

Evaluation of Logistics Led Economic Development

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Final Report

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Florida Department of Transportation

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DISCLAIMER

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the State of Florida Department of Transportation.

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The authors' thanks are due to those employees of the logistics activity centers (LACs) who were interviewed during site visits for their valuable inputs on the success factors of their LACs. The LACs visited were as follows (specific employee names were not included for privacy reasons): Alliance Texas (Fort Worth, TX), Centerpoint (Joliet/Elwood, IL), KC SmartPort (Kansas City, MO), Centerpoint (Kansas City, MO), Union Pacific's Global III and IV Intermodal Terminals (Rochelle, IL), Port of New York and New Jersey (New York, NY), and Port of Savannah (Savannah, GA).

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EXECUTIVE SUMMARY

Project Objectives

Freight mobility, trade, and logistics are essential elements of Florida's economic success; not only for fulfilling the growing high demand for goods, commodities, and services in Florida, but also for driving the state's economic development and competitiveness. Its importance as a driving force for maintaining and creating jobs, and fueling economic development has increasingly been recognized by various local, state, and federal transportation programs in the United States. Despite state, regional, and national level efforts to foster logistics led economic development, there has not been much insight into the factors that influence the success or failure of these investments. This research aimed at filling this gap by examining the success and deterrence factors of logistics activity centers (LACs) by means of a multiple methods research, including an extensive review of the literature, case studies through site visits of selected LACs, and a freight/logistics investment survey of all U.S. state departments of transportation (DOTs). In this report, the term logistics activity centers (LACs) is used to steer away from the apparent lack of consensus on a precise definition for some of the commonly used terminologies such as intermodal logistics centers (ILCs), logistics clusters, satellite marine terminals, multimodal logistics parks, inland ports, major distribution hubs, etc.

Literature Review and Expert Task Group

An extensive review of the literature was performed to provide a background on previous studies such as freight movement plans, studies, and investments made by selected states and countries. It is categorized into three components: (1) Florida's freight mobility and trade studies; (2) Freight plans/studies by other states, and; (3) A review of intermodal logistics centers (ILCs) and inland ports.

In the first stage of this research, a list of factors which could influence the potential success or failure of an LAC was determined based on an extensive literature review. These factors were grouped into five major categories: (1) strategic location, (2) economic incentives for development, (3) champion, (4) government support, and (5) other factors; they were then applied to evaluate LAC sites identified in the literature. These same factors were investigated later, when the project team conducted site visits of major LACs in the country. The full version of this literature review can be found in Appendix A of this report.

An Expert Task Group (ETG), composed of representatives leading the logistics planning aspects of large corporations, was formed to discuss distinct characteristics of successful LACs and how similar practices could be adopted in Florida. Suggestions drawn from the ETG meetings were used to guide the research design.

Freight and Logistics Investments Survey of the State Departments of Transportation in the U.S.

A nationwide survey was conducted among all 50 U.S. states to collect information regarding strategic investments and initiatives in freight and logistics sector within the past several years.

The focus was on the economic development impacts of these freight/logistics projects and initiatives through attracting businesses and employment growth in existing or new industries.

Within Florida, the survey was distributed directly to all FDOT District Freight Coordinators. To contact the remaining 49 states, the survey was distributed through the American Association of State Highway and Transportation Officials (AASHTO) to State Freight Coordinators, members of the AASHTO Subcommittee on Highway Transportation, and members of the AASHTO Subcommittee on Rail Transportation. Twenty-two states (44%) in the U.S. responded to the survey. In most cases, respondents were from the state department of transportation and represented a variety of division offices such as transportation planning, rail, multimodal, and harbors and waterways. A response was also received from a state rail development commission. Survey respondents were contacted with follow-up questions to the survey responses as necessary and some responses were augmented with information found on the internet regarding specific projects within survey responses.

Completed surveys by state DOTs revealed limited knowledge of freight/logistics-focused projects and their economic development benefits. Specific projects that focused on economic development had little to do with several state DOTs, and were more closely associated with private corporations or other state agencies. Most freight/logistics project evaluations of state DOTs are based on mobility improvements such as reductions in travel time and congestion. Only a few of the evaluation methods include economic development and attraction/retention of businesses and jobs. In one response, state funds that were distributed for projects had a requirement that the project must result in the creation of new jobs and/or the retention of existing ones.

Deterrence factors included the vulnerability of some tenant businesses and, therefore, project investments, to the fluctuation of the economy. For example, Louisiana noted that longstanding businesses such as oil and gas were able to withstand economic downturns whereas fledgling businesses catering to alternative energy sources were not found to be as resilient.

One notable deterrence factor in funding economic development driven projects is the lack of overall funding. Unstable funding at the federal level has made it difficult for many states to keep up with traffic growth and system maintenance, thus leaving no additional funding for infrastructure investment. The lack of investment in transportation infrastructure has taken a noticeable toll on the economy as noted in Brun et al. (2014). A favorable business case along with private investment is sometimes necessary to justify public investment. One state, Arizona, is prevented from using public money to benefit private businesses by the “gift clause” in the Arizona Constitution.

Validation of Success Factors through Case Studies

Seven case studies were performed to validate the success and deterrence factors obtained through the extensive literature review and to potentially uncover additional factors. The case studies included site visits and personal interviews with representatives of selected LACs throughout the United States: Centerpoint, Joliet/Elwood; AllianceTexas, Fort Worth, TX; CenterPoint, Kansas City, MO; KC SmartPort, Kansas City, MO; Union Pacific’s Global III and

IV Intermodal Terminals, Rochelle, IL; Port of NY and NJ, New York, NY; and Port of Savannah, Savannah, GA.

Once the site visits/interviews were completed, their corresponding discussions were transcribed and analyzed. The success factors that resonated in the case studies were compared to the success factors found through the literature review to validate and/or augment the latter. The compilation of success and deterrence factors obtained in the LAC site visits and interviews were found to match closely with those found in the literature review. Drawing upon information obtained from the individual site visits and literature review, a list of success and deterrence factors were grouped into five major categories: (1) strategic location; (2) economic incentives for development; (3) champion; (4) government support, and (5) other factors. However, additional success factors were identified by the LAC executives during site interviews. These include logistics work force development/education in the region, innovation/technology level of the LAC, importance of public-private partnerships (P3s) in the region, counties/cities/state governments offering out-of-the-box saving packages for LACs, and the importance of value added services (e.g., light manufacturing) being located in the close proximity of the LAC.

Conclusions and Recommendations for Florida

A list of recommendations, specific to Florida, was compiled by using information gathered from the LAC site visits and literature review in conjunction with the nationwide survey responses. These recommendations encourage the formation of a sustainable coalition between Floridian organizations, the presence of government incentives for new businesses, support for public-private partnerships (P3s), and clarification of freight mobility and economic development intentions throughout transportation planning documents, amongst many others. A list of recommendations for Florida are listed below in bullet-point format. A full list of these recommendations with further discussions can be found in Chapter 5 of this report.

- speak with a single voice,
- form a sustainable coalition amongst other Florida organizations,
- develop and disseminate a clear, distinctive value proposition for businesses in Florida,
- build the capacity to flex with changing needs,
- clarify freight mobility and economic development intentions through transportation planning documents as well as other planning documents,
- educate state and local level transportation professionals regarding specific needs of the freight industry, as well as type of commodities being served,
- establish methods to measure the economic impacts of freight/logistics related projects,
- examine ways of bolstering investment in transportation infrastructure,
- support public-private-partnerships (P3s),
- allow private sector to lead, but offer government support, and
- provide economic incentives and out-of-the-box savings options for companies to relocate in Florida.

The State of Florida has already initiated some of the recommendations, such as shifting towards a more direct focus on freight-related projects and their impacts. The Investment Element of the *Florida Freight Mobility and Trade Plan (FMTP)* indicates the intent to facilitate freight

mobility through hiring freight coordinators to oversee freight planning projects, utilizing public-private-partnership (P3) relationships to construct infrastructure improvements, educating state and local level transportation officials on the specific needs of the freight industry, as well as many other initiatives.

The success and deterrence factors for enhancing logistics led economic development that are highlighted in this final report, as well as the recommendations for Florida should help LACs, government entities, and businesses better understand critical factors that should be considered in freight and logistics investment decisions.

Per the findings of this research, several future research directions can be taken as follows: (1) Evaluation of various strategies to address Florida's freight-in and freight-out imbalance and reduce it by increasing the percentage of imports consumed in Florida that enter the marketplace through Florida seaports and airports, (2) Strategies to divert goods consumed in Florida through Florida's ports, (3) Interviews with businesses to understand what factors (economic, transportation, etc.) attract them to locate and expand them to Florida, and (4) Evaluation of multi-modal transportation investments from an economic development and job creation perspective with a return on investment analysis for the State of Florida.

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CHAPTER 1: INTRODUCTION

Freight mobility is an essential element not only for fulfilling the growing high demand for goods, commodities, and services in the United States but also for shaping a geographic area's economic development and overall quality of life. Its importance as a driving force for maintaining and creating jobs and fueling economic development has increasingly been recognized by local, state, and federal transportation programs in the United States. Given several state, regional, and national level efforts to foster such *logistics led economic development*, there exists a research need for insight into the factors that define the success and failure of these investments. The goal of this research was to identify key success and deterrence factors in the logistics and freight sector that facilitate economic development in the United States. Freight mobility plays an important role in the U.S. economy, acting as a driving force in both maintaining jobs and fueling economic development (US DOT, 2015). To encourage growth in Florida's trade and logistics sector, it is necessary to make strategic investments in the freight and logistics infrastructure.

An extended literature review was performed to provide a background on previous studies such as freight movement plans, studies, and investments made by selected states and countries. It is categorized into three components: (1) Florida's freight mobility and trade studies; (2) freight plans/studies by other states, and; (3) a review of intermodal logistics centers (ILCs) and inland ports. Previous studies have evaluated the State of Florida as a potentially valuable logistics hub. The *2013 Florida Trade and Logistics* study highlights a variety of strengths for Florida, such as it being one of the country's largest consumer and visitor markets, an extensive freight transportation infrastructure, and having time-honored business and cultural connections to South and Central America. Another major study undertaken by FDOT, the *Florida Freight Mobility and Trade Plan* (FMTP) requires identification of investments and policies that promote the increase of multiple factors, such as the flow of domestic and international trade through ports, development of Integrated Logistics Centers (ILCs) as well as manufacturing industries in the state, and consumption of compressed natural gas (CNG), liquefied natural gas (LNG), and other energy options that reduce costs. An extensive literature review was also performed to evaluate the freight plans of states that contained crucial ILCs/inland ports and Logistics Activity Centers (LACs) such as Georgia, New Jersey, Texas, and Washington State.

For this project, an Expert Task Group (ETG) was assembled to gather information and discuss various initiatives that Florida could implement to improve its trade and logistics through freight and logistics investments. Members of the ETG were composed of executive representatives of private firms that oversaw freight and logistics related aspects of their respective companies. Individual recommendations were made by each ETG member and several FDOT freight coordinators were involved in the conversation. Specific topics regarding the characteristics of successful freight/logistics infrastructure projects, policies, incentives, grant programs, and emerging future trends were discussed, in hopes of implementing similar initiatives in Florida.

Also, to understand each states' freight-related investments and their measures of success, a nationwide survey was distributed to all 50 U.S. State DOTs to obtain information regarding targeted freight and logistics investments and initiatives. The survey's purpose was to collect information on targeted investments that occurred within the past several years. The findings

were then compiled and categorized into their respective types, providing information on the scope, type of investment, funding sources, affected commodities, and job creation, among other things.

Seven case studies were performed to validate the success and deterrence factors obtained through the extensive literature review and to potentially uncover additional factors. The case studies included site visits and personal interviews with representatives of selected LACs throughout the United States: Centerpoint, Joliet/Elwood; Alliance Texas, Fort Worth, TX; CenterPoint, Kansas City, MO; KC SmartPort, Kansas City, MO; Union Pacific's Global III and IV Intermodal Terminals, Rochelle, IL; Port of NY and NJ, New York, NY; and Port of Savannah, Savannah, GA.

Once the site visits/interviews were completed, their corresponding discussions were transcribed and analyzed. The success factors that resonated in the case studies were compared to the success factors found through the literature review to validate/improve the latter using insights obtained through the case analyses. The compilation of success and deterrence factors obtained in the LAC site visits and interviews were found to match closely with those found in the literature review. Drawing upon information obtained from the individual site visits and literature review, a list of success and deterrence factors were grouped into five major categories: (1) strategic location; (2) economic incentives for development; (3) champion; (4) government support, and : (5) other factors. However, additional success factors were identified by the LAC executives during site interviews such as logistics work force development/education in the region, innovation/technology level of the LAC, importance of public-private partnerships (P3s) in the region, counties/cities/states offering out-of-the-box saving packages for LACs, and the importance of value added services being located in the close proximity of the LAC.

A list of recommendations, specific to Florida, was compiled by using information gathered from the LAC site visits and literature review in conjunction with the nationwide survey responses. These recommendations encourage the formation of a sustainable coalition between Floridian organizations, the presence of government incentives for new businesses, support for public-private partnerships (P3s), and clarification of freight mobility and economic development intentions throughout transportation planning documents, amongst many others.

This final report is split into five chapters. Chapter 1 is introduction, Chapter 2 depicts the extensive literature review performed, Chapter 3 summarizes the freight and logistics survey of the 50 U.S. states, Chapter 4 is the derivation of success factors for logistics activity center development, and lastly Chapter 5 includes the conclusions and recommendations for Florida.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The introductory portion of the literature review section provides a background on previous studies such as freight movement plans, studies, and investments made by selected states and countries. It is categorized into three components: (1) Florida's Freight Mobility and Trade Studies; (2) Freight Plans/Studies by Other States, and; (3) A Review of Intermodal Logistics Centers (ILCs) and Inland Ports. A full extended literature review is included in Appendix A of this report and goes into depth regarding the above mentioned three components.

2.1.1 Florida's Freight Mobility and Trade Studies

Florida Trade and Logistics Study

A prominent study highlighting Florida's importance and future as a global hub for trade is the *Florida Trade and Logistics Study* (2010), initiated by the Florida Chamber Foundation in partnership with the Florida Department of Transportation (FDOT). As the first study of its kind that analyzed trade flows and related logistics activity in the state, its main goal was to draw the attention of public and private investors to the trading opportunities provided by the widening of the Panama Canal. Continuing the previous study in 2010, the *Florida Trade and Logistics Study 2.0* was launched in 2013 with the following objectives:

- identifying opportunities that would allow Florida to become a global trade hub;
- developing a plan of operation to accomplish this goal, and;
- continuing to build consensus among public and private partners in support of this vision and its implementation.

The 2013 *Florida Trade and Logistics Study 2.0* highlights a variety of strengths of Florida, such as being one of the country's largest consumer and visitor markets, an extensive freight transportation infrastructure, and having time-honored business and cultural connections to South and Central America. The study also points out a concern that even though a lot of freight is imported, many trucks and trains carrying freight to the state leave the state nearly empty or partially loaded.

Florida Freight Mobility and Trade Plan

The Florida Freight Mobility and Trade Plan (FMTP) is another major study recently undertaken by FDOT. FMTP is a result of a mandate by Florida's House Bill (HB) 599, which required FMTP to identify investments and policies that promote the following:

- Increasing the flow of domestic and international trade through the state's sea ports and airports, including specific policies and investments that will recapture cargo currently shipped through sea ports and airports located outside the state.
- Increasing the development of Integrated Logistics Centers (ILCs) in the state, including specific strategies, policies, and investments that capitalize on the empty backhaul trucking and rail market in the state.

- Increasing the development of manufacturing industries in the state, including specific policies and investments in transportation facilities that will promote successful development and expansion of manufacturing facilities.
- Increasing the consumption of CNG, LNG, and propane energy policies that reduce transportation costs for businesses and residents located in the state.

The FMTP was developed in two phases, each with their own purpose: (1) the *Policy Element*, and (2) the *Investment Element*.

The *Policy Element* establishes the policy framework, identifies responsibilities for implementation, and meets the requirements of Florida HB 599, as codified in 334.044 (33) Florida Statutes. Specifically, as part of FMTP's *Policy Element*, Florida's freight stakeholders helped FDOT develop the following objectives to guide the state in the process of making strategic freight investments to achieve goals in Florida House Bill (HB) 599:

- Capitalize on the freight transportation advantages of Florida through collaboration on economic development, trade, and logistics programs.
- Increase operational efficiency of goods movement.
- Minimize costs in the supply chain.
- Align public and private efforts for trade and logistics.
- Raise awareness and support for freight movement investments.
- Develop a balanced transportation planning and investment model that considers and integrates all forms of transportation.
- Transform the FDOT's organizational culture to include consideration of supply chain and freight movement issues.

The *Investment Element* provides a roadmap to guide and develop an efficient, reliable and safe freight transportation infrastructure over the next thirty years. Specifically, it identifies the freight needs of Florida, identifies the criteria for state investments in freight based on the goals and objectives developed in the *Policy Element*, prioritizes freight investments across modes, and meets requirements of the federal *Moving Ahead for Progress in the 21st Century Act* (MAP-21). The *Investment Element* was prepared through the input of shippers, receivers, freight carriers, manufacturers, academia, various industries, associations, regional and local planning agencies, sister state agencies, and other concerned private sector stakeholders.

The FMTP states that, for investment prioritization, a project will be considered a "freight project" if it is on the designated Florida Freight Network and satisfies one of following:

- Freight Focused: The primary purpose of the project is to address a specific freight transportation need.
- Freight Related: The primary purpose of the project is to address multiple transportation concerns, of which freight is one element.
- Freight Impacted: The primary purpose of the project is to address general transportation needs, however freight mobility may be positively affected.

To prioritize investments among competing “freight projects”, a total of 26 criteria were selected based on the project’s ability to implement the strategies outlined in FMTP’s *Policy Element* and FDOT’s best practices in project selection.

Using the above criteria and a prioritization process, FDOT identified a list of close to 800 freight projects with total anticipated costs of over \$34 billion. While these projects span all modes of transportation, over half of the freight projects identified by the criteria were highway related (about 82% of the total costs).

2.1.2 Freight Plans of Selected Other States

This section provides a brief summary of freight plans from the following four states that handle heavy freight volumes and make large logistics-related investments: Georgia, Texas, New Jersey, and Washington State.

Georgia

The Georgia Department of Transportation (GDOT) led the development of the *Georgia Statewide Freight and Logistics Action Plan* which summarizes the steps to take for the progression of freight interest and activity. The report emphasizes that freight transportation is very important to Georgia’s economy and recommends a series of improvements for Georgia not to lose its economic advantage. The report emphasizes a rather quick action on deepening the Savannah Harbor to be prepared for the Panama Canal expansion.

New Jersey

The New Jersey Department of Transportation developed the *New Jersey Comprehensive Statewide Freight Plan* to identify a consolidated set of actions that can be organized into seven categories as follows:

- Statewide coordination and advocacy.
- Asset allocation to priority freight nodes and corridors.
- System optimization strategies (promoting rail and barge modes and promoting the utilization of off-peak roadway capacity).
- Policy and planning strategies.
 - Increasing the number of truck rest stops.
 - Roadway designs to adequately provide clearances for heavier/wider trucks.
 - Elevate the consideration of freight issues/impacts in highway improvement planning and prioritization.
 - Support warehouses and distribution centers (DCs), individually and as part of corridor efforts to better connect clusters with port facilities.
 - Strategic location of future warehouse and distribution center facilities.
 - Advance the adoption and integration of freight Intelligent Transportation System (ITS) and other technologies.
 - Incorporate funding considerations early in the planning process.
- Improve data collection and multimodal analysis tools.
- Safety and security.

Texas

The State of Texas developed their first comprehensive and multimodal *Texas Freight Mobility Plan* (TFMP), to be completed by the end of November 2014. The Texas Department of Transportation (TxDOT) completed a series of white papers to build towards the TFMP. The white paper, “Goals, Objectives, and Performance Measures” highlights the following objectives:

- Increase safety and resiliency of the state’s freight transportation network.
- Achieve and maintain a state of good repair for all freight transportation modes.
- Enhance mobility (reduce congestion) and improve travel time reliability on critical freight corridors.
- Improve first and last mile connectivity to major generators.
- Promote greater coordination among agencies responsible for freight investment.
- Implement a performance based prioritization process for freight system investment and, increase freight expertise in districts, across departments and elected officials.

Washington State

Washington is one of the major states in the west coast with a large freight movement. As dictated by MAP-21, the Washington State Department of Transportation (WSDOT) generated the *Washington State Freight Mobility Plan*. The plan suggests the prioritization of the freight improvement projects in the following order:

- Operate existing highways efficiently by using traffic management tools to optimize the flow of traffic and maximize available capacity.
- Manage demand either by shifting travel times or promoting the usage of public transportation so that entire system can function better.
- Add capacity strategically by targeting worst hotspots or filling critical system gaps to best serve an entire corridor, community or region. This would also mean fixing bottlenecks that constrain the traffic flow.

2.1.3 Intermodal Logistics Centers (ILCs) / Inland Ports

With ILCs and inland ports being on the front line of logistics and distribution, the FDOT Office of Freight, Logistics and Passenger Operations prepared a document called, “ILC Primer: Boosting Florida Economy through Freight Logistics.” Its purpose is to present the benefits of incorporating ILCs within Florida’s freight network. As stated in the document, “A key initiative of Florida’s growth strategy is to transform Florida’s economy into a global hub for trade, logistics, and export-oriented manufacturing.” Therefore, this research project reviewed a large number of ILCs and inland ports and selected the following short list:

1. Virginia Inland Port (VIP), VA
2. Alliance Texas Logistics Park, TX
3. The Port of Huntsville, AL
4. KC Smartport, Kansas City, MO
5. Port of Battle Creek, MI
6. NY/NJ Port Inland Distribution Network
7. Detroit Intermodal Freight Terminal (DIFT), MI

8. Global III Intermodal Terminal, Rochelle, IL
9. Metroport, New Zealand
10. Logport, Duisburg, Germany

Appendix A, section A-3 goes into depth explaining and summarizing each of the above ten selected ILCs.

2.2 Studies Related to Logistics Performance Index and Logistics Hub Success Factors

This section summarizes the literature related to logistics performance indices as well as studies shedding light on logistics hub development and related success factors.

2.2.1 Measurement of Logistics Performance of Different Regions

Achieving excellence in logistics is a challenging task that requires adequate funds, political support, planning capacity, technical knowledge, and continuous measurement and evaluation of logistics performance. Comprehensive performance indices such as the World Bank's Logistics Performance Index (LPI), as explained below, are being used when evaluating a geographic location's trade and logistics performance.

World Bank's Logistics Performance Index

The Logistics Performance Index (LPI), which was introduced by the World Bank in 2007, is a comprehensive index created to assist countries in identifying challenges and opportunities they face in trade and logistics performance (Jhavar et al., 2014). Six parameters are used to assess the performance of countries. The calculated LPI is an equal weighted average of these six parameters (Arvis et al., 2012):

1. Customs: The efficiency of customs and border management clearance.
2. Infrastructure: The quality of trade and transport infrastructure.
3. International shipments: The ease of arranging competitively priced shipments.
4. Logistics quality and competence: The competence and quality of logistics services.
5. Tracking and tracing: The ability to track and trace consignments.
6. Timeliness: The frequency with which shipments reach consignees within scheduled or expected delivery times.

The Agility Emerging Markets Logistics Index

Transport Intelligence (2015) released their sixth edition of "The Agility Emerging Markets Logistics Index." This index ranks 45 emerging markets across the world using three broad criteria to measure each country's score – market size and growth attractiveness (50% of the overall score), market compatibility (25% of the overall score) and market connectedness (25% of the overall score).

2.2.2 Factors Influencing the Success of Logistics Investments

Khan (2003) examined case studies from across the world to develop a logistics attractiveness ranking framework for assessing successful investments in logistics in order to achieve economic development. This framework was subsequently used to rank 75 countries by using data from the World Bank and World Economic Forum.

The main success factors obtained from the case studies by Khan (2003) include the need for the following:

- Highly skilled logistics labor force
- Strategic location
- Integrated logistics strategy
- Setting up exclusive regional authorities to help facilitate active development of the logistics sector
- Long term vision

Munoz and Rivera (2010) employed cluster analysis to propose a structure of seven critical factors needed for developing logistics hubs (Figure 1). Resulting from case study analysis of major logistics hubs in Dubai and Singapore, the structure identifies the critical factors behind the success of a logistics hub. The proposed structure was then used to analyze the development of a logistics hub in Panama by Brito (2010), indicating strategic location, infrastructure, government commitment, and availability of a skilled workforce as key elements for a successful logistics hub.

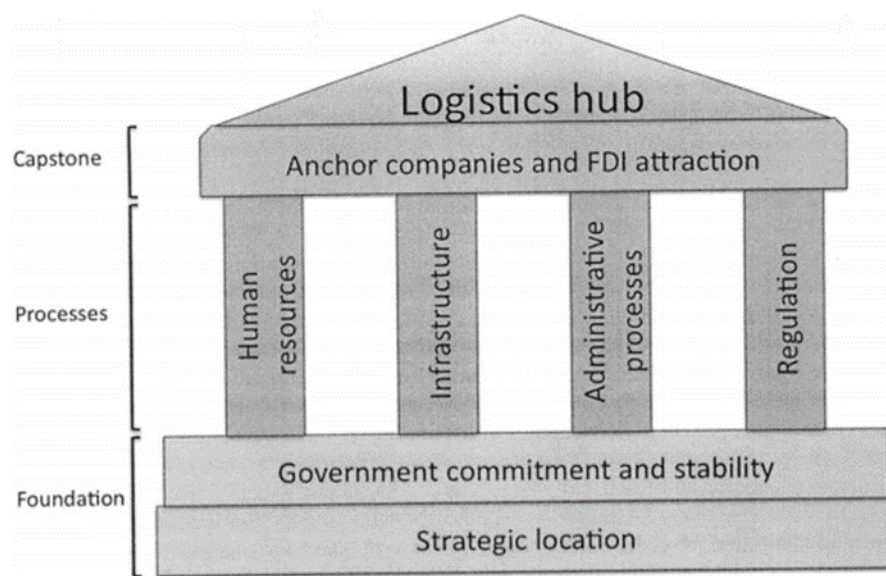


Figure 1. Critical factors for developing logistics hubs [Munoz and Rivera (2010)]

Additionally, the Tioga Group (2006) presented 29 case studies of LACs within the United States and abroad to understand the key factors that led to the success or failure of each LAC. Results from these case studies stressed the importance of location and government support along with the utilization of the available transportation infrastructure as key factors for the success of inland ports and other related logistics developments.

The extended full literature review performed for this project can be found in Appendix A of this report.

CHAPTER 3: FREIGHT AND LOGISTICS INVESTMENTS SURVEY OF THE STATE DEPARTMENTS OF TRANSPORTATION IN THE U.S.

3.1 Introduction

A nationwide survey was conducted to obtain information regarding targeted freight and logistics investments and initiatives in all 50 U.S. states. The intent of the survey was to collect information on targeted investments in the last several years. The research team compared and cataloged these investments, providing information on the scope, type of investment, funding sources, affected commodities, and job creation, among other things.

3.2 Survey Methodology

The survey questions were initially developed by the research team based on the type of information sought from the states. Questions were keyed into an online survey mechanism and internally tested. The draft survey was then sent out to Florida Department of Transportation Freight Coordinators to further test the survey instrument and give input on the survey itself. Several detailed comments were provided by the survey testers including that the survey asked too many questions and required too many details that were unknown to the tester. In addition, it was believed that an excessive amount of research would be required of respondents and would deter many from responding.

In response to the comments, the survey questions were simplified while trying to obtain information about strategic state investments in the freight system and their impact on business and employment growth in existing or new industries. For purposes of the survey, the following definitions were established:

- A **freight/logistics focused** investment is a project that primarily addresses specific freight transportation needs.
- A **freight/logistics focused** policy and/or initiative primarily addresses specific freight transportation needs.

The final survey itself, as depicted in Appendix B of this report, also requested information about the respondent for purposes of follow-up interviews (including which state the survey respondent represented). The following questions constituted the substance of the survey:

1. Has your State made any **freight/logistics focused** investments that were completed from January 2009 to date?
2. Identify **up to five of the top priority freight/logistics focused** investments in your State completed from January 2009 to date. Name, type of project, location (city, county, major roadway), year, cost, description, funding, commodities, industry clusters served, (4) Information Technology, (5) Financial and Professional Services, (6) Logistics and Distribution, (7) Clean Tech/Energy, (8) Life Sciences, and (9) Health Care/Pharmaceuticals, (10) Other), new business, jobs, evaluation method.
3. Has your State adopted any **freight/logistics focused** policies and/or initiatives from January 2009 to date?

4. Identify **up to five of the top priority freight/logistics focused** policies and/or initiatives adopted in your state between January 2009 to date. Name, describe, evaluation method, new business, jobs.

The survey was redistributed directly to the Florida District Freight Coordinators. To contact the remaining 49 states, the survey was distributed through the American Association of State Highway and Transportation Officials (AASHTO) to State Freight Coordinators, members of the AASHTO Subcommittee on Highway Transportation, and members of the AASHTO Subcommittee on Rail Transportation.

After initial responses were received, additional efforts were made to increase the number of survey responses through known contacts for unresponsive states; however, no further responses were received. Survey respondents were contacted with follow-up questions to the survey responses as necessary and some responses were augmented with information found on the Internet regarding specific projects within survey responses.

3.3 Survey Responses

Results from the survey are shown in Figures 2 through 6. Twenty-two out of 50 states (44%) in the U.S. responded to the survey. In most cases, respondents were from the state department of transportation and represented a variety of division offices such as transportation planning, rail, multimodal, and harbors and waterways. A response was also received from a state rail development commission.

States responding to the survey were Alabama, Arizona, Colorado, Connecticut, Florida, Georgia, Idaho, Indiana, Kansas, Louisiana, Minnesota, Missouri, Montana, Nebraska, New Jersey, North Carolina, Ohio, Oregon, Vermont, Virginia, Wisconsin, and Wyoming. Missouri noted that transportation investments have been focused on passenger movement that often resulted in benefits to freight.

States not responding included Alaska, Arkansas, California, Delaware, Hawaii, Illinois, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Mississippi, Nevada, New Hampshire, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Washington, and West Virginia. A number of the states not responding have well-developed freight logistics networks and hubs, thus caution should be exercised in conclusions from survey results.

Two respondents reported having no freight/logistics focused investments or freight/logistics focused policies and/or initiatives - New Jersey and Nebraska. Nebraska noted that although its Department of Roads recognizes the importance of freight, it currently has no entity dedicated to freight planning or other activities. Therefore, no freight/logistics focused investments or policies/initiatives were reported.

STATE	TYPE OF PROJECT	PROJECT DESCRIPTION	YEAR	PROJECT COST (IN MILLS)	DOLLAR YEAR	FUNDING SOURCES	COMMODITIES SERVED	INDUSTRY CLUSTERS SERVED	INDUSTRY ATTRACTION/ JOB CREATION	EVALUATION METHOD
Alabama	Logistics activity center	Norfolk Southern Birmingham Intermodal Facility constructed on 316 acres adjacent to I-20 in northern Jefferson County – part of NS Crescent Corridor Initiative www.nscorp.com	2012	\$97.5	2012	Federal State Multistate	All dry and special commodities moving via truck and rail	Aviation and Aerospace; Manufacturing; Logistics and Health Care/ Pharmaceuticals	Immediate jobs created with expectation of new industry	None
Arizona	Logistics activity center	Port of Tucson constructed an intermodal ramp to the main Union Pacific railroad line	2013	\$5.0	2013	Federal - \$5 mil TIGER Private	Alfalfa, steel, sorghum, cotton, scrap metal	Aviation and Aerospace; Manufacturing; Logistics and Distribution	n/a	None
Connecticut	Rail corridor/ terminal	New England Central Railroad (NECR) – rail line brought to 286K standard from New London through state to Maine border and beyond	2016	\$3..5	2015	Federal State Private	Steel, salt, lumber, cement	Logistics and Distribution, Construction	To be determined	Not yet completed
Florida	Logistics activity center	Logistics Parkway Connector Road connecting ILC to state highway						Manufacturing; Logistics and Distribution	Promotes better access	None
Florida	Highway corridor	SR60/US98 - Concreted a multilane intersection serving significant heavy truck traffic for mobility and safety						Manufacturing; Logistics and Distribution		
Florida	Seaport access/ expansion/ deepening	Port Manatee. Container handling – Construction of initial 10 acres of a 52 acres containerized cargo and vehicle handling facility at the seaport						Logistics and Distribution;		
Florida	Seaport access/ expansion/ deepening	Port Manatee. Heavy cranes for handling bulk containers, breakbulk, and general cargo at multiple berths								
Florida	Seaport access/ expansion/ deepening	Port of Tampa. I-4/Selmon Expressway Connector provides access from the port directly to the interstate system http://tbinterstates.com/projects/projectinfo.asp?projectid=175	2014	\$426	2015	Federal State Local		Manufacturing; Logistics and Distribution		
Florida	Highway corridor	US98/SR33 intersection	2013	\$53	2015	Federal State	Copper, wood pellets	Manufacturing; Defense and homeland Security; Logistics and Distribution	Unknown	Unknown

Figure 2. Freight/logistics focused investments by state

Table 1. Freight/logistics focused investments by state											
STATE	TYPE OF PROJECT	PROJECT DESCRIPTION	YEAR	PROJECT COST (IN MILLS)	DOLLAR YEAR	FUNDING SOURCES	COMMODITIES SERVED	INDUSTRY CLUSTERS SERVED	INDUSTRY ATTRACTION/ JOB CREATION	EVALUATION METHOD	
10	Georgia	Seaport access/expansion/deepening	Port of Savannah. Four additional "Super Post-Panamax" cranes to load/unload larger ships www.gaports.com/corporate/tabid/379/xmid/1097/xmid/8492/xmview/2/de fault.aspx	2013	\$40	2015	Private	Containerized cargo	Logistics and Distribution	Supports over 352,000 jobs	Improvement in velocity and volume of container loading
11	Georgia	Logistics activity center	Cordele Inland Port. New intermodal container yard and rail-loading facility and improved rail connection www.cordeleintermodal.com	2011	\$9.8	2011	State Local Private	Containerized cargo; bulk agriculture	Logistics and Distribution; Agriculture	Supports manufacturing, logistics and export/import jobs	Number of containers handled
12	Georgia	Seaport access/expansion/deepening	Port of Savannah. New SR 307 rail overpass providing service through the port's main gate to the adjacent intermodal facility expansion	2012	\$29	2010	State Private	Containerized cargo	Logistics and Distribution	Supports continued economic competitiveness	Shortened intermodal movement to Atlanta by six hours
13	Indiana	Highway corridor	US31 Freeway upgrade http://us31.hamiltoncounty.in.gov/	2014	\$722	2014	Federal State	All freight	Manufacturing; Logistics and Distribution		Decreased travel time
14	Louisiana	Seaport access/expansion/deepening	Port of New Orleans Napoleon Avenue container terminal expansion.	2013	\$6.2	2008	State	Containerized cargo, including refrigerated	Various	48 new jobs plus new industry with refrigerated container capabilities	Inspection, follow-up discussions, and monitoring
15	Louisiana	Seaport access/expansion/deepening	Port of New Orleans Napoleon Avenue. Two container terminal gantry cranes.	2013	\$27.5	2008	State Private-Port of New Orleans	Containerized cargo	Various	20 new jobs plus attracted industry	Inspection, follow-up discussions, and monitoring
16	Louisiana	Seaport access/expansion/deepening	Port of New Orleans Alabo Street Terminal Improvements	2013	\$8.1	2009	Private-Port of New Orleans	Steel and other metal products, aluminum, rubber, and wood	Various	16 new jobs plus attracted industry	Inspection, follow-up discussions, and monitoring
17	Louisiana	Seaport access/expansion/deepening	Port of South Louisiana. Globalplex Finger Pier, 750 ft by 44 ft extension	2013	\$19.5	2008	State	Alloys, sand, fertilizer, agricultural products, and iron ore	Various	22 new jobs plus attracted industry	Inspection, follow-up discussions, and monitoring

Figure 3. Freight/logistics focused investments by state (cont'd_a)

Table 1. Freight/logistics focused investments by state										
STATE	TYPE OF PROJECT	PROJECT DESCRIPTION	YEAR	PROJECT COST (IN MILS)	DOLLAR YEAR	FUNDING SOURCES	COMMODITIES SERVED	INDUSTRY CLUSTERS SERVED	INDUSTRY ATTRACTION/ JOB CREATION	EVALUATION METHOD
18	Louisiana	Seaport access/ expansion/ deepening	2015	\$5.9	2013	State, Private - Greater Baton Rouge Port Comm	Wood pellets	Energy and forestry	125 new jobs plus attracted industry	Inspection, follow-up discussions, monitoring
19	Minnesota	Rail corridors/ terminals	2014	\$12.0	2014	State	Grain, ethanol, food products, fertilizer	Manufacturing; Logistics and Distribution; Agriculture	Attracted new manufacturing and ag supply business	Federal inspection, state audit
20	Minnesota	Seaport access/ expansion/ deepening	2015	\$20.0	2015	Federal State Local	Energy generating and oil field equipment, containers, bulk materials	Manufacturing; Logistics and Distribution; Mining	Attracted European container services, wind generation, oil field project cargo	Engineering evaluation
21	Montana	Logistics activity center	2014	\$17.4	2011	Federal - \$10 mil TIGER State Local	Agricultural	Manufacturing; Logistics and Distribution; Clean Tech/ Energy, Agriculture	Supports wind energy farms; expands ag export capacity; builds on private investment pledges	None
22	North Carolina	Rail corridors/ terminals	2013	\$7	2013	Federal State Private	Phosphate, lumber	Manufacturing	No	Eased congestion for both rail and roadway traffic
23	North Carolina	Logistics activity center	2013	\$90	2012	Federal State Local Private	Containerized cargo	Manufacturing; Logistics and Distribution		Project exceeded projected throughput

Figure 4. Freight/logistics focused investments by state (cont'd_b)

Table 1. Freight/logistics focused investments by state										
STATE	TYPE OF PROJECT	PROJECT DESCRIPTION	YEAR	PROJECT COST (IN MILS)	DOLLAR YEAR	FUNDING SOURCES	COMMODITIES SERVED	INDUSTRY CLUSTERS SERVED	INDUSTRY ATTRACTION/ JOB CREATION	EVALUATION METHOD
24	North Carolina	Logistics activity center	2013	\$8		Federal	Containerized cargo	Manufacturing; Logistics and Distribution		Met throughput projections
25	Ohio	CSX Charlotte Intermodal Facility reconfiguration and expansion to double throughput moving containers between trucks and double stack trains www.nationalgateway.org/projects/project/68	2010	\$6.8	2009	Federal State Local	Bulk cargo	Manufacturing; Logistics and Distribution	Yes	Increase in tonnage handling, loading speed; additional cargo
26	Ohio	Toledo Lucas County Port Authority repair and replace CSX rail loop track at international cargo facility www.toledoseaport.org/SeaportTerminals/GeneralCargo.aspx	2014	\$4.7	2013	Federal State Local	Bulk, general cargo	Manufacturing; Logistics and Distribution	In progress	In progress
27	Ohio	Port of Southpoint: Construction of a new general cargo dock. Seeking to serve containerized cargo www.lawrencountyohio.org/the_poi_nt/map.php	2014	\$183		Federal - \$98 mil TIGER State Private	Containerized cargo	Manufacturing; Logistics and Distribution		Double-stacks moved successfully
28	Ohio	National Gateway Phase I providing double stack clearances on the North Baltimore, Ohio to Chambersburg, PA CSX mainline. www.nationalgateway.org	2014	\$7		State Private		Manufacturing; Logistics and Distribution	Improved rail service to 97 rail users employing over 10,000 people	Yard capacity increased by 33%
29	Ohio	Wheeling & Lake Erie Railway Brewster Yard Expansion.	2014	\$2		State Private Local	Food, grain, plastics, soda ash, sand, borates, waste oil, cement, other	Manufacturing; Logistics and Distribution	Allowed shippers short line access to 2 railway companies	Trains carried up to 15 more cars, reduced derailment
30	Ohio	Napoleon, Defiance & Western Railway Mainline Rehabilitation	2015	\$1.78		State Private Local	Steel, sand, soda, ash, other	Manufacturing; Logistics and Distribution	Serves 5 shippers that employ 220 people; redevelopment of 1.2 million sq. ft. of industrial buildings	Tracking of carloads generated along the line

Figure 5. Freight/logistics focused investments by state (cont'd_c)

Table 1. Freight/logistics focused investments by state										
STATE	TYPE OF PROJECT	PROJECT DESCRIPTION	YEAR	PROJECT COST (IN MILLS)	DOLLAR YEAR	FUNDING SOURCES	COMMODITIES SERVED	INDUSTRY CLUSTERS SERVED	INDUSTRY ATTRACTION/ JOB CREATION	EVALUATION METHOD
31	Ohio	Rail corridors/terminals	City of Jackson Rail Line Rehabilitation	2015	\$1.3	Federal State Local Private	Ammonium nitrate, waste oil, sand, alumina, tomato paste, lumber, other	Manufacturing; Logistics and Distribution	Expansion of two shippers, service to new transloading facility, access to vacant industrial buildings	Tracking of carloads generated along the line
32	Vermont	Rail corridors/terminals	Various vertical clearance projects at highway bridges and tunnels to allow rail freight double stack clearance	2015	\$50	Federal State	Grain, wood, salt, chemicals, fuel	Manufacturing; Logistics and Distribution		Underway
33	Virginia	Rail corridors/terminals	Norfolk Southern Heartland Corridor, clearances raised in 29 tunnels to make way for double-stacked intermodal trains	2010	\$290	Federal State Private		Manufacturing; Logistics and Distribution		
34	Wisconsin	Seaport access/expansion/deepening	Onconto dredging to accommodate cruiser yachts and commercial fishing	2014	\$1.258	State	Boat building	Manufacturing	Promote business in existing industry	Maintenance and facility use
35	Wisconsin	Seaport access/expansion/deepening	St. Marys Cement/City Center dredging Manitowoc	2014	\$0.5	State	Cement	Manufacturing	Promote business in existing industry	Maintenance and facility use
36	Wisconsin	Seaport access/expansion/deepening	Burger Boats Dockwall Rehab. Upgrading launch well to expand marine vessel launching and hauling capacity	2015	\$1.33	State	Ship building	Manufacturing	Promote business in existing industry	In progress
37	Wisconsin	Seaport access/expansion/deepening	Bay Shipbuilding dockwall. Upgrading berth for repairs and winter lay up	2015	\$2.53	State	Ship building	Manufacturing	Promote business in existing industry	Ongoing
38	Wisconsin	Seaport access/expansion/deepening	Fraser Shipyards Phase 3 Rehabilitation – upgrade of Elevator O facility	2015	\$2.9	State	Ship building	Manufacturing	Promote business in existing industry	Ongoing
39	Wyoming	Other	Evanston-Green River truck parking area	2012	\$7	Federal State		Logistics and Distribution; Clean Tech/Energy	No	

Figure 6. Freight/logistics focused investments by state (cont'd_d)

3.4 Observations and Findings from the Survey

Completed surveys by state DOTs revealed limited knowledge of freight/logistics-focused projects, and their economic benefits. Specific projects that focused on economic development had little to do with several state DOTs, and were more closely associated with private corporations or other state agencies. In one response, state funds that were distributed for projects had a requirement that the project result in the creation of new jobs and/or the retention of existing ones.

The research team compared and cataloged all targeted investments provided in the survey responses, providing information on the scope, type of investment, funding sources, affected commodities, and job creation among other things. The most common project types reported were in the categories of seaport access/expansion/deepening, logistics activity centers, and rail corridors/terminals. In most cases, the bulk of the investment came from private and/or federal sources. While the survey sought information from state departments of transportation, site visits revealed that much freight logistics investment is being made by private corporations, particularly rail and seaport companies, and the federal government. The federal government provides funding for freight logistics projects as well as other transportation infrastructure projects through programs established in Moving Ahead for Progress in the 21st Century Act (MAP-21). Such specific programs of federal funding are, for example, Projects of National and Regional Significance (PNRS) and Transportation Investment Generating Economic Recovery, or the TIGER Discretionary Grant program and projects funded through these programs can be found on the Federal Highway Administration website. Several projects reported in the survey noted the receipt of TIGER Grant funds.

Major railroad companies are investing heavily in corridor improvements to accommodate double-stacked cars for freight movement to the U.S. interior. In addition, the companies are investing in intermodal facilities to accommodate rapid transloading of cargo. Similarly, ports are investing in deepening harbor ways to accommodate larger and heavier ships and large cranes to accommodate rapid transloading of cargo. Follow-up interviews revealed a common belief among state departments of transportation that many freight-related projects are due to the knowledge of impending growth in freight and, more specifically, the availability of federal dollars for projects that would improve freight mobility.

Project types reported in the survey appear to be the result of the needs of the geographic area. This is evidenced by the greater focus of port projects in coastal states, rail projects in inland states, and logistics activity centers serving both. It is even evident in Wyoming where truck parking is an important investment due to the major truck routes that pass through the state. Follow-up interviews revealed that project need was often identified by a port authority, a private entity, or the metropolitan planning organization planning and prioritization processes.

Survey respondents at state departments of transportation had limited knowledge of specific freight/logistics focused projects and, particularly, the economic benefit of a project. In many cases, state investment was a small portion of a much larger project. Follow-up interviews with some respondents revealed that economic development is often conducted within another state agency or even a private entity and although such entities are involved in long range planning

efforts, specific economic development projects are not developed by state departments of transportation. In a few cases, states have specific funds devoted to economic development efforts.

In follow-up interviews to the survey, one state noted that a criterion for spending state funds on a project to expand a facility or accommodate new tenants required that new jobs be produced or existing jobs be retained. The creation or retention of jobs was considered a success factor. The authors of “Current State of Estimation of Multimodal Freight Project Impacts” (Wygonik, et al., 2014) note that most multimodal freight projects are evaluated based on improvements to travel time and reductions in congestion. Only a few of the evaluation methods documented in the report include economic development and attraction/retention of businesses and jobs.

Deterrence factors included the vulnerability of some tenant businesses and, therefore, project investments, to the fluctuation of the economy. For example, Louisiana noted that longstanding businesses such as oil and gas were able to withstand economic downturns whereas fledgling businesses catering to alternative energy sources were not found to be as resilient.

One notable deterrence factor in funding economic development driven projects is the lack of overall funding. Unstable funding at the federal level has made it difficult for many states to keep up with traffic growth and system maintenance leaving no additional funding for infrastructure investment. The lack of investment in transportation infrastructure has taken a noticeable toll on the economy as noted in the report, “Infrastructure Investments Create American Jobs.” (Brun, et al., 2014) A favorable business case along with private investment is sometimes necessary to justify public investment. One state, Arizona, is prevented from using public money to benefit private businesses by the “gift clause” in the Arizona Constitution.

CHAPTER 4: DERIVATION OF SUCCESS FACTORS

4.1 Introduction

The United States is the largest consumer market in the world with a high demand for goods, commodities, and services. Freight mobility is not only essential for fulfilling this demand but also affects a geographic area's (city, state, etc.) economy and overall quality of life. Its importance as a driving force for maintaining and creating jobs and fueling economic development has increasingly been recognized by local, state, and federal transportation programs in the United States (U.S. DOT, 2015). To promote further growth in trade and logistics, it is vital to strategically invest in the freight mobility infrastructure.

According to Rodrigue (2013), logistics investments are the apportionment of funds to improve the efficiency of freight distribution through infrastructure (terminals, real estate, and telecommunications), operations (transport modes and equipment), and human resources (labor, management, governance, research and development). This project focuses on the infrastructure aspect of these three major categories, particularly on what this research specifies as logistics activity centers (LACs). In this report, the term logistics activity centers (LACs) is used to steer away from the apparent lack of consensus on a precise definition for some of the commonly used terminologies such as intermodal logistics centers (ILCs), logistics clusters, satellite marine terminals, multimodal logistics parks, inland ports, major distribution hubs, etc. (Sheffi, 2012). The reason behind these multiple terminologies is partly because such infrastructures have emerged in a variety of geographical settings and serve a wide variety of functions with multiple actors involved (Rodrigue et al., 2010). More specifically, this research highlights the factors that determine the success and deterrence of LACs, which are, in turn, associated with numerous economic benefits such as enhanced freight mobility, increased integration with national and global trade, better utilization of transport assets, lower cost of imports and exports, and job growth/economic development in their vicinity.

Despite state and national level efforts to foster logistics led economic development, there is not much insight on the factors that define the success and failure of these investments. This research is intended to bridge this gap by examining the success and deterrence factors of LACs by means of an extensive review of literature and case study analysis. In addition, the research involves a survey of recent investments, policies and other initiatives of the 50 U.S. states in the freight and logistics sector. This portion of the report summarizes the success and deterrence factors derived from: (1) A review of literature on the measurement of logistics performance of a region (e.g., a country or a state); (2) case studies of selected LACs through their site visits, and; (3) a survey of freight/logistics investments, policies, and initiatives of the 50 U.S. states.

4.2 Conceptualization of Success and Deterrence Factors

Based on the literature review, as summarized in Chapter 2 of this report which included a number of LACs as well as logistics performance indices, a list of factors that could influence the potential success or failure of a LAC was developed. The factors were grouped into five major categories: (1) strategic location; (2) economic incentives to promote development; (3)

champion; (4) government, and; (5) other factors. Each category was further divided into associated sub-categories that are explained in detail in this section.

4.2.1 Strategic Location

Strategic location is highlighted as the foundation for the success of an LAC (Munoz & Rivera, 2010; Brito, 2010). Since this is an expected major factor for a successful LAC, it was divided into three sub-categories which are further divided into several sub-sub-categories to give more detail: (1) demand elements; (2) supply elements; and (3) transport infrastructure and accessibility.

4.2.1.1 Demand Elements

Access to a Large Market

A crucial element of the strategic location factor is the access to a large population market. A large market in close proximity will ensure that there are adequate avenues for distributing goods/commodities that are received in an LAC.

4.2.1.2 Supply Elements

Availability of Cheap Land

Companies often choose to locate themselves in an LAC due to the availability of cheap and developable land. The major factors that govern the availability of cheap land are the actual land prices in a particular location, land ownership, issues related to current and prospective regional development, plans of local governments and regulation. (Tantsuyev, 2012).

Labor Cost

Affordable labor is dependent on the local economy and, therefore, is an important parameter to be considered during the process of locating the LAC.

Local Supplier Quantity

This factor refers to the presence or absence of local suppliers in the area of the LAC which would then use these suppliers once operational.

Local Supplier Quality

This factor refers to the capabilities of the local suppliers in the area of the LAC. These could range from inefficient suppliers with little know-how of technological innovation to internationally competitive suppliers with expertise in new product and process development.

4.2.1.3 Transport Infrastructure and Accessibility

Under this sub-section, it should be noted that the utilization of major roadway networks can serve both the local population as well as national and international markets; however, the utilization of a railroad carrier, air cargo, and port facilities most likely serves national and international markets only (Rivera et al., 2014).

Utilization of Major Road Networks

The success of an LAC often correlates with its connectivity to major freeways and other roadway networks. Easy and quick access to high-speed roadways makes the transportation of goods/commodities more efficient, thereby making an LAC very attractive for investment.

Utilization of a Willing Railroad Carrier (if present)

Railroad carriers have the potential to transport a greater amount of goods/commodities more economically in comparison with over-the-road transportation. Additionally, railroad carriers help achieve economies of scale through their ability to use the same track structure and locomotives to move both light and heavy weight freight (Bereskin, 2009).

Utilization of Air Cargo Facilities (if present)

Air transport is important to the movement of goods/commodities across national and international supply chains. This is especially significant in high value-to-weight freight cargo that incurs a significant decrease in value with higher than acceptable delay (Kasarda et al., 2006). Therefore, this factor acts as an enabler for a LAC, if businesses that require air cargo are interested in locating in an LAC (Kasarda et al, 2006).

Utilization of Port Facilities (if present)

The development of an LAC was found to be strongly correlated with the level of activity at nearby ports due to the fact that ports are major nodes on the global supply chain map (Rodrigue, 2013). Therefore, locating an LAC close to a port increases the success of the LAC due to decreased container travel times and drayage costs.

4.2.2 Economic Incentives for Development

Another crucial factor that contributes to the success or failure of LACs was found to be economic incentives provided to companies that are interested in locating their operations in these LACs. The economic incentives category is further sub-divided into: (1) provision of foreign trade zones; (2) provision of tax abatements; (3) providing avenues for job creation in the local community, and; (4) enabling innovation in LACs as a means to attract new business.

4.2.2.1 Provision of Foreign Trade Zones

Foreign Trade Zones (FTZs) are considered to be outside of the customs territory and act as catalysts for economic development. The presence of an FTZ in an LAC allows onsite inventory to be exempt from state inventory taxes a great tax advantage to companies (KMI, 2005).

4.2.2.2 Provision of Tax Abatements

Tax abatements are seen as a way to attract companies. This is an incentive provided by the cities or local governments to the businesses that consider locating in a specific LAC in their jurisdiction. The most common form of tax abatements provided is in the form of a 10 year, 50% tax allowance.

4.2.2.3 Job Creation

The ability of an LAC to provide regional benefits such as overall regional economic development through job creation is a strong indicator for the overall success of the LAC and will also garner support from local and regional government agencies.

4.2.2.4 Innovation

Innovative measures undertaken by the LACs play a key role in their success. These range from providing vocational/educational and technical training programs to improve the skill level of the workforce to establishing public-private partnerships (P3s).

4.2.3 Champion

Every project with a large scope and complexity requires a champion to carry it forward, and LACs are no different. The champion category is further sub-divided into: (1) a long-term vision and commitment; and (2) a flexible and effective plan.

4.2.3.1 Long Term Vision and Commitment

Long-term vision and commitment by the LAC's developers tend to push the project in the direction of success, whereas the lack of vision and commitment are detrimental to the LAC.

4.2.3.2 Flexible and Effective Plan

In order to account for the unexpected, it is common practice to make plans that are viable and flexible enough to accommodate change. Successful LACs ensure that their plans are flexible enough to accommodate any unforeseen opportunities or challenges.

4.2.4 Government Support

Projects such as LACs which have a large scope and complexity cannot be successful without the support of the local and regional government. Governmental support is further sub-categorized into: (1) political consensus and support; (2) adequate funding/capital; and (3) burden or flexibility of regulations.

4.2.4.1 Political Consensus and Support

High level political consensus among political parties and support for the long term are crucial elements in defining a LAC's overall success or failure.

4.2.4.2 Adequate Funding/Capital

The presence of adequate capital is a fundamental need of any LAC since it needs this capital to start off. It can be observed in the literature that when funding (seed money) has been secured and is adequate, the LAC did not have barriers to growth.

4.2.4.3 Burden or Flexibility of Regulations

This factor basically takes into consideration the burdensome nature of administrative regulations of the local or regional government of the LAC. Regulation is one of the pillars identified as essential for the successful development of a logistics hub (Munoz and Rivera, 2010), and it includes important factors such as the government's willingness to invest in logistics, tax abatement decisions, freight friendly land use considerations, and the flexibility of local environmental regulations.

4.2.5 Other factors

In addition to the first four categories, some other factors were found to play a role in the success or failure of LACs such as: (1) success of competitors; (2) delays in project completion; (3) corruption; and (4) security risks.

4.2.5.1 Success of Competitors

The presence of competing facilities can be detrimental to the success of an LAC. This is especially true if the competing facilities are in close proximity, utilizing the same resources (roadway networks, railroad carrier(s) and serving the same population market.

4.2.5.2 Delays in Project Completion

Delays in completion could be attributed to different reasons such as the inability to secure adequate funding and/or disputes with the construction company. In either case, a client will not want to wait longer than the agreed upon timeframe and is likely to cancel their contract with the LAC.

4.2.5.3 Corruption

This factor considers the presence or absence of corruption in the area of the LAC. Although this is not easily quantifiable, it was observed that the presence of corruption played a big role in the failure of LACs in emerging economies or other regions where it is prevalent.

4.2.5.4 Security Threats and Other Risks

This factor investigates the presence or absence of security threats and other risks in the geographic area of the LAC. The presence of security risks play a big role in the failure of LACs, since companies generally do not want to locate to areas with security threats and/or other risks.

Based on the preliminary analysis of success and deterrence factors as highlighted in this section, Figures 7 through 9 were constructed in a “success factors” matrix for a select set of major domestic and international LACs reviewed from literature in order to classify the success and deterrence factors for each LAC. In these figures, each success and deterrence factor is displayed under its major success/deterrence category as discussed previously.

4.3 Case Studies of Selected LACs Through Site Visits and Interviews

In order to validate the success factors drawn from the literature review and to derive more nuanced insights that could not be obtained from literature reviews, seven U.S. logistics activity centers were selected as case studies. The selection criteria were determined through discussions with the Expert Task Group. One of the selection criteria was to include a diversity of (as opposed to a single type of) LACs such as seaports, intermodal railyards, ILCs, and freight/logistics led economic development entities. The second major section criterion was to include high capacity and highly successful LACs. The third selection criterion included geographical diversity as well as diversity in the ownership and management of LACs. Based on all these criteria, the seven LACs listed below were selected for case studies from across the U.S.:

1. CenterPoint Joliet/Elwood Logistics Activity Center, Joliet/Elwood, Illinois
2. Alliance Texas Logistics Activity Center, Fort Worth, Texas
3. CenterPoint Logistics Activity Center, Kansas City, Missouri
4. KC SmartPort (Economic Development Initiative), Kansas City, Missouri
5. Global III Intermodal Terminal, Rochelle, Illinois
6. Port of NY and NJ, New York, New York
7. Port of Savannah, Savannah, Georgia

The research team traveled to each site and conducted interviews with executive level (vice-president and/or president) business development representatives of each facility. The interview questions ranged from the types of companies located at the LAC, the commodities represented, the reasons for the LAC's geographic location, benefits of the location, challenges faced by LAC, actions/items making the LAC successful/unsuccessful, what can make it better, etc. The interviews were audio recorded with the permission of the respondents and were then transcribed and analyzed. The success factors that resonated in the case studies were compared to the success factors found through the literature review to validate/improve them using additional insights obtained through the case analyses. This section summarizes the case studies and interviews that were performed for the above listed seven highly successful and high volume LACs across continental U.S. For more detailed information on these seven LACs and the interviews performed, please refer to Appendix C of this report.

CenterPoint, Joliet/Elwood LAC – Joliet/Elwood, IL

CenterPoint Joliet/Elwood Intermodal Logistics Center in northern Illinois, south of Chicago, is one of the largest LACs in the USA. The research team met with an executive level employee of CenterPoint Properties, the developer, to conduct a site visit and interview.

Strategic location with direct access to the greater Chicago region, home to over 8 million residents, and easy access to markets (logistics density) were noted as major success factors for this CenterPoint property. Access to surface transportation, including major roadway networks through trucking, was also seen as a success factor. The fact that Joliet/Elwood is just outside the city of Chicago, but close enough, allows trucks to save on crucial travel time.

The presence of multiple modes of transportation was also identified as a success factor since companies can get more competitive shipping prices. Approximately 10,000-15,000 feet of rail track is located in the middle of the LAC so that containers can be taken directly from the rail to the warehouses, which is considered a success factor for the LAC. This loading capability is attractive to companies because it significantly reduces drayage costs as well as travel time. Other success factors noted included tax abatement, the economic and development opportunities a P3 brings to an LAC's success, and the presence of shovel ready or pre-built sites.

Alliance Texas LAC – Fort Worth, TX

The well-established 18,000-acre Alliance Texas complex is located to the north of Fort Worth, Texas. The representative interviewed for this case study works for Hillwood Properties, the developer of Alliance Texas. He began by noting the importance of a P3 in the success of the LAC during the early stages of development.

The strategic location, the presence of multimodal transportation, and the resulting economic benefits resonated as success factors and the reasons many companies choose to locate at Alliance Texas. Clients have ready access to the Dallas/Fort Worth Metroplex, a large population base with over 6.5 million people. More importantly, direct access to major roadways (Interstate 35, 114 and 130) enables businesses to reach a large market and population of 48.8 million people within one day and 111 million (across the nation) within two days by truck.

The LAC has access to airports including a cargo-only international airport inside the LAC with US Customs on-site as well as nearby DFW International Airport. BNSF, a Class I railroad, has an intermodal hub facility located inside the LAC, thereby reducing drayage costs. The presence of Union Pacific (another Class I railroad) gives the LAC's clients additional options to reduce their rail shipment costs through the competition between BNSF and Union Pacific. In addition, the presence of FedEx and UPS cargo hubs inside the LAC allows for late clearance times (by 6 pm daily), a great advantage for larger companies, especially those that offer overnight deliveries. The presence of heavy load trans-loading facilities on site also result in reduced transportation costs by over 200 percent in specific cases.

Another success factor revealed during the interview was the presence of a Foreign Trade Zone (FTZ) within the LAC. The presence of an FTZ works in favor of Alliance Texas's clients, especially in the case of shipping tuna from abroad, because they are able to store goods in the FTZ without clearing customs. This helps Alliance Texas's clients to store the product in FTZ even during seasons when shipping tuna into the U.S. is not allowed. Another advantage is that the product is taxed only when it clears customs and is ready for distribution. Finally, the availability of a skilled and qualified workforce in the LAC's geographic area was identified as a success factor during the interview.

CenterPoint LAC – Kansas City, MO

CenterPoint LAC in Kansas City, Missouri houses Walmart's Kansas City distribution center. The interview was conducted with a business development executive of the LAC and major success factors for this facility were pointed out as the easy access to the highway network and the availability of strong labor markets (with the presence of skilled labor force) for warehouse distribution. In addition, the presence of Class I railroads in the close vicinity of the LAC was

also stressed as a benefit for companies since this lowers their drayage costs. As part of economic incentives for setting up business at CenterPoint Kansas, companies received 10 year, 50% tax abatements. One very important success factor for the LAC is shovel-ready sites, where the developer has sites ready for construction immediately once a client is interested in the property, rather than waiting three to six months for the permitting process.

KC SmartPort – Kansas City, MO

A site visit and interview were conducted in Kansas City with a high level executive of SmartPort, a highly successful economic development entity in charge of marketing the Kansas City, Missouri area to prospective firms. KC SmartPort, a major champion for Kansas City, advocates for relocation by businesses to the area and meets and negotiates with prospective companies to bring their production and distribution centers to Kansas City.

According to SmartPort executives, a major success factor for LACs in the Kansas City area is the ability to reach 85 percent of the US population via ground within two days. In addition, the multimodal nature of transportation (access to air, rail and road facilities) is considered a major attracting factor for companies to locate in LACs in Kansas City.

Contributing to the success of this central US location, companies can receive service from five of the seven Class I railroad carriers in the region. Other factors mentioned included the presence of zero inventory tax and lower labor costs in the Kansas City region. As part of economic incentives for setting up business in Kansas City, companies received 10 year, 50% tax abatements in return for the tens of thousands of jobs created in the region. One other success factor for the Kansas City area is the availability of a high quality workforce that was created through innovative educational/training programs.

Union Pacific’s Global III and IV Intermodal Terminals – Rochelle, IL

The research team conducted a site visit and interviews with the senior terminal managers of Global III and IV Intermodal Terminals that are located just outside of the Chicago, Illinois area. Strategic location and access to the surface transportation system were major success factors listed for this LAC. Direct access to a strong customer base (supporting a Midwest operation) is provided including easy access to the interstate highway system so that trucks can get in, pick-up/drop-off their containers and leave without having to lose precious travel time. Additionally, the presence of more than one major railroad carrier in the Chicago area, where both Union Pacific and BNSF operate, provides additional benefits for customers with easy access to the north-south and the east-west interstates faster than in-city trucking options.

Port of NY and NJ – New York, NY

To include different types of LACs, the research team also conducted site visits and interviews with two major east coast ports. For the Port of NY and NJ, the three interviewees were involved in the port’s regional freight planning, economic analysis, and industrial data analysis. In 2002, the Port Authority authorized the creation of a Port Inland Distribution Network (PIDN) which involved transporting container embargoed services between the Port of New York and five other locations. However, there were a number of assumptions that failed to materialize (e.g., 100% return rate with no revenues on empties, loss of opportunities for financial savings due to the lack of use by the ocean carriers, lack of barge use by the terminal operators, and increased

fuel costs from running the barge – about \$19,000 extra per round trip). The service terminated about three years later.

In addition, interviewees noted that economic impact studies for return on investments is very specific and should not be used as a decision-making tool since for the most part, its results are considered linear. The only economic impact work done on projects performed is input/output analysis for construction spending and viewing its cost-benefits in terms of a broad outlook.

In New Jersey, the Cargo Facility Charge (CFC) was put in place as a means to recover rail costs; however, it was described as a type of tax and therefore the public was not in favor of continuing it. This resulted in the Governor shutting down the CFC. The interviewees stated that the economic consequences and benefits of the services were being overlooked by the idea of simply having a “tax,” even though there was no difference in the overall numbers.

A program being implemented by the state DOTs of New York and New Jersey called GMAP (Goods Movement Action Program) involves structural, regulatory, and policy changes. One benefit of the program would be the advantage of having access to markets from the ports by multiple roads, barge and rail, in addition to providing interconnectivity between terminals.

Port of Savannah – Savannah, GA

Port of Savannah was the last site visit and interview conducted by the research team. The interviewees held executive levels at the port in business development.

One of the well-documented major factors leading to the success of the Port of Savannah was their vision of the Port as a strategic gateway. Savannah is 100 miles closer to Atlanta than any other port in the country. This proximity to Atlanta, one of the most populous markets in the region, is considered a strategic advantage. The Port has easy access to the rail (CSX and Norfolk Southern) and highway networks (I-95 and I-16). Owing to their location at the crossroads, the hinterland of the Port covers 20% of the US population with a potential of reaching 45% of the total population within two days.

Achieving transportation synergy is another main factor working in favor for the Port of Savannah. Being a single terminal design leads to significant transportation benefits owing to the presence of two Class I railroad carriers in addition to the major interstates surrounding the Port. Support from the state government and Georgia Department of Transportation (GDOT) in increasing access to these infrastructures has enabled the patrons of the port to significantly reduce their travel times and has led to achieving cost advantages in this regard.

Another significant cost-cutting factor working in favor of the Port of Savannah is their gate fluidity (speed of goods moving in and out of the terminal). On an average, there are 8,500 gate movements per day and the Port is one of the fastest in the country in its ability to process single movement (loading or unloading) in 32 minutes and double movements (loading and unloading) in 53 minutes.

The interviewees also mentioned the advantages of clustering in the context of the Port and the reasons for businesses to locate themselves close to the Port of Savannah. This explains the

presence of more than 250 Port-dependent distribution centers in the state of Georgia, mostly along the interstates and in close proximity to Savannah.

When asked about some of the challenges faced by the Port, the deepening project was brought up. Savannah is one of the shallowest container ports in the world at 42 feet, and this was being perceived as an impediment for shippers to move in and move out of the Port as they had to depend on the assistance of the high tide. Work is in place to deepen the port to 47 feet and is expected to be completed by 2018-19. Another major challenge was experienced from the railroads that had a lot of influence in the day-to-day activities. The interviewees both agreed on the fact that increased efficiency on the part of the railroad could potentially be beneficial to the Port in extending their hinterland and reach across the country.

4.4 Results Obtained from Case Studies/Site Visits and Interviews

Once the site visits/interviews were completed, their corresponding discussions were transcribed and analyzed. The success factors that resonated in the case studies were compared to the success factors found through the literature review to validate/improve the latter using insights obtained through the case analyses. In general, there was a unity between the success factors obtained through literature review, the matrices in Figures 7 through 9, and the factors brought up in the site visits and interviews. Most of the factors the interviewees brought up were summarized under the five major success factor categories (strategic location, economic incentives for development, champion, government and other factors) that were determined through literature review and the analysis of the success-factors matrices developed.

Additional success factors were identified by the LAC executives including logistics work force development/education in the region, innovation/technology level of the LAC, importance of public-private partnerships (P3s) in the region, counties/cities/states offering out-of-the-box saving packages for LACs, and the importance of value added services being located in the close proximity of the LAC. Detailed conclusions and recommendations derived through these site visits and interviews are summarized in Chapter 5 of this report.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

Freight mobility, trade, and logistics are essential elements of Florida's economic success; not only for fulfilling the growing high demand for goods, commodities, and services in Florida but also for driving the state's economic development and competitiveness. Its importance as a driving force for maintaining and creating jobs, and fueling economic development has increasingly been recognized by various local, state, and federal transportation programs in the United States. Despite state, regional, and national level efforts to foster logistics led economic development, there has not been much insight into the factors that influence the success or failure of these investments. This research aimed at filling this gap by examining the success and deterrence factors of logistics activity centers (LACs) by means of a multiple methods research, including an extensive review of the literature, case studies through site visits of selected LACs, and a freight/logistics investment survey of all U.S. state departments of transportation (DOTs). In this report, the term logistics activity centers (LACs) is used to steer away from the apparent lack of consensus on a precise definition for some of the commonly used terminologies such as intermodal logistics centers (ILCs), logistics clusters, satellite marine terminals, multimodal logistics parks, inland ports, major distribution hubs, etc.

The factors relating to the success and deterrence of logistics activity centers (LACs) were initially established after a literature review analysis of a number of LACs across the United States and abroad. These factors were then validated and expanded by case studies (site visits and interviews) of high capacity and highly successful LACs with the continental United States. Findings regarding success and deterrence factors drawn from the site interviews matched those initially found in the literature review. A final list of 24 factors were grouped into five major categories: (a) strategic location, (b) economic incentives for development, (c) champion, (d) government support, and (e) other factors as discussed in detail under the conceptualization of success and deterrence factors section of this final report.

Strategic location, transport infrastructure and accessibility, and the presence of multimodal transportation (presence of Class I railroads, seaports, and air cargo facilities) to transport the goods to/from the LAC were seen as highly important success factors for an LAC. The presence of a supportive political establishment with adequate funding for early developmental stage was also found to be crucial. Additionally, government entities (cities, counties, state DOTs) can increase job growth and economic development in their regions by showing commitment to the respective LAC champions and supporting them by shouldering a portion of the start-up capital necessary (supporting P3s), providing tax incentives, and expedite permitting to increase shovel-ready (construction ready) sites and move-in ready speculative buildings.

In addition, successful LACs ensured the maintenance of their competitive advantages by focusing on innovative measures such as the provision of a high quality workforce through educational and technical certifications/programs in collaboration with educational institutions around their vicinity.

On the other hand, during the literature review, it was observed that some LACs did not or could not satisfy some of the factors highlighted in this research such as the nonexistence of a champion, little or no government/political support, not enough initial capital and delays in final project completion. These factors, in turn, were deterrence factors for each specific case as observed in Figures 7 and 8.

Therefore, a good understanding of the presence or absence of the success and deterrence factors highlighted in this paper will provide businesses and government entities with valuable insights regarding their involvement/investments in specific LACs. Businesses can use the research findings to analyze the LACs they are interested in and ensure that the specified success factors are present. Finally, current and potential LACs can also learn from these factors highlighted in this study in order to better understand what major factors contribute to the successful development of an LAC and the factors prospective client companies are looking for before they make an investment decision.

5.2 Recommendations to Enhance Logistics Led Economic Development via Strategic Investments in LAC Development

All the above discussed research, interviews with top-level executives of the LACs visited by the team, and recommendations from the projects' expert task group (ETG) members resulted in the following recommendations for the state of Florida.

5.2.1 Speak with a single voice

States and cities that are highly successful in the freight and logistics sector (e.g., Georgia, Kansas City, Missouri via KC SmartPort) project a unified vision and marketing plan to businesses and investors (e.g., LAC developers). A united front with a unified vision and marketing plan to attract freight/logistics investments that is shared by all stakeholders in the state (at the statewide, regional, and local levels as well as across different organizations such as FDOT, ports, railroads, land developers, and shippers) will enhance Florida's ability to attract businesses and freight/logistics investments. For example, most successful LACs are attracted to states with a unified vision coupled with an organizational structure that pivots on a shared vision for promoting trade and logistics.

5.2.2 Form a sustainable coalition amongst other Florida organizations for freight and logistics-level economic development

In order for Florida to move forward, the state must form a sustainable coalition among various stakeholders in the freight/logistics and economic development sectors, including FDOT, Enterprise Florida, the ports, maritime operators, the railroads, land developers, and selected key shippers. Other competitors (i.e., Georgia, New York/New Jersey, and Kansas City, Missouri) have been successful due to similar initiatives. In Georgia, the Center of Innovation for Logistics – a division of the Georgia Department of Economic Development – serves as the catalyst to bring key stakeholders together around a common vision and message. In New York/New Jersey, the Port Authority partnered with the New York Shipping Association to form the Council for Port Performance with working groups that identify opportunities and shore up weaknesses. In Kansas City, Missouri, KC SmartPort is the entity that carries the banner for the coalition of cities and counties in the region. KC SmartPort carries the region's message to

prospective businesses that have a potential to locate there. Florida should consider the formation of such coalition to bring together different stakeholders with a unified and shared vision and a marketing plan to attract business and to promote economic development.

5.2.3 Develop and disseminate a clear, distinctive value proposition

Successful LAC's have a deep understanding of how the features of their facilities deliver value for customers. Moreover, they understand how the value they deliver is distinctively different from key competitors. This distinctive value proposition is communicated in first-class promotional materials (e.g., videos, brochures, and tours) and delivered in integrated communication programs that include systematic contacts with private industry, elected officials, and the general public.

Florida's challenge is to draw on the multitude of freight planning documents to craft a memorable identity as a desirable location for logistics operations. Ideally, this identity will harness – rather than compete with – Florida's strong reputation as a tourist destination. For example, "Freight moves faster where the sun always shines."

5.2.4 Build the capacity to flex with changing needs

Many successful LAC's can respond quickly to opportunities because they have access to shovel-ready sites as well as ready-to-go facilities that provide room to grow, whether by attracting new business or expanding existing operations. They are flexible in their operations with multiple options to make it easy for prospective customers to locate facilities in their LAC's (e.g., buy land, lease facilities and/or build custom facilities). In addition, successful LAC's have the capability to anticipate changing needs of customers. They stay close to their customers through constant contact and high levels of information sharing.

Information pertaining to site availability for logistics operations in Florida is currently not easy to locate. Ideally, Florida should have a highly visible, easy to navigate list of shovel-ready sites and ready-to-go facilities.

5.2.5 Clarify freight mobility and economic development intentions through transportation planning documents as well as other planning documents

The survey of state departments of transportation revealed that projects were being carried out because they were contained in metropolitan planning organization plans sometimes with little knowledge on the part of the state as to the intention of the project. Respondents demonstrated limited knowledge of specific freight/logistics focused projects and, particularly, the economic benefit of a project. In many cases, state investment was a small portion of a much larger project. Follow-up interviews with some respondents revealed that economic development is often conducted within another state agency or even a private entity; and although such entities are involved in long-range planning efforts, specific economic development projects are not developed by state departments of transportation. In a few cases, states have specific funds devoted to economic development efforts. Transportation planning documents that set forth planned projects to benefit freight mobility and economic development developed by metropolitan planning organizations and local governments should clearly convey the intention.

5.2.6 Educate state and local level transportation professionals regarding specific needs of the freight industry, as well as type of commodities being served

The survey and interviews revealed minimal understanding of freight mobility needs or commodities served. Respondents commonly indicated “Logistics and Distribution” when asked what industry clusters were served indicating a knowledge of general goods movement but were less able to identify other industry clusters or commodities. A better understanding of the needs of freight movement for specific industries is needed among planning professionals as well as elected officials.

5.2.7 Establish methods to measure the impact of freight/logistics related projects

The survey revealed that few states had mechanisms in place to measure the impact of freight/logistics related projects on economic development aspects, such as attraction of businesses and promotion of job growth. In follow-up interviews to the survey, one state noted that a criterion for spending state funds on a project to expand a facility or accommodate new tenants required that new jobs be produced or existing jobs be retained – a success factor. However, most multimodal freight projects are evaluated based on improvements to travel time and reductions in congestion (see Wygonik et al., 2014), which is in line with performance measures recently developed for Florida’s transportation system. Development and implementation of methods to measure the impact of freight/logistics related projects on economic development (particularly through attracting businesses and job creation) would help Florida establish criteria and goals for future investment. A positive move in this direction is the mention of such factors in Florida’s recently completed Freight Mobility and Trade Plan.

5.2.8 Examine ways of bolstering investment in transportation infrastructure

One notable deterrence factor in funding economic development driven projects is the lack of overall funding. Unstable funding at the federal level has made it difficult for many states to keep up with traffic growth and system maintenance leaving no additional funding for infrastructure investment. The lack of investment in transportation infrastructure has taken a noticeable toll on the economy as noted in the report “Infrastructure Investments Create American Jobs” (Brun, et al., 2014). In 2012, Florida’s Metropolitan Planning Organization Advisory Council (MPOAC) completed a “Statewide Transportation Revenue Study” (<http://www.mpoac.org/revenuestudy/>) that includes revenue options for the State to consider.

5.2.9 Support Public-Private Partnerships (P3s)

Public-private partnerships play a crucial role in the success of an LAC. The government should support possibilities that allow for P3s within the private sector.

5.2.10 Allow private sector to lead, but offer government support

Relationships between the public and the private sector must be strong to encourage business and economic development. The private sector should be allowed to lead as a champion in LAC development. The government’s role is to analyze the vision and, if sound, assist in a way to allow the private sector champion to bring the vision of a successful LAC to reality. This an effective way to bring economic development, additional jobs and additional taxes to the region. It should be noted that government support can comprise three different aspects such as political support, adequate funding, and flexibility of regulations.

5.2.11 Provide economic incentives and out-of-the-box savings options for companies to relocate in Florida

The presence of a zero inventory tax and lowered labor costs, such as those in Kansas City, Missouri region provide an economic incentive for businesses to settle or remain in the area. As an incentive for setting up business in Kansas City, local governments provide a 10-year, 50% tax abatement in return for the tens of thousands of jobs created in the region and future fully-taxable income.

Companies also seek out alternative options to reduce their freight and logistics costs, such as having access to multimodal transportation, such as railyards, seaports, and cargo airports. For example, the presence of multiple Class I railroads in CenterPoint Joliet/Elwood LAC is seen as a benefit for this LAC and the companies located within. This aspect alone reduces overall drayage costs for the companies that chose to locate to CenterPoint Joliet/Elwood LAC.

5.3 Florida's Current Progress and Initiatives Compared to the Above Research Recommendations

Five main factors were deemed highly important success factors for a successful LAC, such as having a strategic location, transport infrastructure and accessibility, the presence of multimodal transportation (Class I railroads, seaports, and air cargo facilities) to transport goods to/from the LAC.

Florida has already addressed some of the recommendations mentioned above by reaching out and taking a proactive approach on its goal of facilitating freight movement. According to Florida's 2014 *FMTP Investment Element* report, Florida has already begun expanding on data collection efforts pertaining to freight and has developed full-time Freight Coordinator positions to institutionalize freight planning and to work with agency partners to promote freight mobility. Florida promises to continue monitoring the implementation performance on the *Freight Mobility and Trade Plan* and to update the annual list of freight projects in order to maintain a dynamic plan moving forward.

Lastly, Florida has acknowledged the necessary role of public-private partnerships (P3s) in freight transportation projects. Partnerships with private entities such as railroad companies, port authorities, terminal owners, freight transfer facility owners, etc. can help alleviate gaps in project funding. Advantages of a P3 relationship include an earlier construction time and prompt generation of revenue to the public and private sectors. Since 2007, several FDOT projects involving P3s have already been completed, including \$458 million worth of modifications to I-75, \$339 million in modifications to I-95, and an estimated \$663 million investment to the Port of Miami Tunnel.

5.4 Future Research Direction

Per the findings of this research, several future research directions can be taken as follows: (1) evaluation of various strategies to address Florida's freight-in and freight-out imbalance and reduce it by increasing the percentage of imports consumed in Florida that enter the marketplace through Florida seaports and airports, (2) strategies to divert goods consumed in Florida through Florida's ports by utilizing the fact that the research team consists of a university (not-for profit)

based research group, and approaching shipping companies and obtaining their true input, which they might not be so inclined to share with “for-profit” organizations, (3) interviews with businesses to understand what factors (economic, transportation, etc.) attract them to locate and expand them to Florida, and (4) evaluation of multi-modal transportation investments from an economic development and job creation perspective with a return on investment analysis for the State of Florida.

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APPENDIX A: FULL LITERATURE REVIEW

A-1. Florida's Freight Mobility and Trade Studies

An important study highlighting Florida's importance and future as a global hub for trade is The *Florida Trade and Logistics Study* (2010), initiated by the Florida Chamber Foundation in partnership with the Florida Department of Transportation (FDOT). As the first study of its kind that analyzed trade flows and related logistics activity in the state, the main goal was to attract the attention of public and private investors to the trading opportunities provided by the widening of the Panama Canal. On the other hand, as a continuation of the previous study on 2010, the *Florida Trade and Logistics Study 2.0* was launched in 2013 with the following objectives:

- Identifying opportunities that would allow Florida to become a global trade hub;
- Developing a plan of operation to accomplish this goal; and
- Continuing to build consensus among public and private partners in support of this vision and its implementation.

The 2013 Florida Trade and Logistics Study highlights a variety of different strengths of Florida, such as being one of the country's largest consumer and visitor markets, an extensive freight transportation infrastructure, as well as time-honored business and cultural connections to South and Central America. The study also points out to a concern that even though a lot of freight is imported, many trucks and trains carrying freight to the state leave the state nearly empty or partially loaded.

Florida Freight and Mobility Plan (FMTP) is another major study recently undertaken by the FDOT. FMTP is a result of a mandate by Florida's House Bill (HB) 599, which also required the FMTP to identify investments and policies that promote the following:

- Increase the flow of domestic and international trade through the state's sea ports and airports, including specific policies and investments that will recapture cargo currently shipped through sea ports and airports located outside the state.
- Increasing the development of Integrated Logistics Centers (ILCs) in the state, including specific strategies, policies, and investments that capitalize on the empty backhaul trucking and rail market in the state.
- Increasing the development of manufacturing industries in the state, including specific policies and investments in transportation facilities that will promote successful development and expansion of manufacturing facilities.
- Increasing the consumption of CNG, LNG, and propane energy policies that reduce transportation costs for businesses and residents located in the state.

The FMTP was developed in two phases, each with their own purpose: (1) The Policy Element, and (2) The Investment Element.

The *Policy Element* establishes the policy framework, identifies responsibilities for implementation, and meets the requirements of Florida HB 599, as codified in 334.044 (33) Florida Statutes. Specifically, as part of FMTP's *Policy Element*, Florida's freight stakeholders

helped FDOT develop the following objectives to guide the state in the process of making strategic freight investments to achieve goals in Florid House Bill (HB) 599:

- Capitalize on the freight transportation advantages of Florida through collaboration on economic development, trade, and logistics programs.
- Increase operational efficiency of goods movement
- Minimize costs in the supply chain
- Align public and private efforts for trade and logistics
- Raise awareness and support for freight movement investments
- Develop a balanced transportation planning and investment model that considers and integrates all forms of transportation
- Transform the FDOT’s organizational culture to include consideration of supply chain and freight movement issues

The *Investment Element* provides a roadmap to guide and develop efficient, reliable and safe freight transportation infrastructure over the next thirty years. Specifically, it identifies the freight needs of Florida, identifies the criteria for state investments in freight based on the goals and objectives developed in the *Policy Element*, and prioritizes freight investments across modes, and completes the meeting requirements of the federal *Moving Ahead for Progress in the 21st Century Act* (MAP-21). The investment element was prepared through the input of shippers, receivers, freight carriers, manufacturers, academe, various industries, associations, regional and local planning agencies, sister state agencies, and other concerned private sector stakeholders.

The FMTP states that, for investment prioritization, a project will be considered a “freight project” if it is on the designated Florida Freight Network and satisfies one of following:

- Freight Focused: The primary purpose of the project is to address a specific freight transportation need
- Freight Related: The primary purpose of the project is to address multiple transportation concerns, of which freight is one element
- Freight Impacted: The primary purpose of the project is to address general transportation needs, however freight mobility may be positively affected

To prioritize investments among competing “freight projects”, a total of 26 criteria were selected based on the project’s ability to implement the strategies outlined in FMTP’s *Policy Element* and FDOT’s best practices in project selection.

Using the above criteria and a prioritization process, FDOT identified a list of close to 800 freight projects, with total anticipated costs of over \$34 billion. While these projects span all modes of transportation, over half of the freight projects in the needs identified by the criteria were highway related (summing up to about 82% of the total costs).

A-2. Freight Movement Plans, Studies and Investments by Select Other States and Countries

This section provides a review of freight mobility plans and investments by select other states in the U.S., viz.: Texas, Georgia, New Jersey, and the State of Washington. In addition, the section provides examples of targeted freight/logistics infrastructure investments across different states in the U.S. and other countries.

A-2.1 Texas

The State of Texas is currently working on their first comprehensive and multimodal *Texas Freight Mobility Plan* (TFMP) and it is scheduled to be completed by the end of November 2014. However, TxDOT has already completed a multitude of white papers that builds towards the TFMP.

According to the white paper, “A Primer on Public Sector Freight Performance Measures”, the freight performance measures (organized by specific goal areas) that are based on best practices across the country and national-level research are:

- Annual Hours of Truck Delay (Mobility)
- Truck Reliability Index (Mobility)
- Reduction in Freight Bottlenecks (Mobility)
- Truck Related Crashed and Fatalities (Safety)
- Rail Accidents (Safety)
- At-Grade Rail Crossing Safety (Safety)
- State of Good Repair on the Strategic Freight Network (Preservation)
- Operations/ITS (Aspirational Measures)
- Multimodal Access (Aspirational Measures)

Another white paper, “Freight and Economic Development: Driving the Texas Economy” suggests that freight transportation investments are geared towards the state’s unique assets and strengths such as advanced technology and manufacturing, aerospace/aviation and defense, biotechnology and life sciences, information and computer technology, petroleum refining and chemical products and energy. This paper also states that the transportation networks that serve freight transportation must ensure reliable and timely deliveries of goods and services so that the competitiveness of Texas business is kept intact. The paper concludes by stating that the right freight transportation infrastructure is vital to enable businesses in Texas to compete and to move goods and services nationally and internationally.

The white paper, “Goals, Objectives, and Performance Measures” highlights the TFMP objectives to meet the needs identified by Texas stakeholders and review of several plans with freight components.

- Safety -increase the resiliency of the state’s freight transportation system and reduce the rates of crashes, fatalities, and injuries on the primary and secondary freight network.

- Asset Management- achieve and maintain a good state of repair for all freight transportation modes, improve the overall rating of bridges and the pavement conditions on the primary and secondary freight network.
- Mobility and Reliability- reduce the number of strategic freight network miles that has high levels of congestion and improve travel time reliability on critical freight corridors.
- Multimodal Connectivity- Improve first and last mile connectivity between freight modes and major generators.
- Stewardship- support greater coordination among the agencies responsible for freight system investment.
- Customer Service- implement a performance based, prioritization process for freight system investment, increase freight expertise in districts, across departments and elected officials.

Additionally, the white paper, “Texas Priority Corridors of Commerce: Shaping the Future of Freight Movement” states that one of the cornerstones of the development of the TFMP is the Texas Priority Freight Network (TPFN). This network identifies key freight movement corridors and gateways and will define an all-mode priority freight network that includes transportation corridors such as:

- Roadways
- Railroads
- Pipelines
- Key Freight Generators and Gateways including Marine Ports
- Border Crossings
- Airports
- Major Distribution and Manufacturing Clusters
- Major Intermodal Facilities

The TPFN is designed to serve as the backbone for prioritizing freight investments, identifying target areas, hot spots, bottlenecks, while supplying the freight industry, the community, and other stakeholders with the framework to understand how goods move in, out and through Texas.

A-2.2 Georgia

The Georgia Department of Transportation (GDOT) led the development of the Georgia Statewide Freight and Logistics Action Plan, which summarizes the steps to take for the progression of freight interest and activity. The report states that freight transportation is of vital importance to Georgia’s economy and recommends a series of improvements to be taken so that Georgia does not lose its economic advantage. The recommended improvements are depicted in Figure A-1.

Mode	Summary of Improvements	Cost (\$ millions)	Increase in Gross State Product (\$ millions) or Other Benefits
Port	Deepen Savannah Harbor	550	2,800 in transportation cost savings
	Develop Jasper Port	4,000	9,000 in additional tax receipts for Georgia and South Carolina
Rail	Line Haul Expansion		
	Expansion of Terminals	4,000 to 6,000	13,200 to 19,800
	Increase Weight Limits and Vertical Clearances		
Highway	Add Capacity to Select Long-Haul Corridors		
	Improve Congested Interstate Interchanges		
	Develop Key Bypass Routes	9,542	52,480
	Improve Key Rural Freight Corridors		
	Improve Last-Mile Connectors in Savannah and Atlanta		
	Safety Improvements		
Air Cargo	Add Warehouse Capacity in Atlanta	15 to 20	Additional air cargo capabilities
	Lengthen Airport Runway in Albany		
TOTALS		18,017 to 20,112	65,680 to 72,280 ^a

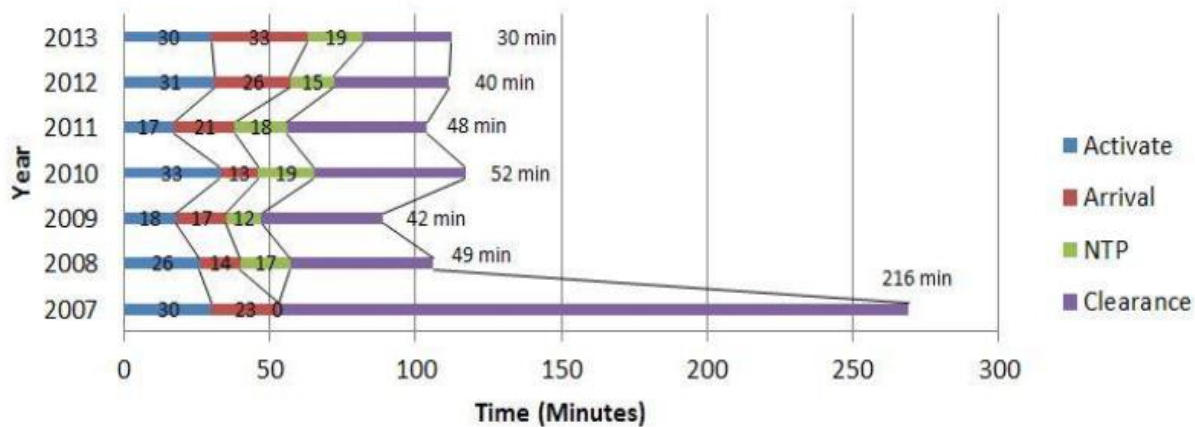
^a Increase in GSP does not include benefits from marine port and air cargo improvements.

Figure A- 1. Summary - Recommended Improvements and Expected Monetary Return

The report suggests that the quickest action should be taken on the deepening of the Savannah Harbor due to the expansion of the Panama Canal along with rail and interstate interchange improvements. The plan also highlights operational improvement strategies and lists the following items under this category.

- Metro Atlanta: Intelligent Transportation Systems (ITS) is highlighted as a significant component of maintaining safe and efficient traffic operations of interstates in metro Atlanta. This system monitors traffic flow via automatic sensors and cameras, and provides real time travel information to all drivers. In addition, information alerting drivers of incidents and delays is delivered through a dedicated toll free live operator, changeable message signs (CMS), an internet website operated by GDOT, phone apps and broadcast media. In addition, the system is served with GDOT highway emergency response operators (HEROs) who coordinate with emergency responders such as local police, fire and state patrol.
- Metro Atlanta: Regional Traffic Operations Program (RTOP) is a multi-jurisdictional signal timing program that improves traffic flow and reduces vehicle emissions through improved and coordinated corridor signal timing. This program differs from regular signal timing operations in the sense that GDOT provides additional signal timing personnel to focus only on metro Atlanta’s busiest arterial roadways. GDOT works closely with local governments (since corridors cross city and county boundaries) to make signal timing seamless.

- Metro Atlanta: Downtown Connector Operational Improvements is located on a four-mile stretch of interstate where I-75 and I-85 are co-routed through the heart of the city, which can behave as a significant freight bottleneck. To reduce congestion, GDOT gradually added operational improvement to this location starting with re-striping and extending a divider wall to add ramp storage and reduce weaving maneuvers. In addition, four southbound entrance ramp meters were installed with significant improvements to traffic flow on the connector. GDOT states that the ramp meters were very effective and saved a weekly average of 17.3% in fuel and 22.4% in travel time during the four-hour afternoon traffic peak period.
- Metro Atlanta: Traffic Incident Management Enhancement (TIME) is a taskforce of first-responders and transportation agencies who developed and sustained a regional incident response program to facilitate coordination of safe and fast roadway clearance.
- Metro Atlanta: Towing and Recovery Incentive Program (TRIP) is created by the TIME and is a quick-clearance program that provides financial incentive/bonus for heavy-duty recovery/wrecker companies to remove large truck-involved crashes from affected travel lanes within 90 minutes. GDOT reports that before this program went into effect, clearance of large truck crashes often took several hours causing a large travel delay. TRIP operates on I-285 and all radial interstates (I-20, I-75 and I-85) and major state routes GA-400 and GA-166. Figure A-2 depicts time to roadway clearance before and after the implementation of the TRIP program.



Source: www.timetaskforce.com/index.php/time-initiatives

Figure A- 2. Time to Roadway Clearance – Before and After TRIP Program Started

- Metro Savannah: Traffic Operations and ITS – The Savannah region has significant truck traffic on its interstates and many state and local roads due to the Port of Savannah. ITS hardware installed along those interstates includes CMS to inform drivers of incidents or advisories.
- Metro Macon ITS – Has the same capabilities of the Savannah region ITS. Macon is an area that serves as a connector for the trucks traveling from the Port of Savannah to Atlanta.

- Statewide: Intelligent Transportation Systems (ITS) – On the interstates outside of the metro Atlanta area, probe technology blends road sensor data with data points from GPS-enabled vehicles to obtain traffic speeds and incident identification and response.
- Statewide: PrePass program, which is a multi-state pre-pass program that is an automatic vehicle identification (AVI) system. This system enables participating transponder-equipped trucks to be pre-screened and “bypass” Georgia’s interstate route weight stations (19 in total) as well as the participating states along the interstate corridor. This allows the trucks to be on the travel lanes at higher speeds instead of stopping at each weight-in station to add to their overall delay.

As a major freight hub, Atlanta also has its own *Atlanta Regional Freight Mobility Plan* that was initiated by the Atlanta Regional Commission. The *Atlanta Regional Freight Mobility Plan* highlights seven key issues for the current and future freight mobility needs.

- System Capacity: Congestion and resulting capacity inefficiencies are the major issue affecting freight mobility. The primary cause of congestion was highlighted as infrastructure deficiencies in the plan. The five major freight congestion and infrastructure deficiencies were reported as:
 - Insufficient Grid System Deterring Alternative Routes
 - Bottlenecks at Key Interstate Interchanges and Freight Generators
 - At-grade Rail Crossings
 - Rail Capacity Limitations and Development Issues
 - Potential Diversion of Through Truck Traffic
- Freight System Operations: In the stakeholder input process, operational issues including the need for improved network management, updated design standards to accommodate newer commercial vehicle requirements and an updated properly signed regional truck route system was reported. The three major issues were:
 - Using ITS for Network Management – The necessity of real-time information was brought up by stakeholders.
 - Design Standards to Accommodate All Freight Requirements
 - Lack of Regional Truck Route System
- Land Use Conflicts: It is essential for municipal and regional policies to provide guidance and help reduce the sprawl of freight activities by developing goods and trade-related distribution facilities within existing transportation corridors and zones. This way a balance between the movement of people and the movement of goods across key corridors can be ensured. This will also enhance economic competitiveness and sustainability. Two key issues raised are:
 - Encroachment of Residential Use into Traditionally Industrial Corridors/Areas
 - Freight District Redevelopment
- Safety: Carriers want to operate effectively and efficiently while maintaining high safety standards. Therefore, key corridors and hotspots with safety concerns can be determined and action should be taken to take all the necessary measures to ensure safe travel of all vehicles.
- Education and Public Awareness: The ability to advance the need for more proactive freight mobility planning and especially for freight specific projects is dependent on the

public awareness regarding the benefits of the freight mobility on regional competitiveness and quality of life.

- Regional Approaches: The stakeholder group mentioned that there is a need for a regional approach (reaching over city, county lines) to freight mobility and all the planning factors that impact the freight subsystem.
- Community and Environmental Impacts: Freight transportation impacts environmentally sensitive areas such as floodplains, steep topography, wetlands, reservoirs, agricultural and forest lands, and streams and rivers. The trends that were found indicate that freight, particularly diesel-emitting freight, has a significant impact on air quality, whereas the construction and operation of freight facilities can impact the functionality of natural habitats. Additionally, freight was found to be a significant contributor to water pollution. Therefore, these issues should also be addressed by the local and regional governments to ensure the balance between the community, environment and the impacts of freight.

The major recommendations of the Atlanta Regional Freight Mobility Plan were divided into three subsections as Institutional and Policy Strategies, Operational Improvement Strategies, and Infrastructure Strategies.

- Institutional and Policy Strategies
 - Conduct peer exchange with other comparable regions; provide local government freight-related training and capacity building; and begin feasibility discussions on establishing a multi-state I-75 Coalition.
 - Establish an on-going freight related outreach and communications program and encourage development of a “share the road” driver education program.
 - Incorporate freight-specific measures into project prioritization procedures
- Operational Improvement Strategies – Recommendations are split into two categories as public and private sector:
 - Public Sector Operational Recommendations
 - Establish a Freight Corridor Traffic Signalization Improvement Program to improve signal timing and support efficient freight movement along the priority freight corridors.
 - Prepare a Regional Truck Route Plan and Identify Freight Districts Signage Improvements.
 - Upgrade Regional Priority Freight Highway Network routes, where needed, to meet minimum geometric and weight requirements to support freight movement needs.
 - Implement a Georgia Navigator Freight-User Communications Program encouraging increased use of incident-related information by private-sector freight dispatchers.
 - Encourage discussions at the Land Use Coordinating Committee (LUCC) to lead discussions identifying opportunities to preserve important freight-related corridors and districts.
 - Prepare Model Freight-Related Land Use Guidelines and Site Design Standards
 - Private Sector Operational Recommendations

- Implement an Off-Peak Delivery Pilot Program promoting off-peak deliveries in key commercial areas.
- Infrastructure Strategies
 - Interchanges: Enhance bottleneck interchanges on the Regional Freight Priority Network through redesign, operational improvements, and capacity expansions.
 - Rail Crossings: Work with governments and the private sector to mitigate issues associated with crossings including reducing the number of at-grade crossings. This includes grade separation and crossing consolidation.
 - Intermodal Connectors: Develop truck friendly lanes on intermodal connectors for key freight generators throughout the region.
 - Highway and rail capacity: Invest in expanding the region's highway system through the most feasible combination of a regional bypass system, truck only lanes and enhancements to the region's Priority Freight Highway Network. Also invest in rail capacity to meet the projected increase in rail freight and to encourage the diversion of truck traffic to rail.

A-2.3 New Jersey

Another major state in the east coast that sees a large amount of freight movement is the State of New Jersey. Therefore, the New Jersey Department of Transportation conducted the New Jersey Comprehensive Statewide Freight Plan, which states that all indicators point to increased demands being placed on New Jersey's freight transportation system as larger amount of goods are forecasted to move within and through the state. The freight plan presents a consolidated set of actions that can be organized into seven categories as follows:

- Statewide Coordination and Advocacy
 - Establish a senior level body to promote logistics as a critical element of the state's economic prosperity.
 - Implement education, outreach, and local technical assistance programs to increase freight knowledge in general public and private sector.
 - Promote a New Jersey Logistics Economic Development Program that actively facilitates warehouse development in the state.
- Priority Freight Nodes
 - The State's priority freight nodes (intermodal rail yards and port facilities where there is concentrated freight activity) are assets which must be protected, therefore immediately completing previously identified projects and advancing newly proposed projects related to these assets.
- Priority Freight Corridors
 - Highway Corridors: Develop specific infrastructure and operational action plans for priority highway freight corridors identified.
 - Rail Corridors: Ensure that the priority rail projects / initiatives identified in the plan are appropriately represented in capital priorities and accelerated. Also, begin to develop a more coordinated mechanism for the planning and management of the rail system.
 - Waterway Corridors: Support maintenance of key waterway channels. Also promote the beneficial uses of dredged material.
- System Optimization Strategies

- Advance Mode Shift (besides truck freight, promote the usage of rail and barge options) and time shift (promote the utilization of off-peak roadway capacity) strategies.
- Policy and Planning Strategies
 - Policy
 - Increasing the number of truck rest stops to ensure that there is an adequate number of support facilities to serve the trucking community.
 - Roadway designs to adequately provide clearances for heavier and wider trucks.
 - Planning
 - Elevate the consideration of freight issues/impacts in the highway improvement planning and prioritization process.
 - Explore modal options to support warehouses and distribution centers (DCs), individually and as part of corridor efforts to better connect clusters with port facilities.
 - Determine where future warehouse and distribution center facilities can best be located within the state.
 - Advance the adoption and integration of freight Intelligent Transportation System (ITS) and other technologies.
 - Incorporate funding considerations early in the planning process.
- Data Collection and Multimodal Analysis Tools
 - Improve data collection and multimodal analysis tools (the plan recommended that the state should conduct a five-year large truck monitoring program to monitor truck volumes and patterns statewide).
 - Create a mechanism for sustained data and analysis coordination and sharing
 - Develop improved highway freight analysis tools, data collection programs and monitoring, which will lead to the creation of a multi-modal analysis tool.
- Safety and Security
 - The movement of hazardous materials should be tracked and controlled efficiently.
 - Enforcement of safety, security and routine enforcement stops should be undertaken and facilities should be provided to state police to carry out these stops.
 - Monitor and respond to freight impacts (air cargo) of federal security requirements.

A-2.4 Washington State

One of the major states in the west coast with a large freight movement is the State of Washington. Therefore, as dictated by the MAP-21, the Washington State Department of Transportation (WSDOT) generated the Washington State Freight Mobility Plan. The Freight Plan suggests the prioritization of the freight improvement projects in the following order:

- Operate existing highways efficiently by using traffic management tools to optimize the flow of traffic and maximize available capacity.
- Manage demand either by shifting travel times or promoting the usage public transportation so that entire system can function better.

- Add capacity strategically by targeting worst hotspots or filling critical system gaps to best serve an entire corridor, community or region. This would also mean fixing bottlenecks that constrain the traffic flow.

In this effort, the WSDOT has allocated funding for freight related projects through the year of 2017 and the allocated funding project classes are highlighted under Figure A-3. It should be noted that “I” and “P” in this figure stand for “Improvement” and “Preservation” as far as the type of project is involved. Additionally, “Z” denotation belongs to projects with freight benefits that can be funded through local programs.

Improvement Program (I)		Approximate Freight Project Value (Millions of \$'s)	
		2013 – 2015	2015 – 2017
I1	Mobility	\$2,659	\$1,135
I2	Safety	\$49.2	\$4.9
I3	Economic Initiatives	\$139.8	\$113.9
Preservation Programs (P)			
P1	Roadway Preservation	\$218.9	\$196.5
P2	Structures Preservation	\$219.2	\$64.1
P3	Other Facilities	\$17.2	\$3.6
Local Programs (Z)			
Z8	FMSIB Projects	\$14.2	\$14.2
Other Programs (Y)			
Y5	Essential Rail Assistance and Banking	\$15.3	\$13.7

Source: Transportation Executive Information System (TEIS), Version 14DOT000. Projects with freight benefits are defined as those located on WSDOT's T-1 and T-2 truck freight economic corridors, including those that are located partially on these corridors.

Figure A- 3. WSDOT Selected Programs and Subprograms

The WSDOT Freight Mobility Plan also highlights top three potential funding mechanisms to fund the freight related projects as follows:

- Fuel Tax Surcharge: One of the fuel tax options evaluated by WSDOT was a diesel fuel tax with non-freight refunds.
- Vehicle Miles Traveled (VMT) Fees: According to WSDOT Freight Mobility Plan, “VMT fees are a way to charge vehicle drivers based on the number of miles that are driven on the highway system. Two basic types of VMT fees were evaluated, distance/vehicle VMT fees and time/location VMT fees. Distance/vehicle VMT fees would vary by vehicle class and drivers would be charged by the number of miles driven.

Fees would correlate directly with mileage consistent with a user fee. Time/location VMT fees could also incorporate congestion pricing and other demand management into the fee structure.”

- Federal Registration Fees: The Plan states that expanded federal registration fees for all freight trucks is a relatively simple and effective means to generate revenue for a dedicated freight infrastructure fund.

A-2.5 Examples of Targeted Freight Investments in the Nation

A-2.5.1 TIGER Grants

The Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grant program, provides an opportunity for the DOT to invest in road, rail, transit and port projects that have potential in achieving critical national objectives. Since 2009, Congress has dedicated more than \$4.1 billion to fund projects that have a significant impact on the Nation, a region or a metropolitan area. In addition, the states responded to this grant very heavily and the 2014 fiscal year funding application totaled \$9.5 billion, which is 15 times the available funding. Some examples include:

- Chicago Regional Environmental and Transportation Efficiency (CREATE) Program: A partnership between U.S. DOT, the State of Illinois, City of Chicago, Metra, Amtrak, and the nation's freight railroads. A project of national significance, CREATE is planned to invest billions in critically needed improvements to increase the efficiency of Chicago region's passenger and freight rail infrastructure and enhance the quality of life for Chicago-area residents. Figure A-4 represents a map of the planned improvements.



Figure A- 4. CREATE Program Map

- Alameda Corridor: The Alameda Corridor is a 20-mile-long rail cargo expressway linking the ports of Long Beach and Los Angeles, California to the transcontinental rail network near downtown Los Angeles. It is a series of bridges, underpasses, overpasses and street improvements that separate freight trains from street traffic and passenger trains, facilitating a more efficient transportation network. The \$2.4 billion Alameda Corridor was funded through a mixture of public and private sources. Benefits include:
 - More efficient freight rail movements
 - Reduced traffic congestion by eliminating at-grade crossings
 - Improvements to the adjacent Alameda Street
 - Multiple community beautification projects
 - Less train emissions
 - Reduced vehicle delays and emissions at railroad crossings
 - Less train noise due to trains traveling in trench
- Infrastructure Support for Development Projects (interchanges, bypasses): Funded through federal government and can have other private funding sources.
- Connect Oregon (lottery bonds): This program was established by legislature in 2005 and provides grants and loans to non-highway transportation projects that promote economic development in Oregon. The types of projects (203 projects to date) include:

- Air cargo facilities
 - Container terminals and cranes
 - Grain facilities
- MDOT Loan/Grant Program: This is a Michigan DOT rail freight economic development program that can loan 50% of the cost of an eligible rail infrastructure project at low-interest rates (minimum interest rate of 2% below prime). In addition, the loan can be forgiven incrementally over five years if agreed-upon minimum carloading requirements are met. To date, 36 projects were funded for about \$14 million.
 - South Carolina Ports: South Carolina invested \$23 million to perform upgrades on the City of Charleston’s Columbus Street Terminal “for handling roll-on/roll-off, breakbulk and project cargoes. This has an immediate impact on competition with other East Coast ports, such as Savannah, Georgia, Port of Jacksonville and Port of Miami, FL.
 - Cordele Inland Port: This new inland port is aimed to reduce rail bottlenecks in Atlanta and Savannah using Heart of Georgia and Georgia Central Railroads. This initiative was taken by the governor’s directive and funding was sought from TIGER grants. Among its benefits are creating a new Central Georgia Logistics Hub so that Georgia can compete with projects looking to locate in adjoining states. It is estimated to create 3,000-5,000 jobs in five years.
 - Port of Brunswick RORO: With one of the nation’s largest auto facilities, the Port of Brunswick offers advantages for RORO shippers. The facility has two Class 1 railroads on terminal and has immediate access to major interstates such as I-95 and I-16. In addition, it has a dedicated RORO facility of 19 paved acres (7.7 HA).
 - Nexus Distribution Facility: This distribution facility is located at International Falls, MN.
 - WisDOT TEA program: The Transportation Economic Assistance (TEA) program provides 50% of Wisconsin state grants to governing bodies, private businesses, and consortiums for road, rail, harbor and airport projects that help attract employers to Wisconsin, or encourage business and industry to remain and expand in the state.
 - FAST Corridor: The Freight Action Strategy for the Everett-Seattle-Tacoma Corridor (FAST Corridor) is a partnership of 26 local cities, counties, ports, federal, state and regional transportation agencies, railroads and trucking interests, intent on solving freight mobility problems with coordinated solutions. The administrative responsibility for this corridor is consolidated in the Puget Sound Regional Council. A list of projects that were undertaken in this effort can be found at the following website: <http://www.psrc.org/transportation/freight/fast/fast-projects/> (Last accessed on July 22, 2014).
 - Centerpoint-Kansas City Southern Intermodal Center: The facility’s central location and proximity to numerous east-west and north-south highways and interstates means tenants can ship goods to 80% of the U.S. population within two days by truck. In addition, adjacent to the intermodal facility is a 940-acre industrial park, making it an ideal location for businesses looking for a strategically located distribution center. The features of this ILC are:

- A 370-acre intermodal park

- A 970-acre industrial park
- Fully improved sites with infrastructure complete
- Off-site storm water detention
- Buildings from 100,000 to 1,000,000-plus square feet
- Flexibility to build to suit for sale or lease
- Adjacent to new Kansas City Southern Class I rail line
- Reduced drayage expenses
- Foreign Trade Zone
- Missouri Enhanced Enterprise Zone

A-2.6 Freight Movement Plans and Investments by International Agencies

Kahn (2003) looked at four case studies (Zaragoza, Spain; Louisville, KY; Singapore; Indiana) to develop a “logistics attractiveness” ranking framework for assessing potential for successful investments in logistics in order to achieve economic development. This framework is used to rank 75 countries by using data from the World Bank. The results show that regional authorities play an important role in leading the development and progress of logistics-related investments. Additionally, training and academic research activities were also found important for local development. The study suggests that countries which rank highly in logistics attractiveness are generally competitive in infrastructure, information and communication technology (ICT), and ease of doing business. In addition, the study also identifies areas around the world where new logistics developments are taking place. According to the Kahn (2003) study, the logistics attractiveness variables are listed in Table A-1.

Table A- 1. CREATE Program Map [Kahn, Taimur (2003)]

<p>ICT</p> <ol style="list-style-type: none"> 1. Technological sophistication 2. Speed and cost of internet access 3. Quality of competition in the telecommunications sector 4. IT training and education 5. Quality of competition in ISP sector 6. Government prioritization of ICT <p>Infrastructure</p> <ol style="list-style-type: none"> 7. Overall infrastructure quality 8. Road infrastructure quality 9. Railroad infrastructure quality 10. Port infrastructure quality 11. Air transport infrastructure quality 	<p>Ease of doing business</p> <ol style="list-style-type: none"> 1. University/industry research collaboration 2. Property rights 3. Intellectual property rights 4. Burden of regulation 5. Business costs of corruption 6. Administrative burden for start-ups 7. Local supplier quality 8. Local supplier quantity 9. Value chain presence 10. Extent of regional sales 11. Breadth of international markets 12. Extent of staff training 13. Hiring and firing practices 14. Cooperation in labor-employer relations 15. Pay and productivity 16. Flexibility of regulations
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That being said, one of the major international trade partners of United States is its northern neighbor, Canada. Since Canada has an invested interest in freight, Ontario, Canada came up with a Freight-Supportive Guidelines document in June 2013. Additionally, this chapter also discusses India’s approach to the freight investments.

A-2.6.1 Ontario, Canada – Freight Supportive Guidelines

The document states that freight movement plays a major role in the provincial economy, generating large revenue and supplying jobs for hundreds of thousands of employees. According to Transport Canada, in the year 2011, 38 percent of Ontario’s economy came from freight-intensive industries. The plan also acknowledges that freight industries tend to be located close to market locations. Therefore, efficient freight movement helps support livable communities. In addition, efficient freight movement brings forth environmental benefits, due to the minimization of air pollution produced as well as fuel consumption.

The guidelines suggest that a strategic truck route network (with categories such as primary, secondary, etc.) should be developed and it should be continuous and harmonized with adjacent municipalities. In addition, this network should promote multimodal connectivity and include routes/corridors within the existing network that quicken freight movement with:

- Advanced signage
- Enhanced traffic signaling (Adaptive Signal Control)
- Higher Speed Limits
- Longer Left Turn Lanes (more storage capacity)

This report also mandates developing minimum standards for freight corridors that include:

- Design Elements: Minimum lane widths, minimum curve radii, minimum intersection standards, minimum intersection spacing, bridge design.
- Construction elements: Surface materials, subsurface materials, signage, and traffic control standards.
- Maintenance elements: Providing priority snow clearing, providing emergency road repairs, scheduling general maintenance to minimize delays and detours.
- Operational Elements: Signal timing, adaptive signal control, ITS.

A-2.6.2 India

According to CII Institute of Logistics (CIL), India has been experiencing significant growth over the past decade, with expected future continuation. This growth is driven by logistics, which is described as the backbone of growth by the Indian government and the industry.

The paper, “The Future of Multi-Modal Logistics Parks in India”, published by CIL in 2009, points out that there is a revolution in India towards multi-modal logistics parks such as ILCs. This is projected to bring new opportunities for manufacturers, retailers, suppliers, and logistics players to improve their supply chain. The report highlights that ILCs have the following direct benefits:

- Better Customer Service
- Decreased Cost for Goods
- Decreased Delivery Times

The paper suggests that ILCs across the globe provide good references for India to model their own ILCs to increase economic competitiveness within the region and especially with China.

A-2.7 Examples of International Targeted Freight Investments

In order to increase economic competitiveness with their competition, the international stakeholders also improve their freight network and make the necessary investments to achieve this goal. Below is a list of projects/investments:

- Panama Canal Expansion: Probably the most important of the current freight investments being made, the Panama Canal Expansion that was started in 2008 due to the in-transit time of vessels increasing from nine hours in 1999 to 13.05 hours in 2008. The main reason for this is the canal reaching over its capacity, and therefore the in-transit time increasing to reflect this bottleneck of vessels. In addition, the canal, before the investment did not have the infrastructure to handle post-panamax vessels causing these vessels to find alternate routes such as the U.S. Intermodal System Route or the Suez Canal. The expansion of the Panama Canal as a major freight route has caused a ripple effect of other freight investments, especially in United States, since the ports that would receive the larger cargo vessels needed to be deepened and the freight network of the receiving states needed to be improved to increase their respective competitiveness.
- Infrastructure Funding Inland Waterways (Brazil): Inland waterways are a significant part of Brazil and the Ministry of Transport indicated in 2011 that it was the year of waterways. The office of the president is making a \$1.62 billion investment for the

construction of seven waterways and 34 terminals so that the potential of Brazil's 29, 825 miles of navigable rivers can be tapped.

- Infrastructure Funding (Europe): With the new Connecting Europe initiative, the European Union (EU) is aiming to create a core network of transport infrastructure to enable swift goods movement. This core network includes major infrastructure essential for the EU internal market, including waterways and ports. The projects that comprise Connecting Europe are expected to be completed by 2030 and the 2014-2020 budget of this investment will total up to 26 billion euros and 85% of this budget is scheduled to be spent on clearing bottlenecks in major multi-modal corridors, including the full deployment of ITS.
- Gantry Crane Investments (Luka Koper, Slovenia): Gantry Cranes at port facilities are very important for the timely and successful transfer of the containers between the waterborne and truck freight modes. In this effort, the EU has invested 2.8 million euros in the construction of rail mounted gantry cranes at the Luka Koper port in Slovenia.
- PLAZA – Zarazoga, Spain: PLAZA is the biggest logistics park/logistics cluster in Europe. Logistics clusters are a composition of several types of firms and operations:
 - Logistics Services Firms: Warehousing, forwarders, transportation, etc.
 - Logistics Operations of Industrial Firms: Distribution operations of retailers, manufacturers, and distributors
 - Operations of companies for whom logistics is a major part of their business
 - Logistics clusters exhibit many advantages such as:
 - Increase in productivity due to shared resources and availability of suppliers
 - Improved human networks including knowledge sharing
 - Tacit communications and understanding
 - High trust level among companies in the cluster
 - Availability of specialized labor pool as well as educational and training facilities
 - Knowledge creation centers such as universities, consulting firms, and think tanks.

PLAZA was a ten year project that was started in 2000 and it was initiated to create more jobs in Aragon, a region of Spain where population has constantly been decreasing. PLAZA has taken into account the following three aspects:

- Geostrategic area: The opening of new routes in Europe means that most of the goods will pass through the Pyrenees via Zarazoga. With its strategic location, Zarazoga is set to be the new economic heart of Spain.
- Intermodality: Zarazoga is a hub for all modes of transportation since it has the capability of moving containers from trains to truck, the possibility of air cargo, and the option of being a dry port connected to major sea ports in Spain.
- Competitive price of land: The land that was sold for PLAZA, was one-third of the price of similar land that would be located in Madrid or Barcelona.

In 2013, PLAZA employed an estimate of 12,000 people and utilized over one-hundred companies including global enterprises such as Inditex.

A-3. Intermodal Logistics Centers (ILCs) and Inland Ports

The terms intermodal logistics center (ILC) and inland port refer to a facility or group of facilities that serve as an intermodal transfer point for freight in a specific area of land physically separated from a seaport. In this specific area of land, certain activities that relate to transport, logistics, goods distribution, consolidation, and/or value-added activities are carried out. These activities and services are designed to be supported through one or more seaports and usually have access to rail or barge.

According to Rodrigue et al. (2010), the function of inland ports has caused some confusion since there really is no specific consensus, even for the definition of the “inland port” term itself. The term “dry port” is often referred to a terminal where various cargo handling and added value activities are performed and it is connected to a seaport with either rail or barge services. In addition, a wide variety is also observed since some inland ports are just simple terminals whereas others are complex entities that include logistics zones and a governance structure (port authority). In the United States, they are mainly called intermodal logistics centers (ILCs). In France they are called “port avance”. The reason behind these multiple terminologies is because inland ports have emerged in a variety of geographical settings and they are servicing a wide variety of functions while involving a wide variety of actors. However, it is discussed that there are three main criteria fundamental to the definition of inland ports:

- **Containerization:** An inland port is heavily linked with the handling of containers, both maritime and domestic. In addition, they are almost always associated with added value activities such as consolidation, deconsolidation, transloading or light manufacturing.
- **Dedicated Link:** An inland port must be linked with a port terminal with a high capacity corridor. These dedicated links can be truck, rail or barge, with rail or barge being the best options.
- **Massification:** An inland port must allow economies of scale in inland distribution by handling larger volumes that come with a lower unit cost.

From a transport stand point, inland ports fulfill three major functions for containerized loads:

- **Satellite Terminal:** Refers to an inland terminal that is in the close proximity to a maritime terminal and which mainly serves to accommodate additional traffic and functions such as a container depot.
- **Load Center:** An intermodal rail or barge terminal that generates access from a maritime terminal to a regional production and consumption market.
- **Transmodal Center:** A transport function where an inland port connects larger systems of freight circulation either through the same mode (e.g. truck to truck) or through intermodal connections (e.g. truck to rail).

Also the following transport functions serve a variety of supply chain functions where some added value activity is performed on the cargo:

- **Consolidation/Deconsolidation:** These are conventional inventory management practices where the cargo is consolidated or deconsolidated into container loads.

- Transloading: Organizing the cargo into specific freight loads that are adapted to capacity and regulatory constraints of the geographical region. Quite often, consolidation, deconsolidation, and transloading are performed together.
- Postponement: A form of inventory management where an inland terminal can offer the possibility to route freight according to last minute and last mile considerations.
- Light transformations: Various forms of product and package transformations such as packaging, labeling or customization to geographical region market characteristics.

Roso et al. (2009) developed a dry port concept where containers are handled as though they were located at a seaport. This study defines three separate categories: distant, midrange, and close. The results show how dry ports can help to shift freight volumes from roadways to relieve congestion and environmental impacts. In addition the study provides background information regarding the development of inland facilities and the related terminology (e.g., Inland Clearance Depot from Europe, Inland Container Depot from India).

Another study (Rodrigue et al., 2010) discusses the emergence of inland ports taking place in several regions around the world. These regions are located where the growth of inland freight distribution required the collection of the freight flows together. However, there is still no definitive consensus about how these inland facilities should be labeled. His paper suggests that the term “inland port” is more appropriate since it refers to terminal activities as well as the important logistics activities taking place in proximity of inland terminals. This perspective demands the investigation of how transport and supply chain functions as well as the various actors involved in their operations are taking shape in inland ports. The Rodrigue et al. (2010) study presents case studies pertaining to European and North American inland ports. The study mentioned that although inland ports are planned, set, and operated by a range of factors (public to private interests), transport and supply chain functions tend to label them as satellite terminals, load centers, or transmodal centers. The study also discusses the three-tier system to represent the functional relations between an intermodal terminal and the region it belongs in: (1) transport functions within the inland terminal; (2) supply chain functions that involve logistics activities; and (3) hinterland flows of retailing and manufacturing activities.

Another study, Busk et al. (2014) suggests that an increase in sea freight flows generates an almost proportional increase in inland freight flows. Therefore, what takes place inland will directly influence the ability of intermodal transport systems to accommodate the growth of international trade. The study mentioned that this could be facilitated by using dry ports/inland ports, which were developed to support seaport operations as well as the overall operations of intermodal transport systems. The aim of the Busk et al. (2014) paper is to develop the Wilmsmeier et al. (2011) framework of directional development by also taking into account the development over a period of time. This way a contribution to the understanding of the development of seaport–dry port/inland port dyads is offered through the analysis of two in-depth case studies from Northern Europe (Sweden and Finland). Additionally, a qualitative research strategy is applied so that the understanding of the development is increased. The results of this study contribute to the results of earlier studies of spatial development of seaport–dry port/inland port development by taking into account development over time. This was performed

by increasing the understanding of the actors, the types of dry ports and the services influencing the development of the dyads.

In addition, Wilmsmeier et al. (2011) examined the spatial development of freight infrastructure by developing a conceptual model which draws attention to the directional development of intermodal corridors in relation to inland terminals. The paper proposes two concepts of vertical control of the development process, first “inside-out” and second “outside-in”. The “inside-out” process is such that inland intermodal terminals seek greater integration with their sea ports, often driven by public body intervention. The “outside-in” development is such that there is a conscious use of an inland node as a tool for sea port actors (whether port authorities or terminal operators) to expand their hinterland (region) and capture discretionary cargo. The key difference between these two models is the role played by different government approaches to the development of inland terminal facilities. The study discusses national examples such as Sweden, Scotland, and the USA. The Wilmsmeier et al. (2011) primary contribution is the research approach developed, which should also be applied to additional case studies in future work.

ILCs and inland ports being at the front line of current logistics distribution, the FDOT Office of Freight, Logistics and Passenger Operations prepared a document called, “ILC Primer: Boosting Florida Economy through Freight Logistics”. Its purpose is to present the benefits of incorporating Intermodal Logistics Facilities within Florida’s freight network. As stated in the document, “A key initiative of Florida’s growth strategy is to transform Florida’s economy into a global hub for trade, logistics, and export-oriented manufacturing.”

According to Section 311.101(2), F.S.:

“The term ‘intermodal logistics center’ including, but not limited to, an ‘inland port,’ means a facility or group of facilities serving as a point of intermodal transfer of freight in a specific area physically separated from a seaport where activities relating to transport, logistics, goods distribution, consolidation, or value-added activities are carried out and whose activities and services are designed to support or be supported by conveyance or shipping through one or more seaports listed in s. 311.09, F.S.”

The primer presents four main objectives:

1. To use policies and investments to take back the cargo that is currently being shipped through seaports and airports located outside the state.
2. To increase the development of intermodal logistics centers in the state.
3. To increase the development of manufacturing industries in the state
4. To reduce transportation costs by increasing the use of compressed and liquefied natural gas.

The key findings can be summarized as follows.

- Establishment of a National Freight Network will open way for standardized interstate freight policies; standardization of interstate freight policies will reduce complication for interstate trucking companies as the policies (as well as the interstate

- trucking network design) would consider the variation in trucks' physical characteristics.
- During the 2013 legislative session, the Florida Legislature also added ILCs as facilities eligible for designation as part of the SIS.
 - SIS (Strategic Intermodal System) is compared to a “hub and spoke” system where the ILC serves as a hub for containerized cargo and the spokes are represented by different modes.
 - Typical characteristics of an ILC:
 - Proximity to a seaport or an airport.
 - Specialized equipment for loading and unloading containerized cargo
 - Parking for truck chassis and for intermediate trucks that move the containers onto a chassis.
 - A loop rail truck of several thousand feet.
 - A population center with skilled employees.
 - Outside storage.
 - A Foreign/Free Trade Zone can serve as an ILC. The goods entering this area can be processed without taxation and then shipped out without having to pay an “excise tax.”
 - A modern freight train can move one ton of freight 468 miles on one gallon of diesel fuel.
 - CSX has its Central Florida ILC on a 1,250 acre lot near Lake Wales/Winter Haven, FL.
 - The primer exemplifies the following intermodal facilities throughout the nation:
 - The Rickenbacker Intermodal Facility in Columbus, Ohio
 - An advantage of the location for the Rickenbacker Intermodal Facility is that it is within a day's drive of 50% of the population of the U.S.
 - Murphy's Warehouses in the Minneapolis/ St. Paul region
 - Their advantage comes from the rail transport being their primary mode of transportation as the accessibility to Class I rail lines allows them to cheaply send freight to other ILCs for distribution.
 - The Alliance Global Logistics Center in Fort Worth, Texas
 - Advantages: Direct routing of truck traffic onto the highways and Interstate 35; close proximity to Interstates 20,30, and 40; access to Class I railroads.
 - The Port of Tucson Intermodal Facility
 - Established as an FTZ; features over 26,000 feet of railroad track. Also, as this facility provides custom design and development on-site to 3PL companies attracted large tenants.
 - Family Dollar Distribution Warehouse in Marianna, FL
 - Direct access to the interstate allows free movement of trucks in and out of the facility without interfering with local traffic, thus providing no truck impact to the local roads.
 - Port Laredo in the Town of Laredo, Texas
 - Access to FTZ and the Laredo International Airport.
 - Workforce should not be overlooked when analyzing the success of Port Laredo.

Figure A-5 presents Florida Railroad terminals per three types such as multimodal, bulk transfer, and automobile.

Type	Railroad	Location	Highway Access	
			Facility Roadway	Nearby Major Roadway
Intermodal	CSXT (CSX Intermodal)	Jacksonville	Sportsman Club Road	I-295
		Orlando	East Landstreet Road	Beachline Expressway, I-4
		Tampa	N. 62 nd Street	I-4, SR 60, Selmon Expressway
	NS	Jacksonville ¹	N. Edgewood Drive	I-295, I-10, I-95
		Titusville	Tico Road	SR 405, I-95
	FEC	Jacksonville	US 1	I-95
		Fort Pierce	Indian Hills Drive	I-95, US 1
		Fort Lauderdale	Andrews Avenue	I-95, US 1
		Miami	NW 69 th Avenue	I-75, I-95
Bulk Transfer	CSXT (Transflo)	Jacksonville	Druid and Warrington Streets	I-10, I-95, I-295
		Sanford	West 5 th Street	I-4
		Tampa	N. 34 th Street	I-4, Selmon Expressway, I-275
		Fort Lauderdale	SW 21 st Avenue	I-95
	NS (Thoroughbred Bulk Transfer Terminal)	Jacksonville	West 20 th Street	I-295, I-10, I-95
		Miami	NW 62 nd Street	I-95
Automobile	CSXT (TDSI ³)	Jupiter	Corporate Road S	Bee Line Highway, FL Turnpike, I-95
		Jacksonville	Blount Island Boulevard	I-295
		Jacksonville	W. 12 th Street	I-295
		Ocala	600 NW 1 st Avenue	I-75
		Orlando	East Landstreet Road	Beachline Expressway, I-4
		Winter Haven ²	Pollard Road	SR 60
		Tampa	Anderson Road	Veterans Expressway, I-275
	NS	Jacksonville	Old Kings Road	I-295
		Titusville	Tico Road	SR 405, I-95
	FEC	Miami	NW 67 th Avenue	I-75, I-95, Palmetto, and Dolphin Expressway

Figure A- 5. Florida Railroad Multimodal Terminals as depicted in Florida Freight Mobility and Trade Plan: Policy Element

A-3.1 Other National ILCs

- Centerpoint-Kansas City Southern Intermodal Center
 - A 370-acre intermodal park

- A 970-acre industrial park
- Fully improved sites with infrastructure complete
- Off-site storm water detention
- Buildings from 100,000 to 1,000,000-plus square feet
- Flexibility to build to suit for sale or lease
- Adjacent to new Kansas City Southern Class I rail line
- Reduced drayage expenses
- Foreign Trade Zone
- Missouri Enhanced Enterprise Zone
- Americas Gateway Logistics Center
 - 1,600 acre site strategically located in central southern Florida
 - Largest of its kind in Florida
 - Master-planned for multiple logistics functions
 - Planned 18-million square feet of manufacturing and distribution space
 - Cold chain opportunities
 - Within service area of four major seaports – Miami, Ft. Lauderdale, Palm Beach, and Manatee
 - Located on four miles of rail frontage and served by major freight railways – CSX, Florida East Coast Rail, and South Central Florida Express (SCFE)
 - Located on two major feeder highways – US 27 and SR 78 with access to three interstate highways – I-75, I-4, I-95 and the Florida Turnpike
 - Within service area of two major airports (Miami, Ft. Myers- Naples) and Air Glades air cargo
 - Away from congested coastal areas
 - Access to a workforce of over 200,000 in Florida’s Heartland region
 - Foreign Trade Zone 215
- The North Carolina Global TransPark (GTP)
 - 2,500-acre industrial/airport site situated strategically in Eastern North Carolina
 - 5,775 acres environmentally permitted for development
 - Buildings and sites readily available
 - Airport (ISO) with an 11,500 x 150 foot runway
 - CAT I instrument landing systems (ILS)
 - Foreign-Trade Zone #214
 - 33,000 SF Composite Center on-site
 - Location near several major military installations
 - Rail spur on site
 - Short distance to I-95 and I-40
 - Proximity to two deep water ports
 - Telecommunications infrastructure, fiber optic network and full utilities on-site
- Port Inland Distribution Network (PIDN), Port of New York and New Jersey
 - Situated at the heart of the Northeast Corridor, the Port of New York and New Jersey is at the logistics center of the nation
 - Home to over 8 distribution and warehouse facilities
 - Rail system, which includes ExpressRail and connects to Regional Rails
 - Foreign-Trade Zone 49
 - Short distance to extensive roadway network

- Port facility is situated within 700 miles of major cities and population centers in the Northeast.
- Shippers can reach 100 million consumers within a day’s departure from the port facility.
- Compromise a network of inland container terminals in locations like Albany, NY, Bridgeport, Connecticut, and Harrisburg, Pennsylvania and these sites are linked to the port by dedicated rail, barge, or tandem trailer-truck shuttle.
- Projections of terminal productivity in 2040 is summarized in Table A-2.

Table A- 2. Port of NY/NJ Terminal Productivity Projections [Ellis, (2001)]

	Modal Split			Container Terminal Dwell Time	VMTs	
	Truck	Barge	Rail		0-75 Mile Zone	75-400 Mile Zone
Without PIDN	86%	0%	14%	6 days	314MM	404MM
With PIDN	38%	39%	23%	2 days	116MM	75MM

A-3.2 Major National Inland Ports

- Virginia Inland Port
 - 165 acre facility
 - 50 paved acres
 - 8,000 feet of on-site rail serviced by Norfolk Southern
 - within 1 mile of I-66 and within 5 miles of I-81
 - 24/7 access to containers via a drop off
 - Real time data communication to marine terminals
 - Truck Rail transfer by Straddle Carriers
 - Live load/unload capable
 - Foreign Trade Zone 20
 - Inland Port
- South Carolina Inland Port
 - Opened in October 2013
 - Provides shippers with access to 95 million consumers within a one-day drive
 - Expected to create additional economic investment in South Carolina, where BMW, Michelin, and other international manufacturers already operate
 - Norfolk Southern serves as the inland port through its main rail line
 - Facility is positioned along the Interstate 85 corridor between Charlotte and Atlanta, where Norfolk Southern operates additional rail yards
 -

A-3.3 Major International ILCs/Inland Ports

- ADNPlus Industrial Multiport, Monterrey, Mexico
 - Proposed as a Multimodal Logistics Center located in Monterrey, Mexico.
 - Originally planned for 1,100 acres

- Adjacent to Monterrey International Airport on the Maxico-Laredo Highway and has connections to Mexican Railways (TFM and Ferromex).
- The facility would have been the only authorized cargo terminal in northeast Mexico with a free trade zone designation.
- Port-like development where customs, cargo handling, logistics, and manufacturing were to occur, however project was canceled during conceptual phase.
- Cancellation of this site point out that a strong support structure is needed to back up conceptual inland port plans.
- Logport, Duisburg, Germany
 - Logport is a comprehensive tri-mode ILC at the former Duisburg-Rheinhausen ironworks site.
 - Located at the heart of central Europe
 - Port of Duisburg was established in 1716
 - Approximately 30 million consumers live within a 94 mile radius of Logport.
 - 665 acres with access to its own river container terminal, road, rail and nearby airports.
 - Direct connection to Europe's most important waterway, River Rhine
 - Direct waterway link to Duisport, Europe's largest inland port as well as being an ocean port.
- Europort Vatry, France
 - Vatry ILC is located 90 miles east of Paris
 - Bringing together on-site access to multiple transportation modes with a variety of services managed by a private company.
 - Has a 24 hour all-cargo airport with no-flight restrictions, road and rail connections.
 - Direct links to A 25, A 4 and A 5 motorways for efficient trucking
 - ILC is 1,040 acres with a potential to add 2, 220 acres in the future.
- Metroport Auckland, New Zealand
 - First inland port
 - TranzRail link the inland port to Port of Tauranga
 - Has access to major roadways
 - Customs bonded site (customs transactions are done at this inland port rather than the maritime port of Tauranga).

A-3.4 Selected Intermodal Logistics Centers (ILCs) / Inland Port Case Studies (SCAG Inland Port Case Studies – The Tioga Group)

A-3.4.1 Virginia Inland Port (VIP)

The Virginia Inland Port idea was introduced early to mid-1980s with a focus to capture a larger market share for the Port of Virginia (Norfolk). Virginia Port Authority (VPA) determined that in order to attract businesses they need to build an intermodal facility to the Appalachian Region that could be linked by rail to the port area.

VIP started operations in 1989 with initial volumes of 8,000-9,000 containers and reached its goal of 20,000 containers in 1999. VIP steadily increases in the number of containers throughput such that 14,000 in 2003, 28,000 in 2004 and 35,000 in 2005.

Norfolk Southern (NS) provides the intermodal service between the two VPA terminals (Norfolk International Terminal – NIT, and VIP).

- NS provides the train service and rail cars.
- VPA owns both terminals and operates them through its subsidiary Virginia International Terminals (VIT).
- The services at the terminal in Front Royal includes a warehouse facility, mechanical repairs, USDA inspections, SGS inspections, pool chassis, generator sets for refrigeration units and hook ups. The terminal is a U.S. Customs-designed port of entry and full range of customs functions is available.
- The marine carriers are the customers of VIT.
- VIT has a contract with NS to provide a second morning train service scheduled for six days per week in each direction. VPA markets this service to marine carriers as a part of the terminal service package.

VIP has a very large regional benefit, with an estimated 95 percent of businesses generated being new business for the Port of Virginia-Hampton roads. From 1989 to 2005, 24 major companies have located distribution centers near VIP with an estimated \$600 million investment. These firms cover a large variety of products such as plastics, medical supplies, apparel, auto parts, furnishings, food, paper, and four-wheel-drive vehicles.

Success factors of VIP:

- There was capital and commitment to develop the terminal and these were very strongly supported by the Commonwealth of Virginia. Commonwealth created a transportation trust fund that is composed of a percentage of gasoline, titling, and sales and use taxes. The VPA then received 4.2 percent of the trust fund called as the Commonwealth Port Fund (CPF).
- The marketing plan was sensible and flexible enough to include possible changes if needed.
- Norfolk Southern is a willing Class 1 railroad. The long-standing relationship between NS and VPA supported the development of VIP. In addition, there was a commitment to run the train and possibly absorb initial start-up operating costs.

A-3.4.2 Alliance Texas Logistics Park

The Alliance Texas Logistic Park (ATLP) covers around 15,000 acres. It is located 15 miles west of Dallas-Fort Worth International Airport, and 15 miles north of downtown Fort Worth. To connect The Alliance Texas Logistic Park with a broader national and international market, the rail, air and highway systems in existence have been improved. Moreover, the business activity at ATLP has also been improved by an enterprise zone, a foreign trade zone, an inventory tax exemption, a world trade center, and high-tech telecommunication facilities.

In 2005, the amount of cargo handled by the Fort Worth Alliance Airport was 220,134 metric tons, having an increment of 28 percent above the 172,046 metric tons that were handled by the

facility in 2004. Currently, the Fort Worth Alliance Airport is capable of handling freight-cargo carried by all sizes of aircrafts.

Services and Sub-developments:

- Alliance Center, a complex that encircles the airport and is geared primarily towards aviation-related enterprises.
- Alliance Commerce Center, a business park for manufacturing and high-tech firms.
- Alliance Air trade Center, an air cargo development with direct access to the Alliance Airport runway system, direct access to Interstate 35 W, and over 250,000 square feet of space for cargo companies.
- Alliance Gateway, a distribution, manufacturing, and office sector for large distribution and industrial firms.
- Alliance Advanced Technology Center, a technology complex.
- Heritage Reserve at Alliance, which offers locations for research and development facilities.
- Westport at Alliance, a 1,500-acre industrial and distribution sector located on BNSF's main line and intermodal terminal.
- Alliance Crossing, a retail complex.
- Rail intermodal service.
- Air cargo services: The Fort Worth Alliance Airport that accommodates air cargo, corporate aviation, and military operations.
- Auto loading service: The 55-acre auto facility is a conventional rail transfer facility and serves DaimlerChrysler, American Honda, Hyundai and a number of other manufacturers and automotive re-marketers.

Hillwood, which is a Perot Company, runs the business park that accommodates more than 140 companies, including 62 from the Fortune 500, Global 500 and Forbes List of Top Private Companies. These firms have made an investment of more than \$5 billion in order to build 24.4 million square feet and create 24,000 fulltime jobs.

Success factors of Alliance Texas Logistics Park:

- The airport was placed in order to serve the greater Dallas-Fort. Worth area and points beyond. As with other cargo airports, its initial tenants were aircraft and airline industry firms, not cargo shippers or consignees.
- The rail intermodal terminal was relocated from Dallas to Alliance. Therefore, it had a preexisting clientele. The Hillwood Group has been a very effective master developer for the project.
- This facility initiated the tendency toward synergistic development of business parks and intermodal terminals. At the beginning, there were some concerns about the distance of the facility from the Dallas Metro area, which were related to drayage costs. However, Alliance has been a successful development, overcoming this negative factor through Hillwood's interest in having an intermodal facility as an adjunct to the industrial park. Therefore, Hillwood actively markets the synergistic relationship between the intermodal terminal and the industrial park, bringing in more business through this process.

A-3.4.3 The Port of Huntsville, Alabama

This port is an inland port located in Northern Alabama. It consists of three operating facilities, which are Huntsville International Airport, Jetplex Industrial Park, and the International Intermodal Center. These facilities are under the jurisdiction of Huntsville-Madison County Airport Authorities. This inland port has the purposes of stimulating the economic growth of the Tennessee Valley Region and providing a good quality multi-modal transportation services to a varied regional clientele.

The facility is served by two NS trains per day, westbound and eastbound. Around 90 percent of the volume that passes through the terminal is international containers, and around between 60 to 70 percent of that volume moving over the west coast ports. The west coast volume is transferred to Norfolk Southern (NS) at Memphis by Burlington Northern Santa Fe or Union Pacific. The rest of the international volume is moved through the ports of Savannah, Charleston, Jacksonville, and Miami.

International air cargo service for the Port of Huntsville started in 1991 with Swiss freight forwarder Panalpina. Panalpina is operating ten scheduled B-747's per week to European markets, three scheduled weekly flights to Mexico, and charter aircraft as needed. In addition, the terminal is served by Norfolk Southern (NS), whose main lines are between Memphis and Chattanooga. Additionally, IIC provides customs services for both international air cargo and rail containers.

A considerable portion of the terminal's container business comes from import auto parts of Toyota engine plant, and Hyundai and Mercedes auto assembly plants. Moreover, the region has developed a considerable auto assembly and parts facilities. The Huntsville rail intermodal terminal has been a beneficiary of the automotive business with record volumes in 2004 and 2005.

Success factors for the Port of Huntsville:

- Vision: The focus on developing freight facilities required in order to support industrial developments and future transportation needs.
- Willing rail service: Securing the NS rail service was another success factor. NS was not interested in investing capital to develop an intermodal terminal or establish intermodal service. However, the airport Authorities built the intermodal terminal and convinced NS to provide service from and to key markets.
- Financing: This was an important factor for developing the port. The capital was obtained by the Airport Authority through the means of Federal Grants and Airport Authority revenue bonds.
- Champion: The key factor was to create jobs and economic development.

A-3.4.4 KC Smartport

This facility was created in June 2001. KC Smartport is an economic development that was designed in order to promote the logistics hub (separate from the KC Port Authority). This

facility is not an inland port, it is an organization that was formed in order to promote and improve the Kansas City metro area's status as "America's Inland Port Solution".

The mission of the KC Smartport is focused on attracting businesses with considerable logistics and transportation elements as well as making it faster, cheaper, more efficient and secure for companies to transport goods from, to and along the Kansas City area.

Success factors for KC Smartport:

- This facility was able to secure \$500,000 in federal funding in 2003 and \$750,000 in 2004. Moreover, instead of using the funds for facilities development, the funds were to be used for pilot projects. The focus has been on testing of wireless and RFID data systems, which turned out to attract many businesses. KC Smartport has had considerable success in attracting businesses to Kansas City, especially the new Distribution Centers for New Holland and Musician's Friend.

A-3.4.5 Port of Battle Creek, Michigan

Battle Creek Unlimited Inc. was created in 1972. It was created as a private, nonprofit organization in order to direct economic development activities for the City of Battle Creek, Michigan. This facility houses more than 90 companies. The U.S. Customs Port of Battle Creek and Foreign Trade Zone #43 serves Southwest Michigan from a central location in Fort Custer Industrial Park.

Battle Creek Unlimited (BCU) is a private-nonprofit corporation that has a staff of 15 people. It is under contract with the City of Battle Creek for economic development activities. The efforts of BCU are focused primarily in W.K Kellogg Airport, Fort Custer Industrial Park, and the downtown central business district.

BC/CAL/KAL Inland Port Development Corporation is a private-nonprofit organization that is in charge of administering Foreign Trade Zone #43, and markets the inland port of entry in Battle Creek. The main activity of the Inland Port Development Corporation is the promotion and management of the FTZ and associated sub-zones to the benefit of regional employers.

Success factors for Port of Battle Creek:

- Port of Battle Creek houses both a U.S. Customs and a Foreign Trade Zone and is located at a centralized location in order to serve Southwest Michigan. This location and the products being able to reach a large population within a short amount of time is one of the biggest success factors of Port Battle Creek.

A-3.4.6 NY/NJ Port Inland Distribution Network

The Comprehensive Port Improvement Plan (CPIP) is a strategic plan in order to develop the Port Authority of New York and New Jersey (PANYNJ) in the future. The PANYNJ looks to maintain and expand port market share in the very competitive Atlantic port marketplace because

distribution and logistics activities are a significant economic factor for the New York Metropolitan region.

The Express Rail on-dock volume is climbing rapidly from 50,000 annual containers lifts 30 years ago to 227,000 lifts in 2005. However, projected rail growth is one million rail lifts by 2020 and 2 million by 2040.

Success factors for NY/NJ Port Inland Distribution Network:

- The demand for an increased Atlantic Port capacity in general, and PANYNJ port capacity in particular has continued to be very strong as expected. NS has continued its rail service to Pittsburgh, PA. CSX successfully implemented the rail shuttle to New England over its Worcester, MA terminal and is looking into a service to Buffalo, NY. The barge service between New York and Boston continues to operate.

A-3.4.7 Detroit Intermodal Freight Terminal (DIFT)

Michigan DOT with the support of GM, Chrysler, and Ford, undertook a project to develop the intermodal terminals of the four Class 1 rail carriers serving Detroit. At that time, Conrail, Norfolk Southern (NS), Canadian National (CN), and Canadian Pacific (CP) operated intermodal terminals in Detroit. The concept was the creation of a consolidated common user terminal located at Conrail's Livernois Yard in Southwest Detroit. The project was named Detroit Intermodal Freight Terminal and referred to as DIFT. DIFT has railroad service from NS and CSX.

Success factors for DIFT:

- Reducing the distance and related cost for trucking between the terminals
- Improving the highway infrastructure towards one common location
- Assisting the rail carriers in providing the terminal capacity needed for future demand.

A-3.4.8 Global III Intermodal Terminal, Rochelle, IL

This facility was built to meet the growing need for intermodal terminal capacity in the Chicago market. The driving force behind this facility was the railroad and its need for higher capacity. This project was not undertaken by a public economic development authority or industrial development company looking for an industrial development opportunity.

This facility provides Union Pacific (UP) with much needed intermodal capacity in the Chicago area albeit at a distance from the center of the city. Direct rail-to-rail interchange is accomplished by building blocks of cars at Global III for direct rail movement to connecting railroads in Chicago. Highway drayage of intermodal freight between local Chicago markets and Global III has proved to be relatively expensive. The UP carload and unit train classification yard is expected to generate local economic development through its own employment and vendor purchases.

Success factors for Global III Intermodal Terminal:

- The facility's main purpose is to provide capacity for the growing intermodal businesses which travel through Chicago. The terminal lets UP build interchange blocks in order to connect railroads and also lets UP build west bound trains out of the congested portions of Chicago. Moreover, the facility is located at the intersection of I-39 and I-88; therefore, it enjoys an excellent highway access to both north/south and east/west.

A-3.4.9 CenterPoint Intermodal Center (CIC) - Joliet/Elwood, IL

CenterPoint is located about 40 miles southwest of downtown Chicago, and it is adjacent to the I-55/I80 freeways. CenterPoint is situated on an area of more than 6,500 acres. It is the largest planned inland port in North America. CenterPoint has a strategic location in the region that has a huge transportation infrastructure, which makes it the perfect location for distributing regional goods.

Success factors for CenterPoint, IL:

- The facility has easy access to different markets such as international intermodal, domestic intermodal and carload service.
- It has easy access to the I-55 and I-80 freeways.
- There is no major restriction in terms of trailer parking ratio.
- The facility has road, water and utility systems in new condition so that prospecting businesses will not be interrupted at any time. In addition the facility has public bus service.
- The facility has 24/7 police protection and an on-site fire station which will reduce the security cost as well as insurance expenses.
- CenterPoint has storage facilities for containers, trailers and equipment with a 5 level high stacking options.

A-3.4.10 Metroport, New Zealand

Metroport Auckland was established in 1999 and it is New Zealand's first inland port. Tranz Rail connects this inland port with the Port of Tauranga. This facility is located around 140 miles away from the maritime port, in the manufacturing region of South Auckland. Tranz Rail is the owner of the land at the Metroport site; however, the port of Tauranga owns the land improvement and the computer system.

Metroport is run by contracting with shipping lines that call at the Port of Tauranga. After arriving, the import cargo is unloaded and railed to Metroport. Then, from Metroport, the containers are trucked to their final destination. On the other hand, the reverse process applies to exports arriving at Metroport. The travel from Metroport to the Port of Tauranga takes around four hours on the main north-south trunk rail line in New Zealand. A commercial system called Preactor was customized and each container was represented by color codes for easier identification. The train schedule is read together with the customer's expected delivery dates and container arrival times. In addition, a system called ShuttleSelect allows customers to see when their cargo is due into the Metroport.

Success factors for Metroport, New Zealand:

- Metroport is an extension of the Port of Tauranga’s commercial presence in the Port of Auckland’s market. Therefore, Metroport is not a public effort in order to reduce truck travel or improve system efficiency, but rather a commercial initiative. The Port of Tauranga has traditionally been an export port, with Auckland dominating the import trade. However, Metroport was able to grow the Port’s cargo share in the Auckland area.

A-3.4.11 Logport, Duisburg, Germany

Duisburg is an independent metropolitan borough located in the western part of the Ruhr region in North Rhine-Westphalia, Germany. Duisburg has become an important venue for steel production and commerce as its proximity to the Dusseldorf International Airport. Logport is a section of Duisport and it is an inland port located on a river rather than having coastal access like many other ports. Logport has an emphasis on modern logistics and multimodal transportation. At Duisburg port, every year more than 40 million metric tons of different goods are handled with more than 20,000 ships stopping by the port. However, there are companies that run their own private docks and estimate that there is an average of 70 million metric tons that pass by Duisburg port each year.

Success factors for Logport:

- The Logport site is ideally chosen to access a very large market base. The use of a brownfield site with preexisting river and rail access minimized startup cost and time.
- The role of Duisport management is critical, bringing extensive port facility operating and marketing experience to the project.

A-4. Florida Specific Freight Mobility and Trade Plans

A-4.1 Florida Trade and Logistics Study

The Florida Trade and Logistics Study (December 2010), initiated by the Florida Chamber Foundation in partnership with the Florida Department of Transportation (FDOT), was the first study of its kind that analyzed trade flows and related logistics activity for the state of Florida. The main goal of this initial study was to attract the attention of public and private investors to the trading opportunities provided by the widening of the Panama Canal. For the three year period following the study, the Governor, Legislature, and public and private partners implemented recommendations from this study. The research team reviewed this study along with the Florida Regional Goods Movement studies such as the Tampa Bay, Central Florida, North Florida and Southeast Florida Regional Goods Movement Studies.

The Florida Trade and Logistics Study 2.0 was launched in 2013 to examine the progress towards the goals stated in the first study. The main objectives of this follow-up study were as follows:

- Identify opportunities that would allow Florida to become a global trade hub;
- Develop a plan of operation to accomplish this goal; and
- Continue to build consensus among public and private partners in support of this vision and its implementation.

Additionally, the 2013 update builds on the 2010 recommendations and emphasizes the importance of workforce, economic development, and business climate strategies as well as the importance of increasing exports of Florida-origin goods and services. The 2013 study highlights the fact that Florida has a large variety of resources such as being one of the country's largest consumer and visitor markets and having a broad transportation infrastructure as well as having time-honored business and cultural connections to South and Central America. One of the biggest concerns stated in the Florida Trade and Logistics Study 2.0 was that even though a lot of freight is imported, many of the trucks and trains leave the state nearly empty or partially loaded.

This study also points out that to be competitive with its freight competition, Florida has to maintain its historic leadership as a gateway to the Americas and needs to gain ground on trade with emerging markets. In addition, this study states that in order to transform its economy Florida needs to successfully position itself as a global hub.

The study outlines a plan that includes the following six goals to be accomplished between 2013 and 2018 in order for Florida to position itself as a global hub:

- Position Florida as one of the nation's leading states for global trade and investment (compete with states such as California, Texas and New York).
- Grow Florida jobs in trade, transportation, logistics, export-oriented manufacturing, and related value-added services (at least 150,000 new jobs in these industries).
- Expand Florida's market share on critical global trade lanes (position Florida as the Southeast United States' leading gateway for trade with Asia, Africa, and the Middle East as well as building on the current trade relationship with Latin America).
- Supply more imports through Florida's sea and air gateways so that cost can be reduced while at the same time capturing more of the supply chain.
- Double the value of Florida-made exports through supporting manufacturing, agriculture, and other export sectors.
- Expand trade-related, value-added services in Florida including finance, law, engineering, and other service activities that support global trade.

The study also points out that the above-mentioned goals can be achieved only through coordinated statewide action on workforce, transportation, economic development, business climate and other initiatives as deemed fit. In addition, the report draws attention to the US-Panama Trade Promotion agreement that took effect in 2012. This agreement drops the tariffs on some U.S. industrial and agricultural goods and helps the U.S. exporters compete on a more level playing field.

The plan concludes by stating that Florida can excel in the global marketplace by following the three strategic opportunities identified below:

- Through the maximization of trade flows through Florida's sea and air gateways, move more goods.

- Through the expansion of Florida-origin manufactured goods, agricultural products, and other natural resource exports, grow, make and refine more products for export from Florida.
- Provide value-added services to trading businesses in Florida and trading partners around the world so that the impacts of global trade in Florida can be multiplied along with Florida's role as a global hub for visitors, investment, and talent.

A-4.2 Florida Freight Mobility and Trade Plan

Another key study is the *Florida Freight Mobility and Trade Plan: Policy Element* (June, 2013) and *Investment Element* (July, 2014). The report opens up by stating that Florida is an international trade state with a very crucial freight mobility component due to the fact that freight -- the movement of goods and commodities -- affects the state's economy and quality of life for all Floridians. The authors also acknowledge that while Florida has what it takes from a freight perspective, the challenge is improving and expanding the transportation infrastructure, while setting policies and regulations that are friendly to private sector market growth. In addition, the report notes that in order to achieve maximum capability, businesses must get the right product to the right place, at the right time, and with the right price. However, even though there is great interest in freight mobility both statewide (Florida) and nationally, funding to improve freight mobility has not risen accordingly to meet the interests of local, state and national decision-makers.

The *Florida Freight Mobility and Trade Plan: Policy Element* (FMTP) begins by laying out the legislative foundation and freight initiatives. In 2011, FDOT Secretary Ananth Prasad initiated the Florida Transportation Vision for the 21st Century which implements Florida Governor Rick Scott's goals to increase private sector job creation and to support the growth of the economy by aiming to have the best transportation and infrastructure system in the nation. The transportation vision plan proposes creative financing alternatives, decreases bureaucracy to expedite decision-making, supports port development, plans for future transportation corridors, and also makes faster project delivery possible. In addition, FDOT established the Office of Freight, Logistics, and Passenger Operations (FLP) to establish a focus on freight mobility.

In 2012, the Florida Legislature supported Governor Scott's freight vision and passed House Bill (HB) 599, which requires an FDOT-led plan to improve integration and connectivity of transportation systems across and between transportation modes throughout the state. The four specific goals of this bill were highlighted in the Policy Element as follows:

- Increasing the flow of domestic and international trade through the state's seaports and airports.
- Increasing the development of Intermodal Logistics Centers (ILC) in the state.
- Increasing the development of manufacturing industries in the state.
- Increasing the implementation of compressed natural gas (CNG), liquefied natural gas (LNG), and propane energy policies that reduce transportation costs for businesses and residents located in the state.

The release of national freight guidance further supports these efforts. Under the freight provisions of the Moving Ahead for Progress in the 21st Century Act (MAP-21), freight projects must be identified in a state plan in order to qualify for increased federal funding. Under MAP-21, the state freight plans must include the following:

- An identification of significant freight system trends, needs, and issues with respect to the state.
- A description of the freight policies, strategies, and performance measures that will guide freight-related transportation investment decisions of the state.
- A description of how the plan will improve the ability of the state to meet the national freight goals established under Section 167 of Title 23, United States Code.
- Evidence of consideration of innovative technologies and operational strategies, including intelligent transportation systems, which improve the safety and efficiency of freight movement.
- In the case of routes in which travel by heavy vehicles (including mining, agricultural, energy, cargo or equipment, and timber vehicles) is projected to substantially deteriorate the condition of roadways, a description of projects that may be required to reduce or impede the deterioration.

The FMTP is more than a freight plan; it provides Florida with a comprehensive and integrated plan focusing on strategies and objectives to benefit the movement of goods, commodities and services. The FMTP states that freight movement is economy in motion meaning that even though transportation, trade, and energy are separate activities which exist to support Florida's citizens and businesses, these activities are linked to one another and have a collective impact on Florida's economy.

The FMTP classifies the dimensions of the Florida freight system as reflecting the dimensions and needs of Florida's economy. Figure A-6 represents the Dimensions of Florida's Freight System as depicted in the FMTP.

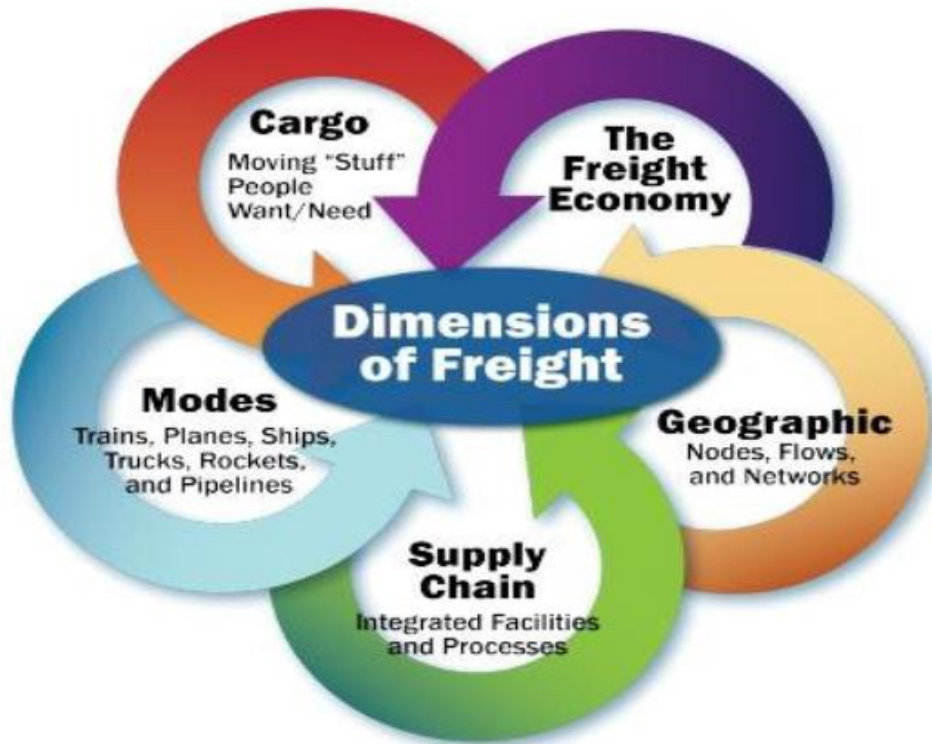


Figure A- 6. Dimensions of Florida’s Freight System

Regarding the cargo dimension of Florida’s freight system, the FMTP states that freight transportation is the lifeline of Florida’s domestic and international trade and that Florida has the following advantages in the freight arena:

- The state highway system supports 103,954 million annual vehicle miles of travel (VMT).
- The 15 deep-water seaports moved a total of 106.4 million tons of cargo while handling 2.8 million 20-foot equivalent container units (TEUs) in 2010 alone.
- Florida contains one-quarter of the licensed U.S. spaceports (2 out of 8 licensed space ports in the U.S.) - the Cape Canaveral and Cecil Spaceports.
- The state contains 784 aviation facilities, 129 public use and 19 commercial services.
- Florida contains 2,700 miles of rail lines that move over 98 million tons of freight annually.
- The state’s pipelines transport gas and liquids through the usage of nine main lines.

The economic dimension brings forward the fact that Florida’s economic success is greatly correlated to freight activity. The report notes that Florida has the 3rd largest logistics and distribution industry in the nation as well as the 5th largest number of logistics and distribution jobs in the nation.

Another dimension of Florida’s freight system is the geographic dimension. The Florida Legislature and the Governor established Florida’s Strategic Intermodal System (SIS) in 2003 to

facilitate strategic investment decisions regarding the transportation system. The SIS specifies objective criteria along with thresholds to designate significant facilities, both statewide and interregional. These facilities elevate the state's position to compete for the movement of goods throughout the state and are classified in FMTP into three different types:

- Transportation hubs (seaports , airports, spaceports and terminals) moving people or goods;
- Interregional corridors (highways, rail lines, waterways, and other exclusive-use facilities) connecting major origin/destination markets; and
- Intermodal connectors (highways, rail lines, or waterways) linking hub-to-corridor, hub-to-hub, or strategic military installation-to-corridor.

Generally, intermodal connectors serve as the “last mile” connection between hubs and the interregional corridors. The “last mile” is generally the last leg of the supply chain where the goods are no longer shipped in bulk. The FMTP notes that if the last mile requires distribution to crowded urban areas, the shipping can be quite difficult and costly. The report suggests that the key factors that impact the last mile are:

- Land Use
- Safety
- Noise
- Emissions/Air Quality

In addition, FMTP points out that there are other factors such as connections between modes, customs, freight forwarding, break bulk, and transloading that also affect the last mile.

Furthermore, the report discusses the supply chain dimension of Florida's freight system and suggests that the emergence of worldwide production markets for consumer products and a very competitive marketplace elevated the importance of supply chain management as an integral component of the overall business strategy. Supply chains include all transportation legs and logistics functions associated with the complete process of bringing goods and commodities from their origin to the market as well as processing returns, recycling and remanufacturing. Therefore, supply chain management practices guide the selection of an appropriate mode for the movement of goods within a type of industry, company, or geographical area.

The last freight dimension component of Florida is the modal dimension. The FMTP highlights that different commodities normally have different transportation service needs, such as the following:

- Speed of transport
- Reliability
- Cost
- Capacity
- Safety/security
- Accessibility

The modal selection can be summarized as choosing the mode that generates the optimum mixture of the above mentioned criteria. Table A-3 summarizes the modes of freight movement in Florida as depicted in FMTP.

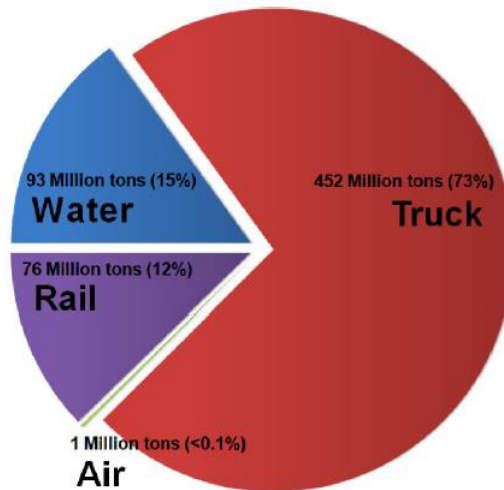
Table A- 3. Modes of Freight Movement in Florida

Mode	Space	Air	Truck	Rail	Water	Pipeline
Speed of Transport	Fast					Slow
Reliability	Variable	High	Variable		Low	High
Cost (\$/lb)*	>	>\$1.00	\$0.10-\$0.03		\$0.01-\$0.005	<
Capacity	Low	Low	Variable		High	Variable
Safety/Security	High	Med	Variable		Low	Low
Accessibility	Low	Med	High	Med	Med	Variable
Freight Profile: What types of products are likely to be shipped by this mode?	Variable weight, high value, high time sensitivity, high inventory cost Example: satellites	Low weight, high value, high time sensitivity, high inventory cost Example: flowers	Broad range of weight, value, time sensitivity, and inventory cost		High weight, low value, low time sensitivity, low inventory cost Example: petroleum	Variable due to the specialized nature of the commodity Example: natural gas

* Comparative cost purposes only

Source: Supply Chain Management, Systems Planning Office, 2013

The report also states that out of the six modes, four have been found to have the greatest volume of data, namely, air, truck, rail and water. Figure A-7 shows the total freight flows by these four dominant modes in Florida.



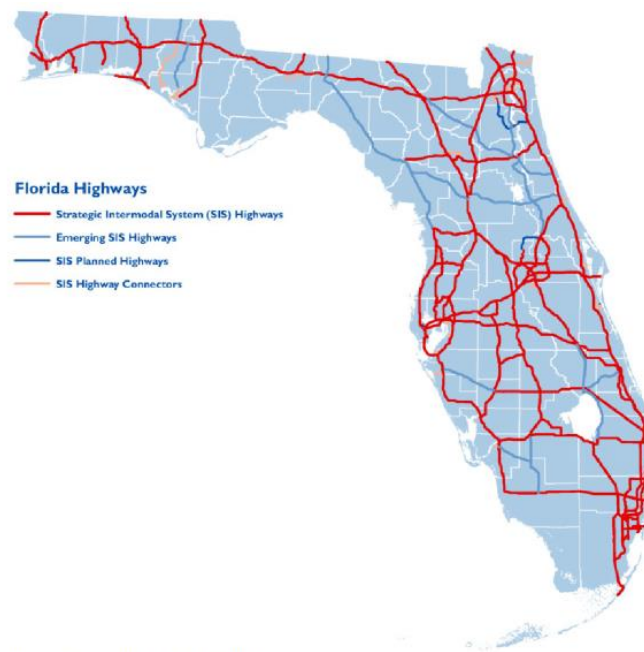
Source: Florida Trade and Logistics Study, 2010

Figure A- 7. Total Freight Flows by Mode (2009)

It can be observed from Figure A-7 that truck is the most dominant mode by tonnage, followed by water, rail and air, respectively. FMTP also states that the commercial trucks are classified into different categories by their cargo weight, such as Truckload, Less Than Truckload (LTL), Express, and Specialized. In Florida, trucking accounts for the majority of all freight volume by

both tonnage and value and is characterized by speed, flexibility, and versatility performing the final leg for the freight transported by air, rail, water and pipeline. Therefore, it is a necessity for the state to ensure the trucking industry has a highway system that facilitates the efficient movement of goods. In this effort, Florida already has 121,759 centerline miles of public roads, with 12, 076 of those miles included in the State Highway System and over 4,356 miles designated as the highway portion of the Strategic Intermodal System (SIS).

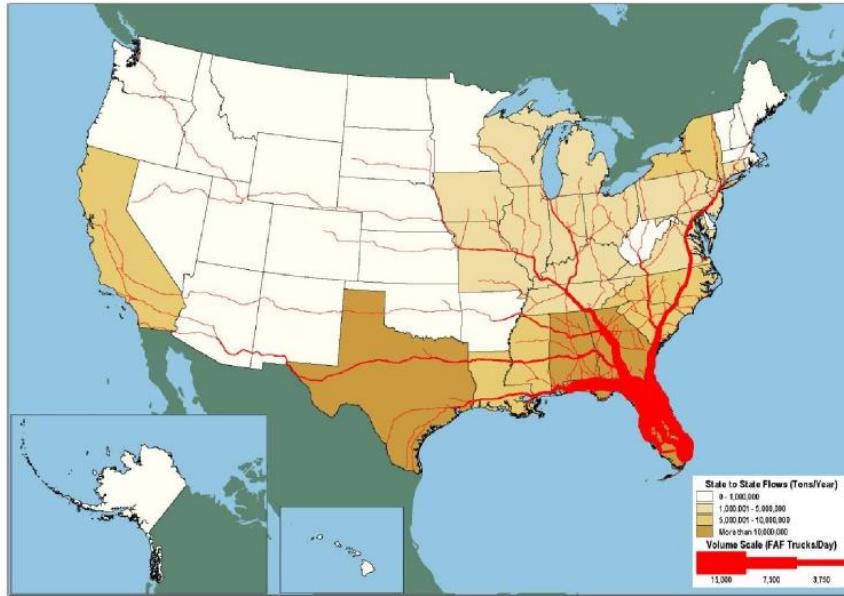
FMTTP also suggests that the SIS highways are the backbone of the SIS, due to the fact that they connect the majority of Florida’s SIS hubs such as airports, spaceports, seaports, and other intermodal/freight facilities. In addition, SIS highways provide access to SIS rail terminals that serve 90 percent of the State’s freight rail tonnage. Figure A-8 presents Florida’s SIS and Emerging SIS Highways and Connectors.



Source: Systems Planning Office, 2013

Figure A- 8. Florida’s SIS and Emerging SIS Highways and Connectors

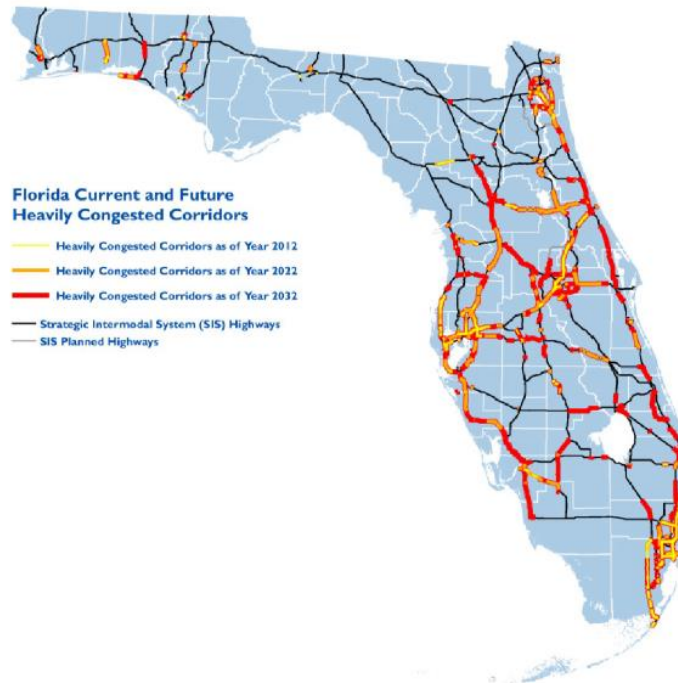
The FMTTP states that SIS highways represent only three percent of the entire Florida roadway network, however, they carry over 54 percent of all daily traffic, including 70 percent of all truck traffic. The National Highway System (NHS), the National Network and the Florida SIS are quite similar as far as the facilities are concerned, but they are not identical. Florida interstates (I-4, I-10, I-75, and I-95) are included in the National Network, the NHS, and the SIS. The FMTTP states that these facilities are key to freight movement through as well as in and out of Florida. In addition, the FMTTP also notes that other critical Florida highway facilities are part of all three networks including US-301 from Jacksonville to I-75, Florida’s Turnpike, and US 27 from I-75 to Okeechobee. Figure A-9 shows the major flows by commercial truck to, from, and within Florida as depicted in the FMTTP.



Source: Federal Highway Administration, 2011

Figure A- 9. Major Flows by Truck to, from and within Florida (2007)

In addition, the FMTP also addresses the heavily congested corridors throughout Florida in Figure A-10.



Source: Systems Planning Office, 2012

Figure A- 10. Heavily Congested Corridors 2012, 2022, and 2035

The FMTP states that geometric capacity and other attributes can lead to bottlenecks and further increase in congestion. It is observed that bottlenecks are usually found on roadways at certain locations with:

- Lane drops
- Weaving areas
- Freeway on and off ramps
- Interchanges
- Changes in highway alignments
- Narrow lanes or lack of shoulders
- Traffic control devices

Figure A-11 presents the statewide SIS bottlenecks as depicted in FMTP.



Source: Systems Planning Office, 2013

Figure A- 11. Statewide SIS Bottlenecks

Therefore, FMTP also looks at the large truck generators that contribute to the roadway congestion. Common generators of trucks include:

- Airports
- Seaports
- Major industry sites
- Military installations
- Warehousing/distribution centers
- Intermodal logistics centers (ILCs)
- Other intermodal facilities

FMTP highlights that maintaining adequate highway facilities and removing barriers near freight centers is vital for freight mobility in Florida. That is the reason that the state keeps up-to-date inventories of freight distribution centers in Florida. Figure A-12 presents a map of freight distribution centers in the state.



Source: Florida Trade and Logistics Study, 2010

Figure A- 12. Freight Distribution Centers in Florida

In addition to the trucking side of freight, waterborne international trade that is handled by Florida's seaports was valued at \$85.6 billion in 2012. This value shows an increase by 3.5 percent from 2011. More importantly, the \$85.6 billion value represents 53% of Florida's total international trade. Figure A-13 represents the Florida seaports.

- Port Canaveral
- Port Citrus
- Port Everglades
- Port of Fernandina
- Port of Fort Pierce
- Port of Jacksonville
- Port of Key West
- Port Manatee
- Port Miami
- Port of Palm Beach
- Port Panama City
- Port of Pensacola
- Port of Port St. Joe
- Port of St. Petersburg
- Port of Tampa

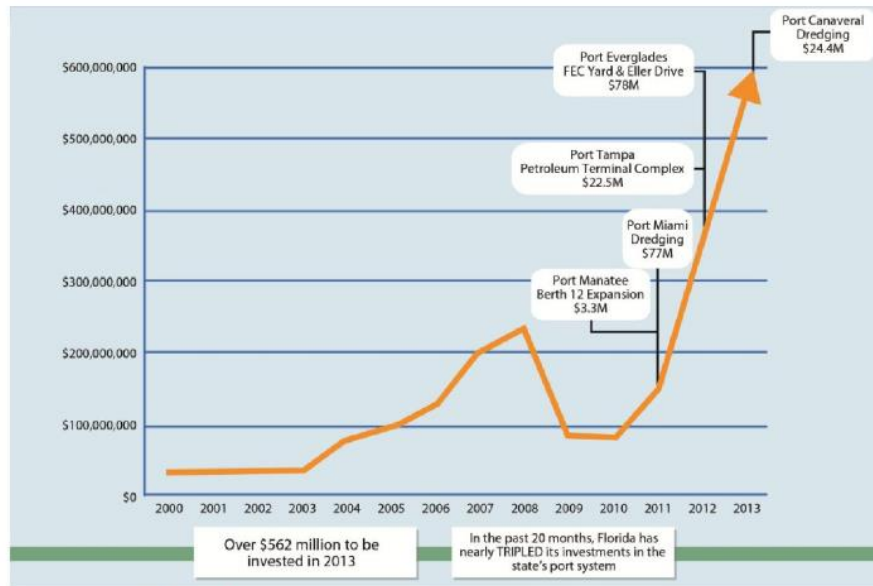
Figure 11: Florida Seaports



Major Cargo Gateway Port- Gateway for non-Florida commodities; gateway for strategic Florida commodities: containers, petroleum, coal, aggregates, etc; very strong truck, rail, barge connectivity
Regional Cargo Gateway Port- Gateway for regional commodities; special services, niche commodities; effective truck, rail barge connectivity
Major Cruise Port- Strong auto/transit/air connectivity; strong truck connectivity for provisioning
 Source: Seaports and Waterways Office, 2013

Figure A- 13. Florida Seaports

FMTF points out that due to their importance to the State’s international trade, Florida has invested heavily on its seaports as depicted in Figure A-14. The seaport projects receive their funding from sources such as the FDOT Five-year Work Program, the U.S. Army Corps of Engineers (USACE), Environmental Protection Agency (EPA), and the Department of Homeland Security.



Source: Executive Office of the Governor, 2012

Figure A- 14. Investment in Florida Seaports

The landside connection to Florida’s seaports is supplied by Florida’s interstates and major highways as described previously. These interstates and major highways connect the seaports to the National Freight Network, NHS and Florida’s SIS.

FMTP also suggests that the HB 599, which required FDOT to generate the FMTP, also created ILCs as a new type of hub included in the SIS and created an annual program with \$5Million to fund projects at ILCs that meet specified criteria. According to the Florida legislature, the term ILC refers to:

“The term ‘intermodal logistics center,’ including, but not limited to, an ‘inland port’ means a facility or group of facilities serving as a point of intermodal transfer of freight in a specific area physically separated from a seaport where activities relating to transport, logistics, goods distribution, consolidation, or value-added activities are carried out and whose activities and services are designed to support or be supported by conveyance or shipping through one or more seaports listed in s. 311.09, F.S.”

FMTP also discusses Florida’s air cargo capabilities and points out that the aviation system contributes \$114 billion to the state’s economy each year. The report also states that nearly all airports that support air cargo are either passenger airports with cargo capability or industrial airports where cargo is one of the aviation activities that are supported. Figures A-15 and A-16 present the Florida aviation system and the larger airports with scheduled air cargo capability, respectively.

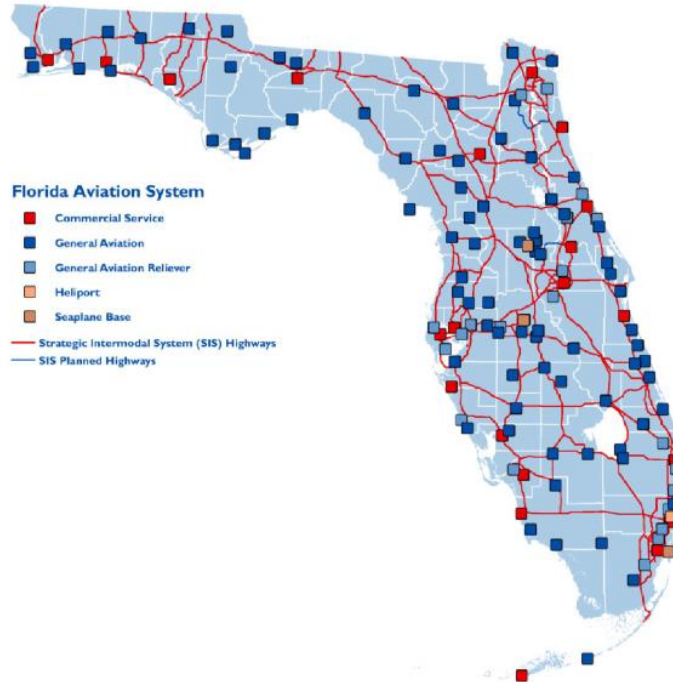


Figure A- 15. Florida Aviation System



Figure A- 16. Florida Airports with Scheduled Air Cargo Service

For an airport to receive and send large jet aircraft cargo (18,000-200,000 pounds per aircraft), there are requirements that it needs to meet. These requirements are summarized in the FMTP as:

- Adequate runway length

- Pavement strength
- 24-hour air traffic control operations
- De-icing capabilities
- Aircraft rescue and firefighting (ARFF) facilities
- Adequate fuel availability
- A precision instrument approach landing system
- An acceptable number of days that the airport could be potentially closed due to poor weather conditions
- Adequate ramp space, lighted ramp for night operations, clearly marked aircraft parking pads and taxiways, security fence to prevent loss, and secured gates that allow ease of entry for cargo vehicles
- Interlining capabilities with connecting passenger carriers, charters, and motor carriers—especially important to the non-integrators since they must rely on other modes and carriers to provide, or extend, the service they cannot provide
- Direct access to aircraft by trucking operations
- Superior roadway network in the airport’s vicinity
- Support services such as cargo terminal handling; aircraft handling (maintenance, repair, fueling, etc.), and security
- On-airport regulatory authorities including U.S. Customs, Federal Aviation Administration (FAA), the U.S. Department of Agriculture (USDA), and the U.S. Postal Service (USPS)
- Strong presence of freight forwarders in the local marketplace – an airport-to-airport cargo carrier cannot exist without the presence of a strong freight forwarder network within the community.

However, similar to all modes of cargo, air cargo is also not only limited to the airports. The surface transportation of air cargo is also a vital component of the air cargo system due to the fact that the air cargo that arrives at the airport needs to move beyond the airport to reach its respective market.

FMTF also highlights another mode that Florida offers, which is composed of its spaceports. Space transportation touches the daily lives of a majority of the U.S. population through global positioning system (GPS) satellites, communication satellites, national security sensing constellations, and weather systems. To fulfill these needs, Florida has five spaceport sites that are depicted in Figure A-17.



Figure A- 17. Florida Spaceport Sites

Pipelines, as discussed in the FMTP are another freight mode that Florida houses. These pipelines play a significant role in the transport of commodities into and within Florida. With approximately 60 percent of Florida’s power plants using natural gas for the energy generation process, the existing pipelines are nearing full capacity and the state needs another pipeline by 2017 so that it can meet the growing need for natural gas power. Figure A-18 depicts the Florida pipelines per the content they carry.



Source: National Pipeline Mapping System (NPMS), 2013

Figure A- 18. Florida Pipelines

The Investment Element of the “Florida Freight Mobility and Trade Plan” is currently in its draft form. This document is intended to identify the freight needs of Florida, as well as the criteria for state investments in freight. Additionally, the investment element is to prioritize freight investment across modes. Therefore, the investment element is the roadmap to guide and develop efficient, reliable and safe freight transportation infrastructure over the next thirty years. The investment element was prepared through the input of shippers, receivers, freight carriers, manufacturers, academe, various industries, associations, regional and local planning agencies, sister state agencies, and other concerned private sector stakeholders.

The FMTP Investment Element highlights Florida’s Freight Definition by stating that a project will be considered a freight project if it is on the Florida Freight Network and satisfies one of the three components:

- Freight Focused: The primary purpose of the project is to address a specific freight transportation need
- Freight Related: The primary purpose of the project is to address multiple transportation concerns, of which freight is one element
- Freight Impacted: The primary purpose of the project is to address general transportation needs, however freight mobility may be positively affected

A total of 26 criteria were selected for the freight investment prioritization process. Each prioritization criterion was selected based on the freight project’s ability to implement FMTP Policy Element strategy and FDOT Best Practices.

Upon review of the freight projects, the FMTP Investment Element suggests that the majority of the freight projects in the needs identified by the criteria were highway related (456 projects out

of 787 that meet the prioritization criteria). This was found to be logical since there are numerous available sources for appropriate highway projects, and also due to the fact that other modes do not plan 20 years out.

The document states that in Florida the funding for freight related projects consist of a combination of deferral, state, local and private funding sources. For the FDOT Five-Year Work Program (2013-17), funding was available from state (49%), federal aid (31%), Turnpike and associated tolls (13%), local and other funds (4%), and right-of-way (ROW) and state infrastructure bank bonds (3%).

Another Florida specific document that was prepared by the URS Corporation for Florida Department of Transportation, District Seven is the “Freight and Mobility: Tampa Bay Regional Goods Movement Study”, which states that economic development and transportation are closely linked such that economic development stimulates transportation demand and this demand triggers the need for transportation improvements. The study explains how Tampa Bay is geographically situated to benefit from the emerging economies of South America and Cuba. However, in order to take advantage of this opportunity, improvements that decrease transportation costs need to be made within the transportation network.

The study was put together as a response to the increasing emphasis on freight mobility in the state and local economic development. It has outlined the components of a regional freight network: Trade Corridors that connect the Tampa Bay region to various, national and international markets, as well as, freight corridors that activity centers; Freight centers (seaports, airports, railroad hubs, distribution centers); Strategic Intermodal System.

Additionally, the study pin-points some of the major issues of goods movement in the Tampa Bay area, while suggesting certain legislative changes that are promised to ensure good movement efficiency within the region. The key findings of this study are summarized as follows.

- The study defines freight activity centers (FACs) as the economic engines within the region, as they are major contributors to the region’s base employment and are major generators of truck trip activity within and to points outside the region.
- The study recommends the establishment of a Tampa Bay Regional Goods Movement Management System (GMMS).
 - The purpose of this system is to provide information on the freight transportation system to assist decision-makers to select and fund strategies/actions that facilitate the safe and efficient movement of freight.
- There are five recommended objectives for the GMMS:
 - To provide a framework to address freight mobility issues in the local transportation planning process.
 - To ensure that the freight industry and economic development interests are included in the planning process.
 - To recognize and develop transportation and land use policies that support freight mobility and economic development.

- To identify improvements and strategies that facilitate the safe and efficient movement of freight, accommodate projected growth, and minimize impacts to community and environmental assets.
- To promote and protect the Tampa Bay Region’s intermodal capabilities and capacity.
- The GMMS consists of two parallel structures: Regional and Metropolitan Planning Organization (MPO)/County level. A key element of these structures is the establishment of Regional and MPO/County Goods Movement Advisory Committees (GMAC) for addressing freight mobility issues in a comprehensive manner.
 - The study recommends that the GMACs consist of transportation and land use planners, representatives from the intermodal entities and economic development groups, and the trucking community.
- The study recommends establishing a regional GMAC to guide freight planning in the Tampa Bay Region under the auspices of FDOT and the Tampa Bay Chair’s Coordinating Committee (CCC).
 - The function of the regional GMAC is to promote and protect the region’s intermodal capabilities and capacity and to develop and implement a regional goods movement strategy that advances economic development through regional transportation initiatives.
- To assist the GMACs in monitoring the status of the regional goods movement system including the regional freight mobility corridors, intermodal facilities, and the major FACs, the study recommends developing a Regional Goods Movement Database consisting of two integrated management functions.
 - The first function is to maintain an inventory of all FACs, intermodal facilities, regional freight mobility corridors, and connector corridors.
 - The second function is to monitor freight mobility projects by maintaining an inventory of transportation improvement projects and tracking transportation improvement schedules for existing and newly identified projects including project category, synopsis of project, projected/actual start date, projected/actual completion date, phasing, selected performance factors, and other information requested by the GMACs.
- Finally, the study developed and recommends a freight project planning and programming process that could be used by the GMACs and MPO Policy Boards as means of identifying, implementing, and tracking freight transportation improvements.

A-4.3 Florida Seaport Mission Plan

Another freight related report (Florida Seaport Mission Plan 2013-2017) was initiated by the Florida Seaport Transportation and Economic Development Council. Because of Florida’s geographical position, the ports play a vital role in the state’s economy. In general, Florida’s seaports are highly competitive with other seaports throughout the United States. At the state level, Florida is in the top five states for total waterborne tonnage and containers handled. This is due to its large consuming population and the presence of a well-established and competitive system of seaports.

Today, the state's seaports are facing a transformation; they are experiencing a cycle of important changes that are reshaping Florida's logistics landscape, heavily influencing planning, investment, operations and marketing. The key findings of this report are as follows:

- The State of Florida invested \$180 million in critical seaport projects in 2012/2013 and invested a historical \$288 million in 2013/2014.
- Combined Cargo and cruise activity supports more than 680,000 jobs in Florida
 - \$96.6 billion of output to the state's economy (13% of Florida GDP)
 - Generate \$2.4 billion in state and local taxes, and \$4.7 billion in federal taxes.
- Current (potentially temporary) shift from bulk to more labor-intensive, containerized high-value cargo.
- Modern size vessels require at least a 47 to 50 foot deep channel.
 - Florida's ports are working at becoming deeper, Port Miami will be dredged to 50 feet by the summer of 2015, Port Everglades is planning for 50 feet and the Port of Jacksonville for 47 feet.
- There must be regular and reliable support from federal agencies for future port terminals, to prevent infrastructure obsolescence and ensure infrastructure is available to meet national goals for exports, safety, security, and other priorities.
- Waterborne trade comprised 53 percent of the state's total international trade (vs. 44.7 percent through airports and just over 2 percent over land).
- According to Martin Associates' port economic analysis, no future deepening would mean that no new first-inbound, fully-laden, all-water services from Asia would materialize.
 - There would be no growth in the much sought-after general cargo associated with deep-draft vessels.
 - New port-sector and related-user job opportunities for Floridians from new general cargo would be limited, and that would include distribution center opportunities.
 - Moreover, some of the distribution center jobs already resident in the state could move south to the Caribbean meaning that state and local governments would lose potential revenues.
- The completion of the Miami 'Deep Dredge' - to 50 feet of water, would generate 98,000 additional containers annually, which would mean 33,000 new jobs throughout the state, at various points along the supply chain.
- SIS has designated the following as SIS seaports:
 - Port Canaveral
 - Port Everglades
 - Port of Jacksonville
 - Port Manatee
 - Port Miami
 - Port of Palm Beach
 - Port of Tampa
- Ports of Canaveral, Everglades, Fernandina, Fort Pierce, Jacksonville, Manatee, Miami, Palm Beach, Panama City, Pensacola, and Tampa have Free Trade Zones within their borders, adjacent, or nearby.

- Florida’s interstates and major highways are the primary connection for the seaports to the National Freight Network, NHS, and Florida’s SIS.

A-4.4 Florida Rail System Plan

Florida’s Rail System Plan is one of several key statewide modal planning efforts conducted by the Florida Department of Transportation consistent with the Florida Transportation Plan. Rail planning also is closely connected to and supports Florida’s economic, environmental, community, and statewide planning framework. The goal is to shape and develop a future-oriented, integrated, and multimodal transportation system for the State of Florida.

The 2010 Florida Rail System Plan is an update to the 2006 Florida Freight and Passenger Rail Plan and is a key part of an evolving rail planning process in Florida. The 2010 Plan builds upon previous efforts, including the work of the Florida High-Speed Rail Authority and the 2006 Florida Intercity Passenger Rail Vision Plan.

This statewide plan identifies goals, objectives, and strategies to guide transportation investment decisions in Florida over a 20-year period. Specifically, the document does the following:

- As it is, the Investment Element builds upon the framework of the Policy Element by identifying the needs of Florida’s rail system and establishing priorities for the investment of state funds using the goals, objectives, and strategies of the Policy Element as guidance. The Investment Element presents detailed information on the future needs of Florida’s rail system and sets forth strategic priorities to meet those needs.
- Provides an inventory of the operating and recently abandoned freight rail transportation system and services in the State and an analysis of the role of rail transportation within Florida’s surface transportation system.
- Describes the State’s passenger rail system and includes a performance evaluation of passenger rail services operating in Florida, including possible improvements in those services and a description of the strategies to achieve those improvements.
- Identifies rail infrastructure issues within the State that reflect consultation with relevant stakeholders.
- Holds an inventory of rail needs, including capital investments for track upgrades, new facilities, capacity expansion, safety improvements, and industrial access.
- Describes the approach for evaluating rail needs projects by goal and objective area using a combination of qualitative and quantitative indicators.
- Discusses existing as well as potential and new funding opportunities to support investment in rail mobility and connectivity for both residents and freight and rail-dependent businesses.

A-4.5 Florida Air Cargo System Plan

Last but not least, the Florida Department of Transportation, Aviation Office had a report prepared for the air cargo system plan of the state. This document, “2012 Florida Air Cargo System Plan Update” is an update to the “Florida Air Cargo System Plan” completed in 2009 and reflects current trends (as of Summer 2012). The document is divided into six tasks:

1. Air and RFS (Road Feeder Service) capacity and schedules that are being analyzed for 15 Tier One and Tier Two Florida airports.
2. Destinations and capacity.
3. Air and RFS capacity analysis using thematic maps.
4. Surface transport analysis of air cargo in Florida between station-to-station as well as station-to-airport.
5. Summary of the findings throughout the entire analysis of the 2012 update
6. Discussion of the 114 general aviation cargo airports that do not have scheduled air cargo activity.

The key findings of the air cargo plan are as follows.

- Almost 53% of Florida tourists arrive by air
- Florida's air passengers account for 10% of the nation's total passengers
- More than 8% of the nation's air cargo travels through Florida's commercial service airports
- \$114 billion is contributed to the state's economy each year by Florida's aviation system
- Air cargo operations account for more than \$6.6 billion in annual economic activity to Florida.
- On an annual basis, over 2.5 million tons of air cargo are accommodated at Florida's airports
- There are 15 FL airports that have scheduled air cargo service. The study divides these airports into two categories:
 - Tier One (SIS airports) – the study examined 7 Florida Tier One
 - Florida SIS airports are located near major metropolitan areas that produce consistent air cargo traffic.
 - Tier Two (most commonly used to transport cargo to Tier One airports or to the out-of-state airports).
 - Located near medium sized metro areas
- Analysis of Federal Aviation Administration (FAA) data indicates that 36 airports in Florida regularly accommodate air cargo by specialized cargo carriers utilizing piston, turboprop, and corporate jet aircraft.
 - These types of aircraft are generally more economical when operating on shorter distances.
- Miami International Airport dominates in the Florida market share with 69.1%, whereas Orlando International follows with 11.2%, Fort-Lauderdale-Hollywood International follows with 7.5% and Tampa International follows with 4.9%.
- Florida's International Air Cargo Trade Lanes with percentage of Florida's international lift.
 - Central America/Caribbean [MIA handles 83% of all import and 81% of all exports] - 24%
 - South America – 56%
 - Europe – 14%
 - Asia – 6%

- Florida SIS and Tier Two airports reviewed in this analysis offer a total of 336,500 pounds of air cargo lift capacity on a typical Wednesday, the busiest day in the air cargo industry workweek.
- Flower industry heavily relies on air cargo, as flower imports are heavily dominated by Columbia and Ecuador.
- In 2012, aircraft and RFS service combined provides over 16.1 million pounds of cargo daily lift capacity related to Florida's airports. Nearly 84% of the total lift capacity is offered on cargo aircraft. The other 16% is provided on scheduled RFS carriers.
- On average, Florida airports offer nearly 17.86 million pounds of scheduled RFS cargo capacity each week, which represents a 27% increase over 2008 total RFS capacities. Robust growth in RFS service in Florida is directly tied to the increase in air carrier fuel costs. The average cost of Jet A fuel in the Gulf Coast region increased from \$2.10 per gallon in June 2007 to \$3.90 per gallon in June 2008 and remained high at \$2.68 per gallon in June 2012.
- Surface transportation of air cargo represents a major component of the air cargo system.
 - For example, UPS and FedEx have major surface transportation networks. Statewide, they total to:
 - 77 stations, combined area of 4.5 million square feet.
 - 2300 truck docks.

Total of 2833 miles between these stations and the airports they serve.

APPENDIX B: SURVEY DISTRIBUTED TO 50 STATES' DEPARTMENT OF TRANSPORTATION

Freight/Logistics Investment Survey of the 50 U.S. States

April 2015

This document is for understanding the survey only. Please complete the survey online.

Introduction

The Center for Urban Transportation Research (CUTR) at the University of South Florida is conducting research for the Florida Department of Transportation (FDOT) regarding freight logistics and economic development. The research objective is to understand the potential impacts of strategic state investments in the freight system on economic development via promoting business and employment growth in existing or new industries. The purpose of this survey is to obtain information about strategic state investments in the freight system and their impact on business and employment growth in existing or new industries.

Participation in the survey is completely voluntary and no compensation is offered. Survey results will be made available to all participants interested and may be published; however, published results will not include your name. Your privacy and project records will be kept confidential to the extent of the law. Authorized research personnel and other individuals acting on behalf of USF may inspect the records from this survey. Completing the survey indicates a willingness to participate in this research. If you have questions, please contact the Co-Principal Investigators, Karen Seggerman, AICP, CNU-A at seggerman@cutr.usf.edu or Seckin Ozkul, Ph.D, E.I. at sozkul@cutr.usf.edu or 813-974-3120.

Advisory for Internet Explorer Users:

Some tables may not appear properly. Please ensure you are using the Internet Explorer Version 9.0. If you do not have this version, please complete the survey in Chrome, Firefox, Safari, or Opera.

Your information:

Please provide your contact information, so that we may follow-up if necessary.

Name*:

Organization*:

Email*:

Phone:

Would you like to receive the survey results? Yes or No

Instructions

Please answer the survey questions to the best of your abilities and complete the survey by April 30, 2015.

Completing the Survey - When taking this survey, it will be useful to have documents at hand that contain information regarding the top five projects focused on freight/logistics that were completed in your state between January 2009 and March 2015. Investments outside of this timeframe may be included in the survey if the respondent believes the project is pertinent to the research objective.

Figure B- 1. Survey distributed to 50 state DOTs

Survey Length – The survey will take approximately 30 minutes to complete and will be available online from April 9 to April 30, 2015. Progression through the survey will be tracked by a bar at the bottom of the screen indicating percent complete.

Required Responses - All items with an asterisk require a response.

Moving Within the Survey – You will be able to move back and forth within the survey. Please use the “back” and “next” buttons *within* the survey itself. Use of the browser “back” and “forward” arrows will result in lost responses.

Saving the Survey – You can save and return to the survey at any time prior to the close of the survey by using the button at the topmost portion of the page (“*Save and continue survey later*”). The survey will automatically save any responses you have made. When you get to the last page of the survey, **do not click “Submit”** until you are completely finished with the Survey. Once you click the “Submit” button on the last page, you will be unable to change your responses.

Forwarding the Survey – If you determine that another person within your agency has the information necessary for completing a portion of the survey, please save the survey as described above and forward the survey link to that individual. The survey link will be emailed from Freight and Logistics Investment Survey 2015 (freightinvestment@cutr.usf.edu); you may want to add this address to your whitelist.

Survey

1. State represented* (choose state from dropdown list)

Provide the office of your state department of transportation in which you work. If you represent an agency other than your state’s department of transportation, please provide your agency’s name, city, state, and function.

2. A **freight/logistics focused** investment is a project that primarily addresses specific freight transportation needs. Has your State made any **freight/logistics focused** investments that were completed from January 2009 to date?* Yes or No

Advisory for Internet Explorer Users:

The following question may not appear properly. Please ensure you are using the Internet Explorer Version 9.0. If you do not have this version, please complete the survey in Chrome, Firefox, Safari, or Opera.

Figure B- 2. Survey distributed to 50 state DOTs (cont’d)

3. A **freight/logistics focused** investment is a project that primarily addressed specific freight transportation needs. Identify **up to five of the top priority freight/logistics focused** investments in your State completed from January 2009 to date.
- Please use the “Add another project” button at the bottom of this page to add multiple freight focused projects that fit this criteria. *Note: Investments outside of this timeframe may be included in the survey if the respondent believes the project is pertinent to the research objective.*

Name of project*	
Type of project*	Port expansion/deepening, Inland ports, Intermodal logistics centers/terminals (ILCs), Gateways, Corridors, Other (describe)
Location	City: County: Major roadway:
Year of project completion	
Project cost (in millions)	
Dollar year (e.g., 2010)	
Brief description of the project*	
Project funding sources (include partners)	Federal, state, local, private, other
Commodities served (e.g., steel, phosphate, cars, lumber, coal, etc.)	
Industry clusters served	(1) Aviation and Aerospace, (2) Manufacturing, (3) Defense and Homeland Security, (4) Information Technology, (5) Financial and Professional Services, (6) Logistics and Distribution, (7) Clean Tech/Energy, (8) Life Sciences, and (9) Health Care/Pharmaceuticals, Other
Describe how the project was evaluated after completion	
Did the project attract new industry, promote business in existing industries, or create jobs in existing or new industries? If so, describe.	
Link to project website, if available. Provide any project-related documents that you feel would answer questions regarding the project by emailing them to freightinvestment@cutr.usf.edu	

4. Has your State adopted any **freight/logistics focused** policies and/or initiatives from January 2009 to date? Specifically policies/initiatives that are aimed at promoting economic development via promoting business and employment growth in existing or new industries.*
Yes or No
5. A **freight/logistics focused** policy and/or initiative primarily addresses specific freight transportation needs. Identify **up to five freight/logistics focused** policies and/or initiatives

Figure B- 3. Survey distributed to 50 state DOTs (cont’d)

adopted in your state between January 2009 and present. Specifically include policies/initiatives that are aimed at promoting economic growth via promoting business and employment growth in existing or new industries.

Please use the "Add another policy/initiative" button at the bottom of this page to add multiple freight focused projects that fit this criteria. *Note: Policies/initiatives implemented outside of this timeframe may be included in the survey if the respondent believes they may be pertinent to the research objective.*

Name of policy/initiative*	
Date adopted	
Describe policy/initiative*	
Describe how the policy is evaluated	
Did the policy/initiative attract new industry, promote business in existing industries, or create jobs or new industries?	
Link to policy/initiative website, if available. Provide any related documents that you feel would answer questions regarding the project by emailing them to freightinvestment@cutr.usf.edu	

6. Please provide any additional information about freight/logistics investments that may be useful to this research.
7. The project research team may contact the following individuals for interviews:
the initial participant or someone else

Name, organization, email address, telephone number.
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This concludes the survey. Click the "Back" button to review or revise your responses. If you are satisfied with your responses click the "Submit" button.

Thank you for your participation in this survey. Your response is very important to this research.

Figure B- 4. Survey distributed to 50 state DOTs (cont'd)

APPENDIX C: DETAILED SITE VISIT AND INTERVIEW DISCUSSIONS FOR SELECT 7 LACS

Based on the information presented in the literature review (previously submitted as Deliverable #2), obtained from state DOT survey results and direct recommendations from the expert task group members as well as findings gathered from the Georgia Logistics Summit, a list of seven high-volume and high-efficiency LACs (Intermodal Logistics Centers (ILCs), inland ports, economic government entities, seaports) was compiled for site visits and interviews with their business development and executive level employees.

These sites and dates of the visit/interview are shown in Table C-1. Interviewees were asked about success factors including the impact of the transportation system and the cost of doing business among other things.

Table C- 1. High-volume and High-efficiency Logistics Activity Centers

	Intermodal Logistics Centers (ILCs)/ Economic Government Entities	Date of visit
1	CenterPoint Intermodal Logistics Center, Joliet/Elwood, IL	April 29, 2015
2	Global III Intermodal Terminal, Rochelle, IL	April 30, 2015
3	Alliance Texas Global Logistics Hub, Fort Worth, TX	May 8, 2015
4	CenterPoint Intermodal Center, Kansas City, MO	May 13, 2015
5	KC SmartPort, Kansas City, MO	May 13, 2015
	Ports and Their Inland Distribution (two major ports on the east coast)	Date of visit
1	NY/NJ Port Authority and their inland distribution, New York, NY	June 16, 2015
2	Port of Savannah and inland distribution + GA Port Authority, Savannah, GA	June 17, 2015

The findings from each of these LACs have been summarized below.

C-1. Alliance Texas Global Logistics Hub, Fort Worth, TX

The research team visited the Alliance Texas Logistics Activity Center (LAC) on May 8, 2015 to discuss the contributing factors leading to the success of this LAC with one of the business development executives for the developer.

The strategic location of Alliance Texas was noted as the leading success factor of the LAC. Alliance Texas is located just north of Fort Worth with easy access to the Dallas/Fort Worth Metroplex – home to over 6.5 million people. Alliance Texas’ direct access to Interstate 35 and other north-south and east-west highways (TX 114 and 130) across the state enable access to 48.8 million people within one day by truck and 111 million within 2 days, thus making their distribution centers local, regional, and national in nature.

Access to multimodal transportation is also an important success factor for Alliance Texas. Multimodal transportation is attractive to customers because it aids in significant reductions to transportation costs. Alliance Texas is served by a cargo-only international airport with U.S.

customs on-site. This is in addition to the close proximity of Alliance Texas to the nearby DFW International Airport. BNSF, a Class I railroad, has an intermodal hub facility inside the LAC, a logistics advantage for the firms located in Alliance. Union Pacific (another Class I railroad) also has its presence just to the east of the development, which increases accessibility by rail to the rest of the country. In addition to air and rail, access to the interstate highway network also contributes to the success of Alliance in relation to its competitors. The strategic location of the LAC has enabled easy access to almost all the major roadways networks in the DFW region thereby reducing the excess driving time inside the cities. The presence of the FedEx and UPS hubs inside the LAC also allow for later clearance times, which come as a great advantage in delivering goods across the country since last minute overnight orders can still be delivered within the promised timeframe.

Alliance Texas customers are poised to achieve significant reductions in long term operating costs as a result of starting operations at Alliance Texas. Key to this is the presence of a Foreign Trade Zone (FTZ) within the LAC that enables smooth transfer of commodities to and from international destinations. The presence of an FTZ works in favor of shippers, specifically in the case of shipping tuna from abroad because the shipper is able to store it in the FTZ without clearing customs. This helps Alliance Texas's clients to store the product in FTZ even during seasons when shipping tuna into the U.S. is not allowed. Another advantage is that the product is taxed only when it clears customs and is ready for distribution.

Another important cost advantage is the presence of heavy load trans-loading on site, the process of transferring a shipment from one mode of transportation to another. Heavy load trans-loading has been proven to reduce transportation costs by 230 percent in some specific cases. The BNSF intermodal facility also brings about lower costs for ship lines that utilize the empty backhauling (a common concern) containers to make their way back to Los Angeles or Long Beach ports and, ultimately to the Far East.

Providing incentives for development of the local economy has ensured that Alliance Texas receives local and regional support in their endeavors. It is crucial to gain the support of the local and regional government in creating a business-environment. This has been achieved through various measures – like providing jobs for the local residents and introducing innovative educational/training programs to improve the quality of the workforce. Alliance Texas has a workforce of 40,000 employees and workforce development has been a major focus of attention. Measures toward ensuring a high quality workforce include the introduction of educational certifications/programs focusing on logistics from the high school level up through the doctoral level with ties to various educational institutions across the DFW region. The presence of a high quality workforce in the area has ensured that companies seeking new business locations prefer Alliance Texas. Initiatives like the Alliance Opportunities Center allows local residents to use skills obtained through the various educational certifications to gain employment.

Finally, Public-Private Partnerships or P3s served as the genesis for Alliance Texas. Of the \$8 billion USD invested in Alliance, 97% is private money and only 3% is public money. The seed money for Alliance Texas was public, but it has gradually moved towards private investment, a sign of how Alliance Texas stands out in comparison to its competitors and a direct reflection on its overall standing.

C-2. CenterPoint Intermodal Center, Joliet/Elwood, IL

The research team visited the CenterPoint properties – Joliet, Elwood Logistics Activity Center (LAC) on April 29, 2015 to discuss the contributing factors that led to the success of the LAC. The research team met with the interviewee who serves as one of their executive directors of property management.

The strategic location is the primary success factor for this LAC. CenterPoint's direct access to a large population base (Chicago itself is about 8 million people) and easy access to markets (logistics density) were major factors for customers to locate in the LAC. The strategic location offers logistics efficiencies that are seen as favorable by CenterPoint's customers.

The presence of multiple modes of transportation including Class I railroad carriers (BNSF and Union Pacific) on the LAC property ensures that customers are able to obtain competitive railroad shipping prices. This enables customers to use the most cost-effective carriers and leverage their shipment percentages to maximize benefits. Customers are supported by the presence of 10,000-15,000 feet of straight rail track within the LAC where they can directly transfer their containers to respective warehouses – not a common feature. In addition to the on-site presence of rail, access to major roadway networks for trucking is also an important factor for customers considering business at CenterPoint Joliet Elwood.

A company starting operations at CenterPoint Joliet may realize a significant reduction in operating costs. Key is reduced drayage costs which in specific cases have added up to as much as \$10 million USD in savings. For one company, this factor was seen as the single largest contributing factor towards locating at CenterPoint Joliet Elwood from a cost point-of-view. Notably, Wal-Mart located at the LAC due to the faster container transfer times from the main rail track resulting in reduced drayage costs.

The importance of actively partnering with the local government in support of LAC initiatives was stressed. CenterPoint selected environmentally hazardous land, cleaned it up, and helped construct infrastructure and utilities for local residents, thereby building goodwill. The LAC received a ten-year, 50% tax abatement from both the city and county governments that played a great role in enticing people/businesses to locate at CenterPoint Joliet Elwood. Local governments played a greater role in establishing the LAC than the state government because the local community receives the most direct positive impacts from the investment. State government support was largely restricted to funding for transportation related infrastructure. In addition to the role of the government as a financial/regulatory entity, their importance was stressed as an active supporting stakeholder in discussions with the local community.

C-3. CenterPoint Intermodal Center, Kansas City, MO

The research team visited the Kansas City CenterPoint Logistics Activity Center (LAC) on May 13, 2015 to discuss the contributing factors leading to the success of the logistics investment with one of the land use and development managers.

CenterPoint Kansas is located in the Kansas City, Missouri region with easy access to the major highway network and the presence of strong labor markets for warehouse distribution. The strategic location was noted as a major success factor for the LAC. Easy access to the roadway network in the Kansas region is another important success factor.

A challenge faced by CenterPoint Kansas is a low amount of intermodal traffic; however, that is changing. A new BNSF Intermodal Rail Yard close to CenterPoint is considered an advantage for attracting new customers. Although intermodal traffic is yet to pick up at this LAC, with Walmart being the largest client at the moment, more businesses are likely to be attracted to the site.

Local government has incentivized qualifying businesses to locate at the LAC with 50% tax abatement for 10 years - one of the major attractions for businesses to move to Kansas. Another factor is the presence of a readily available and quality workforce. Increased government support is needed in order to speed up permitting for warehouse building projects and speculative buildings that are client-ready. In the Kansas City market, having shovel ready sites is not enough by itself. Construction of a speculative building brings in clients even before its construction is complete - "build it and they will come".

C-4. KC SmartPort, Kansas City, MO

The research team visited the Kansas City SmartPort Economic Development Initiative on May 13, 2015 to discuss the contributing factors leading to the success of logistics investments in the region with a high level executive and a manager. SmartPort is a successful economic development entity that markets the Kansas City region to prospective businesses.

The competitive location of Kansas City is the key factor in the success of the region for logistics activity centers. KC SmartPort is located in Kansas City region with easy access to centralized rail and highway networks. Owing to their location at the crossroads of the United States, goods sent from Kansas City can reach 85% of the U.S. population on the ground within 2 days. Additionally, Kansas has a population of around 2.2 million. The region's competitive locational advantage to the Midwest and proximity to the NAFTA trade corridors gives it a large market to serve.

The multimodal transportation system in Kansas City is an important factor to its success in logistics activity. Five of the seven Class I railroad carriers serve the market. Major carriers including BNSF, Union Pacific, and Norfolk Southern have a sustained presence which increases the accessibility to and from the Kansas City region. The presence of Class I railroad carriers leads to significant reductions in transportation costs. Kansas City also has an intermodal air cargo facility in the region. In addition to air and rail, the roadway network contributes to the desirability of Kansas City in comparison to its competitors, Chicago and Dallas/Fort Worth. The presence of the FedEx and UPS hubs (largest UPS sorting facility in the country) is also a great advantage in delivering goods across the country.

Contributing to the low cost of business operations in the region is the zero inventory tax offered by the local governments to companies. Inventory stored is exempt from property tax. Other

measures that work in favor of businesses are lower labor costs and availability of skilled labor in the Kansas City region. The government has been supportive of SmartPort efforts and has been actively involved as a stakeholder in the process. SmartPort has worked toward the provision of tens of thousands of jobs in the region and the government has incentivized businesses in return with 50% tax abatement for 10 years. This tax incentive is seen as one of the major attractions for businesses to move to Kansas City.

Another attractive aspect is the introduction of innovative educational/training programs to improve the quality of the workforce. KC SmartPort collaborates with Kansas University and a few community colleges in the area to foster the necessary skilled workforce. An initiative is in place to introduce supply chain educational programs beginning at the high school level so that there is a skilled and employment-ready workforce available in the region.

A false impression of Kansas City itself is one of the greatest challenges to attracting business to the region. If potential customers actually visit Kansas City, they can be won over due to the positive attributes of the region. SmartPort continuously works to improve perceptions through the education of decision makers.

C-5. Global III Intermodal Terminal, Rochelle, IL

The research team visited the Global III Union Pacific Logistics Activity Center (LAC) on April 29, 2015 to discuss the contributing factors that led to the success of the LAC with a director of Global III, a director of Global IV (an intermodal terminal (LAC) similar to Global III, but closer to Chicago in distance), and a contractor.

Strategic location was noted as the major success factor for this LAC. Global III's easy access to a strong customer base supporting a Midwest operation and easy access to the interstate highway system contribute to the strategic location. Global IV's easy access to other states, especially population centers, is considered its major success factor. Both LACs offer the ability to "get in and get out easily," a critical factor in deciding the location of the activity center. For customers, this means faster container drop-off/pick-up and traveling on major roadways that are not congested.

The presence of two modes of transportation - rail and truck - at Global III are contributing success factors. The presence of a Class I railroad carrier (Union Pacific) on site ensures that customers benefit from greatly improved transit times when using the Global III Intermodal Terminal. In addition, the presence of city-owned railroads where both Union Pacific and BNSF operate provides additional benefits for customers through competition. Rail aside, easy access to the north-south and east-west interstates supports the option for trucking. Global IV offers easy access to Interstates 55 and 80. This easy access to the interstate highway system results in reduced drayage costs and increased cost efficiencies for customers at the LACs.

The support of the local and state government through various means played an important role in locating the LACs and continues to play a role in providing transportation infrastructure upgrades and business incentives. Investments in infrastructure include construction of underpasses and overpasses to reduce bottlenecks, building new roads, and increasing highway

access to route heavyweight traffic. The City of Rochelle is business friendly providing tax abatements in return for new jobs.

Challenges for Global III included working with the various railroads to coordinate schedules allowing for timely departures. Other challenges include lack of future capacity and congestions, issues the LACs are already working to address.

C-6. Port of Savannah and Its Inland Distribution Network, Savannah, GA

The research team visited the Port of Savannah on June 18, 2015 and met with executives from the Business Development Division. The interview included a short video presentation on the Port of Savannah followed by a PowerPoint presentation by the interviewees.

One of the well-documented factors leading to the success of the Port of Savannah is the vision of the Port as a strategic gateway. Savannah is 100 miles closer to Atlanta, one of the most populous markets in the region, than any other port in the country – a definite strategic advantage. The Port has easy access to the rail (CSX and Norfolk Southern) and highway networks (I-95 and I-16). Owing to their location at the crossroads of the southeastern U.S., the port covers 20% of the U.S. population within 1 day of truck travel with a potential of reaching 45% of the total population within in 2 days.

Achieving transportation synergies is another main factor working in favor of the Port of Savannah. The Port's single terminal design leads to significant transportation benefits owing to the presence of two Class I railroad carriers in addition to the major interstates surrounding the Port. Support from the state government and the Georgia Department of Transportation to increase access to these modal networks has enabled the Port customers to significantly reduce travel times leading to cost advantages. The advantages mentioned above have led Savannah to be one of the most successful ports in the country in terms of growth both before and since the recession period.

Another significant cost-cutting factor for customers that works in favor of the Port of Savannah is gate fluidity, that is, the speed of goods moving in and out of the terminal. On an average, there are 8,500 gate movements per day and the Port is one of the fastest in the country in its ability to process a single movement (loading or unloading) in 32 minutes and double movements (loading and unloading) in 53 minutes.

The advantage of business clustering also contributes to the Ports success. More than 250 port-dependent distribution centers are located in the State of Georgia, mostly along the interstate highway system and in close proximity to Savannah. Another initiative taken by the Port of Savannah to achieve competitive advantage over its rivals is the existence of a professional customer care department. The customer service wing allows for customers to access their respective data – an advantage to them. In addition, the presence of foreign trade zone (FTZ 104) and customs office (U.S. Customs and Border Protection) within the terminal ensures significant time and cost savings on the part of the customers.

A challenge faced by the Port is the channel depth. Savannah is one of the shallowest container ports in the world at 42 feet which is an impediment for ships moving in and out of the Port as

they must depend on the assistance of high tide. Work is in progress to deepen the channel to 47 feet and completion is expected by 2018-2019. Another major challenge is day-to-day railroad activities that could benefit from increased efficiency in operations.

C-7. NY/NJ Port Authority and Its Inland Distribution Network, New York, NY

The research team visited the New York/New Jersey (NY/NJ) Port Authority on June 16, 2015 and met with three executives whose responsibilities included planning and strategy. The NY/NJ containerized cargo competitors are Norfolk, Savannah, Halifax, Montreal, and to a lesser extent, Charleston and Boston. Although previously number one in auto cargo, NY/NJ has been surpassed by locations like Baltimore and Philadelphia.

The infrastructure is not in place for post-Panamax vessels at the Port; however, there are other projects taking place to expand, including the dredging of a 50-foot channel, a project involving the Bayonne Bridge to increase air draft, and a project involving the Goethals Bridge, currently being funded by a public-private partnership. Following a rough winter in December 2013, the Port and the New York Shipping Association announced the launch of a Port Performance Task Force to tackle issues for every aspect of Port operations, (e.g., express rail operations, government-community relations, drayage operation, marine terminal operations). This effort was significant in that it involved the private and public sectors working together and sharing information that would have normally been guarded. The Task Force generated 23 recommendations. One major recommendation to be implemented in the near future is the creation of a common chassis pool to enable the pickup and drop off of chassis at different locations without penalty. Other recommendations were to develop reportable KPI's for speedy express rail operations, the development of a Port community system for extensive tracking on shipments, and a trucker guidebook equipped with maps and meaningful information to assist truckers maneuvering throughout the Port.

In 2002, the Port Authority authorized the creation of a Port Inland Distribution Network which involved transporting container cargo between the port of New York and five other locations. However, there were a number of assumptions that were not realized (e.g., 100% return rate with no revenues on empties, lost opportunities for financial savings due to the lack of use by the ocean carriers, lack of barge use by the terminal operators, and increased fuel costs for running the barge – about \$19,000 extra per round trip). The service terminated about 3 years later, and there has been no progress with the PIDN program since. However, Albany is currently showing interest in resurrecting the barge service. There was also a rail service in place, which helped to provide data and determined cargo quantity at particular rail locations.

The executive recognized the difficulty in designating inland ports. Such locations would need to meet key criteria such as: 1) access to ocean carriers, 2) desirable service areas, and 2) opportunity for the location to serve as a meaningful reliever for the port. The level of interest from the ocean carriers has been minimal. One ocean carrier indicated they preferred bringing cargo through Vancouver because the route to markets was faster and did not face border issues. They also preferred to transport empty import containers back to Asia, since the exports leaving from Asia is five to six times more valuable. Maintaining continuous contact between marine terminal operators and the ocean carriers was stressed as extremely important.

The Port executives did not consider the databases used to identify ships to their industries “rock-solid”; they have a vague range of information put into the Bill of Lading, therefore the destination of cargo can be hidden. For example, Heineken Beer information shows that thousands of its containers are destined for its headquarters in White Plains, New York. Only about 30% of the information in the Bill of Lading can be truly certain.

The challenge with working with two governors (NY and NJ) lies in the agreements within their legislatures. A Cargo Facility Charge (CFC) was initially put in place to recover financial losses from rail recovery lift fees, security costs, roadway improvement costs, etc. In New Jersey, CFC was put in place as a means to recover rail costs, however, it was described as a type of tax which generated public disfavor, especially from the governor who decided against it. The economic consequences and benefits of the services were being overlooked by the idea of simply having a “tax.” Foreign ocean carriers convinced New Jersey that the CFC put the Port at a competitive disadvantage, and its legislature unanimously passed legislation to discontinue the fee. Similar legislation is proposed for New York. Port Authority officials have had multiple discussions with legislators about the importance of the projects that have been funded by CFC (e.g., positive economic impact, project specific job creation, and increased cargo transportation) and the overall benefits of its implementation. They are hopeful that the legislation will die and that the CFC will stay in place.

A group of economists perform analyses for various departments at the Port. Their services include economic modeling, forecasts for Port commerce, projections for traffic for tunnels/bridges/terminals, freight and logistics (occasionally), in addition to the traditional input-output and cost-benefit analyses. The economists note that forecasting has limitations when it comes to planning which usually goes out to about a 10-year horizon. For long-term planning, the Port uses scenario planning instead of linear trend forecasts. Although at times forecasting and scenario planning produce inaccurate predictions, it is still important to have a continuous discussion with all necessary agencies in that region to consider future possibilities.

The only economic impact studies for projects are input/output analyses for construction spending and cost-benefit analyses in terms of a broad outlook. The Port relies on economic impact analysis updates performed by Anne Strauss-Wieder as attempts to perform their own analyses may generate conflicting numbers due to varying definitions of regions.

A program, under consideration by the state DOTs of New York and New Jersey, is called GMAP (Goods Movement Action Program) and it involves structural, regulatory and policy changes. One benefit cited would be the advantage of having access to markets from the ports by multiple roads, barge, and rail, in addition to providing interconnectivity between terminals.