



NORTH CAROLINA TASKFORCE *for* OFFSHORE WIND ECONOMIC RESOURCE STRATEGIES

NC TOWERS FINAL REPORT

FEBRUARY 2022 - DECEMBER 2024



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FINAL REPORT

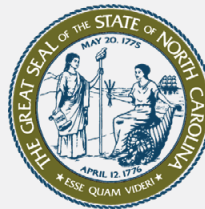
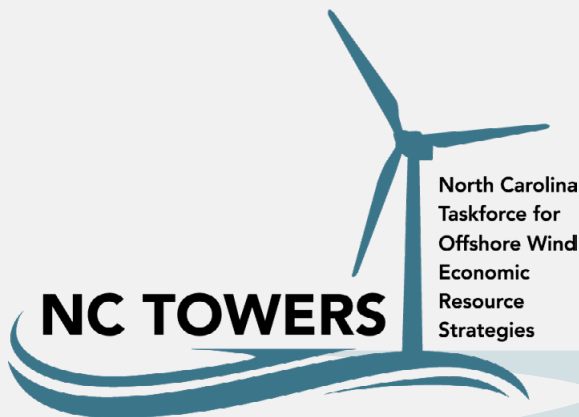
FEBRUARY 2022 - DECEMBER 2024

TO THE GOVERNOR *and the* GENERAL ASSEMBLY

Submitted by:

Machelle Baker Sanders, Secretary of the NC Department of Commerce
On behalf of the NC TOWERS Taskforce
December 15, 2024

As directed by [Section 3.C. of Executive Order 218](#)



NORTH CAROLINA
**DEPARTMENT of
COMMERCE**

On the cover: NC TOWERS members, staff and guests gather at Carteret Community College (CCC) on Nov. 2, 2023 for the Taskforce's quarterly meeting. CCC has conducted two renewable energy academies to help local students and workers develop skills in renewable energy sectors like wind and solar.



December 15, 2024

Dear Governor Cooper, Senator Berger and Speaker Moore,

The North Carolina Taskforce for Offshore Wind Economic Resource Strategies (NC TOWERS) has met quarterly since February 2022 to identify economic and workforce opportunities presented by the offshore wind industry and to develop policy recommendations that will position North Carolina to benefit from the jobs and investments this growing industry is already bringing to Atlantic Coast states.

With 30 offshore wind projects already in production or under development along the East Coast, the National Renewable Energy Laboratory (NREL) estimates that the Atlantic Coast offshore wind pipeline – and its supply chain – represent more than \$200 billion in capital expenditures and tens of thousands of family-sustaining jobs over the next 12 years.

North Carolina is uniquely positioned to attract a significant portion of these jobs and investments. North Carolina's central location on the East Coast means we can support the responsible development of offshore wind up and down the entire Eastern Seaboard by supplying parts manufactured in North Carolina, as well as providing maritime support.

Targeted investments in North Carolina's ports, supply chain development and workforce training programs will help our state secure our share of the benefits the offshore wind industry is bringing to East Coast states.

The attached NC TOWERS Annual Report includes an overview of accomplishments throughout the life of the Taskforce and the Taskforce's recommendations to advance offshore wind economic development in North Carolina. Additional detail on these recommendations can be found [here](#).

The Taskforce's recommendations will prepare North Carolina's workforce to secure jobs in the offshore wind industry, businesses to enter the supply chain, and communities across the state to benefit from the economic impact of the industry.

The NC Department of Commerce welcomes the opportunity to collaborate and discuss future work on offshore wind. Thank you for your partnership and consideration of these recommendations.

Sincerely,

A handwritten signature in cursive script that reads "Machelle Baker Sanders".

Machelle Baker Sanders
Secretary, N.C. Department of Commerce





FINAL NC TOWERS KEY FINDINGS & RECOMMENDATIONS

Over the course of the Taskforce’s work, members heard from regional, state, national, and international experts in: offshore wind project development; growing the offshore wind component supply chain; identifying and creating complementary workforce training and educational resources; necessary supporting infrastructure investments; power markets and the NC Carbon Plan; legislative and regulatory approaches; and project financing. In addition to the overarching recommendation that the incoming Administration and 2025 General Assembly continue efforts like NC TOWERS to encourage offshore wind economic investment, build the state’s supply chain and support workforce development efforts, the Taskforce identified several common themes that emerged from its work and are the foundation for the following recommendations.

The complete findings of the Taskforce can be accessed [here](#).

RECOMMENDATION 01.

North Carolina should focus on sending clear market signals to offshore wind developers, original equipment manufacturers (OEMs), and supply chain participants by enacting legislation to help the State meet its zero carbon goals and codifying the offshore wind development goals of 2.8 GW by 2030 and 8 GW by 2040.

RECOMMENDATION 02.

North Carolina should make strategic investments in waterside infrastructure assets and appropriate up to \$50 million to support improvements to Radio Island at the Port of Morehead City to facilitate offshore wind economic development opportunities at the site.

RECOMMENDATION 03.

Offshore wind developers should invest in North Carolina’s workforce and leverage the Offshore Wind Tax Credit Provision in the Inflation Reduction Act.

RECOMMENDATION 04.

In order to support the development of the skills necessary for offshore wind careers, North Carolina should increase capacity for education, training and workforce development programs offered by the state’s colleges, universities and public school systems.

RECOMMENDATION 05.

As one of the 11 member states in the Fisheries Mitigation Project (Project), North Carolina should continue to contribute to the design, implementation, and execution of the Project ensuring provision of financial compensation for economic losses borne by fisheries resulting from offshore wind development off the Atlantic Coast.

RECOMMENDATION 06.

North Carolina should grow its tools to encourage new and expanding businesses in the offshore wind industry by identifying and preparing new sites, strengthening critical assets and resources and broadening the supply chain.



KEY ACCOMPLISHMENTS

1. **Sponsored offshore wind (OSW) Training Programs:**

NC TOWERS sponsored two virtual and two in-person deliveries of *Offshore Wind Ready* by the Oceanic Network. Nearly 100 people in total attended one of the day-long programs during which OSW sector experts, practitioners, and industry partners described the opportunity for businesses to pivot into OSW. Attendees learned about the industry's market drivers, how manufacturing is key across all levels of the OSW supply chain, and the occupations required to support the industry with the ability to ask questions and identify ways that they can plug into the sector.

2. **Select Members Co-Signed Carbon Plan Consumer Statement to the NC Utilities Commission:**

Twelve members of the Taskforce signed onto the Consumer Statement on the Duke Energy Carbon Plan prepared by the Department of Commerce. The Consumer Statement explains the economic investment and job creation opportunities that could be secured with a directive from the Commission that provides market certainty for offshore wind project development. Further, the Statement supports the development of up to 6 GW of North Carolina offshore wind by the mid-2030's which represents the estimated generating capacity of the wind energy areas (WEAs) held under lease by Avangrid Renewables, Dominion Energy, Duke Energy, and TotalEnergies.

3. Informed Federal OSW Planning: NC TOWERS and its members have been involved in and have helped inform the federal Bureau of Ocean Energy Management's (BOEM) planning efforts in the Central Atlantic Region of the Outer Continental Shelf. In May 2022, the Taskforce saw the years'-long work to auction Carolina Long Bay, culminating in the lease of two WEAs off the coast of Brunswick County. Following BOEM's mid-2023 decision to advance the first Central Atlantic (CATL1) leasing process without North Carolina WEAs, Taskforce members and staff worked doggedly with partners and collaboratively with BOEM to not only include North Carolina in a subsequent leasing effort, but to initiate the second Central Atlantic (CATL2) leasing process before the end of the Cooper Administration. Leaders from BOEM participated in our Taskforce meetings to share the timelines and expectations for the process with the goal of holding an auction to lease new WEAs in 2026.



Assistant Secretary Jennifer Mundt facilitates an offshore wind roundtable discussion with U.S. Interior Secretary Deb Haaland, BOEM Director Liz Klein (not pictured), N.C. Gov. Roy Cooper and other state, local and federal officials Feb. 9, 2024 in Beaufort, N.C.

(From left) Assist. Sec. Mundt, N.C. Dept. of Commerce; Peter Ledford, Clean Energy Director, Office of Gov. Roy Cooper; Marqueta Welton, Chief of Staff, N.C. Dept. of Commerce; and Gov. Roy Cooper.



U.S. Interior Secretary Deb Haaland and BOEM Director Liz Klein share a laugh during the Feb. 9, 2024 offshore wind roundtable in Beaufort, N.C. (From left) Director Klein, Sec. Haaland and Connie Gillette, Chief of Community Engagement, Office of Renewable Energy Programs, BOEM. Photo: North Carolina Department of Natural and Cultural Resources



KEY PARTNER ACTIVITY

North Carolina State Ports Authority Completed Environmental Impact Statement (EIS) for Radio Island:

The NC Ports Authority prepared an EIS for the vacant 154-acre site on Radio Island. The EIS evaluated development of facilities and infrastructure necessary to create a multi-use terminal to support manufacturing and operations in the automotive and offshore wind industries. The preferred alternative described development including the construction of an estimated 300,000 square foot manufacturing facility with office space for offshore wind, approximately 100,000 square feet of warehouse with office space or complementary uses for automotive industry use, modifying the existing pier to accommodate roll on and roll off vessel operations, construction of a new southern 1,600 foot berthing facility to accommodate the berthing of larger or multiple vessels, and new rail spurs to provide access to both the manufacturing facility for offshore wind equipment and for the warehouse. The EIS gives the NC Ports a better understanding of whether the potential for a multi-use terminal is compatible with the property.

North Carolina Ports, April 9

The Port of Morehead City is flexing its breakbulk muscles. Wind turbine blades for Vestas, a global leader in sustainable energy solutions, have been moving through our general cargo terminal since mid-March. These blades will unlock additional onshore wind energy in the United States, paving the way for a more sustainable tomorrow.

Source: <https://www.facebook.com/NCPorts/posts/the-port-of-morehead-city-is-flexing-its-breakbulk-muscles-wind-turbine-blades-f/1151019939207170/>

SUBCOMMITTEE ACCOMPLISHMENTS

Subcommittee on Outreach and Engagement

1. Identified and engaged offshore wind stakeholders in North Carolina.

The Outreach and Engagement Subcommittee conducted a statewide stakeholder engagement survey to gauge information needs and level of engagement of key stakeholders. The survey was e-mailed to 700+ offshore wind stakeholders in the state identified through consultation with Taskforce members, staff and their organizations. The Subcommittee received 465 survey responses with 275 of those respondents electing to subscribe to a monthly offshore wind newsletter launched by the Subcommittee in December 2022. As of December 2024, the number of newsletter subscribers had more than doubled to 586.

The Subcommittee held stakeholder roundtable discussions in Elizabeth City and Morehead City.

Participants at the Elizabeth City roundtable included representatives of: College of the Albemarle; Currituck County Travel and Tourism; Dominion Energy; Economic Development Partnership of NC; Elizabeth City State University; NC Commission of Indian Affairs; NC Fisheries Association; NC Watermen United; and Pasquotank County Board of Commissioners.

Participants at the Morehead City roundtable included representatives of: Carteret Community College; Carteret County Chamber of Commerce; Eastern NC Workforce Development Board; Ironworkers District Council; Mayor of Havelock; NC Fisheries Association; NC Ports; NC Watermen United; NC Works Jacksonville Office; Pamlico County Economic Development Office; and several offshore wind supply chain companies.

2. Connected the public with government agencies and organizations working on offshore wind.

The Subcommittee worked with key partners to hold a public open house on offshore wind at Brunswick Community College which drew nearly 100 attendees. The event provided opportunities for members of the public to speak one-on-one with offshore wind experts. Participating experts included representatives from: Bureau of Ocean Energy Management (BOEM); United States Coast Guard (USCG); Visit NC (part of the Economic Development Partnership of NC); Dominion Energy; Duke Energy Renewables; TotalEnergies; the Southeastern Wind Coalition (SEWC); Chambers for Innovation & Clean Energy; Wilmington Chamber of Commerce; NC Coastal Federation; NC Sierra Club; and UNC Wilmington.



Members of the NC TOWERS taskforce talked with nearly 100 community members at the Brunswick Open House at Brunswick Community College March 21, 2023. Pictured from left behind the table: Ben Cahoon, Greg Richardson, Wit Tuttell, Natalie English (Outreach & Engagement Subcommittee member) and Michele Querry.

Nearly three-quarters of event attendees (72%) provided feedback on the open house. Nearly half of responses were categorized as positive (47%). Nearly one quarter of responses were categorized as negative (24%). Just over one quarter were categorized as neutral or mixed (29%).

3. Conducted K-12 public school visits to highlight career paths in clean energy.

The Taskforce conducted a series of outreach visits with K-12 students across the state. Taskforce members and staff worked with students to build small working wind turbines and discussed job opportunities in the growing offshore wind industry in North Carolina.

Students also heard from businesses involved in the offshore wind supply chain and learned how to prepare for careers in offshore wind and clean energy.

Taskforce members met with students from:

- South Greenville Elementary School, May 9, 2023
- Reid Ross Classical School, Fayetteville, Aug. 9, 2023
- West Carteret High School, Morehead City, Nov. 1, 2023
- Charlotte Engineering Early College, Jan. 31, 2024
- Wake STEM Early College High School, Cary, May 1, 2024
- Center for Energy Education, Roanoke Rapids July 17, 2024
- Apex Friendship High School, Sept. 30, 2024

Students at each event were highly engaged in the turbine building project and many sought out our speakers for one-on-one discussions after the formal program.



Governor Roy Cooper, Secretary Machel Baker Sanders and NC TOWERS taskforce members join Wake STEM Early College High School students to build mini working wind turbines during the May 1, 2024 visit. Taskforce members Jen Banks, Perry Harker and Mark McIntire discussed offshore wind career opportunities with students.



NC TOWERS Chair Marqueta Welton works with students at Reid Ross Classical School to build a working mini wind turbine in advance of the Taskforce's August 2023 meeting in Fayetteville.

4. Conducted site visits of offshore wind businesses and Coastal Virginia Offshore Wind Pilot Project.

Following NC TOWERS' August 2022 meeting, members of the Taskforce had the unique opportunity to sail out to Dominion Energy's Coastal Virginia Offshore Wind (CVOW) Pilot Project roughly 27 miles off the coast of Virginia Beach, Virginia. The participants heard from John Larson, Dominion's Director of Public Policy and Economic Development who shared an overview of the CVOW supply chain and project timeline. At that time, the two 6 MW demonstration turbines were the only turbines installed and operational in federal waters. Since that time, projects off the coast of Long Island, New York and Massachusetts have proceeded to installation and energy production. The commercial CVOW project has been under construction since spring 2024 and is expected to generate 2.6 GW of energy upon on-time and on-budget completion in 2026.

Prior to the February 2024 Taskforce meeting in Charlotte, Taskforce members toured the Huntersville location of cable manufacturer Southwire. Southwire is one of North America's largest wire and cable producers and the company is supplying all of the underground cable to the Vineyard Wind project off the coast of Massachusetts.

And in April 2024, Taskforce members toured Nucor's steel plate mill in Hertford County. "The green economy is built on steel," Nucor's General Manager for Wind Energy Solutions Frank Fisher told NC TOWERS taskforce members at the May 2, 2024 meeting. Nucor is the largest steel producer in the U.S. and has invested more than \$6 billion over the past four years to increase capacity to serve all sectors, including offshore wind.



Taskforce members and staff toured Southwire's 240,000 square foot plant prior to the February 2024 Taskforce meeting in Charlotte. The plant, located in Huntersville, features state of the art technology for producing high-voltage and extra high-voltage underground transmission cables.



NC TOWERS taskforce members and staff at Nucor's Hertford County steel plate mill in April 2024. 1GW of offshore wind energy requires 230K tons of steel for towers, foundations and infrastructure. Nucor recycles more than 20 million tons of scrap iron and steel annually to produce new steel that is 100% recyclable.

Subcommittee on Workforce, Education and Training Opportunity Development

1. Conducted a skills analysis for offshore wind occupations. The Workforce Subcommittee partnered with the NC Department of Commerce's Labor and Economic Analysis Division (LEAD) to complete an offshore wind occupational skills analysis for construction and installation jobs. To scope the work of the skills analysis, the Workforce Subcommittee and LEAD expanded upon the findings from the National Renewable Energy Laboratory's (NREL) Offshore Wind Energy Workforce Assessment as well as other state-level workforce reports. The Subcommittee found that North Carolina is well positioned to recruit and train workers for Manufacturing jobs within the offshore wind supply chain. However, an estimated 30 percent of required jobs are Construction and Installation, Maintenance and Repair Occupations. Jobs in these categories are timely and require specific offshore wind credentials.

LEAD identified 24 key occupations within Construction and Installation job categories and analyzed the required skills and the available supply and demand for these jobs. The analysis determined that several of the occupations needed for offshore wind are currently in high demand by other industries, including heavy-duty truck drivers, maintenance and repair workers, and construction laborers. Other important occupations for the industry include skilled trade workers such as electricians, welders, structural metal fabricators and fitters and structural iron and steel workers. North Carolina also has relatively low numbers of workers such as crane and tower operators, pilots and crews of marine vessels, riggers, reinforcing iron and rebar workers and other workers needed to support construction and installation projects at the state's ports.

In response to these findings, the Subcommittee recommended 1) increasing the numbers of workers in skilled trades to support offshore wind as well as other existing industries; 2) developing and expanding North Carolina's offshore wind capacity by partnering with other states and countries with an existing offshore wind workforce, and 3) developing and expanding safety training capacity in North Carolina by offering Global Wind Organization Basic Safety Training.

A presentation summarizing the key findings from the skills analysis can be found [here](#).

2. Develop an inventory of industry-relevant training already available in North Carolina for offshore industry occupations referenced in the 2023 annual report. To identify existing training programs that are relevant to offshore wind, the Workforce Subcommittee requested a list of clean energy training programs, including apprenticeship programs, that are currently offered by the North Carolina Community College System, the University of North Carolina System, North

Carolina Independent Colleges and Universities, and statewide labor organizations. The training inventory currently includes associate degree programs, bachelor's degree programs, and apprenticeships offered in North Carolina.

The first iteration of the training inventory is linked in the 2023 annual report. Partners from the UNC System, the NCCS, and the Office of the Governor have continued the training inventory effort initially led by the Taskforce. Appalachian State University is leading the effort to develop a more comprehensive clean energy training inventory that encompasses all higher education offerings.

3. Promoted new and existing offshore wind training opportunities to stakeholders in North Carolina and the offshore wind industry. The Subcommittee invited subject matter experts to highlight offshore wind workforce development opportunities in North Carolina and other states during Subcommittee meetings. The Subcommittee heard from the following presenters or organizations:

- LS Cable & Systems, USA
- North Carolina Clean Energy Technology Center and STEPs4GROWTH Partners
- Brandi Bragg, Northeastern Workforce Development Board Regional Coordinator
- Jacqueline Richard, Coastal Studies and GIS Technology Program Manager, Nunez Community College, Louisiana

Additionally, the Subcommittee partnered with the Taskforce and the Outreach and Engagement Subcommittee to share information about offshore wind and clean energy careers to students from 7 public schools. During each school visit, Dr. Perry Harker, Workforce Subcommittee Chair, shared information about courses offered at Carteret Community College that will help students prepare from careers in the offshore wind industry.

4. Advocated for funding for training programs relevant to offshore wind and clean energy offered by the North Carolina Community College System. The Subcommittee drafted on behalf of the Taskforce a letter in support of the NC Community College Systems proposed funding model, Propel NC. The labor-market-driven model prioritizes funding for coursework aligned with high-demand fields, including occupations identified in LEAD's 2023 skills analysis.

A copy of the letter of support can be found [here](#).



Subcommittee on Economic Opportunity and Business Development

1. Established the North Carolina Offshore Wind

Landing Page. In an effort to provide support for North Carolina companies seeking to learn more about offshore wind supply chain opportunities, the Subcommittee facilitated the establishment of a landing page on the Department's website to provide relevant information for North Carolina businesses: commerce.nc.gov/about-us/boards-commissions/nc-taskforce-offshore-wind-economic-resource-strategies-nc-towers. The landing page includes basic educational information on how to prepare a business, details on the state's supply chain registry, support available to assist businesses seeking offshore wind opportunities, as well as relevant research, details on NC TOWERS, and a wind energy event calendar.

2. Enhanced the North Carolina Offshore Wind

Online Supply Chain Registry. After researching other states' databases, the Subcommittee merged the existing North Carolina offshore wind supply chain database, which was not online, with the Southeastern Wind Collation's online supply chain map and database: commerce.nc.gov/business/key-industries-north-carolina/energy/offshore-wind-industry/north-carolina-wind-energy-supply-chain-map. This collaboration allows users to access the map and database via Commerce's website, enter and update their information, and utilize the SEWC's staff to review and maintain the integrity of the data and functionality of the site. There were approximately 112 organizations that were part of the Commerce database in July 2022 and today there are 154 organizations.

3. Facilitated presentations to NC TOWERS.

Throughout the course of the task force's quarterly meetings, several presentations were facilitated by the Subcommittee focused on opportunities for North Carolina businesses in the offshore wind supply chain. Key sessions included Offshore Wind Business Panel, North Carolina Companies in the U.S. Offshore Wind Supply Chain and Resources for NC Businesses Interested in the Offshore Wind Supply Chain.

APPENDIX A

NC TOWERS Membership 2024

NAME	ROLE/ORGANIZATION
Marqueta Welton, Taskforce Chair	Chief of Staff, N.C. Department of Commerce
Jen Banks	Permitting & Development Director (NC), TotalEnergies
Ben Cahoon	Mayor, Nags Head, NC
Christopher Chung	Chief Executive Officer, Economic Development Partnership of North Carolina
Brian Clark	Executive Director, North Carolina Ports
Phyllis Craig-Taylor	Professor of Law, NCCU School of Law
Kevin Dick	President & CEO, Carolina Small Business Development Fund
Hayes Framme	Senior Manager Government Relations & Communications, Orsted
David Goss	Economic Development Consultant, Perquimans County
Daniel Govoni	Policy Analyst, N.C. Department of Environmental Quality
Susi Hamilton	Economic Development Advisor, N.C. Department of Transportation
Perry Harker	Vice President, Corporate and Community Education, Carteret Community College
Arketa Howard	Mid-Atlantic Regional Director Business & Policy Affairs for Offshore Wind, Crowley
Stephen Kalland	Executive Director, N.C. State Clean Energy Technology Center
Karly Lohan	Communication and Outreach Associate, Southeastern Wind Coalition
Munashe Magarira	Staff Attorney, Southern Environmental Law Center
Grier Martin	Secretary, N.C. Department of Veteran & Military Affairs
Mark McIntire	Director, Government Affairs, Energy & Stakeholder Engagement, Duke Energy
Ashley K. McLeod	Stakeholder Engagement Director, Avangrid Renewables-Kitty Hawk Offshore
Trish Murphey	Executive Assistant for Councils, N.C. Division of Marine Fisheries
Bob Peele	Director, N.C. Marine Industrial Park Authority
Michele Query	Southeast Regional Director, Chamber for Innovation and Clean Energy
Greg Richardson	Executive Director, N.C. Commission of Indian Affairs, N.C. Department of Administration
Dan Segovia	Business Manager, Ironworkers Local 848
Jason Semple	Director of Business Development, Brunswick Business & Industry Development
Glenn Skinner	Executive Director, North Carolina Fisheries Association
Justin Sosne	Head of the UK Government's North Carolina Office
John Szoka	CEO, Conservative Energy Network
Brian Turner	Audobon Society
Wit Tuttell	Director, Visit North Carolina, EDPNC
Alvin Warwick	Business Manager, International Brotherhood of Electrical Workers
John White	Chief N.C. Lobbyist Manager - N.C. State & Local Affairs, Dominion Energy
Dana Magliola	NC Chamber, Senior Director of Infrastructure Competitiveness

NC TOWERS Staff Liaisons 2024

NAME	ROLE/ORGANIZATION
Jennifer Mundt	N.C. Department of Commerce, Assistant Secretary, Clean Energy Economic Development
John Hardin	N.C. Department of Commerce, Executive Director, Office of Science, Technology & Innovation
Emily Roach	N.C. Department of Commerce, Director of Policy & Strategic Planning
Lex Janes	N.C. Department of Commerce, Legislative Affairs Director
Susan Fleetwood	N.C. Department of Commerce, Executive Director, Economic Development
Gena Renfrow	N.C. Department of Commerce, Special Assistant, Office of the Secretary
Dr. Jenni Harris	N.C. Department of Commerce, Executive Director, Business Solutions
Dr. Andrea DeSantis	N.C. Department of Commerce, Assistant Secretary of Workforce Solutions
Anders Victor	Economic Development Partnership of North Carolina, Senior Business Development Manager
Colin Kiser	Special Projects, Economic Development Partnership of North Carolina

NC TOWERS Supporting Staff 2024

NAME	ROLE/ORGANIZATION
Patrice Bethea	N.C. Department of Commerce, Deputy Communications Director
Allan Sandoval	N.C. Department of Commerce, Chief Information Officer
Nicole Williams	N.C. Department of Commerce, Business Executive Coordinator