels and scallops are also top 25 export products (see Appendix 8). The seafood industry is, and has been, an important part of Maine's economy. It also has the capacity, along with other perishable agricultural products, to provide significant demand volume for Maine's existing logistics network.

Many of the smaller local producers lack the volume to utilize local logistics infrastructure as an individual shipper. Based on information gathered from a sampling of Maine based shippers and exporters, a large portion of perishables that originate in Maine are currently being processed locally and shipped to either domestic locations such as California, Florida, and New York, or exported internationally to China or Western Europe via larger logistics hubs particularly Boston or Halifax. In the aforementioned hubs, individual shippers are able to utilize third-party logistics companies and freight forwarders who consolidate their volumes for significant cost savings. Many of the local shippers expressed an interest in operating a similar model in the Searsport-Bangor corridor to support the local economy. However, there is a fear

of the risks involved in being “first-movers” as other ports have established shipping models and access to target markets.

The most effective method of shipping perishable/time-sensitive products is via airfreight. Bangor International Airport is uniquely positioned to facilitate access to a number of international and domestic markets. Bangor has more than enough capacity to handle the largest cargo planes, but lacks the inbound and outbound transportation network to feed the flights. The highway infrastructure and trucking fleet needed to move the products from a plethora of coastal and in-land communities to a central shipping location is insufficient. A lack of awareness regarding existing freight forwarder companies in Maine has led to individual producers seeking their own unique shipping means. Based on gathered research, most of the shippers in the state perceive it to be cost-effective to use their own means to move their cargo from Maine to New York and Boston where the product is consolidated on cargo planes. Many Maine producers desire logistics opportunities that are more available and reliable to enable local shipping. The potential for reduced transit time would allow for higher quality product, fewer losses from returned or damaged product, and the potential for increased revenue. Past efforts to utilize regularly routed air cargo capabilities out of Bangor had been hindered due to local “Mainer Attitudes” pertaining to risk aversion and general disinterest.

Transportation Security Administration (TSA), US Customs and US Department of Agriculture (USDA) regulations also limit the ability to ship products in a limited time frame. TSA inspections are mandated on airfreighted goods and slow down the movement of the cargo through the supply chain. There is no way to circumvent these inspections, as they are required, but there are ways to improve on the process. One of the seafood companies in Maine currently has the capacity and certification to inspect and pack seafood in-house. TSA and USDA certification is a time consuming process and can have negative effects on the quality of time-sensitive products. A facility or company that has passed the TSA and USDA requirements and certification of live, perishable, and time-sensitive products would help alleviate the delay and overload of inspections occurring at the airport locations. Companies not utilizing this facility or

without the certification to pre-pack and inspect would suffer losses due to the delays. There is currently a large capacity for US Customs inspection at Bangor International, but there is no facility where the TSA/USDA inspection can occur without delaying the shipping process at detriment to the products quality.

Most of the local companies in the sample population were interested in a centrally located (near-airport), temperature controlled packaging/processing plant with TSA, USDA, and Customs inspection abilities that could consolidate and inspect the cargo to facilitate efficient air cargo exportation. It is important for a facility like this to also offer tax and cost incentives to compete with nearby Canada, Boston and specifically Pease International Trade Port. Another common logistics aspect that was commonly mentioned from this industry survey was the need for an East-West highway to facilitate transportation to the airport from the widespread Maine businesses with products for export. For more information regarding the East-West Highway, see Appendix 3.

Primary research was also conducted on consumer goods and industrial producers in Maine. The companies interviewed in this industrial and consumer market mirrored many of the frustrations found in the process of shipping time sensitive and perishable products. Although the primary modes of shipping differed, there existed an overarching theme of lack of communication. Many companies shipping industrial and consumer goods are already utilizing consolidation. This model enables companies to cooperate and maximize the efficiency of shipping and cost savings.

Companies with high volumes of lower priced commodities use rail for shipments, or less than truckload (LTL) and 3rd Party Logistics (3PL) providers. The companies also have cargo bound for and originating from the Midwest and West Coast regions. Companies believed that consistent transportation to the Midwest would help their operations, because it would allow for expansion of their markets. At this time, responding companies were unsure of the benefits of the proposed East-West highway in Maine, mostly, due to the uncertainty of the project, some were not aware of possible benefits.

Maine is currently in a situation where many of the logistics infrastructure needs are available. However, due to a number of factors, most companies surveyed were unable to fully utilize the established systems. There is a lack of industry cooperation in Maine, which is an essential component of many successful logistics models that we examined. Many companies believe that there is not sufficient volume in Maine for every company to be able to maximize utilization of the existing infrastructure. This however, is a misconception, and appears to be a dichotomy between Maine's shippers and logistics providers.

When conducting research pertaining to Maine's logistics providers, it was evident that if a transportation corridor was in place, the majority of the companies in the state would use it.

Many companies found that their operations faced varied challenges. Inconsistent Rail service, poor road conditions and congestion, lack of volume, common "Not In My Back Yard" (NIMBY) attitudes were all found to be problems faced by surveyed logistics providers. One company, stymied by the lack of rail operator cooperation, was very interested in the concept of a 3rd party rail handler (similar to PHL in Los Angeles) within the Searsport area to allow better access to the port facilities. Trucks are currently used by many sectors to jump/avoid certain rail lines, due to delays and confusion. Many major ports use trucks to shunt intermodal shipments out to peripheral rail yards (primarily to allow container stacking that isn't possible closer to the port due to infrastructure restrictions, bridges and overpasses). "We do it to avoid weak railroad lines," one provider noted. Making these connections is increasingly difficult as the railroads have continued to fragment into smaller regional operators, resulting in significantly decreased efficiency. To move a railcar 200 miles, you have to use 3 different lines, switching twice and the same process must be repeated on the return leg.

The lack of consistent volume of cargo moving through the area prevents the rail lines from maintaining consistent scheduled service. The need for rail improvements is a challenge, especially with the capital investment necessary. Searsport does not currently have a continuous train or on-dock rail loading area. The current MMA sidings

are not conducive to effectively support an increase in on dock staging and loading operations. If various forms of cargo were to enter at Searsport there would need to be a way to stage the trains nearby which would not interfere with traffic.

There is definite interest in the proposed corridor from the trucking and rail industry. The primary challenges which can be foreseen are the conflicts between existing rail carriers and how that relationship could be mended, or if they would need a 3rd party intermediary to assist. The rail infrastructure along the corridor needs to be inspected and upgraded to ensure it is able to adequately handle the cargo flows.

Most of the companies in the aforementioned industries were unaware of, or unable to fully utilize the logistics benefits provided by the Searsport-Bangor transportation corridor at this time. However, if Maine is able to work with the Corridor to provide improved marketing resources, and provide tax incentive plans for out of state companies, such as decreased port fees or bonded inventory warehouses, the 3PL providers think it would help bring additional out of state business to the region. This would take the form of companies using Maine as a staging-entry area for importing/exporting goods internationally. This would distinguish the region from the Canadian and East Coast ports competition and provide value-added benefits to the customers. It is this value-added benefit that shippers require when making location decisions.

Strategic analysis for Searsport-Bangor Corridor

When completing the strategic analysis the GLMM class studied the proposed Corridor to become familiar with existing and proposed infrastructure. This analysis included the Maine regional railroads, Mack Point ownership, existing highway infrastructure and proposed East-West Highway project. Once this was completed the class created SWOT and Force Field analyses to gain further insight.

SWOT Analysis

Strengths

Location: The port of Searsport is one of the closest ports with rail access on the east coast of the U.S. in distance to Europe. The port has beneficial features includes deep-water port (35' at low tide), protected, light traffic, ice free and short run-in. The airport (BGR) and rail infrastructure in the corridor also offer close access to the U.S. Midwest area. In addition to that, BGR is the closest international airport to Europe in the U.S.

Development Infancy: The corridor has considerable potential to be developed. There are undeveloped lands in the port of Searsport, surrounding areas, and Bangor International Airport available for those interested in investment. However, infrastructure improvements are needed within the Corridor, which will be examined in sections to follow.

Diverse Transportation Modes: The Searsport-Bangor Corridor is well connected with the surrounding Rail (MMA), Air (BGR), Ocean (Searsport) and Land (Route 1A, I-95, and the proposed East-West highway) infrastructures, thus providing diverse transportation modes for businesses.

Free Trade Zone (FTZ): The Free Trade Zone in Bangor International Airport provides incentive for imports such as reduced tariffs as well as backhaul opportunities for shippers. It also has advantages for imports for final assembly or value-added manufacturing for export.

Weaknesses

Location: The Searsport terminus of the Corridor is removed from arterial transportation infrastructure. The increased traffic and potential congestion seasonally in Route 1 may limit the effectiveness of the Corridor.

Limited Capabilities: Other than the liquid bulk, the port of Searsport currently has limited cargo-handling equipment's for various containers and bulks operations.

Allocation of Funds and Fragmented Ownership: The port of Searsport has limited funds due to the allocation of those funds between the three port locations in Maine. The port of Searsport has fragmented ownership that includes the State, Sprague Energy, rail road companies and private owners, thus resulting in complex investment and ownership responsibilities.

Rail Yard: There are no “continuous train” capabilities (load/unloaded in sections) and abilities to build complete unit trains with the rail yard in the corridor. The capacity of the corridor is limited due to the restrictions of a single track.

Limited Customer Base/Exposure: There are few established customers due to the ineffective awareness and exposure of the corridor.

Threats

Rail Support: Maine rail carriers lack collaboration to the detriment of Maine and the Searsport-Bangor corridor. A foreign private company, as a large stakeholder for Maine’s Northern and Eastern Rail, is also a threat to the Corridor.

Politics and Funding: There is government intervention over the Corridor’s funding and allocation. By spreading available funds to three ports, due to the three port strategy, only marginal changes can be made at each port, making it difficult for one port to be competitive.

Lack of Communication/Collaboration: A single company cannot create the volume needed to make the Corridor successful. The companies in Maine and transportation providers do not communicate with each other making it harder for the Corridor to achieve success. The ineffective transition between different transportation modes is also a challenge for the Corridor as it adds more time and cost to transportation.

NIMBYs: “Not in my backyard” represents the “no-change” attitude of some population in Maine and this could stop the process before it even starts.

Competition: The competition from the nearby-established ports such as Saint John (N.B.) and Halifax (N.S.), as well as established U.S. East Coast ports, is a threat to the port of Searsport.

Opportunities

Location: The Searsport-Bangor Corridor is in the “backdoor” location to significant population and manufacturing centers. The location provides a location that avoids the congestion common with many of other busy ports on the east coast of the U.S. There is also an abundant amount of developable land along the Corridor.

Biomass Industry: Due to the Maine’s abundant resources and unique location, the biomass industry has the potential to grow substantially. The Corridor could be an early mover and take advantage of Maine’s resources and location. There is an increasing demand for biomass fuel in Europe. The European market has provided an opportunity for the Corridor as the waterborne trade to Europe increases. Searsport, as one of the closest U.S. ports to Europe, has the ability to gain substantial market share.

Short-Sea Shipping: Short-sea shipping is a growing opportunity for the Corridor with the weak road and rail conditions in Maine. The congested I-95 corridor could be relieved of traffic through the implementation of short-sea shipping. Also, the increasing congestion in land transportation stimulates the short-sea shipping in general. For more information regarding Short-sea Shipping, see Appendix 4.

Niche Market: Customers may be motivated to use Searsport due to the expensive fees other ports, such as Boston and New York, have in place.

For a visual SWOT analysis, see Appendix 11.

Force Field

Other forces affecting the corridor

There is a lack of focus on the core competencies of the three ports in Maine, causing some level of rivalry, preventing each port from being more competitive. There are limited specialized facilities or carriers in the area to help support industries that

would otherwise be interested in utilizing such a corridor, such as temperature controlled warehouses. The corridor needs to create more brand awareness by focusing on the aspects that set it apart from other ports, such as:

- Available Land: There is land around the port and along the Corridor that is available for development and could draw the attention of potential development investors.
- Lack of Congestion: Compared to other busy ports along the East Coast, Searsport is in a position to alleviate that problem. There is limited to no congestion in Maine, and this port could be used as an alternative route to population centers as well as the Midwest.
- Proximity to Europe: Searsport is closer to Europe than any other busy East Coast port (with the exception of Eastport). By being located closer to Europe, transit times can be reduced, effectively reducing costs associated with transportation.

The airport also faces challenges in attracting customers. The airport is an underutilized asset of the Corridor and of Maine as a whole. BGR is the closest airport to Europe, has no congestion, and a runway which can handle the largest planes operating today. However, with infrequent flights, limited carriers, limited specialty facilities, and potential unknown by many customers, BGR has not been used to its fullest extent. BGR must market their assets and capabilities to gain a stronger customer base. Some of the aspects that BGR should focus on include:

- Runway Characteristics: BGR has one of the longest runways in the Northeast, with the capability of handling planes of every size and shape. Planes to meet any volume demand can utilize this airport.
- Limited Congestion: Since there is a lack of flights entering and leaving BGR, there is a chance the airport could be used as a “clearing house”. This means that cargo plans could enter at BGR, quickly clear customs, and sent to their final destination, saving companies time and money along the way.

- Closest airport to Europe: By being strategically located as the Northeastern most commercial airport in the US, BGR has an advantage over other US airports. Transit times are shorter from Bangor, requiring less fuel and adding the capability of utilizing smaller planes.
- Specialty Facilities: It would be great benefit to BGR to provide specialized facilities, such as refrigerated warehouse, to attract more clients/customers. Looking at the responses of the perishables industry, specialized facilities would be an asset they could utilize and attract their business.

Unfortunately, the rail system in Maine, as a whole, was rated a C by the American Society of Civil Engineers (maineasce.org, 2008). However, the rail operating in the Corridor is in better condition than most rails throughout the state. The condition of the rail may be sufficient, but there are some lacking characteristics. Though there are some rail sidings, it is not possible for two trains to run along the track at one time, reducing the efficiency and effectiveness of the track. The rail is a key component in the Corridor, providing an alternative connection between Searsport and Bangor that reduces traffic congestion in the area.

Implications

The initial research question was: *“Can the logistics assets of the Searsport-Bangor Corridor be developed to facilitate a prosperous, competitive Eastern and Northern Maine economic region?”* In response to the question, the graduate class believes there is enough volume to support the Searsport-Bangor Trade Corridor if sufficient infrastructure improvements were in place.

There is an absence of communication between supply chain players. Producers need to have improved knowledge of and increased interactions with logistics providers and vice-versa. Many companies do not realize that there are many other producers that they could consolidate their product with to ship it at a lower cost. There is an evident lack of collaboration between companies both for the logistics providers as well as those who could consolidate cargo to increase freight volumes.

The Searsport-Bangor Corridor experiences problems due to weak connections between modes of transportation. Improved rail, road, port, and airport infrastructure is necessary and critical for an effective corridor. Companies lack confidence in the potential proposal due to historical lack of follow-through.

The current Port and Corridor ownership model is fragmented and inhibits clear delineation of authority. The graduate class believes that because there is no overarching authority, companies and logistics providers have experienced poor communication and no strategic vision. No central authority exists, and therefore the Corridor has had virtually no coordinated promotion. Companies that could benefit from use of the Corridor are, in many cases, unaware of the assets and benefits available.

Infrastructure Recommendations

Rail

The current rail network connecting Searsport to Bangor and the rest of Maine with the United States is in unexceptional condition. There is a poor connectivity between MMA railroad and Pan Am causing logistical problems at key interchanges. This causes dysfunction and problems for companies that want to ship their products by rail. Even a moderate change in rail traffic will have noticeable effect to surrounding populations as the Searsport-Bangor rail spur has approximately 15 “private” at-grade rail crossings (e.g., driveways, gravel pits, etc.) and approximately 30 public road at-grade crossings (googlemaps.com, Burton)

Due to this, the graduate class recommends improved rail infrastructure along with a potential intermodal facility located near arterial roadways. A continuous track for non-stop loading and unloading is necessary at Searsport for efficient and effective “bulk handling” logistics.

Road

The present road conditions along the corridor are not well suited to a large increase in truck traffic. In addition, Maine roads overall have been rated a “D” by the American Society for Civil Engineers (maineasce.org, 2008). There is no direct access to major

highways from Route 1 and 1A. Improvements and maintenance of the roads are necessary in order for the Corridor to thrive.

Air

Overall, Bangor International Airport is in a good position and poised to provide companies with efficient transportation of goods with some minor improvements. A primary obstacle is the lack of a significant route network to major cities. If BGR established more regular freight flights to major global hubs, it would attract more companies. It is also vital that warehouses be built at the airport and that they be temperature controlled. At BIA there needs to be a well-developed refrigerated infrastructure. This includes refrigerated storage at the place of origin—in most cases a farm—as well as refrigerated trucks, storage facilities at the airport, and runway refrigeration, and temperature controlled planes

Port

The Port of Searsport is in a position to become a more heavily utilized port as volume of exports increases. Some recommendations for improved infrastructure include acquiring additional handling equipment. A conveyor loading system would be helpful when moving bulk cargo, primarily forestry products.

Short-sea shipping is viable if the corridor exists and the infrastructures are in place between Bangor and Searsport for three reasons. As road and rail congestion increases on land, along with technological improvements in containerization and cargo handling, more customers may be attracted to short-sea shipping. The recent demise of the Halifax/Portland/Boston short sea shipping carrier occurred concurrently with a potential increase in the user base as four additional customers had expressed an interest in using the carrier the same week service was discontinued. Maine companies do have the needs for short sea shipping. Many companies want to be able to ship their products by sea such as L.L.Bean and White Rock Distilleries. In addition, the seaport may be able to benefit if trans-modal transfers, attributable to larger vessel sizes as a result of Post-Panamax canal expansion traffic throughout the Caribbean, to smaller ships that have a wider variety of seaport options, increases.

Recommendations

The following recommendations are ranked in order of significance.

Strategy

It will be essential for the corridor to have a “champion”, who will be committed to improving and promoting the growth of the Searsport-Bangor Corridor. Under the direction of this champion, a committee should be formed that represents all stakeholders involved in the corridor; such as the railroad, roadways, airport, seaport, 3PLs, and suppliers. This committee will be responsible for overseeing all corridor operations including the development of a strategic plan for future expansion.

This strategic plan should consist of incremental stages that outline distinct phases to be completed over a period of time. This should be used to establish a “branding” image for the corridor and Maine. The short-term development phase should include increasing ship and rail traffic through investment in promotion of Maine’s forest products as well as the addition of handling equipment. Some medium term developments are to develop a clear Searsport-Bangor strategic plan, develop a marketing plan for the Corridor, and design a rail spur for access to Sears Island. Identifying land along the Corridor, around BGR, and at the Port of Searsport that could be used for future development are important medium term goals. The key is to promote the Eastern Maine Trade Corridor as a gateway for trade and economic growth, rather than a Northeastern terminus.

Consolidation, Freight Forwarding, Co-op

Currently, Maine produces enough volume of goods to make significant improvements in the Corridor worth the investment based upon the export potential alone. The volume does not emanate from a single source, but as a collective. However, all parties must collaborate to achieve the optimal shipping volume. The consolidation could occur through several methods. It could be approached by freight forwarding companies, through the formation of co-op’s or food brokers, or the use of third party logistics providers. Unfortunately, there is a disconnection between the organizations that are able to complete these consolidation efforts and the businesses that provide the goods: demand capacity is unaware of supply capacity.

Seafood is a major commodity in the State of Maine. It provides a perfect example of an industry which could benefit from consolidation efforts within the state. Fishermen are currently sending their product out of the state to be consolidated in order for the product to reach destinations both domestic and international. Consolidation efforts may reduce the overall total landed costs thereby allowing fishermen to increase revenue and, hopefully, more profit.

The consolidation process may also be viable for many other commodities within the state. A blueberry grower commented that their company would be interested in shipping their product through the state of Maine if there were more container ship port calls. Many companies were willing to consolidate their shipments, and some industrial businesses were already consolidating their cargo organically from different branches within their companies. If this consolidation could occur, the volume needed to increase connections in and out of the state of Maine could be supported by the volume produced.

Third- Party Rail Provider

After visiting the Port of Los Angeles, the graduate class was able to analyze a third- party rail operator for the port. This company (Pacific Harbor Lines) managed all rail activity within the Port of Los Angeles and Long Beach. Having a third party rail operator eliminated potential conflicts between two competing rail companies. A third party rail operator may be beneficial along the Corridor because it would remove perceived conflicting connections between Pan Am and MMA, which currently discourages organizations from utilizing rail, according to data collected.

Based on the information gathered, if the Corridor was strategically marketed, had a clear vision, and a leader with a commitment to the Corridor's success (champion), the Corridor would facilitate a prosperous, competitive Eastern and Northern Maine economic growth.

Project Limitations

All strategic planning and research projects are bound by the scope of the project. This project was no exception. Limitations of this project included, but are not restricted to, a narrow scope, broad spectrum view, anecdotal information, and limited, statistically, valid data. Due to the short timeframe available for this project, the scope of the research was quite narrow. Data gathered focused solely on the problem statement. To find information on this topic, a broad spectrum of companies were contacted and from this, anecdotal information was received on the research topic. Due to the low number of companies contacted, and the large number of stakeholders in Maine, the findings of this study provide limited statistical validity.

Areas for Future Study

- Determine specifically which Companies could possibly use the corridor
- What federal and state funding is available for further research, infrastructure improvements and marketing?
- Can this Corridor be considered a project of regional or national significance?
- Who are some private capital investors in infrastructural improvements?
- What hurdles need to be overcome in order to implement new infrastructure?
- What is the Strategic vision of the Logistics Corridor?
- Lack of collaboration between shippers and carriers
- Data and projections/forecasts on shipper/demand and carrier/supply
- What are potential areas of concern for environmental justice?
- More detailed assessment of infrastructure for transportation and staging
- Assessment of current transit or service patterns or performance carriers
- Concern over infrastructure being outdated
- Designation of a “champion” for this corridor and an organization that can administer and promote

Appendix 1– Global & US Economic Outlook

The global economic outlook is weak but overall in 2012, the global GDP is expected to grow by 3%. The strongest performers will be developing nations, such as China, which is expected to have a growth rate of 8.5% in 2012. The debt crisis in Europe is expected to deepen with the rest of the world's economies lying between China's stronger growth and Europe's continuing recession.

The United States is expected to have slower growth in 2012. There will be increased repercussions this year because of Europe's recession, which will cause more fiscal restraints in the U.S. However the U.S. may not revert into recession; it means that growth will be slower. The labor market is not expected to change because GDP growth needs to be higher than 2.5% for unemployment to decrease; it will stay steady at around 9% in 2012 and 2013. The housing market will not recover this year, but it is expected that prices nationally will stop their decline and begin a slow and steady uptick in the coming years.

China's growth rate will be decelerated in 2012 as the government attempts to rein in inflation and as economic growth decelerates. China is incredibly externally dependent and as the economic growth rate slows or declines in other parts of the world China will feel the effects. There is a lot of fiscal room for Chinese policy makers to slow growth by easing monetary policies. They can lower interest rates and they have low debt levels.

Europe will continue to fall further into a significant recession that will affect all of Europe, but primarily the Eurozone countries. The GDP of the EU is expected to decline annually at a rate of 2% for the next few years. Italy, Spain, and Greece will continue to struggle financially because of unemployment and debt; Greece may even be forced exit the Eurozone. The economy of Germany will contract for a few quarters, but their economy remains strong despite the weakness of Southern Europe because of their robust industrial sector. The recession of the Eurozone countries will spill over into the UK, Scandinavia, and Eastern Europe.

Reference: Jan Hatzius, Goldman Sachs' Chief Economist, Global Investment Research, discusses the global economic outlook for 2012. December 2, 2011

Appendix 2- Panama Canal

The 48 mile-long international waterway known as the Panama Canal was completed by the United States under authority of the Hay-Bunau-Varilla Treaty and began operations in 1914. The canal crosses a natural narrow isthmus of Panama and allows ships to pass between the Atlantic Ocean and Pacific Ocean, saving about 8000 miles from a journey around the southern tip of South America, Cape Horn. (Rosenberg).

However, currently the fastest and most often used method to send cargo from China to the population centers on the U.S. East Coast is by a combination of ship and rail, known as a “land-bridge”. It takes approximately 12-14 days for the ocean voyage from Shanghai to the west coast, and another 7-8 days from the US West Coast to the New York by rail for a total of 19-22 days. Shipping the same Shanghai-New York cargo through the Panama Canal takes 25-26 days, while sending it through the Suez Canal takes 27-28 days. (Sheffi)

Currently, the maximum vessel size capable of transiting the Panama Canal is 965’L, 106’W with 39.5’ draft or about 5000 TEU. This size has become synonymous with a capacity standard related to maritime transport called the “Panamax” standard. (Canal de Panama). Using Panamax vessels the route via the West Coast and overland costs about \$600 more than the trip through the canal, yet the economics of Post-Panamax vessels more than compensate for this. (The Economist) These “PostPanamax” vessels are a direct result of “economies of scale” where vessels of increasingly larger size can move far greater amounts of cargo for only marginal increases in operating costs.

For this reason, 75% of Asian imports use the West Coast route, with the ports of LA/Long Beach accounting for 43% of this volume while only 19% use the Panama Canal (conversely 6% use the Suez route) (Sheffi).

In 2006 an expansion plan for the Panama Canal with an expected completion date of 2014 was announced by the Panamanian government and Panama Canal Authority to address two distinctly different issues. One, rising demand for passage that was resulting in an increasing amount of ships waiting to be admitted to the Canal and two, to accommodate vessels (“PostPanamax”) with dimensions larger than the

“Panamax” standard and thus increase the amount of traffic using the canal. Upon completion of the expansion, the Canal transiting capacity will approximately double and the maximum vessel size will be 1200’L, 160’W with 50’ draft or about 13,000 TEUs.

The Panama Canal expansion may lower shipping costs by allowing Post-Panamax ships to sail directly to the US East Coast. However, it will still take longer than the current ship-rail combination through the West Coast. (Sheffi)

With many companies importing consumer products from Asia, the expansion could conceivably be “the biggest shift in the freight business since the 1950s, when oceangoing ships began carrying goods in uniform metal containers” (Severson) because products made in Asia can be sent directly to the East Coast instead of being unloaded on the West Coast and then sent east by train or truck.

Traffic diversion estimates vary widely. Most estimates put the maritime traffic gains through the canal at between 20% and 35% of the current West Coast freight. Naturally, this will also depend on the toll levied by the Canal Commission. Currently the Canal charges each ship \$72 per container-capacity – thus a 4,500 TEU vessel pays \$324,000 to traverse the canal, whether it is loaded or empty. (Sheffi)

Conversely, John Holmes, Deputy Executive Director of Operations for the Port Of Los Angeles indicated the Canal expansion may divert some traffic from the West Coast but may also facilitate the development of new markets between the West Coast and Eastern South America.

As a result of the Canal expansion, many of the seaports along the US East and Gulf Coasts are either planning or undergoing their own expansion projects to handle the increased draft requirements and cargo capacities expected because of the potential change in the vessels transiting the Panama Canal.

However, critics of these seaport expansion efforts highlight that the massive investments along the US East Coast and elsewhere in the hemisphere may be over reaction. The high estimates of diverted traffic requiring port expansion may not take into account several factors:

1. The competitive response of the existing players. To this end, some of the West Coast ports: Los Angeles, Long Beach, Oakland, Portland, Seattle, and Tacoma

have banded together with the Western railroads: Burlington Northern Santa Fe and Union Pacific to form the U.S. West Coast Collaboration (USWCC) to guarantee competitive cost and service options.

2. As some traffic will start to be diverted to the canal, the efficiency of the West Coast ports will improve as the congestion in ports such as LA/Long Beach, Oakland and Seattle/Tacoma eases up. The resulting improved service will attract shipper and ocean carriers.
3. One of the main objectives of the Canal Commission and the Panamanian government is to increase the rate of transshipments and related logistics operations in Panama. While this may or may not take place in Panama, many other ports in the Caribbean's (including Cuba, if relationships with the US will improve) are set to unload Post Panamax vessels and transfer the container to smaller vessels that can get into any East Coast port (Maritime Transmodal).

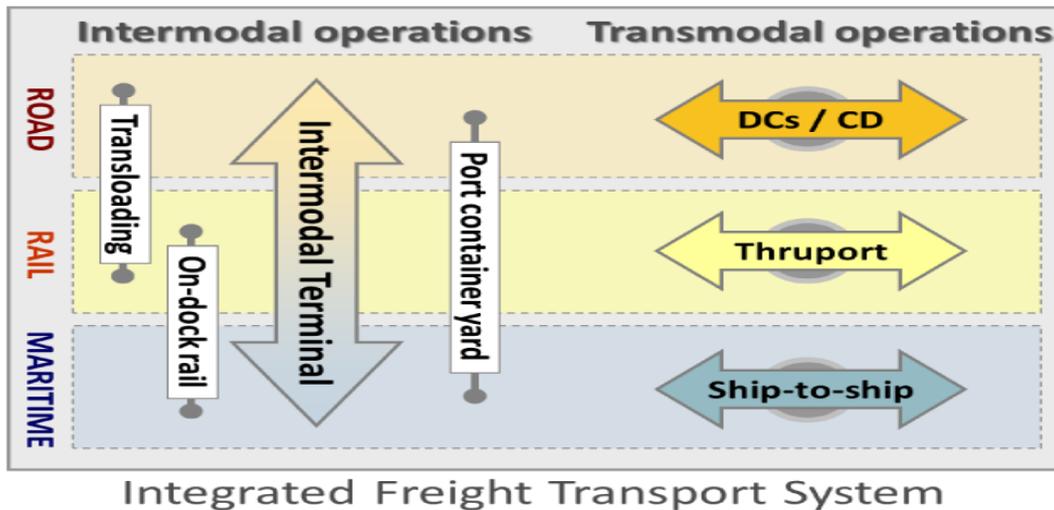


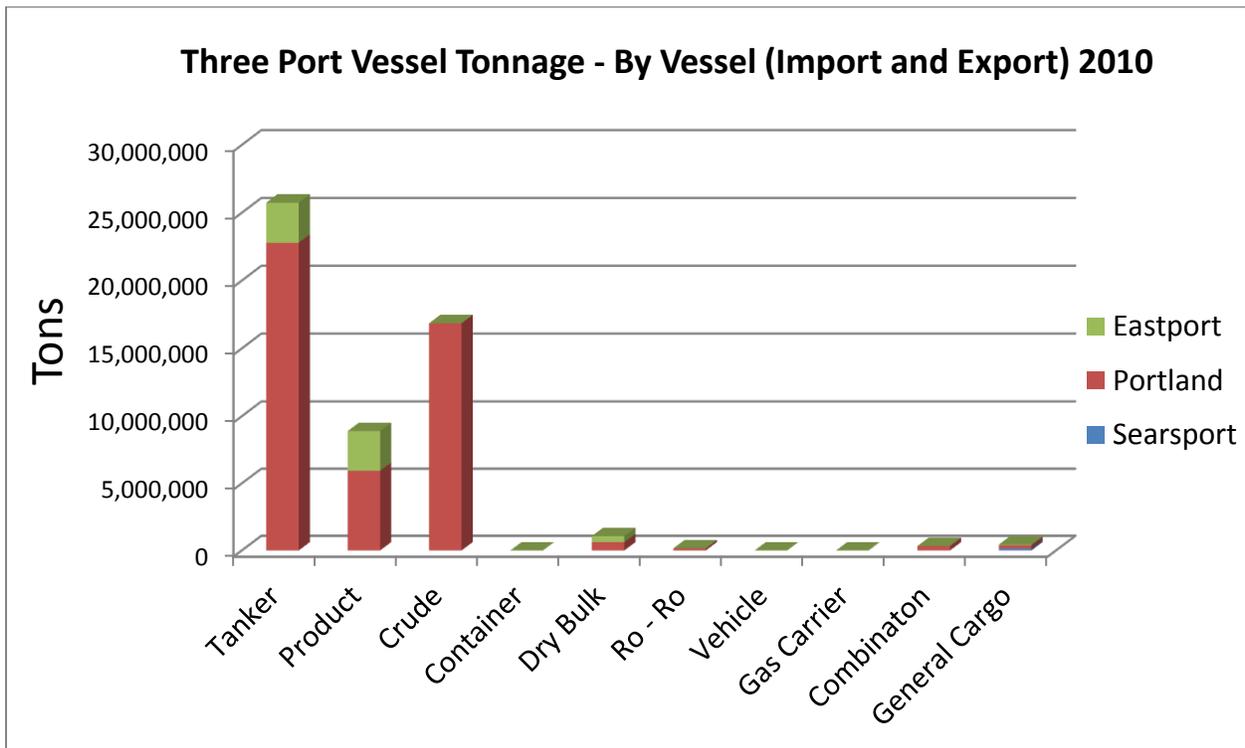
Figure 1 - http://people.hofstra.edu/geotrans/eng/ch3en/conc3en/intermodal_transmodal.html

4. Increased focus on environmental issue and carbon pricing in the future may favor the West Coast route. The reason is that the CO₂ emissions per TEU for a large Panamax vessel hailing West Coast port is only 2/3 of the emissions involved in a trip through the Panama Canal. (Sheffi)

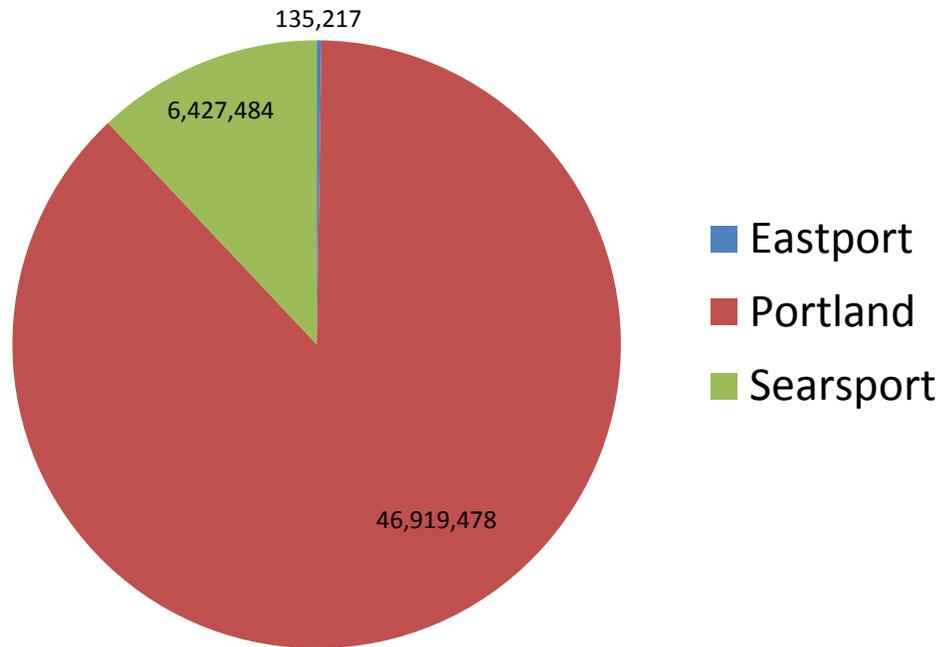
The true effect the expansion will have on commerce is still unknown. However there is no doubt the expansion project will change the transportation flow (air, sea

and land) for North and South America for years to come with the Searsport-Bangor Logistical corridor able to benefit in potentially two different ways.

- If fruition of Maritime Transmodal operations (#3 above) occurs, Searsport may be able to capture the smaller transloaded vessel traffic.
- In addition, the seaport in Searsport is one of the closest to US East Coast - Suez shipping traffic but has failed to capture any significant freight tonnage from this traffic. (see following 2010 tonnage charts) Therefore, the ability to increase the capture of the US East Coast maritime traffic as a result of the Panama Canal Expansion needs to be evaluated. It should be noted that the larger ships capable of transiting the Expanded Panama Canal and their increased cargos may result in the temporary “glutting” (e.g., at or exceeding capacity) of the select ports that can accept these deeper draft vessels. As such, Searsport is ideally situated to capture the potentially displaced marine traffic that either would have resulted in a port being “over capacity” or resulted in the vessel to delay its arrival (i.e., by slowing down or going to anchorage) until the vessel’s cargo could be accepted without exceeding the original port’s capacity.



**Three Port Vessel Total Tonnage Percentage (Import and Export) (in tons)
2010**



Source: "Vessels Calls at U.S. Ports by Vessel Type"
http://www.marad.dot.gov/documents/US_Port_Calls_by_Vessel_Type.xls

Appendix 3 – East-West Highway

Maine’s proposed East-West Highway is a 230-mile, four-lane divided east-west toll highway between Calais and Coburn Gore. It is suggested that the highway be built, owned, and operated by a private investor. It is believed that this proposed project is that it would serve as an economic development project with the potential to stimulate central Maine’s slumped economy. The highway would follow the Stud Mill Road haulroad from Calais to Costigan where it would cross the Penobscot River. From there it would travel northwest, running south of Dover-Foxcroft and Guilford and crossing the Appalachian Trail near Blanchard. North of Blanchard, the highway would transit over logging roads again, following the Shirley Tote Road to Lake Moxie Road to the Forks. West of the Forks, it would follow the Lower Enchanted Road to Grand Falls Road to Flagstaff Road north of Flagstaff Lake. Flagstaff Road connects with Route 27 north of Eustis. The East-West Highway would take 27 to the border at Coburn Gore.

There are many potential benefits that proponents of this project are highlighting. Maine’s current highway system is oriented predominantly north to south, similar to the highway system in Vermont. There are currently no major highway systems that run from the western border to the eastern border of Maine. That being said the “East West Highway” would allow for possible product flow from the coast of Maine to western regions. This could potentially open new market segments for companies in Maine, as well as invite outlying companies to ship their product through Maine en route to other areas of the country. Both scenarios would help stimulate Maine’s economy because goods will be able to be moved more efficiently in and out of the state.

The East West Highway would also provide for fast and easy access to the western Canadian regions. It would allow for easy product flow from Canada into the United States and from the United States into Canada. This could potentially impact the amount of trade between Maine and Canadian markets which could also help to increase Maine’s economy.

Although there are many suggested benefits to this project, it has faced continuous and relentless scrutiny by many different people opposed to the idea. Many people believe that the Highway would bisect northern Maine from southern Maine significantly disrupting the Northern Maine woods. Considering how many industries rely

on the sustainability of the Northern Maine woods, lumber companies, guides, restaurants, lodges, this would in turn affect Maine's economy negatively.

Another argument made against the project is the proposed projected route is located very close to many different game preserves in Maine. Lisa Pohlmann, Executive Director for Natural Resources Council of Maine said that "A new highway would unnecessarily fragment our forests, with adverse impacts to our wildlife, lakes, and rivers". This is one of the major controversies for people that are opposed to the highways because many people feel that they do not want to change the Maine way of life.

Peter Vigue, CEO of Cianbro a staunch supporter to the project stresses his belief that this East-West highway will in fact stimulate Maine's economy. He states the increase in cargo flow into, out of, and across the state of Maine will be beneficial to Maine companies. However, one thing that must be kept in mind with that argument is the fact that Maine shipping companies cannot pick up cargo in Canada, drive it across Maine headed towards an end destination in Canada. According to United States Customs and Border Protection "cabotage" laws, if the an American shipping company is picking up cargo in Canada, it has to be destined for a U.S. end location. Coinciding with that, a Canadian Shipping company can pick up cargo in the United States only if it has a Canadian destined end location.

Many people identify the East-West Highway as a "throughput highway", that is companies are only going to be using it to go through Maine not to Maine. If this is the case then no American shipping company will benefit from this because of the restrictions set forth by Immigration laws.

Sources:

<http://bangordailynews.com/2012/03/29/news/down-east/canadians-told-east-west-highway-through-maine-a-gateway-to-opportunity/>

<http://www.downeast.com/magazine/2012/june/the-east-west-highway>

Appendix 4- Short-sea shipping

Short-sea shipping is viable for Searsport-Bangor corridor providing the weak road and rail conditions and different regulations imposed on them in Maine. However, the recent suspension of the American Feeder Line (AFL) services has reflected the issues existing in Maine short-sea shipping operation. Maine businesses including L.L.Bean, White Rock Distilleries and half dozen of the paper mills have used AFL services to ship and receive the products previously. Since the suspension of the AFL services, companies are reluctant to use the short-sea shipping because of the perceived unreliability of the short-sea shipping industry as a whole. In addition to that, companies do not want to switch their operation to a high-risk transportation mode, having it fail and come back to trucking companies they used to partner with.

In order to build a reliable service to attract customers, the short-sea shipping operation needs to be subsidized by the government initially until it becomes self-efficient. Once the reliability is built and more customers started to use it, the operation could be able to generate enough volume to recoup its operation costs. Another solution is to get large trucking companies to invest in. Short-sea shipping operation may build market share initially by forming strategic alliances with trucking companies who already ship a portion of their cargo via sea. Trucking companies can become partners instead of competitors for the long-haul freight transportation and can further assist the growth of short-sea shipping. The trucking companies also have to convert from long haul to short-hauls, and drayage.

An appropriate sized vessel is also a key to rebuilding the short-sea shipping operation in Maine. The 700 TEUs capacity vessel that AFL used to chart exceeds the needs in volume for Maine. Thus, the AFL could not generate enough cash flow to maintain the operation costs and continue the services. Recently, the U.S. Maritime Administration unveiled 11 vessel concept designs for operation on America's Marine Highway. These vessels in a way will both maximize efficiency while minimizing environmental impact. Furthermore, the Maritime Administration has already signed an agreement with the U.S. Navy, which will provide \$800,000 to the project (Edmonson, 2011). Maine Port Authority is working on the study to develop a new hybrid vessel,

which will have a capacity of 450 TEUs with less manning requirement and lower costs to build.

In conclusion, short-sea shipping is viable for Searsport-Bangor corridor if the government or a trucking company could fund the project and an appropriate sized vessel is used.

Source: Edmonson, R. G. (2011). Marad unveils ship designs for marine highway use. *The Journal of Commerce* , Retrieved from <http://www.joc.com/short-seabarge/marad-unveils-ships-designs-marine-highway-use>

Appendix 5 - Meetings & Tours section

Throughout the year, GLMM have attended and hosted meetings with professionals having expertise in an area of interest pertinent to this report. GLMM began with a briefing at the Eastern Maine Development Corporation office in Bangor. At this gathering a first-hand perspective of the corridor was gained from those directly involved in its development. Those in attendance included employees of EMDC itself, including Jennifer Brooks, the director of business development, Michael Aube, the president of EMDC. Others included Rebecca Hupp representing Bangor International Airport, John Porter of the Bangor Region of Commerce, and David Colter of GAC Chemical Corporation. This meeting as well as the following to be described, gave insight into the political and driving forces behind the development of the Bangor to Searsport Corridor.

Two conferences were also attended, building our experience in issues among industry professionals. The first was “Maine’s Gateway to International Trade” hosted by Maine Maritime Academy’s, Dr. William DeWitt at the Hilton Garden Inn in Bangor. Four Maine professionals presented, beginning with John Henshaw. John Henshaw is the Executive director of Maine Ports, his presentation was titled “Maine Ports: An Improving Resource for International Trade”. The next presenter was Jim Therriault, the Vice President of Sprague Energy, on “Port ‘Customers’: Past, Present, and Future Use of Maine’s Ports”. This presentation was given in cooperation with Craig Starnes of LL Bean. Following was Robert Grindrod, President of Montreal, Maine & Atlantic Railway, in association with Percy Pyne, Chairman of the former American Feeder Lines, presenting “Port Service Providers: Past, Present, and Future Service to Maine’s Ports”. The last presentation of the day was from Gerhardt Muller, a retired professor from the US Merchant Marine Academy, author of *Intermodal Freight Transportation*, and Member of the Columbia University Study Group on “Marine Transportation 2030”, on “USA and World Ports: Maritime Industry in 2030”. This conference allowed the Graduate team to observe and participate in candid conversation about the development of Maine’s ports specifically Searsport.

The most recent conference attended was the Maine International Trade Conference at the Samoset in Rockland. The MITC conference included talks from Dr.

Cesar Hidalgo, Mary Allen Lindeman of Coffee By Design, Sandro Giovanni Valeri of Embraer and as well as panel discussions including Lu Ann Ballesteros of Jackson Lab and Ed Flanagan of Wyman's and sons. The panel discussion broached the topic of "Innovation and Design for Global Markets". This guided conversation allowed GLMM insight into the operations of Maine companies who are currently operating and prospering in Global markets.

GLMM was also able to invite David Cole, commissioner of Maine DOT, and John Henshaw, executive director of Maine Ports, to give private presentations. Both gentlemen presented their point of view of the Bangor to Searsport situation and allowed the team to delve deeper into the situation through a question and answer session following the presentations.

Appendix 6 - Forestry Industry

A New Hampshire based venture capital business, Cate Street Capital, has a subsidiary, Thermogen Industries LLC, which is establishing a site at a mill in Millinocket to produce torrefied wood pellets. They currently have a letter of intent from a utility company in the United Kingdom and hope to have a 10-year contract by the end of the summer of 2012. The utility will use the pellets to co-fire with coal in their coal burning facilities. The company's first production unit is expected to be online by the 3rd quarter of 2013 and will have 100,000-ton/year capacity. They expect to increase capacity to 500,000-tons/ year within the next 2-4 years. The torrefied pellet company is weighing two logistics options for shipping their product to the United Kingdom. Both options utilize bulk shipping from Maine ports to the UK, if the ships departed from Searsport the company could utilize the rail network to move the product from Millinocket to the port. Shipping from Eastport would require trucking the product from the production site to the port. Searsport is uniquely desirable because of the efficiencies offered by the rail presence and infrastructure in place at the port. Cate Street Capital has the potential to provide 500,000 tons of product moving through the Bangor/Searsport corridor per year for at least ten years. (Additional data on the forestry products can be found in appendix 12.)

Appendix 7 - Time Sensitive & Perishable

Questions for Time Sensitive and Perishable Products

1. Do you currently export/import, or trade your products domestically?

- We currently only trade our product domestically through an online website
- We only distribute our product locally
- We do not trade internationally because we are unable to compete with Chinese
- Our products sourced internationally, domestically and locally
- We export to Africa, Asia, and Europe
- We receive raw material from local farms
- We distribute locally and regionally
- Our locally caught product is being processed locally and shipped domestic and internationally
- We currently Export internationally to Asian and Western European markets
- Our product is sold 70% local; 30% regional customers

2. How important is delivery time to your product?

- Our product is typically delivered within 5-8 days
- We do not deliver over thirteen hours as our product's freshness would be compromised
- 24 hrs to Western Europe and 72 hrs to China/Japan before loss of quality occurs
- Very crucial to prevent loss of quality

3. What is the shelf-life of your product?

- Our product must be sold within 3-5 weeks of delivery
- Our product has a two week shelf life
- Shelf life varies depending on storage method
- A certain storage method can keep product viable for several months

4. Through what channels do you distribute your product?

- We utilize a local Supermarket distributor
- We sell our product through a farm stands
- Wholesalers and distributors out of state
- Canadian wholesalers
- Asian and Western European Wholesalers and Distributors

5. Where is your product processed/packaged?

- Package and process in Portland ME
- Typically packed locally, trucked to Boston or New York, then shipped via air to market destinations
- Production Located in Maine and California, California services US WC and Far East
- The product is grown at our facility in Maine and processed within one day
- Product processed in Bangor

6. What is your preferred method of shipping? Why?

- Uses priority mail flat rate boxes, and can send cranberries in 5, 10, and 20 pound batches
- Packaged in a typical cardboard box with plastic liners, and are rarely damaged
- Uses private truck to carry product
- Dispatch one truck/week to West Coast from Maine, no backhaul demand for Maine
- Utilize private FTL Transport full truckloads to Distribution Center's 3-4 times a week
- Uninterested in alternative methods of shipping, as this method 'works for them'
- Utilize containers out of Boston, New York, and Quebec.
- Do not ship by air because of the high cost and lack of volume, both domestic and international
- The only use refrigerated trucks, via 3PL dispatched weekly or bi-monthly dependent on destination

7. Do you use a 3PL or freight forwarder?

- We use a 3PL's to ship our product
- We do not use a 3pl because we do not have the volume
- We use UPS and USPS because of our small volume

8. What city/port/airport are you sending your products in/out of? Why?

- Currently ship our entire product inbound and outbound through Halifax because Halifax is the closest, active container port
- Utilize containers out of Boston, New York, and Quebec
- We truck product to Boston or New York, then shipped via air

9. What packaging constraints and requirements affect your product and or shipping method?

- The product is packaged in either refrigerated LD3s or specially made pallets with wax encasements, dry ice, and insulating foam. The LD3 can hold 2600 pounds of product. Portland and Boston are seeing decreases in the amount of wide body cargo flights, which are the planes needed to accommodate the LD3 and pallet freight. Shipping perishable product in a passenger plane as belly cargo is not as successful and often ends with product losses
- Fresh product is degraded when using refer trucks
- Need to consolidate cargo, do not produce enough volume alone
- Shipped in bags, totes, or boxes
- Product must be delivered in 1-2 weeks
- Product is shipped in cardboard boxes inside of a multilayer bag designed to preserve freshness with a one-way valve.
- The product is packaged in either refrigerated LD3s or specially made pallets with wax
- Inbound refrigerated goods received on pallets

10. Where do you see your company geographically expanding to in the future?

- We think that international trade is too complicated and too expensive for our small operation
- We are uninterested to change their current practices at this time
- Not looking to expand domestic or internationally
- New foreign markets
- Asian markets that are currently not being fully utilized

11. What products do you see your company expanding into?

- Currently cutting back on products
- Value-added specialty products

12. What infrastructure do you need if you were to use the Bangor airport?

- Could not see any advantage to using a freight corridor through Bangor
- Majority of activity and assets are located further down the East Coast, would not see benefits from corridor
- Freight consolidation facility near airport with climate controlled (cold not hot) warehouses
- Live seafood holding tank facility near airport

13. What's missing?

- Need active container ports that can be easily accessed
- Competitive pricing and special services
- Bangor has more than enough capacity to handle the largest cargo planes, but lacks the inbound/outbound transportation network to feed the flights, particularly the road network and trucking fleet needed to move lobsters from a plethora of coastal communities to a central location.

14. What are your constraints?

- Rail inefficiencies in Maine defer us from utilizing this mode
- Air is too expensive for our operation
- Product cannot be refrigerated and needs to be moved quickly

- Can see use for air cargo, BGR-Europe opportunity

Appendix 8 – Current Maine Trade Statistics

Current Maine Trade Statistics:

Maine Perishable/Time-Sensitive Product Exports for 2011(percentage monetary value): Total 10.1%

- Lobsters (Live/Fresh) – 6.2%
- Potatoes (Prepared) – 1.2%
- Bovine Animals (Live) – 0.9%
- Salmon (Fresh, Frozen, or Chilled) – 0.6%
- Mollusks and Bi-valves (Live, Fresh, Frosen, or Chilled) – 0.6%
- Blueberries and Cranberries- 0.6%

Maine Exports breakdown for 2011(percentage monetary value): Total 52.7%

- Electronic Integrated Circuits – 21.2%
- Civilian Aircraft, Engines and Parts – 7.4%
- Chem Woodpulp, Soda Etc – 7.1%
- Paper, Paperboard for writing & printing – 5.2%
- Paper, Paperboard, Cellulose wadd – 3.6%
- Amplifiers, Electronic Integrated Circuits – 3.0%
- Coniferous wood in the Rough – 2.8%
- Processors & Controllers, Electronic Integ Circuits – 2.4%

Maine Exports breakdown by Country for 2011:

- Canada – 32.4%
- Malaysia – 26.8%
- China – 7.9%
- UK – 3.7% (115% increase from 2010)
- S Korea – 3.7%

State exports for Maine. (2012, Feb 12). Retrieved from <http://www.census.gov/foreign-trade/statistics/state/data/me.html>

Maine Imports for 2011 (percentage monetary value): Total 26.7%

- Airplane & OT A/C, Unladen weight > 15,000 KG – 17.3%
- Chemical Wood-pulp, SODA ETC. N DIS S BL & BL CONIF – 4.3%
- Footwear, Outer Sole RUB ETC & Leather Upper NESOI – 1.3%
- Paper & Paperboard, UNCOATED, >10% MECH.FIB.,ROLLS – 0.9%
- Generating Sets, Electric, Wind-Powered - 0.8%
- Solid or Crushed Tires, Interch Threads, Flaps, Rubber - 0.7%
- Mens & Boys Shirts & Trousers, not knit, Cotton (combined) – 1.2%
- Sweaters, Pullovers, etc, not knit, Cotton – 0.6%
- Electronic integrated Circuits, Nesoi – 0.5%

Maine Imports breakdown by Country for 2011:

- Canada - 47.5%
- Germany – 19.3% (436% increase from 2010)
- China – 8.6%
- UK – 3.1%
- Netherlands – 1.8%

State imports for Maine. (2012, Feb. 10). Retrieved from <http://www.census.gov/foreigntrade/statistics/state/data/imports/me.html>

Maine Freight by Mode:

- Air 0.4%
- Water 5%
- Rail 8%
- Truck 87%

Appendix 9 – Industrial and Consumer Products

Questions for Industrial and Consumer Products with responses:

1. What do you currently use for modes of transportation for inbound raw materials, components and outbound finished products? Why?

- Uses LTL trucking (Fed-Ex), ocean and air. Mode of transportation is determined by destination, and criticality of the
- LTL trucking (Fed-Ex), Air Freight (80%)
- Inbound and Outbound Transportation composed of rail & truck
- Inbound is all by truck, as quantities are typically LTL. Trucking is less expensive than rail
- Currently has no product to ship. For the future they will look at trucking for inbound raw materials and trucking and barging for outbound finished goods
- We use all modes, Ocean for overseas, LTL & airfreight. Very little rail and it is typically brokered. Truck from Midwest, Boston utilized for airfreight. Boston and NY for ocean.
- Uses full truckload, air freight Federal Express
- Most all transportation in by over the road trucks. We used to use rail when we were located in town for raw materials, but we have no rail siding now.
- We use our own truck fleet for finished goods delivery domestically
- Internationally we use a container port in Newark as container ships leave direct to shipping sites most times.

2. Are you thinking about changing modes? Why?

- We are not looking to change mode because we have a department that handles our logistics movement
- Will not change mode of transportation
- Looking at opportunities in intermodal, to include bulk and containerized cargo
- Not on inbound
- Looking at truck and barge opportunities
- Currently satisfied, but looking at ways to improve

- Yes, would prefer to use rail for the FTL, Rail service in Maine currently does not meet our schedule
- We would love to have the Searsport container port opened

3. What is the volume of your company's imports or exports: by tonnage/units/truckloads?

- Receives daily LTL shipments, would not disclose the volume
- Daily LTL Shipments
- 20 – 30 TEU's every other day
- Currently shipping weekly to Western Canada and Eastern Canada, Chile is just starting
- Not currently producing
- 5-10 containers/week international. 5-10 truckloads/week domestically
- Import and export equate to less than 1% of our volume
- We are currently shipping a container every 12 weeks. However, it appears that will become as frequent as once a month by the end of 2012 and once a week by the end of 2013

4. Are you looking to expand your geographical market? Why?

- Global operation, this is strictly manufacturing
- Global operation
- Current limited global operation, looking into opportunities in the Far East and emerging markets
- Always. Good business practice to have markets in different economies.
- Looking at potential in European market
- We are unsure about this
- We can not disclose this information
- Yes, both domestically and internationally. Companies need to grow or die.

5. Do you ship internationally? Where?

- Ships globally, logistics not handled at this production facility
- Hong Kong, Philippines, Indonesia
- Korea and India
- Canada...Chile just starting
- Looking into Europe
- Dealer network in all industrialized countries
- Canada - part of our fabrication process or repairs to existing units.
- Yes, South America

6. How frequently do you receive raw materials and distribute your finished products?

- Daily
- Daily Shipments – LTL
- Weekly
- Daily distribution of finished products
- Daily
- We are not currently producing
- Raw materials received daily, finished product is one unit per year
- Raw materials arrive by truck several times a week (3-5). Finished goods are delivery daily on multiple trucks. We send out about 1000 trucks a year

7. Could your company meet the increase of demand if you were to enter a new geographic market?

- Yes
- We are not looking to expand
- No
- Plan on increasing capacity by 20% this year
- We have the ability to increase when production begins
- No need to expand
- Not without growing our fleet, drivers and sales people. However, we do have

plenty of factory capacity

8. What percentage of your costs goes towards logistics?

- 3.5%
- 5%
- 15-18%
- 3-5%
- 5-10%
- Estimated to be 4% for all programs

9. Would you consider consolidating cargo to get a better rate?

- Yes, frequently consolidate cargo
- Depends on Strategy
- Yes, but it is driven by a customer requirement
- No, we do not have enough volume
- Potential for cargo consolidation with other producers to decrease shipping costs
- Yes, we currently do as much as possible
- Yes, this is our current business process
- If a cargo company could be found that caters to our industry needs and has a similar approach to customer satisfaction I'd be happy to move in that direction. We have regular issues with many common carriers

10. Could you benefit from local customs clearance at your port of entry?

- Does not see the benefit, we already has an a internal system in place to handle this without adding resources
- We utilize FedEx and other freight forwarders take care of customs
- Yes see benefits.
- Sees benefits of local customs clearance.
- Yes
- Unknown benefit

- Maybe
- Not at the present time
- We do not import many materials, so I don't believe this would help us specifically

11. Would your company benefit from a FTZ or a bonded warehouse?

- I'm not sure what this is or how it could help us
- No advantages in the U.S. No need for a bonded warehouse. We currently utilize a FTZ in Asia
- Yes, they could benefit but their volume is too low
- Yes
- Unknown benefits
- No
- No, not at the present time
- No

12. Would the East/West Highway benefit your company if put in place?

- It could potentially reduce shipping time/costs from some of our suppliers, and to some of our customers
- Not sure, depends on where the shipments are coming from
Source locally – West Coast, North East, Midwest, everywhere
- Not sure, might open up the Upstate NY area.
- We could benefit from the highway with receiving raw materials from Canada or the Midwest. Also opens up potential markets in the Midwest to sell to.
- No
- It would have a minimal impact on our operations
- Yes

13. If the port of Searsport had the necessary infrastructure and regular shipping

schedule to other major ports, how would you utilize it?

- We may use this to reduce shipping time and costs between us and some of our suppliers and customers
- No we would not
- We would utilize on domestic side. Need Jones Act ships. Over the road transport is tough. Containerized if shipping domestics.
- It could aid with South American Trade
- Yes, we could utilize the port for exports to Europe or South America
- If cost savings were there it would be considered.
- No we would not
- Yes!

14. If there were more consistent/reliable transportation to the Midwest, how would that help your company?

- It could potentially reduce shipping time/costs from some of our suppliers, and to some of our customers
- No, not an option as our goods are of too much value
- Yes, Especially with Rail
- It would improve shipments from suppliers in the Midwest
- Could aid with sourcing raw materials
- Maybe, Currently broker all rail use
- It will have a minimal impact on our operations
- Yes, many of our suppliers come from that area of the country

15. How would decreased transportation costs due to enhanced infrastructure between Bangor and Searsport benefit your company?

- It could potentially reduce shipping time/costs from some of our suppliers, and to some of our customers
- It would help increase our bottom line

- It would help the bottom line from a cost stand point
- We would be more aggressive on international markets beyond Canada
- It would have a minimal impact on our operations
- It would aid in transportation of goods to eastern and northern Maine

Appendix 10 – Third Party Logistics, Transportation Providers & Other Industry Interests

Question: If a logistics corridor existed between the Port of Searsport and Bangor would your company/industry utilize it? All available responded with a resounding, “Yes!” How it would work was a harder question to answer.

- We are interested in an upgraded logistics corridor. Our current operations are limited by the rail carrier’s inconsistent service runs and failing infrastructure. Our previous attempts to access air cargo capabilities out of Bangor had been discouraged.
- We foresee challenges with seasonal traffic restricting truck and rail access into the facilities located at the waterfront
- Our core capacity is generated from south of Augusta, therefore a logistics corridor in Eastern Maine would not benefit us
- We believe that incoming commodities could use such a corridor in the Searsport-Bangor area
- We believe that the corridor needs rail access, clean warehousing, consistent OTR capacity, and a consistent, experienced, and cost-effective labor force
- We question the sustainability of the corridor given the other busy ports in the Eastern US as well as Eastern Canada
- We would be willing to use the corridor provided it was beneficial to the end customer
- We believe that an intermodal facility would be beneficial to streamline logistics within the corridor
- We are concerned with Maine Rail traffic speed and condition
- We believe that the infrastructure exists and the main need is for road maintenance
- We believe that the facilities in Searsport are not lacking, but the demand is
- We do not see benefit for East/West Highway
- We believe there is a problem with shortage of rail cars in the area

- Noted railroads have continued to fragment into smaller regional operators (Pan Am, MMA, MNR, SLR, NBSR, etc.) resulting in significantly less rail transportation efficiency, this would need to improve before we utilized the corridor
- Our largest concern with the Corridor is relying on the railroad as the centerpiece of this system
- We believe that the Maine based rail line is the true limitation of this system
- Maine's rail infrastructure is aged, in disrepair, in financial ruin, and not prepared to seize the opportunity and make this idea a winning proposition
- We currently use trucks to avoid certain rail lines due to delays and confusion from the rail provider
- We were previously utilizing air cargo services out of Portland until the operations eliminated
- We currently work mostly out of the Boston and New York because rates are more cost effective
- We believe that the lack of consistent volume of cargo moving through the area prevents the rail lines from maintaining consistent scheduled service runs
- We believe that Searsport would need a staging area available for the rail services in order to stage the trains near the port without interfering with traffic
- We believe that the port is currently lacking the infrastructure necessary for transferring bulk cargo from rail to a vessel efficiently in a high volume
- We believe that Maine should focus more how to better compete against the Canadian ports by utilizing the natural advantages in Searsport
- We believe that improvements in the rail system would increase demand in the area
- We believe short-sea shipping would be a beneficial if the corridor exists and the infrastructures are in place between Bangor and Searsport

Appendix 11 - Strategic analysis for Searsport-Bangor Corridor

		Items	Comments
Internal	Strengths	<ul style="list-style-type: none"> • Location • “Developmental Infancy” • Diverse Modes • FTZ 	<ul style="list-style-type: none"> • Proximity to Europe – one of the closest port in US • Rail and air infrastructure proximity to Midwest of U.S. • Ice free, short run-in, protected, light traffic, water depth (35’ at low tide) • Land available for those interested in port investment • Improvable infrastructure • Connection to Rail, Air, Ocean, and Land • Incentive for Imports (backhaul) • Advantages for import final assembly or value added manufacturing for export
	Weaknesses	<ul style="list-style-type: none"> • Location • Limited Capabilities • Limited Customer Base/Exposure • Route 1 Congestion • Rail Spur • Allocation of Funds • Fragmented Ownership 	<ul style="list-style-type: none"> • Removed from arterial transportation infrastructure • Cargo handling equipment is limited (other than liquid bulk) • Ineffective marketing/ exposure • Few established customers • Increased traffic and potential congestion (seasonal) • No “continuous train” capabilities (loaded/unloaded in sections) • Inability to build complete unit trains • Capacity of corridor is limited to one train • Three port strategy limits funds available to Searsport • Multiple owners, unclear investment responsibilities

External	Opportunities	<ul style="list-style-type: none"> • Location • Biomass Forestry Industry • Europe • Short-Sea Shipping • Land • Niche Market • Job Creation & Economic Growth 	<ul style="list-style-type: none"> • Backdoor to population/manufacturing centers (avoid congestion of other busy ports) • Growing market, be an early mover and take advantage of Maine's resources & location • Increasing demand for biomass fuel in Europe • Increase waterborne trade to Europe • Decrease road traffic (East coast is highly congested) • Decrease length of haul for trucking companies • There is a lot of undeveloped land around the corridor • Expensive fees from port of New York and Boston may drive customers away
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	Threats	<ul style="list-style-type: none"> • Lack of collaboration between rail companies • Three Port Strategy • Lack of Communication/ Collaboration • Community Concerns • Competition 	<ul style="list-style-type: none"> • Maine rail carriers lack collaboration to the detriment of Maine • Foreign private company, is a large stakeholder for Northern and Eastern Rail • Government intervention over funding and allocation • Spreading funds to marginally help three ports is making it difficult for even one port to be competitive • Ineffective transition between modes • Companies do not communicate with transportation providers and vice-versa • Alone, companies cannot create the volume needed to make the corridor successful • People Against Virtually Everything: The “no change” attitude could stop the process before it even starts • Established ports such as Saint John (N.B.) and Halifax (N.S.)
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Appendix 12 - Biomass Fuel Producer

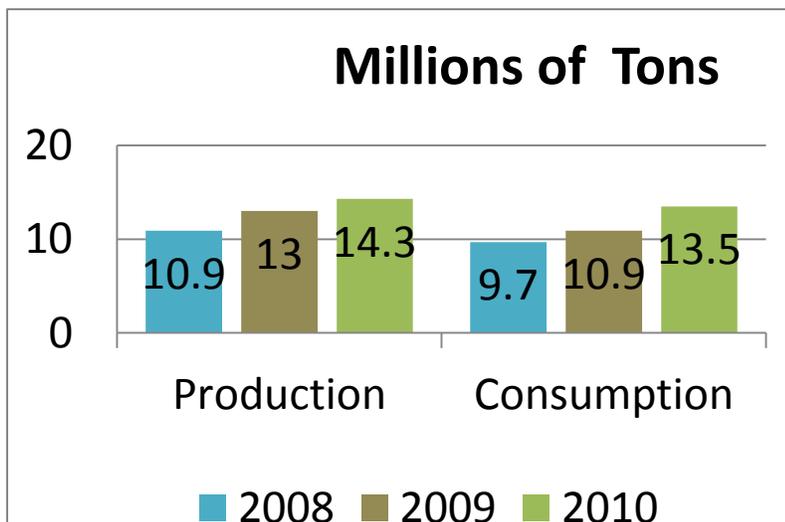
Information from this section is annotated from a previous project completed by the Graduate students.

Demand for Biomass Products

All information cited in this section was taken from one source:

Cocchi, Maurizio. "Global Wood Biomass Industry Market and Trade Study." IEA Bioenergy. Version 1. International Bio Energy Trade, 1 Dec. 2011. Web. 24 Apr. 2012. <www.bioenergytrade.org/downloads/t40-global-wood-biomass-market-study_final.pdf>.

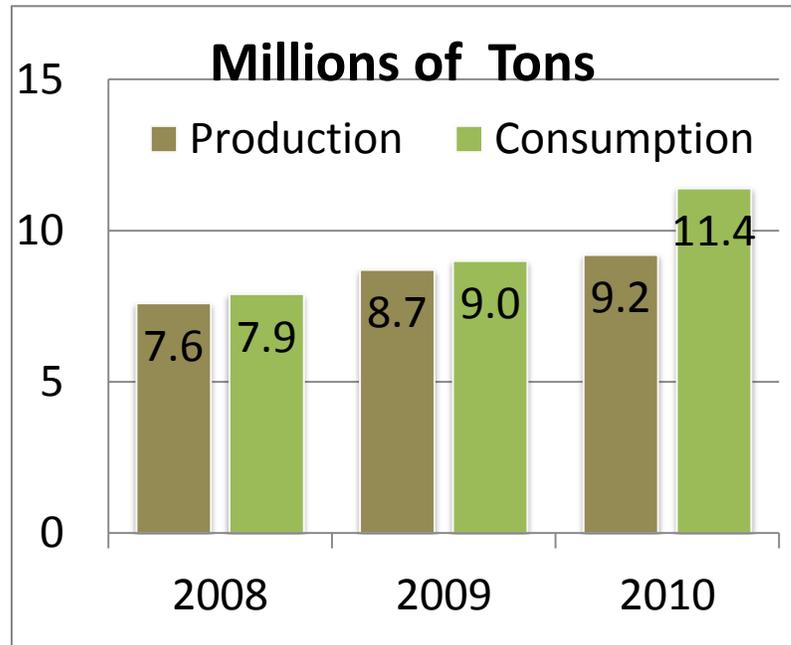
The wood biomass industry is thriving among the world fuel markets. Biomass wood biomass have seen a consistent increase in production, global consumption and capacity. In the past three years, countries located in North America, Europe, Asia and the Middle East have continued to grow their wood biomass industries.



In recent years, as shown in Figure 1.1, the biomass industry has continued to grow. Biomass capacity, which is measured in tons, has increased dramatically between the years of 2008 to 2010. The world's production has also seen steady growth from 2008 to 2010. These two facts,

combined with the slow but steady increase in consumption, points to a promising future in the global wood biomass industry. It should be noted that over production of biomass could create market saturation, negatively affecting the biomass market.

Among the different wood biomass producing and consuming countries, Europe stands within the top ranked in the industry. From 2008 to 2010 Europe's consumption of wood biomass increased by 43.5%. In 2010 Europe's consumption in tons reached nearly 11.4 million, as shown in Figure 1.2. Europe accounted for 85% of world demand in 2010. Although



Europe has a thriving biomass production industry, their production in 2010 only satisfied 81% of their consumption demand. The gap between Europe's production capacity and their consumption needs has been steadily increasing over the past few years. The larger the gap between production and demand the greater the potential for market share from outside suppliers, like Biomass Fuel Producer.

There are many factors that have led to the world's increase in biomass production and demand. Different markets have started to emerge in the biomass industry. The use of co-firing with industrial biomass, a process used for combined heating and power, is a market segment that has shown potential in demand in the biomass industry. This emerging market is a promising opportunity for companies, like Biomass Fuel Producer, seeking to enter the industrial biomass market.

Supply of Biomass Products

After researching the Canadian biomass market, it was found that Canada already produces a surplus of wood biomass and have several biomass production facilities along Maine's border (biomassmagazine.ca). At this time, Canada is not a viable market for Biomass Fuel Producer's product, but may be in the future if

biomass can be produced and transported more efficiently than Canadian production costs.

Biomass Fuel Producer's manufacturing facility at the facility, on the broadest scale, will face intense competition from both domestic and international manufacturers. Domestic competitors have the advantage of a pre-established supply chain. They already possess production facilities, resilient distribution channels and relationships, and have a pre-established customer base. The Southeastern United States has highly efficient mass producers of biomass who control a large share of the domestic and international market. Their success limits the ability of Maine companies to compete on a national and global scale.

Logistics Recommendations

Hopper Barge

The facility should look into the purchase of a covered hopper barge with reclaiming and discharge capabilities. The barge could be utilized as storage for the production facility. It could lower transportation costs to area facilities and potential customers in the targeted market. Low cost access to isolated coastal and island communities would be an additional added benefit. Grant money may be available for the funding of the barge, for the purpose of island delivery.

Cargo Consolidation Plan

The company should look into potential cargo consolidation programs with other biomass manufacturers to accumulate enough cargo to provide bulk shipments to Europe or other parts of the United States. This could also include other biomass product consolidated into one shipment.

Mutual Collaboration

Mutual collaboration is the concept that two or more companies collaborate to gain an advantage within the market. Normally, mutual collaboration is used by companies with non-competing products, by sharing information or working together on

specific tasks. For Biomass Fuel Producer, it may be beneficial to look into a mutual collaboration effort with competitive products, such as wood biomass, wood chips, and torrefied wood. Mutual collaboration with these competing products could give Biomass Fuel Producer and their collaborators advantages on shipping costs. Due to Biomass Fuel Producer's limited production capacity, filling a trans-ocean ship with their product is unlikely. It would stand to reason that it would be beneficial to work with another company (other companies) to fill a ship. By combining cargo, these companies could split the transportation cost based on cargo percentages. For example, if Biomass Fuel Producer is utilizing 20% of the ship, they should cover 20% of the freight cost.

Appendix 13 – Regional Maps

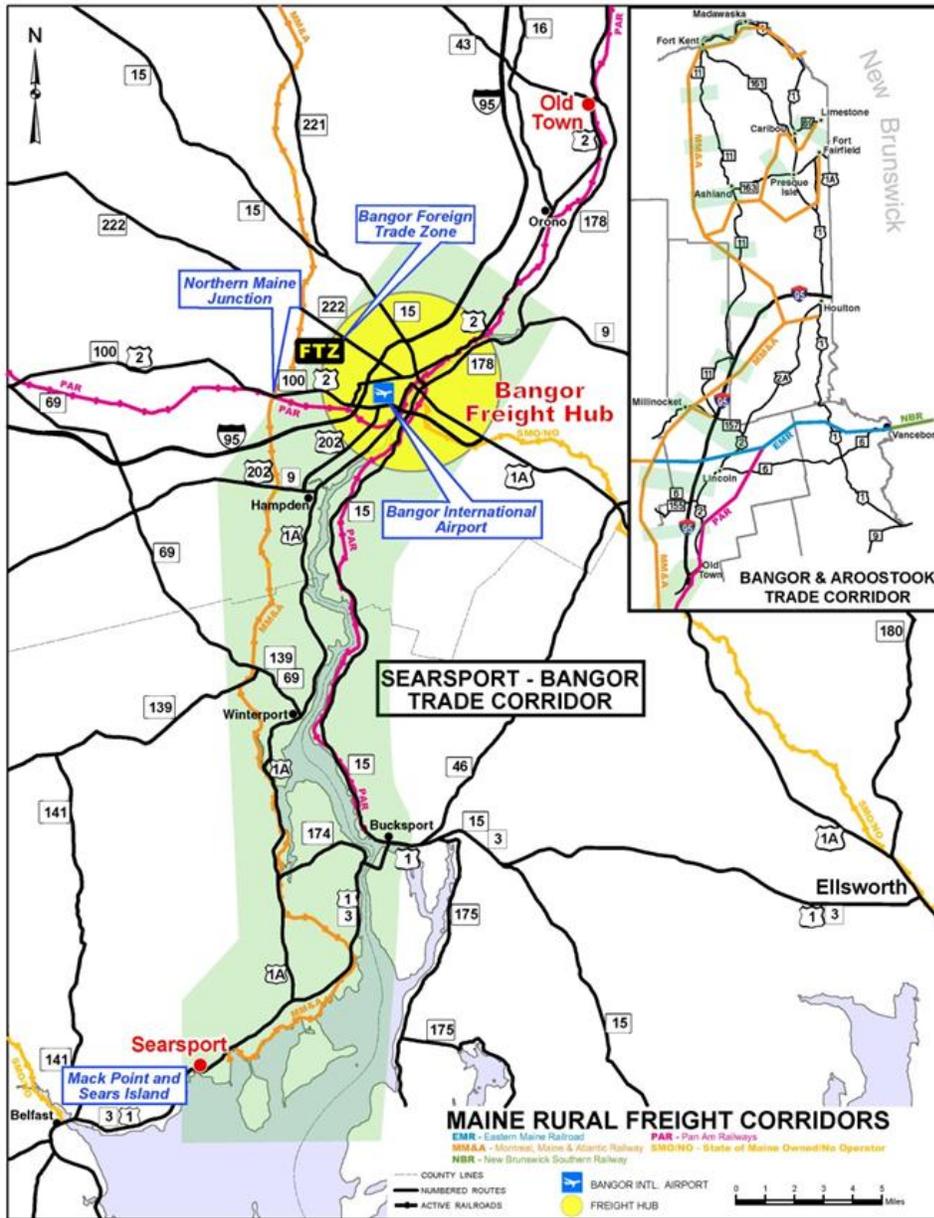


Figure 1. Source: Maine DOT

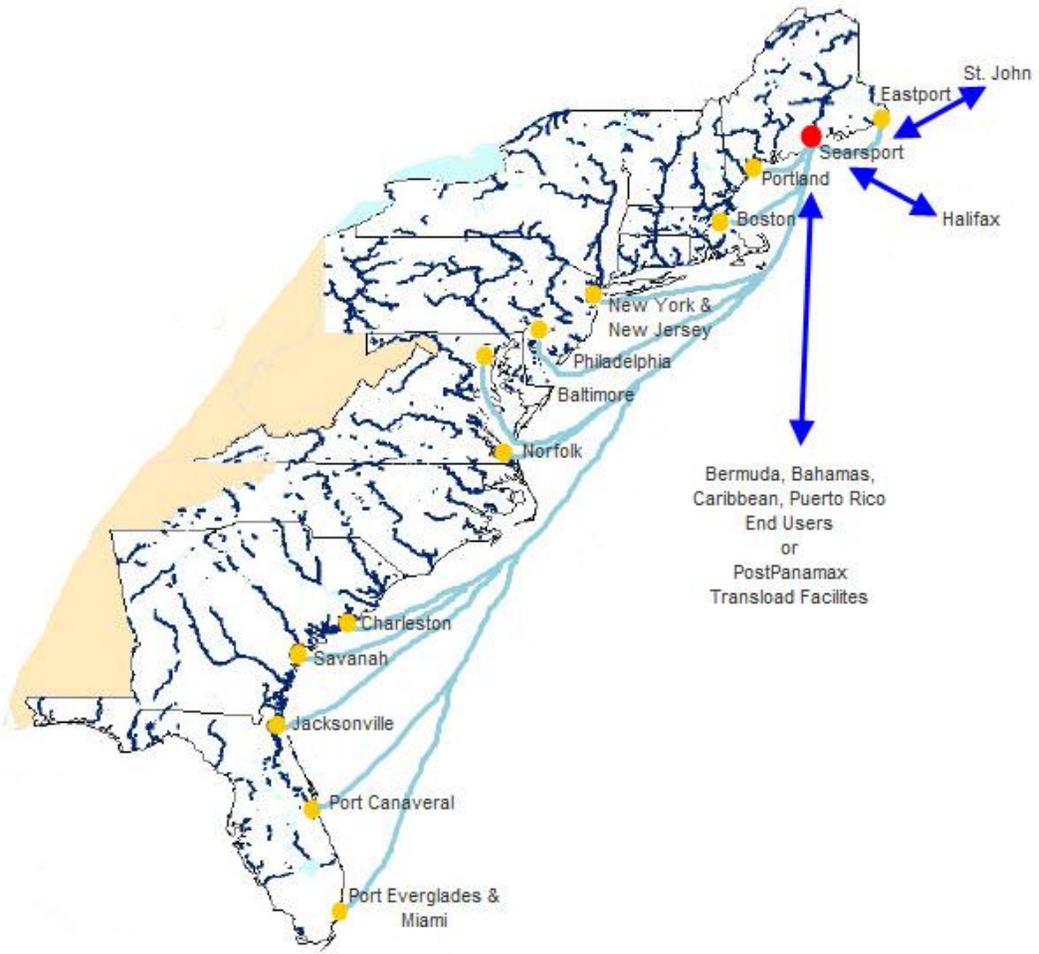
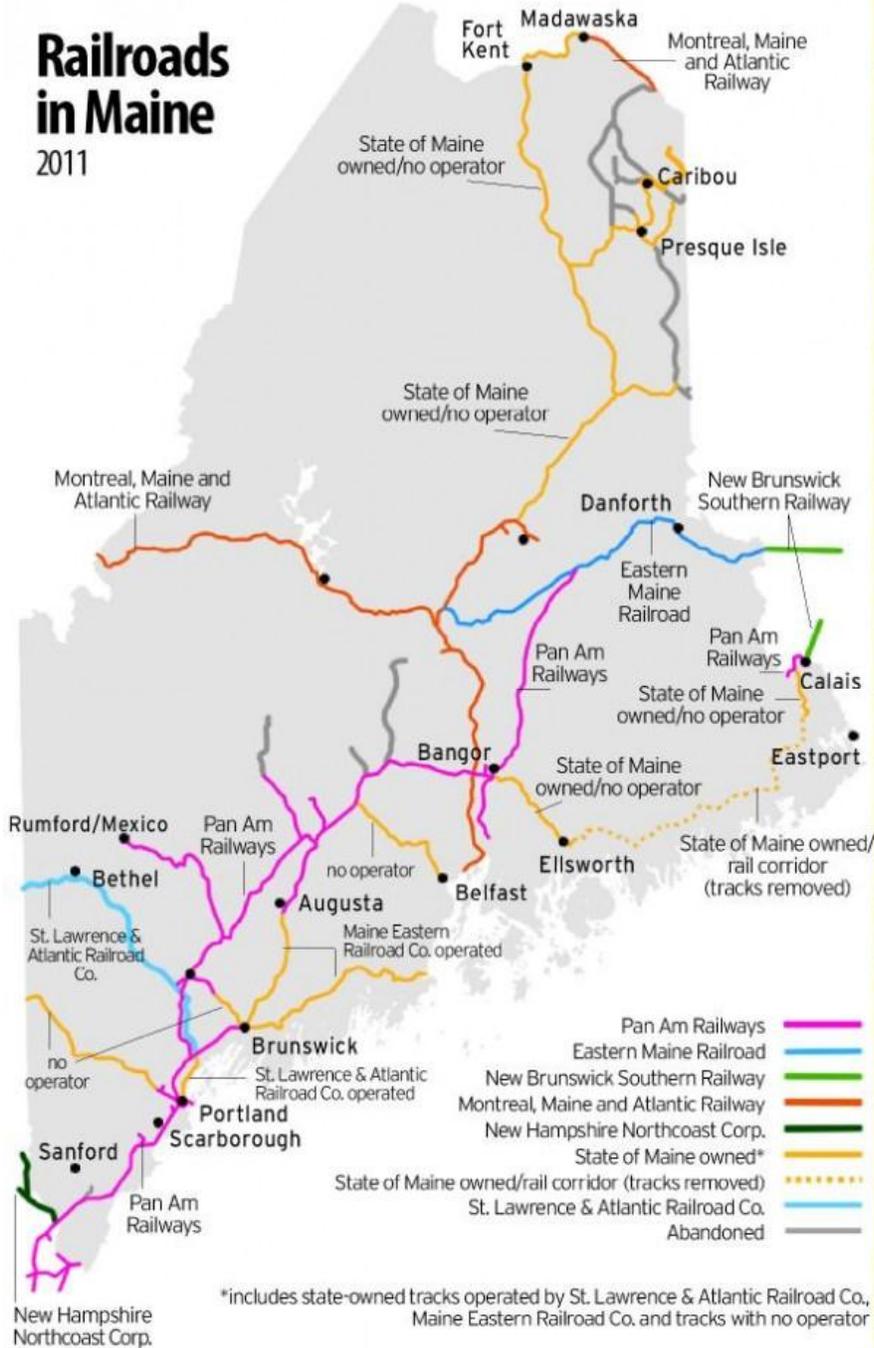


Figure 2, Edited by Lance Burton

Railroads in Maine

2011



SOURCE: Maine Department of Transportation

BDN MAP BY ERIC ZELZ

Figure 3



Figure 4, Source: John Henshaw



Figure 5, Source: CAN-AM Connections Study



Source: Cianbro Corp.

STAFF GRAPHIC | MICHAEL FISHER

Figure 6

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