

Economic Contribution of the North Carolina Ports



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DISCLAIMER

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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 Derek Ramirez for his support in using IMPLAN®.

EXECUTIVE SUMMARY

The North Carolina State Ports Authority (the Authority) commissioned the Institute for Transportation Research and Education (ITRE) at NC State University to assess the economic contribution of the state's ocean ports. The Authority 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 \$14 billion in annual economic contribution to the state's economy constituted by goods moving through North Carolina ports (\$12.9 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 76,700 jobs across North Carolina; thus, deepwater port shipping is clearly a substantial economic factor for the state. The availability of the Port of Wilmington and the Port of Morehead City plays an important role in the supply chain decisions of companies which currently have operations in North Carolina and those considering locating manufacturing and distribution operations in North Carolina. This study documents the economic contribution of the existing deep water ports in North Carolina which foster economic development across the state. This study examines a variety of the key components of economic contribution, including direct, indirect, and induced contributions to output or gross revenue, employee compensation, jobs, and tax collections. The direct contributions featured in this report 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 the study period, June 1, 2013 to May 31, 2014, (the latest full-year dataset available), the North Carolina Ports supported \$4.3 billion in employee compensation for North Carolina workers. Taxes generated by economic activity through the Ports provide additional contributions to local communities and the state of North Carolina. An estimate of approximately \$707 million in sales, property, corporate, and personal taxes was received by state and local governments due to activity supported by the Ports. The Port of Wilmington supported the collection of \$226 million in county property taxes, while the Port of Morehead City supported \$13 million. Together, the Ports resulted in the accumulation \$355 million in sales tax collections across the state. Additionally, state corporate and personal taxes of over \$113 million were collected due to activity supported by the Port of Wilmington and the Port of Morehead City.

In the global marketplace, business access to foreign markets and materials is critical for success. The future global strength of North Carolina firms will correlate with strategic infrastructure investments in transportation systems, including highways, rail, and shipping channels. The Ports of Wilmington and Morehead City are a critical link in the supply chain which can be a tool for economic growth and job creation throughout the state. The estimated direct impact of potential changes in port activity were projected in this study for a variety of scenarios, including \$3.77 billion for the attraction of a new Far East super post-Panamax container service, \$780 million for a new bulk facility at the Port of Wilmington, and \$100 million for a 15% change in bulk and breakbulk tonnage at the Port of Morehead City.

TABLE OF CONTENTS

DISCLAIMER.....	II
ACKNOWLEDGEMENTS.....	III
EXECUTIVE SUMMARY	IV
TABLE OF CONTENTS	V
LIST OF EXHIBITS.....	VI
INTRODUCTION	1
BACKGROUND.....	1
NC PORTS OVERVIEW	2
NC PORTS CARGO MOVEMENT	2
ECONOMIC CONTRIBUTION DEFINITIONS	5
THE ROLE OF PORTS IN THE SUPPLY CHAIN.....	6
ECONOMIC CONTRIBUTION METHODOLOGY	7
ECONOMIC CONTRIBUTION RESULTS.....	8
INTRODUCTION.....	8
OUTPUT CONTRIBUTION.....	10
EMPLOYMENT CONTRIBUTION	12
EMPLOYEE COMPENSATION CONTRIBUTION	13
STATE AND LOCAL TAX CONTRIBUTION	14
OPPORTUNITIES FOR INCREASED ECONOMIC GROWTH	15
COMPARISON TO NEIGHBORING STATES' PORTS	16
REFERENCES	19

LIST OF EXHIBITS

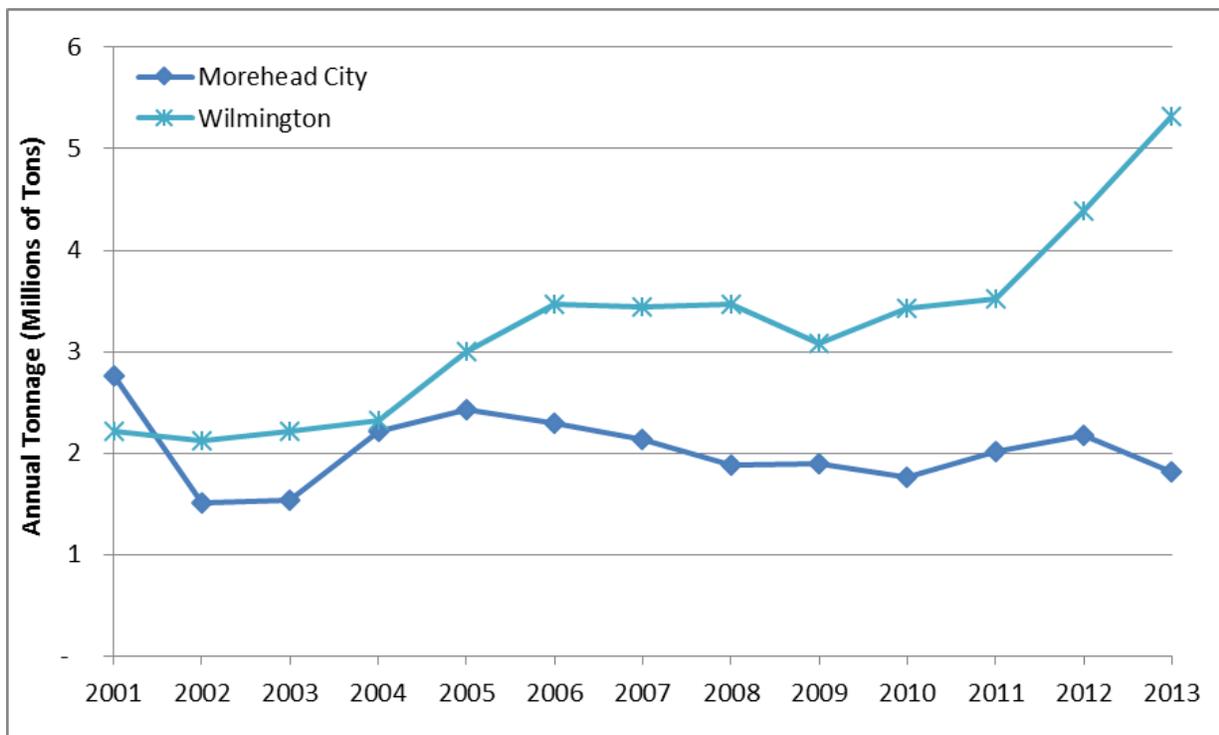
EXHIBIT 1 – NORTH CAROLINA PORTS ANNUAL TONNAGE (2001 TO 2013).....	1
EXHIBIT 2 – TOP FIVE COMMODITIES BY PORT IN FISCAL YEAR 2013	3
EXHIBIT 3 – TOP TEN TRADING PARTNERS BY PORT IN FISCAL YEAR 2013	4
EXHIBIT 4 – VALUE OF IMPORTED GOODS BY TOTAL, NC COMPONENT, AND VALUE ADDED	8
EXHIBIT 5 – VALUE OF EXPORTED GOODS BY TOTAL AND NC COMPONENT	9
EXHIBIT 6 – OUTPUT CONTRIBUTION	10
EXHIBIT 7 – OUTPUT CONTRIBUTION ACROSS NORTH CAROLINA ECONOMIC DEVELOPMENT REGIONS	10
EXHIBIT 8 – EMPLOYMENT CONTRIBUTION	12
EXHIBIT 9 –EMPLOYMENT CONTRIBUTION ACROSS NORTH CAROLINA ECONOMIC DEVELOPMENT REGIONS.....	12
EXHIBIT 10 – EMPLOYEE COMPENSATION CONTRIBUTION.....	13
EXHIBIT 11 – STATE AND LOCAL TAX CONTRIBUTIONS	14
EXHIBIT 12 –TAX CONTRIBUTION ACROSS NORTH CAROLINA ECONOMIC DEVELOPMENT REGIONS	14
EXHIBIT 17 – ESTIMATED IMPACT OF FUTURE CHANGES IN PORT ACTIVITY	15
EXHIBIT 13 – PORT OPERATIONS COMPARISON.....	16
EXHIBIT 14 – PORT OPERATIONS COMPARISON – FIVE YEAR GROWTH IN CONTAINER TRAFFIC	17
EXHIBIT 15 – OUTPUT CONTRIBUTION COMPARISON	17
EXHIBIT 16 – EMPLOYMENT CONTRIBUTION COMPARISON.....	18

INTRODUCTION

BACKGROUND

The North Carolina State Ports Authority owns and operates two ocean ports on the eastern seaboard, the Port of Wilmington and the Port of Morehead City. The objective of this project was to conduct an economic assessment of the existing North Carolina ports at Wilmington and Morehead City. This study builds on earlier work analyzing 2009 data (Findley et al 2011). 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 since 2001 – March 2001 to November 2001 and December 2007 to June 2009 (NBER 2014). The changes in the amount, origin and destination, and type of cargo shipped through the North Carolina ports should be considered when examining the results presented in this study, as these will change the economic contribution of the ports over time.

Exhibit 1 – North Carolina Ports Annual Tonnage (2001 to 2013)



Source: NCSPA 2014

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 methodology for the study is documented in this report and is a replication of the methodology applied to the North Carolina Ports using 2009 data (Findley et al 2011). This methodology follows 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, Humphreys, J.M.2012).

NC PORTS OVERVIEW

The Port of Wilmington services container cargo destined for North Carolina and other surrounding states and a portion of the bulk and break bulk cargo that moves through the Authority's ports. The Port of Wilmington is also equipped to handle refrigerated containers. The Port of Morehead City provides services unique to bulk and break bulk 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 the Authority's 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 and products through NC ports.

NC PORTS CARGO MOVEMENT

The movement of cargo through the Authority's ports connects businesses and customers with distribution facilitators such as warehousing, transportation, financial, and insurance providers that support numerous jobs across North Carolina. In 2013, over 260,000 TEUs (twenty-foot equivalent unit, a measure used for capacity in container transportation), 3 million tons of bulk, and 325,000 tons of break bulk commodities flowed through the Port of Wilmington in the study period. At the Port of Morehead City, over 220,000 tons of break bulk and almost 1.6 million tons of bulk cargo flowed through the port. The Port of Wilmington served 432 ships and the Port of Morehead City served 121 ships and 446 barges in 2013 (NCSPA 2014).

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 grains (1,539,391 tons) and chemicals (447,402 tons). Forest products (443,428 tons) and woodchips (323,346 tons) were the top export commodities (Exhibit 2). The top import commodities at the Port of Morehead City were sulfur products (275,783 tons) and metal products (211,222 tons). Phosphate (933,168 tons) and woodchips (190,944 tons) were the top export commodities (Exhibit 2). (NCSPA 2014). These imports and exports provide critical support for many industries across North Carolina, including retail stores, agriculture, apparel, fertilizer manufacturing, textile mills, wood product manufacturing, and construction.

Exhibit 2 – Top Five Commodities by Port in Fiscal Year 2013

Port of Wilmington - Top Five Commodities			
Import Commodity	Import Tonnage	Export Commodity	Export Tonnage
Grains	1,539,391	Forest Products	443,428
Chemicals	447,402	Wood chips	323,346
Fertilizers	428,862	Woodpulp and Paper Products	342,362
Equipment, Machinery, and Parts	164,953	Food	108,840
Ores and Minerals	99,144	General Merchandise/Miscellaneous	98,888
Port of Morehead City - Top Five Commodities			
Import Commodity	Import Tonnage	Export Commodity	Export Tonnage
Sulfur Products	275,783	Phosphate	933,168
Metal Products	211,222	Woodchips	190,944
Rubber	141,996	Metal Products	16,687
Ores and Minerals	9,441	Pulp and Paper Products	5,908
Vehicles and Equipment	1,310	Ores and Minerals	2,416

Source: NCSPA Website 2014

The ports facilitate trade among surrounding states as well as international partners. Brazil is the largest shipping partner for the Port of Wilmington, with a total of 1,153,000 tons imported and exported in 2013. The largest shipping partner at the Port of Morehead City is India, with 551,000 tons exchanged in 2013 (Exhibit 3).

Exhibit 3 – Top Ten Trading Partners by Port in Fiscal Year 2013

Port of Wilmington Top Ten Trading Partners					
Import Partner	Import Tonnage	Export Partner	Export Tonnage	Partner	Total Trade (tons)
Brazil	1,153,429	China	503,208	Brazil	1,153,429
China	355,334	Turkey	323,703	China	858,542
Argentina	260,977	South Korea	267,157	South Korea	404,445
Saudi Arabia	215,902	Belgium	176,716	Belgium	359,056
Trinidad, Tobago	209,795	Great Britain	140,669	Turkey	323,703
Belgium	182,340	Italy	98,412	Argentina	260,977
Canada	146,361	Taiwan	82,770	Saudi Arabia	225,098
South Korea	137,289	Honduras	45,254	Trinidad, Tobago	209,795
Romania	79,064	Netherlands	37,556	Great Britain	204,678
Netherlands	78,169	Guatemala	20,964	Canada	146,361
Port of Morehead City Top Ten Trading Partners					
Import Partner	Import Tonnage	Export Partner	Export Tonnage	Partner	Total Trade (tons)
Mexico	147,168	India	551,495	India	551,535
Indonesia	131,001	Brazil	247,538	Brazil	371,299
Brazil	123,761	Turkey	190,944	Turkey	190,944
Venezuela	107,693	Bahamas	70,107	Mexico	147,168
United Kingdom	30,900	Argentina	27,591	Indonesia	131,001
Poland	27,456	Columbia	24,240	Venezuela	112,102
Russia	20,923	Peru	17,147	Bahamas	70,107
Thailand	11,194	Chile	6,321	United Kingdom	30,900
Canada	11,053	Venezuela	4,409	Argentina	27,591
Norway	9,442	Panama	4,409	Poland	27,456

Source: NCSPA Website 2014

ECONOMIC CONTRIBUTION DEFINITIONS

A number of terms and concepts will appear throughout this report which are specific to economic contribution studies and port activity. The following section 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 full-time payroll employees, employee compensation (total payroll costs), 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, and personnel employed by the ports.
- Indirect impacts represent the impacts of spending by firms directly engaged in port activities 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 (money that is recirculated in an economy resulting in additional economic impact).

There are three commodity 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 region, which have similar impacts to those of imports or exports.

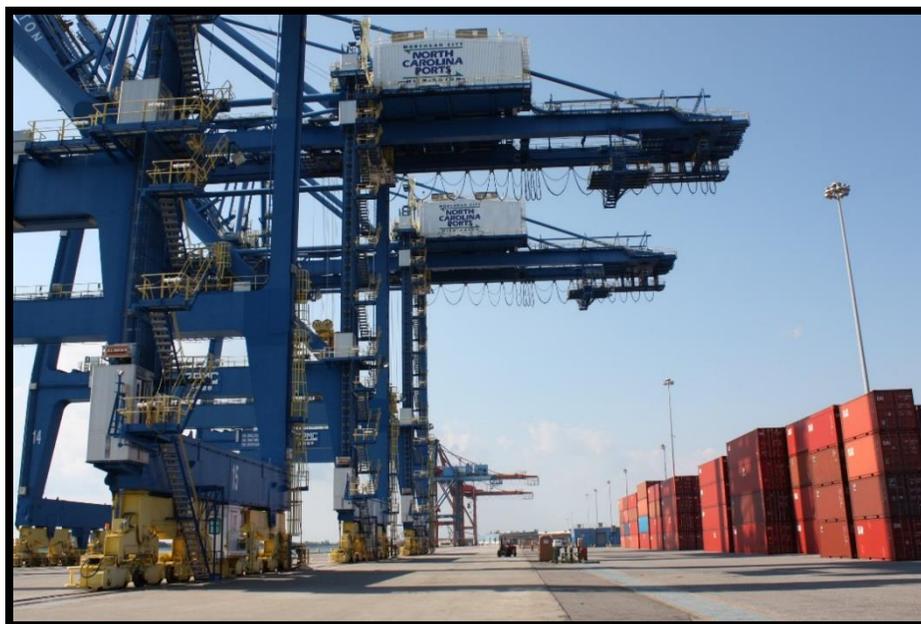


THE ROLE OF PORTS IN THE SUPPLY CHAIN

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, consistent access to deep water ports is a crucial requisite for supply chain design decision-making. When market and supply decisions are made, the total costs of doing business must be considered. Major factors considered in this process 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.

Furthermore, the magnitude of supply chain risk exposure is substantially affected by the efficiency and consistency of port operations. Predictable movement of goods through ports and productive connections with allied transportation networks can reduce business costs, increase competitiveness, and improve profitability. Responding to these needs has a noticeable economic effect on the businesses utilizing the ports.

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 ports that have sufficient capacity to provide their required services and a fee structure that enhances profitability. Sufficient channel depth is a key factor for accommodating large vessels. Firms are attracted to use ports that provide ease of access and have a choice of carriers, with capabilities to transport via sea or land, and that provide service to both origins and destinations which are of importance to the firm. Improved efficiency of ports and carriers will result in shorter transportation time, which will allow the firm to maintain lower inventory levels and costs, and provide the opportunity to benefit from lower transportation costs. As fuel prices continue to rise, costs associated with transportation will become increasingly important in expense analysis.



ECONOMIC CONTRIBUTION METHODOLOGY

Many North Carolina businesses generate revenues based on import, export, and domestic cargo activities at North Carolina ports. Profits are affected by 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 vitality of the state. To quantify how much, what type, and where these contributions occur, the project team conducted an economic contribution study. This was accomplished by measuring 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 an assessment of economic impact and contribution is a lack of transparency in the methodology used to generate the estimates of the economic value. To remedy this issue, the current study utilized manifests supplied by the North Carolina State Ports Authority to determine commodity quantities and derive their impacts. By selecting commodities as the primary driver of economic contribution and ensuring the significance of that value, the research team could verify that the direct and multiplier effects were estimated in an objective and transparent manner.

The findings from studying the economic contributions of the ports include an assessment of the total (direct, indirect, and induced) contributions to economic output, jobs, and employee compensation. 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. IMPLAN® multipliers were also used 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 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 Authority's ports across the state based on the origin and destination of the commodities.

The quantity of commodities used for the direct contributions was estimated using vessel manifest data supplied by the Authority. The contributions were categorized by port and by the type of goods (container and bulk/break bulk). The values of and value-added to the commodities were estimated using data from the Commodity Flow Survey provided by the Bureau of Transportation Statistics with a conversion to 2014 dollars using the implicit gross domestic product deflator index (BTS 2012, BEA 2014).

The project team used IMPLAN®, an economic modeling software provided and used by the North Carolina Department of Commerce, to estimate the multiplier contributions of the Authority's ports. IMPLAN® uses data compiled from a wide variety of sources, including unique local data and census information, not estimated from national averages (IMPLAN 2014). IMPLAN® is widely used by analysts as a tool to calculate the economic contribution of ports and other transportation facilities and other changes in economic structure.

ECONOMIC CONTRIBUTION RESULTS

Introduction

The final results of the project include values for output, employment, employee compensation, 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 \$12.2 billion worth of goods were transported through North Carolina ports between June 1, 2013 and May 31, 2014 with approximately \$7.03 billion originating or terminating within the state (NCSPA 2014).

Over 3.5 million tons of goods worth \$6.2 billion were imported through North Carolina ports (Exhibit 4). The impact of imported goods was derived from the value added to imported goods which remain in the state, which totaled over \$5.8 billion. 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	5,959,650,000	3,568,720,000	3,369,240,000	797,000
Bulk/Breakbulk	Morehead City	1,657,400,000	825,380,000	431,530,000	769,000
	Wilmington	4,614,940,000	2,639,000,000	2,452,440,000	2,761,000
Port of Wilmington Subtotal		10,574,590,000	6,207,720,000	5,821,680,000	3,558,000
Port of Morehead City Subtotal		1,657,400,000	825,380,000	431,530,000	769,000
North Carolina State Ports Total		12,231,990,000	7,033,100,000	6,253,210,000	4,327,000

Source: NCSPA 2014, BTS 2012, BEA 2013

In the study period, 2.3 million tons of goods worth \$6.3 billion were exported through North Carolina ports (Exhibit 5). The impact of exported goods was derived from the value of transported goods which were produced in North Carolina, which totaled over \$2.7 billion. Exhibit 5 shows the value of goods exported from each port by type of goods, the value of goods produced 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	4,074,590,000	1,721,090,000	1,300,000
Bulk/Breakbulk	Morehead City	666,550,000	264,060,000	794,000
	Wilmington	533,770,000	199,860,000	205,000
Port of Wilmington Subtotal		4,608,360,000	1,920,950,000	1,505,000
Port of Morehead City Subtotal		1,657,400,000	825,380,000	769,000
North Carolina State Ports Total		6,265,760,000	2,746,330,000	2,274,000

Source: NCSPA 2014, BTS 2012, BEA 2013

Output Contribution

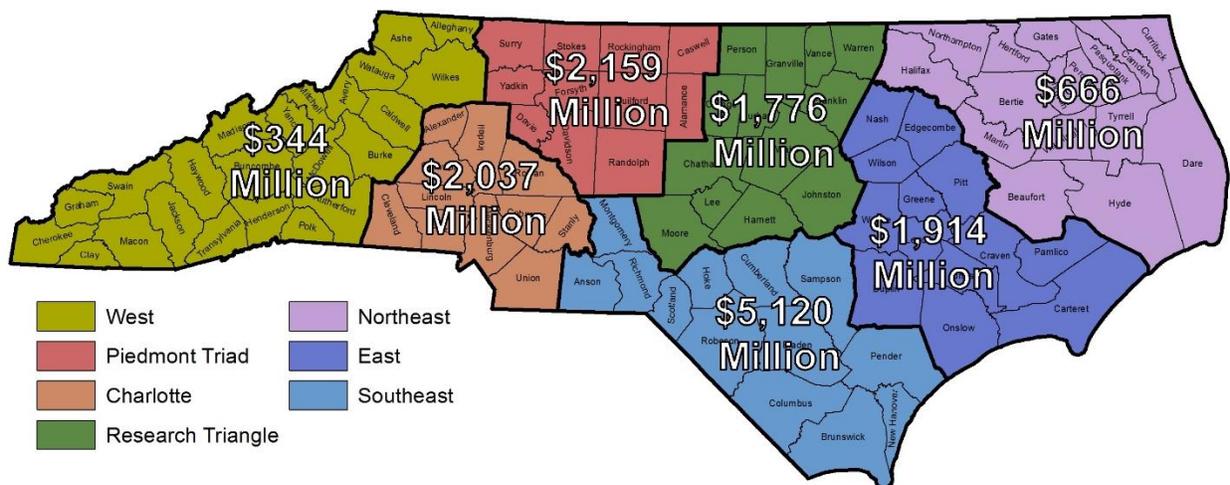
Through the provision of goods' movement services at a marine port, the NC ports supported over \$14 billion in gross revenues for North Carolina businesses during the study period (Exhibit 6). The Authority's contribution to the gross revenues of North Carolina businesses results from the trade facilitated 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 at the Port of Wilmington, with a contribution of almost \$13 billion. Exhibit 7 shows the distribution of output contribution across the state's seven economic development regions.

Exhibit 6 – Output Contribution

		Output (2014 Dollars)				
Type of Goods	Port	Direct	Indirect	Induced	Total	
Imports	Container	Wilmington	\$3,369,240,000	\$1,165,230,000	\$1,289,550,000	\$5,824,020,000
	Bulk/ Breakbulk	Morehead City	\$431,530,000	\$173,500,000	\$111,120,000	\$716,150,000
		Wilmington	\$2,452,440,000	\$801,860,000	\$845,790,000	\$4,100,090,000
Exports	Container	Wilmington	\$1,664,000,000	\$669,270,000	\$335,290,000	\$2,668,570,000
	Bulk/ Breakbulk	Morehead City	\$255,870,000	\$100,890,000	\$37,440,000	\$394,200,000
		Wilmington	\$193,270,000	\$76,560,000	\$43,030,000	\$312,850,000
Port of Wilmington Subtotal			\$7,678,950,000	\$2,712,920,000	\$2,513,660,000	\$12,905,530,000
Port of Morehead City Subtotal			\$687,400,000	\$274,390,000	\$148,560,000	\$1,110,350,000
North Carolina State Ports Total			\$8,366,350,000	\$2,987,310,000	\$2,662,220,000	\$14,015,880,000

Source: NCSPA 2014, IMPLAN 2014

Exhibit 7 – Output Contribution Across North Carolina Economic Development Regions



As a frame of reference for the magnitude of the Authority's ports' impact on the state's economy, the contribution was compared to the North Carolina gross domestic product (GDP).

North Carolina's GDP in 2013 was \$439.6 billion (BEA 2013). Therefore, the Authority's contribution of \$14 billion to the state's GDP was approximately 3%. This is an approximation as the contribution is based on 2014 dollars.

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 2013). Travel has impacts on many industries, including: gasoline, car rental, entertainment, art, recreation, food service, retail, lodging, public transportation, travel agencies, and others. The 2013 economic impact of travel in North Carolina was \$20.2 billion. Therefore, the contribution to North Carolina's economy supported by activity at the Authority's ports is approximately two-thirds of the statewide impact of travel.

Employment Contribution

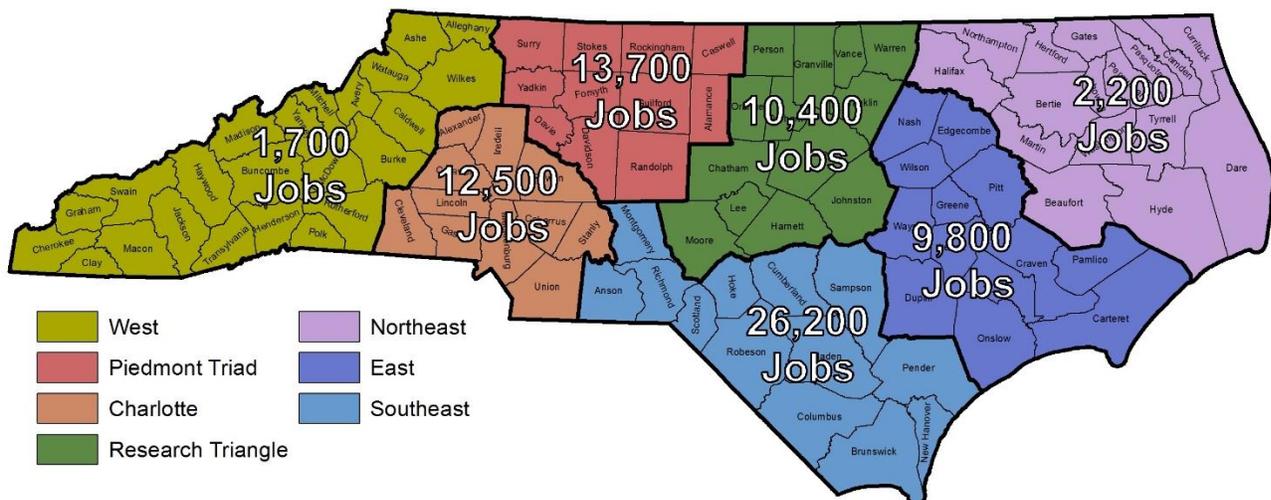
The North Carolina ports supported, through the provision of goods' movement services at a marine port, 76,700 full-time jobs at North Carolina businesses (Exhibit 8). The majority of the employment contribution is derived from the activity related to imports at the Port of Wilmington, with a contribution of over 61,000 jobs. The majority of jobs (40,400) were directly related to activity supported by the ports, while an additional 36,300 jobs were supported through indirect and induced activities. Full-time jobs were estimated from IMPLAN® data using a full-time equivalent conversion based on data from the Bureau of Economic Analysis (BEA 2014). Exhibit 9 shows the distribution of employment contribution across the state's seven economic development regions.

Exhibit 8 – Employment Contribution

Type of Goods		Port	Employment (Full-time Jobs)			
			Direct	Indirect	Induced	Total
Imports	Container	Wilmington	24,100	7,300	9,200	40,700
	Bulk/Break-bulk	Morehead City	1,100	900	800	2,800
		Wilmington	9,700	5,200	6,000	20,900
Exports	Container	Wilmington	4,800	3,100	2,400	10,200
	Bulk/Break-bulk	Morehead City	200	400	300	900
		Wilmington	500	400	300	1,200
Port of Wilmington Subtotal			39,100	16,000	17,900	73,000
Port of Morehead City Subtotal			1,300	1,300	1,100	3,700
North Carolina State Ports Total			40,400	17,300	19,000	76,700

Source: NCSA 2009, IMPLAN 2014

Exhibit 9 – Employment Contribution Across North Carolina Economic Development Regions



Employee Compensation Contribution

The North Carolina ports supported, through the provision of goods' movement services at a marine port, over \$4.2 billion in employee compensation for North Carolina workers (Exhibit 10). Employee compensation is the total payroll cost, including salary, benefits, and payroll taxes. Approximately 56% of the employee compensation is from employment directly supported by activity related to the North Carolina ports.

Exhibit 10 – Employee Compensation Contribution

Type of Goods		Port	Employee Compensation (2014 dollars)			
			Direct	Indirect	Induced	Total
Imports	Container	Wilmington	1,257,480,000	388,890,000	428,200,000	2,074,570,000
	Bulk/ Break-bulk	Morehead City	88,160,000	53,060,000	36,900,000	178,120,000
		Wilmington	788,010,000	289,630,000	280,850,000	1,358,490,000
Exports	Container	Wilmington	238,510,000	188,590,000	111,340,000	538,430,000
	Bulk/ Break-bulk	Morehead City	19,740,000	27,610,000	12,430,000	59,790,000
		Wilmington	31,360,000	23,360,000	14,290,000	69,000,000
Port of Wilmington Subtotal			2,315,360,000	890,470,000	834,680,000	4,040,490,000
Port of Morehead City Subtotal			107,900,000	80,670,000	49,330,000	237,910,000
North Carolina State Ports Total			2,423,260,000	971,140,000	884,010,000	4,278,400,000

Source: NCSPA 2014, IMPLAN 2014

State and Local Tax Contribution

State and local governments in North Carolina received \$707 million in annual sales, county property, corporate, and personal tax collections due to activity supported by the Authority's ports (Exhibit 11). The county property tax related to activity at the Port of Wilmington is over \$226 million, and the activity at the Port of Morehead City is \$13 million across the state. The activity supported by the Authority's ports resulted in over \$354 million in business sales tax collections across the state (Exhibit 12).

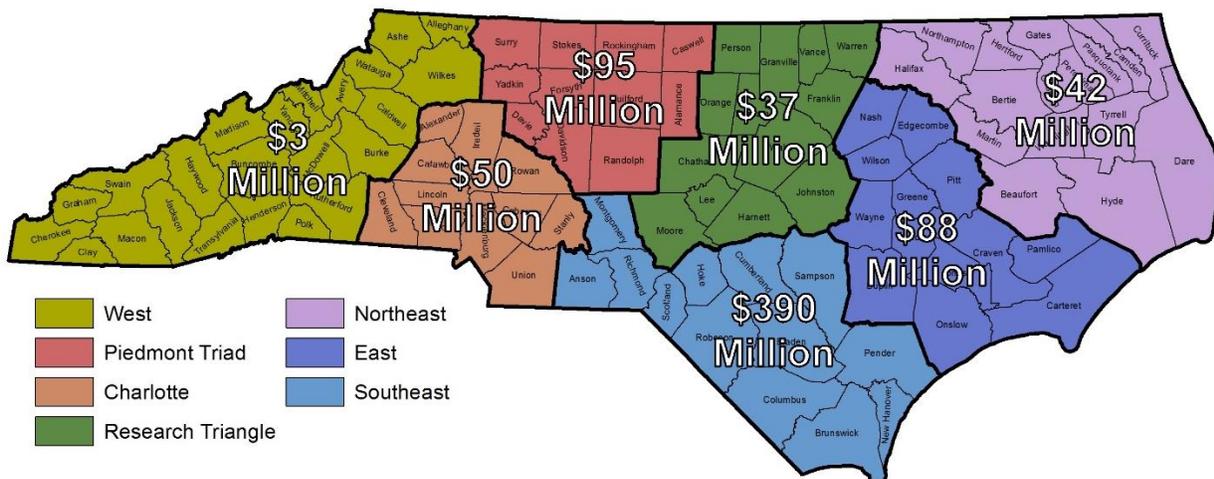
Exhibit 11 – State and Local Tax Contributions

Tax Description	Port of Wilmington (2014 dollars)	Port of Morehead City (2014 dollars)	Total (2014 dollars)
Business Sales Tax	335,560,000	19,190,000	354,750,000
Property Tax	226,230,000	12,940,000	239,170,000
State Corporate and Personal Tax	106,630,000	6,460,000	113,100,000
Total	668,420,000	38,590,000	707,020,000

Source: NCSPA 2014, IMPLAN 2014

The estimated property tax collections supported by the Authority can be used to determine the equivalent tax base. The weighted average county property tax rate, based on total taxable real estate, in the state was \$0.608 per \$100 valuation (NCDOR 2013). The total property tax collections of \$239,170,000 would equate to a tax base of \$39.3 billion, which is approximately 5% of the value of total taxable real estate statewide.

Exhibit 12 – Tax Contribution Across North Carolina Economic Development Regions



OPPORTUNITIES FOR INCREASED ECONOMIC GROWTH

Seaports in the United States move more than 99% of overseas cargo by volume and 65% by value (AAPA 2014b). In the global marketplace, it is critical for businesses to have access to foreign markets and materials. The future global strength of North Carolina firms will be correlated with strategic infrastructure investments in transportation systems, including highways, rail, and shipping channels. The Ports of Wilmington and Morehead City are a critical link in the supply chain which can be a tool for economic growth and job creation throughout the state. Continued investment in ports and associated inland infrastructure connecting markets and products can provide substantial benefits to the economy and citizens of North Carolina.

The estimated direct impact (not including indirect and induced effects) of potential changes in port activity are shown in Exhibit 13. This analysis relies on previously described data and analysis methods which include estimates of commodity types and values. The potential opportunities for increased economic growth at the Port of Wilmington and the Port of Morehead City were quantified for three general scenarios additional container services, a new agricultural product, and consistent growth in bulk and breakbulk commodities. The estimated direct impact scenarios range from \$3.77 billion for the attraction of a new Far East super post-Panamax container service to \$100 million for a 15% change in bulk and breakbulk tonnage at the Port of Morehead City.

Exhibit 13 – Estimated Impact of Future Changes in Port Activity

Detail of Opportunity	Line of Business	Facility	Estimated Direct Impact (2014 dollars)
One new Far East super post-Panamax service	Containers	Wilmington	\$3.77 Billion
One new Far East Panamax service	Containers	Wilmington	\$ 1.95 Billion
One new Trans-Atlantic service	Containers	Wilmington	\$ 820 Million
New wood pellet exporting facility (1.5M tons)	Bulk/Breakbulk	Wilmington	\$ 780 Million
One new South Atlantic container service	Containers	Wilmington	\$ 560 Million
15% growth (or decline)	Bulk/Breakbulk	Wilmington	\$ 400 Million
15% growth (or decline)	Bulk/Breakbulk	Morehead City	\$ 100 Million

Source: NCSA 2014

COMPARISON TO NEIGHBORING STATES' PORTS

To gain a sense of perspective of the contribution of the NC ports, the following discussion includes an assessment of ports in Georgia and South Carolina. The comparisons evaluated several characteristics of the ports, including static measures such as port access and dynamic measures such as port operations and economic contribution, which change from year to year.

The large difference in the Authority facilities' output and employment contribution compared to that of other South Atlantic ports mainly reflects differences in existing transportation infrastructure. Neighboring ports benefit from better rail and highway connections than Wilmington and Morehead City. Inadequate hinterland connectivity is a major factor limiting the geographical area that a port can serve. Given the noncompetitive inland connectivity, it is no surprise that Wilmington and Morehead City have a noticeably smaller economic impact than competing ports that are better supported. It is highly likely that if North Carolina were to improve the infrastructure that impacts Authority's ability to attract cargo, there would be an increase in employment, output, income and tax collections that would exceed the cost of the investment.

Port Access and Operations

By total trade, the Georgia Port moves the most cargo among North Carolina's neighboring ports (Exhibit 14). The Port of Wilmington moves approximately one-fifth of the tonnage at Savannah, two-fifths 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 16 and Exhibit 17. Although economic contribution levels are strongly related to the quantity of goods shipped through a port, other factors play an important 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 14 – Port Operations Comparison

Port	2013 Exports (metric tons)	2013 Imports (metric tons)	2013 Total Trade (metric tons)
North Carolina (Port of Morehead City)	1,086,100	663,500	1,749,600
North Carolina (Port of Wilmington)	1,714,600	4,122,400	5,837,000
North Carolina (Both Ports)	2,800,700	4,785,900	7,586,600
Georgia	17,907,000	13,424,000	31,331,000
South Carolina	6,492,100	8,896,700	15,388,800

Source: Census 2013a, Census 2013b

One such dynamic may include the amount of container traffic moving through regional ports. Relative to neighboring ports, the Port of Wilmington has increased its container traffic substantially in the past five years, increasing the number of container traffic by nearly a third over the previous five years (Exhibit 15).

Exhibit 15 – Port Operations Comparison – Five Year Growth in Container Traffic

Port	2013 Container Traffic (Imports & Exports)	2008 Container Traffic (Imports & Exports)	Five Year Growth (2008 to 2013)
North Carolina (Port of Wilmington)	260,363	196,040	32.8%
Georgia	3,034,010	2,616,126	16.0%
South Carolina	1,601,366	1,635,534	-2.1%

Source: AAPA 2014a

Port Economic Contribution

The neighboring ports in Georgia (Humphreys 2007, Humphreys 2012) and South Carolina (Wilbur Smith 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 induced impacts. A comparison of the economic contribution of neighboring ports on their respective states is shown in Exhibit 16. A caveat is that the studies were conducted in different years, and accordingly, comparisons are approximate. In relation to the neighboring ports, the Authority’s ports’ total economic contribution is approximately one-quarter to one-third of that of neighboring ports.

Exhibit 16 – Output Contribution Comparison

Port	Study Base Year	Output (Millions of Dollars)			
		Direct	Indirect	Induced	Total
North Carolina (Port of Wilmington)	2013	7,679	2,712	2,513	12,906
North Carolina (Port of Morehead City)	2013	687	274	149	1,110
North Carolina (Both Ports)	2013	8,366	2,986	2,662	14,016
Georgia	2011	39,254		27,643	55,606
South Carolina	2007	26,643		18,177	44,820

Source: NCSPA 2014, IMPLAN 2014, Humphreys, J.M. 2012, Wilbur Smith Associates 2008

A comparison of the economic contribution, in terms of jobs, of neighboring ports on their respective states is shown in Exhibit 17. As study dates are different, the comparisons are approximate. In relation to the neighboring ports, the Authority’s ports’ total employment contribution is approximately one-quarter to one-third of that of neighboring ports. 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 17 – Employment Contribution Comparison

Port	Study Base Year	Employment (Jobs)			
		Direct	Indirect	Induced	Total
North Carolina (Port of Wilmington)	2013	39,100	16,000	17,900	73,000
North Carolina (Port of Morehead City)	2013	1,300	1,300	1,100	3,700
North Carolina (Both Ports)	2013	40,400	17,300	19,000	76,700
Georgia	2011	153,884		198,263	352,146
South Carolina	2007	88,700		172,100	260,800

Source: NCSPA 2014, IMPLAN 2014, Humphreys, J.M. 2012, Wilbur Smith Associates 2008

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