

NORTH CAROLINA | CLEAN ENERGY



**NORTH
CAROLINA**

TRANSFORMING THE FUTURE
OF CLEAN ENERGY

NORTH CAROLINA:

LEADING THE CHARGE IN CLEAN ENERGY

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IN RENEWABLE ENERGY LEADERSHIP

North Carolina is leading the charge on renewable energy, ranked #1 by SmartAsset based on rapid increases in renewable energy production.

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IN SUSTAINABILITY

According to Site Selection Magazine, North Carolina is the top state in the nation for sustainability based on renewable energy generation, LEED and Energy Star buildings, and green laws and incentives among other criteria.

LARGEST MANUFACTURING WORKFORCE IN THE SOUTHEAST

North Carolina's manufacturing workforce of over 474,000 workers skilled in machinery, maintenance, technology, and engineering is the largest in the Southeast.

TOP 10 STATE

Business Facilities ranked North Carolina in the Top Ten Best States for Electric Vehicle Industry Investment, Solar Power (Installed MW) and Semiconductor Manufacturing.

HUB FOR RENEWABLE ENERGY SOURCES



WIND

ROBUST STATEWIDE SUPPLY CHAIN

Wind energy companies are served by over 120 suppliers throughout North Carolina who manufacture or sell nacelle and blade/rotor components, tower and foundation equipment, transmission and electrical services, offshore and field services, and more.

LARGEST WIND FARM IN SOUTHEAST US

Elizabeth City is home to a 104-turbine wind farm known as the Amazon Wind Farm US East. Amazon Web Services contracts with the operator, Avangrid Renewables, to power its cloud data centers.

THREE OFFSHORE WIND ENERGY AREAS (WEAs)

The federal Bureau of Ocean Energy Management designated three offshore wind energy areas along the coast of North Carolina. Two of these have been leased for development to date:

- The Kitty Hawk WEA, leased by Avangrid Renewables, is projected to generate 2.5 GW of electricity.
- The Wilmington East WEA, leased to TotalEnergies Renewables USA & Duke Energy Renewables Wind, represents a potential of at least 1.3 GW of offshore wind energy.

ELECTRIFICATION

LARGEST HARD ROCK LITHIUM SOURCE IN US

The Carolina Tin-Spodumene Belt runs approximately 25 miles long in Southwestern North Carolina and contains more than 80 percent of the known lithium ore reserves in the country. A hub for lithium production and R&D, the Belt has attracted companies like Albemarle Corporation, Piedmont Lithium, and Livent.

A CONSOLIDATED EV SUPPLY CHAIN

North Carolina is a top choice for the co-location of the electric vehicle (EV) supply chain. In 2023, EV and battery component manufacturers announced new and expanding operations in North Carolina with investments totaling nearly \$10 billion, solidifying North Carolina's position as a leader in the nation's rapidly growing EV sector.

ELECTRIC GRID RESEARCH & DEVELOPMENT

Our state sits at the forefront of modernizing electrical infrastructure. Industry leaders like Hitachi Energy, GE, Siemens, ABB, and Schneider Electric are pioneering new grid technologies in charging infrastructure, power and distribution transformers, grid integration, and sustainable electrification.

SOLAR

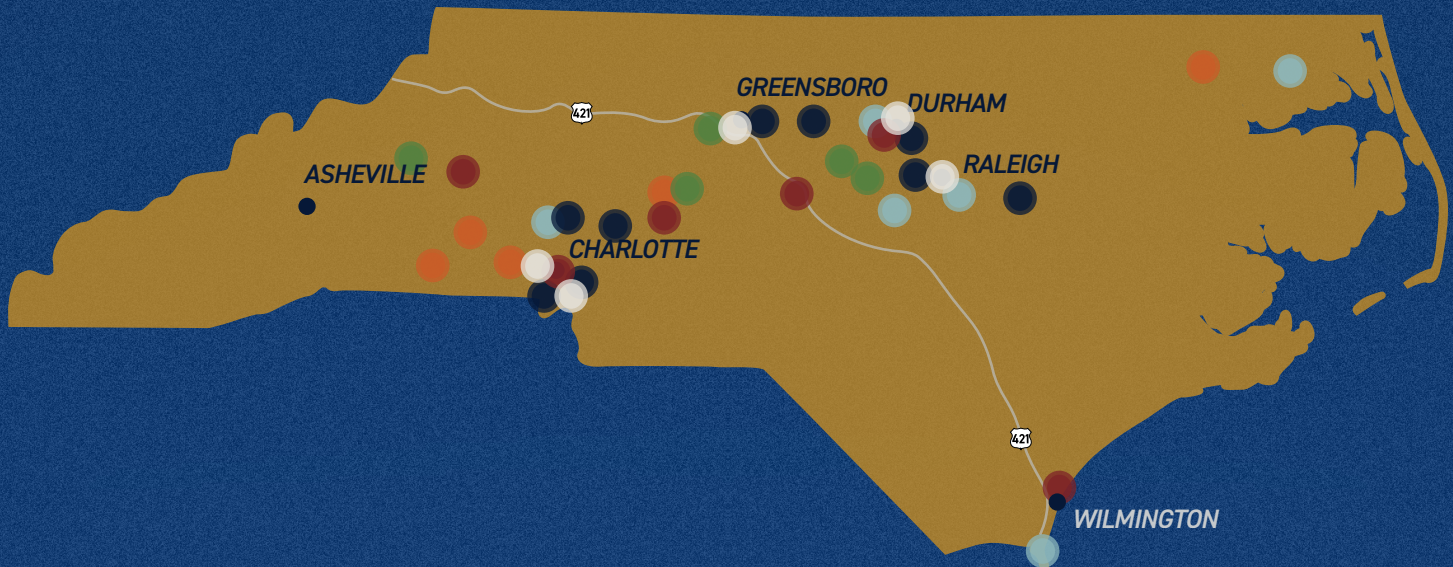
TOP SUPPLIER OF HIGH PURITY QUARTZ

Spruce Pine is home to operations that mine the world's largest known deposit of high-purity quartz, a critical component of solar photovoltaic cells, semiconductors and fiber optics.
(Source: NC DEQ)

#4 INSTALLED SOLAR CAPACITY

North Carolina ranks #4 nationwide for installed solar generating capacity with over 8,100 megawatts in service.
(Source: SEIA, 2023)

TOP CHOICE FOR CLEAN ENERGY COMPANIES



RENEWABLE POWER GENERATION

- Duke Energy Nuclear Power Plants
- Avangrid Renewables Wind Farm
- Carolina Solar Energy
- BioGas Corp.

RAW MATERIALS SUPPLIERS

- Nucor
- Albemarle Corp.
- Piedmont Lithium
- Livent

INFRASTRUCTURE & POWER GRID MANUFACTURERS

- Siemens Energy
- Kempower
- SBM Solar
- ABB
- SAERTEX
- Alpitronic
- Schneider Electric

ELECTRIC VEHICLE AND EV BATTERY MANUFACTURERS

- VinFast
- Toyota
- Siemens Mobility
- Forza x1
- Thomas Built Buses

BATTERY COMPONENT MANUFACTURERS

- Wolfspeed
- Epsilon Advanced Materials
- Celgard
- Dai Nippon Printing
- SGL Carbon

HQ, TECHNOLOGY, ENGINEERING, R&D

- Honeywell
- Albemarle Corp.
- Windlift, Inc
- Hitachi Energy
- Volvo Trucks North America

UNPARALLELED INDUSTRY GROWTH

A business-friendly environment, educational institutions preparing talent for innovations in sustainability, a robust supply chain, and a bipartisan commitment to clean energy are just some of the reasons why companies across this sector are choosing to call North Carolina home. A high concentration of labor in power generation and component manufacturing offers a talent pool diverse in skill and experience.

Industry	Labor Availability	Growth (past 5 years)	Employment Concentration (> national average)
Turbine Manufacturing	1,800	55%	813%
Current-Carrying Wiring Device Manufacturing	2,800	1%	197%
Solar Electric Power Generation	700	292%	121%
Carbon and Graphite Product Manufacturing	450	18%	54%
Switchgear and Switchboard Apparatus Manufacturing	1,500	15%	31%
Nuclear Electric Power Generation	1,300	14%	12%

Source: Lightcast, 2023

INNOVATING CLEAN ENERGY THROUGH PARTNERSHIPS

- **NC Battery, Complexity, Autonomous Vehicle and the Electrification Research Center** at the University of North Carolina at Charlotte is driving innovation through cutting-edge research focused on autonomous vehicles, battery safety and optimization, materials science, and electromechanical engineering for energy storage. Referred to as the “BATT Cave,” the research center is the first of its kind in the Southeast.
- **Southeast and Mid-Atlantic Regional Transformative Partnership for Offshore Wind Energy Resources (SMART-POWER)**, a bipartisan partnership between North Carolina, Maryland, and Virginia, provides a framework for the states to cooperatively develop offshore wind energy and the accompanying industry supply chain and workforce.
- **Future Renewable Electric Energy Delivery and Management Center (FREEDM)**, a NSF Engineering Research Center headquartered at North Carolina State University, conducts research to develop a more sustainable electric grid.
- **Research Triangle Cleantech Cluster (RTCC)** accelerates growth of the cleantech economy by leveraging the unique concentration of industry, academic, and government leaders in the Research Triangle.
- North Carolina signed a **Memorandum of Understanding (MoU)** with the United Kingdom to transition to a clean energy economy by sharing best practices and explore opportunities to increase investment in key sectors, and signed an MoU with the Danish Energy Agency to share best practices relevant to the development of offshore wind energy.

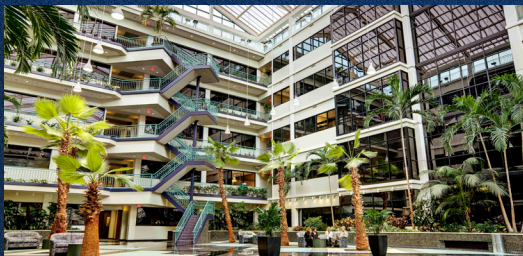
GROWING NORTH CAROLINA'S CLEAN ENERGY TALENT PIPELINE

- North Carolina's **58 Community Colleges** provide clean energy firms with a diverse talent pipeline, graduating more than 3,000 students annually from degree programs in electrical systems technology, automotive systems technology, industrial systems technology, engineering technology, and information technology.
- North Carolina Agricultural and Technical State University received a \$24 million federal grant to create **STEPS4GROWTH**, a comprehensive workforce development program that trains students and adults for jobs in energy efficiency, renewable energy, clean vehicles, and grid and resiliency.
- **The Energy Production & Infrastructure Center** housed at the University of North Carolina at Charlotte prepares engineering students for careers in energy systems. Local industry leaders including Duke Energy, Siemens, and the Electric Power Research Institute advise on curriculum development, assist in student projects, and identify research topics.
- **The Everyone Charging Forward program**, a \$30 million initiative of the Siemens Foundation, selected North Carolina as a partner to create accessible career pathways in the EV manufacturing and charging sectors. A \$1.7 million grant will be used to develop training for underserved communities, including apprenticeships for young adults in EV charging installation and maintenance.

OCCUPATIONS AND JOB GROWTH

Occupation	Total Labor Availability	Workers in Clean Energy Sector	Job Growth within Clean Energy Sector (2018-2023)	Median Annual Earnings
Assemblers and Fabricators	53,100	3,250	8%	\$35,400
Inspectors, Testers, Sorters, Samplers, and Weighers	22,500	1,400	27%	\$38,000
Supervisors of Production and Operating Workers	23,500	1,200	22%	\$61,300
Industrial Machinery Mechanics	14,450	600	74%	\$56,200
Industrial Engineers	9,900	1,100	30%	\$86,400
Electrical and Electromechanical Assemblers	8,350	3,400	45%	\$39,000
Industrial Production Managers	7,900	550	57%	\$103,800
Mechanical Engineers	7,700	700	5%	\$84,300
Electrical Engineers	5,200	600	14%	\$100,100
Nuclear Engineers	600	200	14%	\$166,600

Source: Lightcast, 2023



**THIS BIPARTISAN AGREEMENT
[HOUSE BILL 951] SETS A
CLEAN ENERGY COURSE FOR
NORTH CAROLINA'S FUTURE
THAT IS BETTER FOR THE
ECONOMY, BETTER FOR THE
ENVIRONMENT, AND BETTER FOR
THE POCKETBOOKS OF EVERYDAY
NORTH CAROLINIANS.**

Roy Cooper,
Governor of North Carolina





ECONOMIC
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