Economic Contribution of the North Carolina Ports

FINAL REPORT

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Prepared for

North Carolina State Ports Authority

February 9, 2011

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ACKNOWLEDGEMENTS

The research team wishes to thank the North Carolina State Ports Authority for supporting this project. It is the team's desire that this study become a benchmark for documenting the change in economic contribution over time of port services in North Carolina.

The research team greatly appreciates the tremendous support and efforts provided by Stephanie Ayers, Laura Blair, Glenn Carlson, Janet Chilcott, Karen Fox, Rich Koch, Jeff Miles, Shannon Moody, Jason Smith, Jeff Strader, and James Yokeley at the State Ports Authority. Stephanie Ayers provided extraordinary assistance and access to important data for the research team. Special appreciation is also given to Tom Eagar, Chief Executive Officer of the North Carolina State Ports Authority, for his valuable insight and support of the study. Special recognition is given to David Martin, a student intern at UNC-Charlotte, who provided support on the data collection of the surveys.

The research team received important technical support from the North Carolina Department of Commerce in using IMPLAN®, the economic modeling software for estimating the economic contribution of businesses and industries throughout North Carolina. Special thanks are extended to Chris Harder, Sara Nienow, and Jared Wiener for their support and guidance in using IMPLAN®.

Without the help of all the above individuals, this project could not have been completed.

EXECUTIVE SUMMARY

The North Carolina State Ports Authority (NCSPA) commissioned the Institute for Transportation Research and Education (ITRE) at NC State University to assess the economic contribution of the state's ocean ports for calendar year (CY) 2009, the latest full-year dataset available. The NCSPA owns and operates two ocean ports on the eastern seaboard: the Port of Wilmington and the Port of Morehead City. This project examined the current economic contribution of port services for these two publicly-owned ocean ports in North Carolina, both on a statewide and economic development region level.

The findings of the study show that there is approximately $7.5 billion in annual economic contribution to the state's economy associated with goods moving through North Carolina ports ($6.4 billion attributed to the Port of Wilmington and $1.1 billion attributed to the Port of Morehead City). The ports directly and indirectly support over 65,000 jobs across North Carolina. Deepwater port shipping is clearly a substantial economic engine for the state. The availability of the Ports of Wilmington and Morehead City play a significant role in the supply chain decisions of companies currently having operations in North Carolina and those considering locating manufacturing and distribution operations in North Carolina. This study documents the significant economic contribution that the existing deep water ports in North Carolina have in supporting and encouraging economic development across the state. The major components of the economic contribution included in this study are direct, indirect, and induced contributions to output or gross revenue, labor income, jobs, and tax collections. All of these components are defined and explained in more detail in this report. The direct contributions were derived from commodity data, while IMPLAN® multipliers were used to generate estimates of the indirect and induced contributions of activity at the ports, as well as the analysis of tax contributions. IMPLAN® is a widely used software model for economic contribution studies of ports and other transportation assets.

In 2009, the North Carolina ports supported over $2.4 billion in labor income (payrolls and self-employment income) for North Carolina workers. The jobs that the North Carolina ports supported in 2009 had an average salary of $37,300. An analysis of 2009 average annual wages found that the wages of the jobs supported by the movement of goods through NCSPA ports were higher than the average annual wages in 91 of the 100 counties in North Carolina. Employment related to activity at the Port of Morehead City had a higher average salary than the jobs related to those activities through the Port of Wilmington. Additionally, the export-related jobs from Port of Wilmington activity had a higher average salary than import-related jobs.

Another important component of the contribution that the North Carolina ports have on the local and state level are the taxes generated by the economic activity supported by the ports. Almost $500 million in sales, property, corporate, and personal taxes were received by state and local governments in 2009 due to activity supported by NCSPA ports. Local property tax collections of $170 million are supported by activity at the Port of Wilmington, while activity at the Port of Morehead City supports over $8.5 million. The activity supported by NCSPA ports resulted in over $250 million in sales tax collections across the state. Additionally, state corporate and personal taxes of over $70 million are collected due to activity supported by the Port of Wilmington and the Port of Morehead City.

TABLE OF CONTENTS

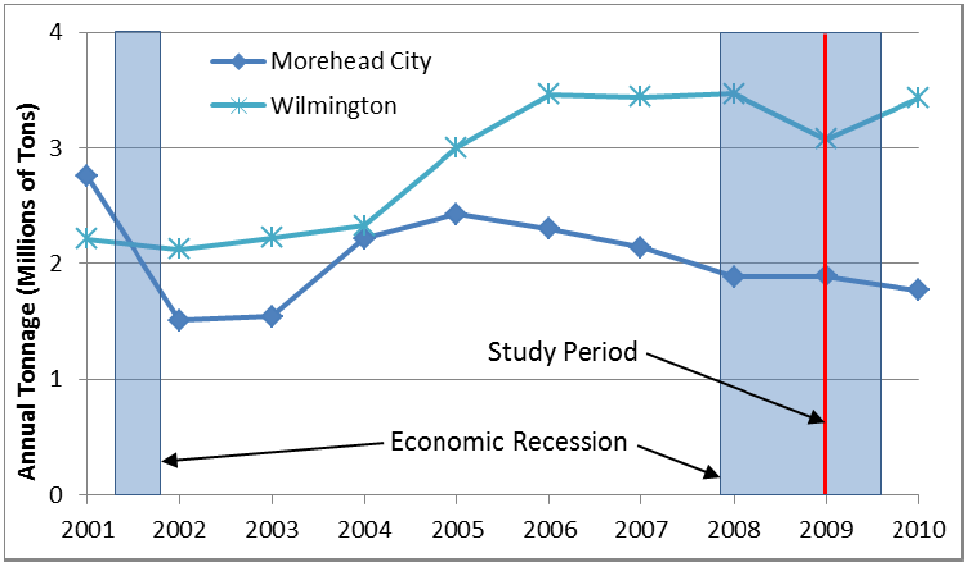
LIST OF EXHIBITS

INTRODUCTION

BACKGROUND

The North Carolina State Ports Authority (NCSPA) commissioned the Institute for Transportation Research and Education (ITRE) at NC State University to assess the economic contribution of the existing North Carolina ports for calendar year (CY) 2009, the latest full-year dataset available. The NCSPA owns and operates two ocean ports on the eastern seaboard, the Port of Wilmington and the Port of Morehead City. The objectives of this project were 1) to conduct an economic assessment of the existing North Carolina ports at Wilmington and Morehead City and 2) to help communicate what the economic contributions mean to the state overall. The economic contribution of the ports changes over time, just as the tonnage shipped through the ports changes over time (Exhibit 1). Overall economic conditions can impact port tonnage, as indicated by the two economic recessions over the past ten years (NBER 2011). Data for 2010 are forecasts. The changes in the amount and type of cargo shipped through the North Carolina ports should be considered when examining the results presented in this study, as the former will change the economic contribution of the ports over time.

Exhibit 1 – North Carolina Ports Annual Tonnage (2001 to 2010)



Source: NCSPA 2010, NBER 2011

The purpose of this project is to examine and report the current economic contribution of port services for the two publicly-owned and operated deepwater ports in North Carolina, both statewide and for the State's seven Economic Development Regions. The results of the study will be documented in this technical report for use by the State Ports Authority and other municipal and elected officials. The NCSPA could use these results to show the existing as well as the future potential contribution of port activities to various audiences such as the North Carolina General Assembly, the North Carolina Department of Transportation Board of Transportation, the North Carolina Department of Commerce, and businesses and industries located in North Carolina, as well as businesses and industries that could potentially locate in North Carolina.

PROBLEM STATEMENT

The NCSPA desired to establish a benchmark measure of the economic contribution of deepwater port services for their two ports in North Carolina, the Port of Wilmington and the Port of Morehead City. The methodology for the study is documented in this report and is replicable over time. The methodology followed accepted economic impact and contribution assessment techniques and was consistent with methodologies applied in other states (Humphreys, J.M. 2007, Wilbur Smith Associates 2008, Pearson, R.L., et al 2008).

SCOPE AND OBJECTIVES

This research project developed a transparent economic contribution analysis methodology based on reviewing methodologies used in several states and the expertise from research team members, the NCSPA, and the North Carolina Department of Commerce. The project utilized data provided by the NCSPA, the North Carolina Department of Commerce, and the Employment Security Commission of North Carolina. The data were entered into an economic model developed for the ports to assess the indirect and induced impacts stemming from the availability and use of the ports (MIG 2010). Economic contribution results were compiled and documented for each port.

NC PORTS OVERVIEW

Container cargo destined for North Carolina and other states primarily passes through the Port of Wilmington as does some of the bulk and breakbulk cargo. The Port of Wilmington is also equipped to handle refrigerated containers. The Port of Morehead City provides services unique to bulk and breakbulk cargo. In addition to ocean traffic, the Port of Morehead City supports a thriving barge industry (primarily for moving phosphate along the Intercoastal Waterway). Each facility is served by a single Class 1 railroad (CSX for the Port of Wilmington and Norfolk Southern for the Port of Morehead City). Both ports offer cargo handling and storage facilities.

Jobs at NCSPA facilities include administration, security, longshoremen, river pilots, stevedores, and others. Businesses that facilitate trade through the ports include third party logistics (3PLs) providers, customs house brokers, freight forwarders, rail lines, truck lines, steamship lines, and tugboat operators. In addition, companies across the state (and beyond its borders) ship their cargo/products through NC ports.

NC PORTS CARGO MOVEMENT

The movement of cargo through the NCSPA ports connects businesses and customers with distribution facilitators, e.g. warehousing, transportation, and financial and insurance providers supporting numerous varied jobs across North Carolina. Over 225,000 TEUs (twenty-foot equivalent unit, a measure used for capacity in container transportation), 1.3 million tons of bulk, and 320,000 tons of breakbulk commodities flowed through the Port of Wilmington in CY 2009. At the Port of Morehead City, over 140,000 tons of breakbulk and almost 1.6 million tons of bulk cargo flowed through the port. The Port of Wilmington served 362 ships and the Port of Morehead City served 118 ships and 415 barges in 2009.

The ports serve a range of industries in North Carolina and surrounding states. The top import commodities based on volume at the Port of Wilmington were chemicals (575,000 tons) and animal feed (287,000 tons). Forest products (273,000 tons) and woodpulp (261,000 tons) were

the top export commodities (Exhibit 2). The top import commodities at the Port of Morehead City were sulfur products (326,000 tons) and rubber (118,000 tons). Phosphate (1,116,000 tons) and military commodities (3,000 tons) were the top export commodities (Exhibit 2). These imports and exports, among others that are transported through the ports, support many industries across North Carolina, including: retail stores, agriculture, fertilizer manufacturing, textile mills, wood product manufacturing, other product manufacturing, and numerous other industries.

Exhibit 2 – Top Five Commodities by Port in 2009

Port of Wilmington - Top Five Commodities			
Import Commodity	**Import Tonnage**	**Export Commodity**	**Export Tonnage**
Chemicals	575,070	Forest Products	273,199
Animal Feed	287,710	Woodpulp	261,473
Cement	163,604	General Merchandise/ Miscellaneous	106,330
General Merchandise/ Miscellaneous	140,112	Scrap Metal	93,470
Metal Products	127,528	Food Products	93,135
Port of Morehead City - Top Five Commodities			
Import Commodity	**Import Tonnage**	**Export Commodity**	**Export Tonnage**
Sulfur Products	326,147	Phosphate	1,115,760
Rubber	117,505	Military	2,981
General Merchandise/ Miscellaneous	108,617		
Scrap Metal	76,709		
Ore, Mica, Shist	56,107		

Source: NCSPA 2010

The ports facilitate trade among many partners and industries in North Carolina and surrounding states. The largest shipping partner by volume at the Port of Wilmington is China at 769,000 tons and the largest shipping partner by volume at the Port of Morehead City is India at 832,000 tons (Exhibit 3).

Exhibit 3 – Top Ten Trading Partners by Port in 2009

Port of Wilmington Top Ten Trading Partners					
Import Partner	**Import Tonnage**	**Export Partner**	**Export Tonnage**	**Partner**	**Total Trade (tons)**
China	331,104	China	438,262	China	769,366
Colombia	163,604	Korea	189,344	Korea	302,783
Brazil	138,733	Taiwan	124,081	Taiwan	189,387
Korea	113,439	Italy	82,331	Colombia	185,041
Denmark	90,392	Turkey	75,283	Brazil	139,048
Trinidad	90,269	United Kingdom	35,995	Denmark	90,392
Germany	72,258	Spain	32,858	Trinidad	90,269
Taiwan	65,306	Colombia	21,437	United Kingdom	90,227
United Kingdom	54,232	Netherlands	18,145	Italy	87,946
Canada	36,707	Honduras	13,598	Turkey	75,283
Port of Morehead City Top Ten Trading Partners					
Import Partner	**Import Tonnage**	**Export Partner**	**Export Tonnage**	**Partner**	**Total Trade (tons)**
Venezuela	255,161	India	831,587	India	831,587
Bahamas	105,023	Brazil	148,295	Venezuela	261,992
Indonesia	82,313	China	29,747	Brazil	230,512
Brazil	82,217	Argentina	27,557	Bahamas	105,023
Turkey	56,107	Colombia	21,942	Indonesia	82,313
Mexico	48,959	Venezuela	6,831	Turkey	56,107
Thailand	35,192	Japan	6,669	Mexico	48,959
Poland	22,821	Cuba	5,263	Thailand	35,192
France	22,027	Puerto Rico	2,208	China	29,747
Russia	22,017	Guatemala	1,990	Argentina	27,557

Source: NCSPA 2010

ECONOMIC CONTRIBUTION DEFINITIONS

Numerous terms and concepts will appear throughout this report, specific to economic contribution studies and port activity. The following information will provide readers with a foundation for understanding the results presented in this report. To measure the contribution of the ports to North Carolina's economy, four metrics were used: output (gross revenue), the number of payroll employees and self-employed workers, employee compensation (payrolls and self-employment income), and tax receipts of state and local governments.

The economic contribution results are presented in three categories: direct, indirect, and induced impacts. The indirect and induced impacts capture multiplier impacts and are typically generated using software packages to develop economic impact models.

- Direct impacts result from firms that are directly engaged in the movement of goods through the NC Ports, which can include manufacturing, shipping, receiving, exporting, distributing, transporting, handling, or processing the goods which move through the ports, including all personnel employed by the ports.
- Indirect impacts represent the impacts of spending by port-related firms on products and services provided by support businesses (such as office supply companies, property maintenance, etc.).
- Induced impacts result from payroll expenditures of employees of directly- and indirectly-related firms that produce successive spending (which is money that is re-circulated in an economy resulting in additional economic impact).

There are three commodities flows in and out of ocean ports: imports, exports, and domestic flows. Imports arriving in the United States at NC ports generate jobs and income through the transportation of goods from the ports to their next destination, further assembly or manufacture of raw or partially processed materials, and/or wholesale and retail selling of finished products in-state. Exports leaving the United States from North Carolina through NC ports similarly generate jobs and income for North Carolina from the growth, harvesting, and processing/ packaging of in-state agricultural products, extraction of minerals and materials, assembling and manufacturing of products, and transportation of goods to the ports. Domestic flows include cargo being moved from one part of the United States to another part and they could have impacts similar to those of either imports or exports.

THE ROLE OF PORTS IN THE SUPPLY CHAIN

The competitive success of firms is grounded in providing product availability at the lowest cost while maintaining the flexibility to meet demand fluctuations. In order to accomplish these objectives, firms strive to maintain lean supply chain operations which are primarily based on reducing time, inventory levels, and costs. In a global economy, ready access to deep water ports is an essential consideration for supply chain design decision making. When market and supply decisions are made, the total costs of doing business must be considered. Significant factors include the costs of maintaining adequate inventory levels, the length of time required to replenish inventory reserves, costs of transportation, related import/export documentation and fees, cost of doing business, and ease of distribution to other locations.

Further, the extent to which ports are located and operated in a fashion that provides consistent and efficient operations can significantly impact the magnitude of supply chain risk to which businesses are exposed. Predictable movement of goods through ports and effective linkages with allied transportation networks can reduce business costs, increase competitiveness, and improve profitability in ways that are difficult to estimate. However, to the extent that ports are responsive to such needs, there is potentially a substantial economic impact.

In many cases, the choice of port is made indirectly through the choice of carrier or other intermediary. Thus, the ability to increase traffic through the ports in North Carolina is driven by the number of carriers that can be attracted to provide service. Carriers seek to use ports that have sufficient capacity to provide their required services and a fee structure that enhances profitability. Firms are attracted to use ports that provide ease of access and have a choice of carriers, sea as well as land based, and that provide service to both origination and destinations of importance to the firm. This will result in shorter transportation time, allows the firm to

maintain lower inventory levels (and thus costs), and provides the opportunity for lower transportation costs. The importance of transportation as a cost consideration will likely increase in importance based on rising fuel prices.

ECONOMIC CONTRIBUTION METHODOLOGY

Many NC businesses generate revenues based on import, export, and domestic cargo activities at North Carolina Ports. These activities occur because of the use of facilities and services and the employment of workers both on-site at the ports and off-site. Therefore, the NC ports contribute to the economic base and vitality of the state. To quantify how much, what type, and where these contributions occur, an economic contribution study was undertaken by the project team. The study approach was to measure the outputs of business activities supported by shipping and receiving commodities via the deepwater seaports in Morehead City and Wilmington, North Carolina.

A common problem when conducting economic impact and contribution studies is a lack of transparency in the methodology used to generate the estimate of the economic value. The methodology employed in this study is transparent as the direct impacts by commodities were collected from manifests supplied by the North Carolina State Ports Authority. By utilizing commodities as the primary driver of economic contribution, the research team had a meaningful value to verify that the direct and multiplier effects were reasonable.

The findings from studying the economic contributions of the ports include total (direct, indirect, and induced) contributions to economic output, jobs, and labor income. The direct contributions came from commodity data. IMPLAN® (IMpact Analysis for PLANning) multipliers (from the Minnesota IMPLAN® Group) were used to generate the indirect and induced contributions of the ports activity, which was also utilized for the tax analysis. The indirect contributions represent spending by port-related firms on goods and services provided by support businesses (such as office supply companies, property maintenance, etc.). The induced contributions result from payroll expenditures by employees of directly- and indirectly-related firms that produce successive spending. Total contributions were generated by modeling of each port's contributions. Import and export data from the Port Import Export Reporting Service (PIERS) enabled the team to distribute the impacts for the NCSPA ports across the state based on the origin and destination of the commodities. Additionally, a survey was developed and sent to the major port users to verify employment levels and commodities being shipped.

The quantity of commodities used for the direct contributions were estimated using vessel manifest data supplied by the NCSPA for CY 2009. The contributions were categorized by port and by the type of goods (container and bulk/breakbulk). The values of the commodities were estimated using data from the Commodity Flow Survey provided by the Bureau of Transportation Statistics with a conversion to 2009 dollars using the implicit gross domestic product deflator (BTS 2007, BEA 2010).

The project team used IMPLAN®, economic modeling software provided and used by the North Carolina Department of Commerce, to estimate the multiplier contributions of the NCSPA ports. IMPLAN® uses data compiled from a wide variety of sources, including unique local data and census information, not estimated from national averages (MIG 2010). IMPLAN® is widely used by analysts in helping to calculate the economic contribution of ports (and other transportation facilities).

ECONOMIC CONTRIBUTION RESULTS

Introduction

The final result of the project includes values for output, employment, labor income, and taxes. The following sections provide the breakdowns of the economic contribution of North Carolina's ports by direct, indirect, and induced contributions for each port and subtotals by category. The results are based on the value of exported commodities produced in North Carolina and the value added to imported commodities which remain in North Carolina. Approximately $8.35 billion worth of goods were transported through North Carolina ports in 2009 with approximately $6.62 billion originating or terminating within the state (NCSPA 2009).

Over 2.2 million tons of goods worth over $5.8 billion were imported through North Carolina ports in 2009 (Exhibit 4). The impact of imported goods is derived from the value added to imported goods which remain in the state, which totaled over $3.2 billion in 2009. Exhibit 4 shows the value of goods imported to each port by type of goods, the value of goods remaining in North Carolina, the value added to the goods that remain in North Carolina, and the total tons imported.

Exhibit 4 – Value of Imported Goods by Total, NC Component, and Value Added

Type of Goods	Port	Total Value of Transported Goods ($)	Value of Transported Goods Remaining in NC ($)	Value Added to NC Imports ($)	Total Tons
Container	Wilmington	4,679,990,000	4,564,650,000	2,908,720,000	674,000
Bulk/Breakbulk	Morehead City	497,020,000	429,950,000	154,380,000	260,000
	Wilmington	635,410,000	494,270,000	212,240,000	1,289,000
Port of Wilmington Subtotal		5,315,400,000	5,058,920,000	3,120,960,000	1,963,000
Port of Morehead City Subtotal		497,020,000	429,950,000	154,380,000	260,000
North Carolina State Ports Total		5,812,420,000	5,488,870,000	3,275,340,000	2,223,000

Source: NCSPA 2009

In 2009, almost 1.5 million tons of goods worth almost $2 billion were exported through North Carolina ports (Exhibit 2). The impact of exported goods is derived from the value of transported goods which were produced in North Carolina, which totaled over $1.1 billion in 2009. Exhibit 5 shows the value of goods exported from each port by type of goods, the value of goods remaining in North Carolina, and the total tons exported.

Exhibit 5 – Value of Exported Goods by Total and NC Component

Type of Goods	Port	Total Value of Transported Goods ($)	Value of Transported Goods Produced in NC ($)	Total Tons
Container	Wilmington	1,639,550,000	350,250,000	1,027,000
Bulk/Breakbulk	Morehead City	575,200,000	575,200,000	1,485,000
	Wilmington	322,550,000	209,080,000	377,000
Port of Wilmington Subtotal		1,962,100,000	559,330,000	1,404,000
Port of Morehead City Subtotal		575,200,000	575,200,000	1,485,000
North Carolina State Ports Total		2,537,300,000	1,134,530,000	2,889,000

Source: NCSPA 2009

Output Contribution

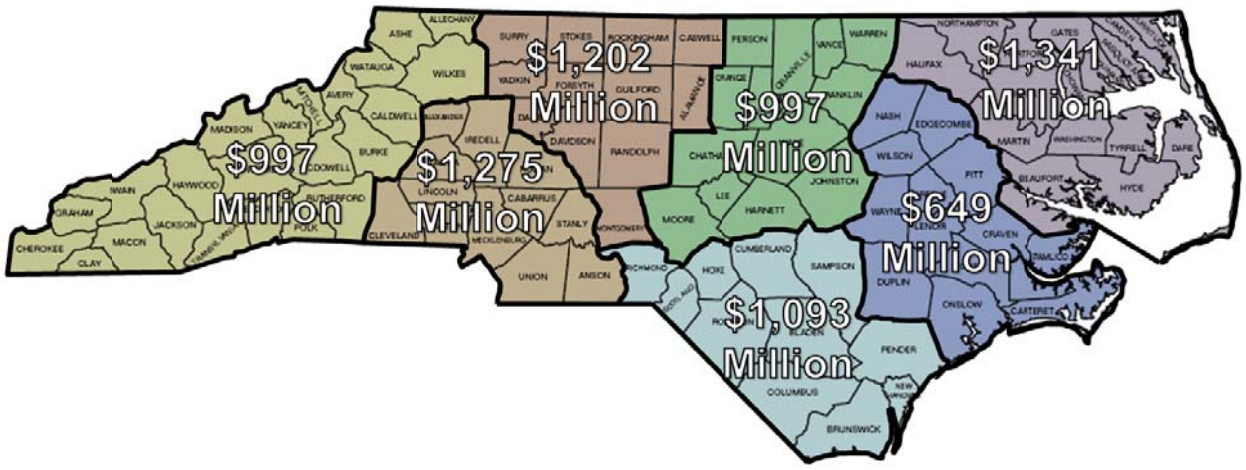
The North Carolina ports supported, through the provision of goods movement services at a marine port, over $7.5 billion in the output, in the form of gross revenues, of North Carolina businesses during 2009 (Exhibit 6). The NCSPA contribution to the gross revenues of North Carolina businesses results from the trade facilitated by the availability of transporting goods through the ports in Wilmington and Morehead City. These transported goods support a diverse set of industries across the state. The majority of the output contribution is derived from the activity related to imports at the Port of Wilmington with a contribution of $5.2 billion. Exhibit 7 shows the distribution of output contribution across the state's seven economic development regions.

Exhibit 6 – Output Contribution

			Output (Dollars)			
Type of Goods		**Port**	**Direct**	**Indirect**	**Induced**	**Total**
Imports	Container	Wilmington	2,907,520,000	942,350,000	1,306,840,000	5,156,710,000
	Bulk/ Breakbulk	Morehead City	148,180,000	48,970,000	37,090,000	234,240,000
		Wilmington	210,730,000	68,370,000	54,040,000	333,140,000
Exports	Container	Wilmington	330,430,000	139,170,000	88,470,000	558,070,000
	Bulk/ Breakbulk	Morehead City	572,200,000	243,790,000	91,190,000	907,180,000
		Wilmington	206,530,000	90,800,000	51,890,000	349,220,000
Port of Wilmington Subtotal			3,655,210,000	1,240,690,000	1,501,240,000	6,397,140,000
Port of Morehead City Subtotal			720,380,000	292,760,000	128,280,000	1,141,420,000
North Carolina State Ports Total			4,375,590,000	1,533,450,000	1,629,520,000	7,538,560,000

Source: NCSPA 2009, MIG 2010

Exhibit 7 – Output Contribution Across North Carolina Economic Development Regions



As a frame of reference for the magnitude of the NCSPA ports' impact on the state's economy, the contribution was compared to the North Carolina gross domestic product (GDP). North Carolina's GDP in 2008 was $400.2 billion (BEA 2009). Therefore, the NCSPA's contribution of $7.5 billion to the state's GDP was approximately two percent (2%). This is an

approximation as the contribution is based on 2009 dollars. As a more detailed comparison, other important industries in the state and their value to the state's economy include: agriculture, forestry, fishing, and hunting ($3.6 billion); utilities ($7.4 billion); and accommodation and food services ($9.8 billion) (BEA 2009).

Another useful comparison can be made to the impact of another important component of the state's economy, namely, travel. Travel is defined as all the activities that are associated with every day trip or overnight trip which is 50 miles or greater from a traveler's origin and those overnight trips which include paid accommodations (NCDOC 2009). The 2009 economic impact of travel in North Carolina was $15.6 billion. Therefore, the contribution to NC's economy supported by activity at NCSPA's ports is approximately 50% of the statewide impact of travel. Travel has impacts on many industries, including: gasoline, car rental, entertainment, art, recreation, food service, retail, lodging, public transportation, travel agencies, and others.

Similar to marine ports, aviation is an important mode of transportation that supports North Carolina businesses. A 2006 study found that the economic impact of North Carolina's 74 publicly owned airports was $11.8 billion (Findley and Foyle 2007). Therefore, the contribution to NC's economy supported by activity at NCSPA's ports is approximately two-thirds of the 2006 statewide impact of aviation.

The overall economic contribution multiplier (total output contribution divided by direct output contribution) is 1.72 (Exhibit 8). The 1.72 multiplier means that for every $1.00 worth of goods that is shipped through the North Carolina ports that stays in the state, $1.72 in gross revenues by North Carolina businesses is supported by the ports. A study of the contribution of tourism to North Carolina's economy found that tourism spending had a multiplier of 1.54 (Tourism Economics 2009). Exhibit 8 shows the economic contribution multipliers for each type of goods and activity at each port.

Exhibit 8 – Economic Contribution Multiplier

Type of Goods		Port	Multiplier
Imports	Container	Wilmington	1.77
	Bulk/ Breakbulk	Morehead City	1.58
		Wilmington	1.58
Exports	Container	Wilmington	1.69
	Bulk/ Breakbulk	Morehead City	1.59
		Wilmington	1.69
Port of Wilmington Subtotal			1.75
Port of Morehead City Subtotal			1.58
North Carolina State Ports Total			1.72

Source: NCSPA 2009, MIG 2010

Employment Contribution

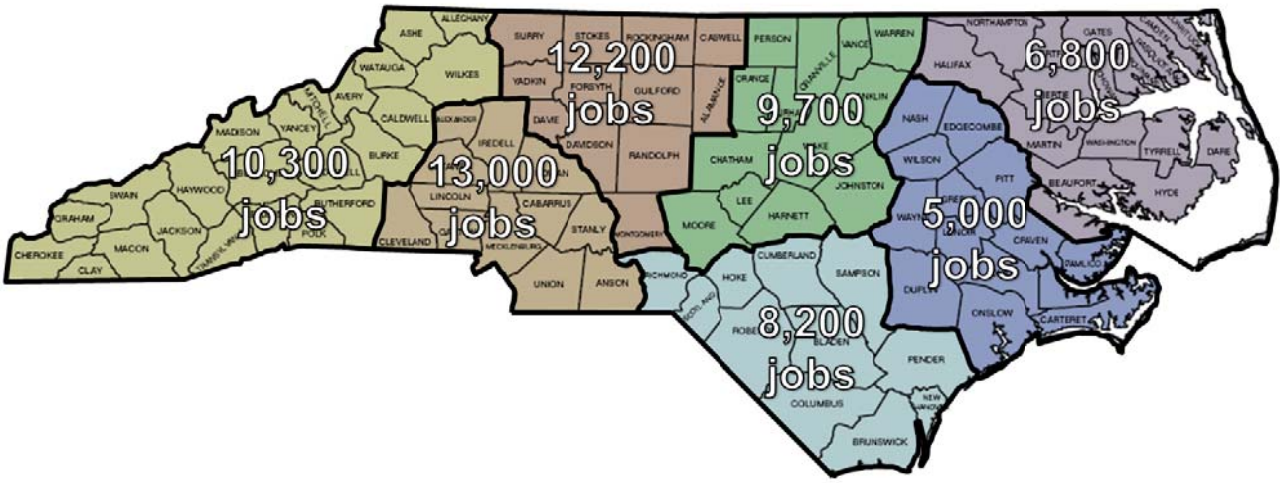
The North Carolina ports supported, through the provision of goods movement services at a marine port, over 65,000 full-time and part-time jobs at North Carolina businesses in 2009 (Exhibit 9). The majority of the employment contribution is derived from the activity related to imports at the Port of Wilmington with a contribution of over 55,000 jobs. The majority of jobs (41,100) were directly related to activity supported by the ports, while an additional 24,200 jobs were supported through indirect or induced activities. Exhibit 10 shows the distribution of employment contribution across the state's seven economic development regions.

Exhibit 9 – Employment Contribution

			Employment (Jobs: Full-time and Part-time)			
Type of Goods		**Port**	**Direct**	**Indirect**	**Induced**	**Total**
Imports	Container	Wilmington	36,900	6,900	11,300	55,100
	Bulk/Breakbulk	Morehead City	400	300	300	1,000
		Wilmington	1,200	400	500	2,100
Exports	Container	Wilmington	1,500	900	800	3,200
	Bulk/Breakbulk	Morehead City	600	1,100	800	2,500
		Wilmington	500	500	400	1,400
Port of Wilmington Subtotal			40,100	8,700	13,000	61,800
Port of Morehead City Subtotal			1,000	1,400	1,100	3,500
North Carolina State Ports Total			41,100	10,100	14,100	65,300

Source: NCSPA 2009, MIG 2010

Exhibit 10 –Employment Contribution Across North Carolina Economic Development Regions



The industry distribution of total employment impacts in the top 20 industries supported by container operations at the Port of Wilmington are shown in Exhibit 11. In total, the IMPLAN® model estimates that a little over 58,000 jobs are supported by the import and export container operations at the Port of Wilmington, with the top 20 industries accounting for

a little over 47,000 or 81% of the total estimated. The majority of these jobs are supported by imported container volumes.

All but three of these top 20 industries (electronic, appliance and clothing retail and real estate establishments) are considered to be part of the economic base of the North Carolina economy. Some of these industries, such as furniture manufacturing, are undergoing significant structural change, and these trends are included within Exhibit 11. For example, the furniture industry employed 61,000 people in North Carolina in 2003 but the total began to decline as companies intensified manufacturing outsourcing to foreign locations and by 2009 slightly less than 35,000 people were employed in this industry (BLS 2011). If the Port of Wilmington could not handle containers to support the furniture industry it is possible that more than the 8,300 jobs listed in Exhibit 11 would be lost because changes in competitive conditions due to inadequate port infrastructure could motivate companies to relocate.

While the IMPLAN® estimates provide an approximation of the number of jobs supported by the Port of Wilmington, it should be recognized that the container facilities provide location advantages that can shape the competitive landscape of industries. Changes to the Port of Wilmington's ability to compete with other South Atlantic ports could have a greater impact on North Carolina's economy than the IMPLAN® estimates indicate.

Exhibit 11 – Top 20 Industries Supported by Container Operations

Employment (Jobs: Full-time and Part-time)			
IMPLAN® Industry Sector	**Export Related (jobs)**	**Import Related (jobs)**	**Total (jobs)**
Retail Stores - Electronics and appliances	< 100	8,500	8,500
Retail Stores - Furniture and home furnishings	< 100	8,300	8,300
Retail Stores - Clothing and clothing accessories	< 100	5,700	5,700
Retail Stores - General merchandise	< 100	5,500	5,500
Retail Stores - Motor vehicle and parts	< 100	2,800	2,800
Wholesale trade businesses	200	2,200	2,400
Retail Stores - Health and personal care	< 100	1,900	1,900
Real estate establishments	100	1,600	1,700
Food services and drinking places	100	1,600	1,700
Retail Stores - Miscellaneous	< 100	1,400	1,400
Retail Stores - Building material and garden supply	< 100	1,300	1,300
Textile and fabric finishing mills	300	900	1,200
Employment services	100	900	1,000
Retail Stores - Sporting goods, hobby, book and music	< 100	700	700
Offices of physicians, dentists, and other health practitioners	< 100	600	600
Animal production, except cattle and poultry and eggs	500	< 100	500
Services to buildings and dwellings	< 100	500	500
Private hospitals	< 100	500	500
Nursing and residential care facilities	< 100	400	400
Retail Stores - Food and beverage	< 100	400	400
Other	1,500	9,600	11,100
Total	3,100	55,200	58,300

Source: NCSPA 2009, MIG 2010

Income Contribution

The North Carolina ports supported, through the provision of goods movement services at a marine port, over $2.4 billion in labor income for North Carolina workers in 2009 (Exhibit 12). Labor income is comprised of compensation for employees and self-employment income. Approximately 60% of the labor income is from employment directly supported by activity related to the North Carolina ports.

Exhibit 12 – Income Contribution

Type of Goods		Port	Labor Income (dollars) Direct	Indirect	Induced	Total
Imports	Container	Wilmington	1,243,550,000	303,360,000	407,600,000	1,954,510,000
	Bulk/ Breakbulk	Morehead City	28,770,000	15,140,000	11,570,000	55,480,000
		Wilmington	43,420,000	19,990,000	16,850,000	80,260,000
Exports	Container	Wilmington	64,140,000	39,770,000	27,580,000	131,490,000
	Bulk/ Breakbulk	Morehead City	45,870,000	61,930,000	28,440,000	136,240,000
		Wilmington	36,600,000	24,540,000	16,180,000	77,330,000
Port of Wilmington Subtotal			1,387,710,000	387,660,000	468,210,000	2,243,590,000
Port of Morehead City Subtotal			74,640,000	77,070,000	40,010,000	191,720,000
North Carolina State Ports Total			1,462,350,000	464,730,000	508,220,000	2,435,310,000

Source: NCSPA 2009, MIG 2010

The jobs that the North Carolina ports supported in 2009 had an average salary of $37,300 (Exhibit 13). The average salary includes full and part-time employees. The data show that the export-related jobs have higher average salaries than their comparable import-related jobs at the Port of Wilmington. These same jobs through the Port of Morehead City have a higher average salary than the jobs related to those activities through the Port of Wilmington.

Exhibit 13 – Average Salary Contribution

Type of Goods		Port	Average Salary (dollars)*
Imports	Container	Wilmington	35,500
	Bulk/Breakbulk	Morehead City	55,500
		Wilmington	38,200
Exports	Container	Wilmington	41,100
	Bulk/Breakbulk	Morehead City	54,500
		Wilmington	55,200
Port of Wilmington Subtotal			36,300
Port of Morehead City Subtotal			54,800
North Carolina State Ports Total			37,300

** Including Full-time and Part-time Employees*

Source: NCSPA 2009, MIG 2010, ESCNC 2010

Exhibit 14 shows the 2009 average annual wage per employee for each of the 100 counties in the state (ESCNC 2010). The total NCSPA supported average salaries from Exhibit 13 (which includes part-time and full-time employees) was $37,300. The NCSPA average is higher than 91 of the average wages in the 100 counties. The nine counties exceeding the NCSPA average include: Durham, Forsyth, Granville, Guilford, Mecklenburg, New Hanover, Orange, Rowan, and Wake.

Exhibit 14 – North Carolina Region/County Average Annual Wage per Employee (2009)

County	Average Annual Wage
Alamance	$33,228
Alexander	$27,716
Alleghany	$24,492
Anson	$29,276
Ashe	$28,028
Avery	$28,860
Beaufort	$32,188
Bertie	$29,796
Bladen	$29,796
Brunswick	$32,604
Buncombe	$35,464
Burke	$31,252
Cabarrus	$34,840
Caldwell	$30,004
Camden	$36,452
Carteret	$28,132
Caswell	$29,120
Catawba	$34,164
Chatham	$30,992
Cherokee	$28,184
Chowan	$30,108
Clay	$26,156
Cleveland	$32,240
Columbus	$29,848
Craven	$36,660
Cumberland	$36,296
Currituck	$30,316
Dare	$27,924
Davidson	$31,096
Davie	$29,692
Duplin	$28,964
Durham	$61,152
Edgecombe	$34,112
Forsyth	$41,496
Franklin	$34,216
Gaston	$33,748
Gates	$29,068
Graham	$26,884
Granville	$37,648
Greene	$28,444
Guilford	$40,040
Halifax	$28,912
Harnett	$29,484
Haywood	$30,680
Henderson	$32,916
Hertford	$29,796
Hoke	$27,768
Hyde	$26,988
Iredell	$37,232
Jackson	$31,720
Johnston	$34,320
Jones	$28,704
Lee	$37,232
Lenoir	$31,460
Lincoln	$31,252
Macon	$28,860
Madison	$26,780
Martin	$30,628
McDowell	$29,224
Mecklenburg	$51,844
Mitchell	$28,808
Montgomery	$29,432
Moore	$33,696
Nash	$33,384
New Hanover	$37,804
Northampton	$29,120
Onslow	$29,016
Orange	$46,124
Pamlico	$26,520
Pasquotank	$31,876
Pender	$29,588
Perquimans	$26,936
Person	$32,084
Pitt	$36,036
Polk	$29,276
Randolph	$30,160
Richmond	$28,548
Robeson	$28,444
Rockingham	$31,408
Rowan	$37,596
Rutherford	$28,496
Sampson	$30,368
Scotland	$30,264
Stanly	$29,744
Stokes	$28,132
Surry	$29,744
Swain	$29,796
Transylvania	$28,860
Tyrrell	$26,364
Union	$34,476
Vance	$30,628
Wake	$45,188
Warren	$28,236
Washington	$25,168
Watauga	$30,316
Wayne	$30,992
Wilkes	$30,160
Wilson	$35,984
Yadkin	$28,340
Yancey	$27,092

Source: ESCNC 2010

State and Local Tax Contribution

State and local governments in North Carolina received almost $500 million in sales, property, corporate, and personal tax collections in 2009 due to activity supported by NCSPA ports (Exhibit 15). The tax base estimates were calculated using a weighted average property tax rate across all counties in the state. The weights were the appraised value of real property in each county. The local property taxes do not include revenues earmarked for the support of public schools, which are not calculated in IMPLAN®. The local property tax related to activity at the Port of Wilmington is over $170 million and the activity at the Port of Morehead City is over $8.5 million across the state.

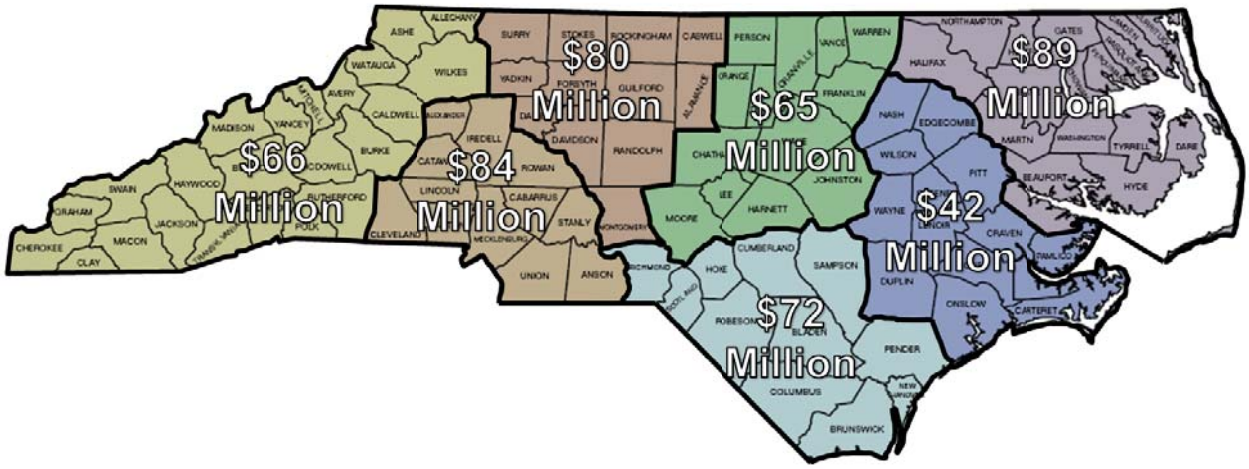
The activity supported by NCSPA ports resulted in over $250 million in sales tax collections across the state (Exhibit 15). The local option portion of the total sales tax was estimated using weighted average local option sales tax rates across the state. The weights were county retail sales. The local option sales tax receipts for local governments in North Carolina from activity supported by the Port of Wilmington and the Port of Morehead City were $5 million and $250,000, respectively.

Exhibit 15 – State and Local Tax Contributions

Tax Description	Port of Wilmington (dollars)	Port of Morehead City (dollars)	Total (dollars)
Business Sales Tax	238,416,000	11,894,000	250,310,000
Local Property Tax	170,011,000	8,508,000	178,519,000
State Corporate and Personal Tax	64,377,000	5,870,000	70,247,000
Total	472,804,000	26,272,000	499,076,000

Source: NCSPA 2009, MIG 2010

Exhibit 16 –Tax Contribution Across North Carolina Economic Development Regions



COMPARISON TO NEIGHBORING STATES' PORTS

To gain a sense of perspective of the contribution of NC ports, ports in Georgia, South Carolina, and Virginia were studied. The following comparisons include several characteristics of the ports – some which are generally static measures (port access) whereas the others are dynamic measures (port operations and economic contribution) that change from year to year.

Port Access and Operations

The Port of Virginia in Norfolk is the neighboring port with the deepest channel at 50 feet. The Port of Morehead City has a depth of 45 feet and is four miles from the open ocean, the shortest distance to open ocean of the neighboring ports. Rail access and availability is another important feature of ports. Unlike NC's ports, the neighboring ports included in this study are served by more than one rail carrier.

By total trade, the Virginia Port at Hampton Roads moves the most cargo among North Carolina's neighboring ports (Exhibit 17). The Port of Wilmington moves approximately one-tenth of the tonnage at Hampton Roads, one-fifth of the tonnage at Savannah, four-tenths of the tonnage at Charleston, and twice the tonnage at Morehead City. The port operations comparison can provide valuable insight into the economic contribution values presented in Exhibit 18 and Exhibit 19. Although economic contribution levels are strongly related to the quantity of goods shipped through a port, other factors play a significant role in the economic contribution of a port including the value of the goods, import and export balance, quality of available landside transportation access, nearby consumer markets, and many other dynamics.

Exhibit 17 – Port Operations Comparison

Port	2009 TEUs	2009 Exports (short tons)	2009 Imports (short tons)	2009 Total Trade (short tons)
NC - Morehead City	N/A	1,104,789	556,543	3,278,457
NC - Wilmington	225,176	1,334,132	3,544,741	6,715,576
GA - Brunswick & Savannah	2,356,512	14,976,170	17,478,781	34,432,803
SC - Charleston	1,181,353	5,018,878	8,436,693	15,834,464
VA - Hampton Roads	1,745,228	39,204,877	8,419,996	58,369,087

Source: AAPA 2010a, AAPA 2010b

Port Economic Contribution

The neighboring ports in Georgia (Humphreys 2007), South Carolina (Wilbur Smith 2008), and Virginia (Pearson et al. 2008) have each conducted economic contribution studies in recent years to document the role of their state's ports in the statewide economy. Each of the three studies utilized IMPLAN® for the development of indirect and inducted impacts. Each of the studies were based on data from either 2006 or 2007, which were years of more robust international shipping activity than the base year data from this study. The changes in shipping volumes over the past few years at the North Carolina ports, as shown in Exhibit 1 are indicative of larger trends throughout the port industry.

A comparison of the economic contribution of neighboring ports on their respective states is shown in Exhibit 18. In relation to the neighboring ports, the Port of Wilmington's total economic contribution is approximately 12% of the Georgia ports' contribution, 14% of the South Carolina port's contribution, 16% of the Virginia port's contribution, and about five and a half times the Port of Morehead City's contribution.

Exhibit 18 – Output Contribution Comparison

Port	Study Base Year	Output (Millions of Dollars)			
		Direct	Indirect	Induced	Total
NC - Wilmington	2009	3,655	1,241	1,501	6,397
NC - Morehead City	2009	720	293	128	1,141
GA - Brunswick & Savannah	2006	32,820		22,786	55,606
SC - Charleston	2007	26,643		18,177	44,820
VA - Hampton Roads	2006	18,557	6,129	16,382	41,068

Source: NCSPA 2009, MIG 2010, Humphreys, J.M. 2007, Wilbur Smith Associates 2008, Pearson, R.L., et al 2008

A comparison of the economic contribution, in terms of jobs, of neighboring ports on their respective states is shown in Exhibit 19. In relation to the neighboring ports, the Port of Wilmington's total economic contribution is approximately 22% of the Georgia ports' contribution, 24% of the South Carolina port's contribution, 18% of the Virginia port's contribution, and about seventeen and a half times the Port of Morehead City's contribution. The relative contribution of North Carolina ports to the state economy and neighboring ports to their respective economies varies in terms of output and employment contributions because of the types of goods, value of goods, availability of in state producers and consumers of goods, and other economic factors.

Exhibit 19 – Employment Contribution Comparison

Port	Study Base Year	Employment (Jobs)			
		Direct	Indirect	Induced	Total
NC - Wilmington	2009	40,100	8,700	13,000	61,800
NC - Morehead City	2009	1,000	1,400	1,100	3,500
GA - Brunswick & Savannah	2006	117,700		167,500	285,200
SC - Charleston	2007	88,700		172,100	260,800
VA - Hampton Roads	2006	147,600	42,600	152,700	343,000

Source: NCSPA 2009, MIG 2010, Humphreys, J.M. 2007, Wilbur Smith Associates 2008, Pearson, R.L., et al 2008

The significant difference in NCSPA facilities' output and employment contribution compared to that of other South Atlantic ports reflects differences in existing transportation infrastructure. Norfolk (Hampton Roads), Charleston, and Savannah benefit from better rail and highway connections than Wilmington and Morehead City. Inadequate hinterland connectivity is a major factor in terms of limiting the geographical area that a port can serve. Given the uncompetitive inland connectivity it is no surprise that Wilmington and Morehead City have a

significantly smaller economic impact than competing ports that are better supported. It is likely that if North Carolina were to improve the infrastructure that impacts NCSPA's ability to attract cargo, there would be an increase in employment, output, income and taxes that would more than pay for the cost of the investment.

RECOMMENDATIONS

RECOMMENDATIONS FOR IMPLEMENTATION

The project team recommends that the North Carolina State Ports Authority utilize the economic contribution results from the existing port activities in developing appropriate web and printed materials documenting these findings for sharing with various groups. The port activities are essentially service functions supporting business activity throughout the state and beyond. Included in this function is the reality that imports and exports involve international trade, an economic activity generally not fully appreciated by the general public. Ports are vital in moving this international commerce, and both businesses and the jobs they create need the ports for future growth and success.

Current economic contributions tell only part of the story; indeed, the greatest value in the current findings is that they serve to provide evidence of the importance that the ports may have in the future vitality of the North Carolina economy. In times past, connecting the State to the National economy was critical, but with the growing importance of the global economy, future economic vitality is substantially dependent upon access to international markets. In addition to disseminating the current findings, communication efforts should seek to ensure that the public and important policy makers understand the central role of the ports in sustaining economic success by facilitating global access for trade involving North Carolina interests.

RECOMMENDATIONS FOR FUTURE EFFORT

Although this economic contribution study required tremendous efforts for data collection and analysis, additional value can be found in the consistent and repeatable methodology that is presented in this report. This type of study is important for the port community in North Carolina and should be reviewed at regular time intervals, perhaps every three to five years. The project team recommends that the methodology presented in this report become the benchmark for any future studies to create the consistency that is necessary for comparisons of studies over time. The expenditure of public funds on capital improvement projects at North Carolina ports also makes a contribution to the economy. These contributions were not included in this study, but they could be estimated in future studies to evaluate the impact of specific projects.

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