NC DEPARTMENT of COMMERCE
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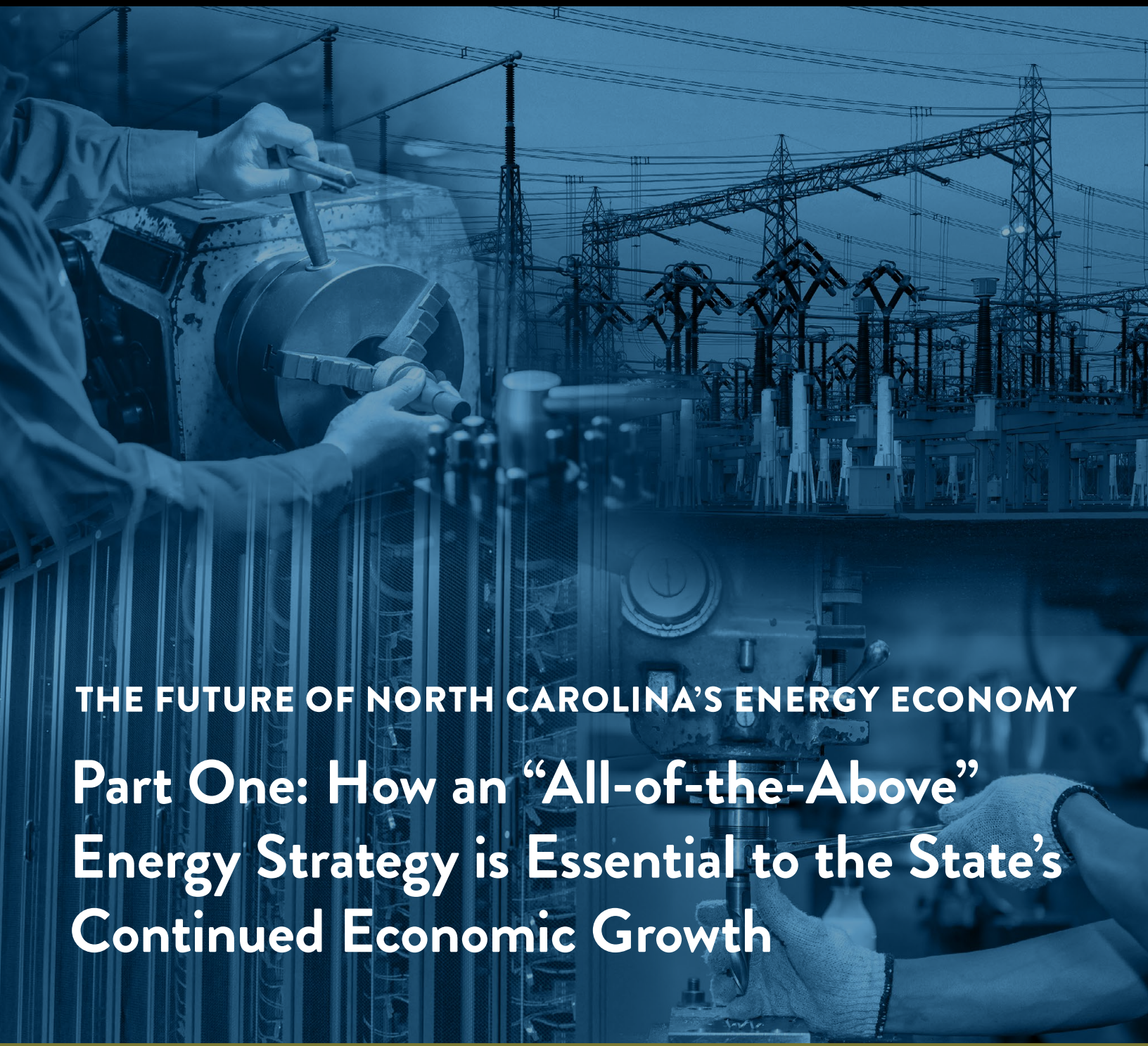


THE FUTURE OF NORTH CAROLINA'S ENERGY ECONOMY

Part One: How an "All-of-the-Above" Energy Strategy is Essential to the State's Continued Economic Growth

NC DEPARTMENT OF COMMERCE | ENERGY & INFRASTRUCTURE OFFICE

North Carolina has both the assets and the opportunity to support an "all-of-the-above" energy strategy that generates power locally, promotes security, and meets the needs of all electricity consumers.

North Carolina is at the intersection of three major economic trends impacting the electric power sector: Booming demand for computing power from data centers, the reshoring of manufacturing, and population growth, with North Carolina among the top five fastest growing states since 2020. Access to affordable, reliable, and diverse energy sources will determine whether and how North Carolina captures future economic opportunities as the U.S. races to build more resilient domestic supply chains and maintain its competitive edge in AI.

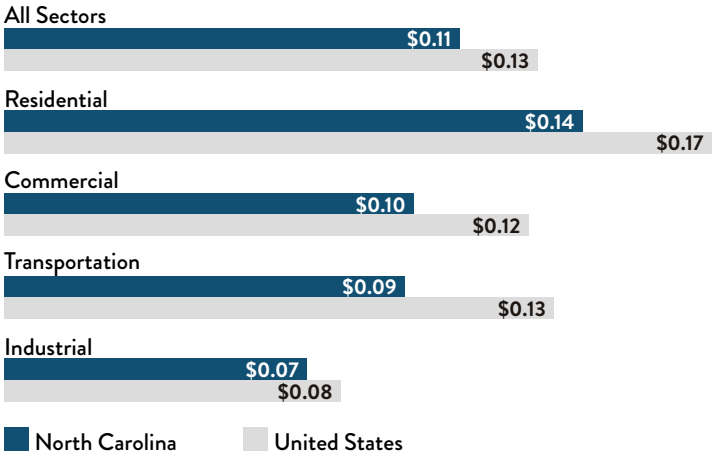
These demand signals are occurring during a seismic shift in electricity generation, with traditional baseload coal facilities retiring at a rapid rate. Supply chain difficulties also impact availability of critical transmission and distribution hardware, limiting utilities' ability to move quickly in delivering projects and responding to major storms.

Because of electric power's critical role in economic growth, the NC Department of Commerce's Energy & Infrastructure Office (EIO) is releasing a series of white papers examining North Carolina's energy sector and its relationship to the security and future prosperity of the state's economy. Access to affordable and reliable electricity is not only critical for recruiting new industries, but for overall economic health and community well-being. These papers will demonstrate energy's role as a foundational pillar for North Carolina's economy and how a more diverse, local, and resilient energy supply can continue our competitive advantage of having affordable power while protecting our economy against unexpected shocks.

North Carolina's future economic growth is closely aligned with energy availability.

In recent years, North Carolina has successfully recruited major manufacturing employers, rebuilding its industrial base and creating thousands of jobs in both urban and rural regions of the state. However, these "mega-projects" require substantial energy resources to power factories and industrial processes. According to a recent filing in July 2025 from Duke Energy, the company was tracking 101 prospective projects with a base demand of 50 MW or greater.[1] A recent survey found that energy availability has surpassed workforce and land availability as a top factor companies consider when choosing where in the U.S. to invest.[2] Access to affordable electricity has also been a strength in North Carolina's economic development, with average electricity prices for the state below the national average.[3]

NC has more affordable electricity compared to the U.S.
Cents per Kilowatt hour.



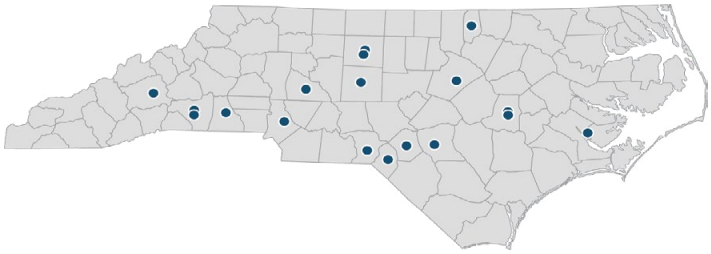
May 2025 average price of electricity to ultimate customers by end-user sector.
Source: U.S. Energy Information Administration

This trend was echoed by Duke Energy staff in a 2024 testimony to the NC Utilities Commission:

> *...Strong and unprecedented economic development in the Carolinas has continued unabated and remains well above [Duke Energy's] historical experience. This economic development success is the product of several factors, including the overall economic vitality of the Carolinas supported by a reliable, affordable, and increasingly clean supply of electricity and the efforts of state, county, and local leadership to attract highly competitive projects to both North Carolina and South Carolina. The economic development that the Carolinas are experiencing has resulted in projected load growth across the Carolinas that substantially exceeds even the high load case included in the Companies' CPIRP [Carbon Plan/Integrated Resource Plan] filing in August.*[4]

Since that 2024 testimony, several economic development projects have been announced, including the state's largest economic development investment in history in terms of job creation: JetZero's new fuel-efficient aircraft production facility in Greensboro, creating over 14,500 jobs.[5]

In 2025 alone, companies have announced more than 25,000 jobs and $19 billion in investments for new manufacturing facilities.



Source: NC Governor's Office. Data as of July 2025.

1. starw1.ncuc.gov/NCUC/ViewFile.aspx?Id=a125fc82-ee3a-40c7-b899-323b46d77217
2. areadevelopment.com/Corporate-Consultants-Survey-Results/q1-2025/39th-annual-corporate-21st-annual-consultants-surveys-what-business-leaders-and-consultants-are-saying-about-site-selection.shtml
3. eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a
4. starw1.ncuc.gov/NCUC/ViewFile.aspx?Id=7e1faf1e-9855-49b1-bbb7-aa2b7a329be5
5. edpnc.com/news/jetzero

The race for AI dominance also affects North Carolina's energy future. Data centers are projected to be the single largest source of new electricity demand, adding up to 65 GW nationally through 2029 and accounting for 44% of U.S. electricity load growth through 2028.[6]

Virginia currently leads in data center development thanks to its strong internet infrastructure. However, limited real estate in Northern Virginia is prompting companies to look elsewhere for sites with accessible, affordable, and reliable energy sources.

As a result, data centers developers are increasingly searching for opportunities to locate in North Carolina. In a telling example of the economic transition, an AI company is converting a former textile mill in Rockingham County into a 100 MW data center.[7] To put this energy demand into perspective, the most recent data available shows that residential customers in Rockingham County collectively consume about 500,000 MWh of electricity each year, while the data center, if operating continuously, would consume approximately 876,000 MWh annually – 175% more than the county's total residential use.[8] In another example of data center growth, in June 2025, Amazon announced a $10 billion data center project in Richmond County.

Power affordability is not the only consideration for companies looking to site a major project. Diversity in generation, and specifically, access to zero emission electricity is a growing demand of many large power users. Nearly 50 percent of Fortune 500 companies have set targets to reach net zero emissions by 2050.[9]

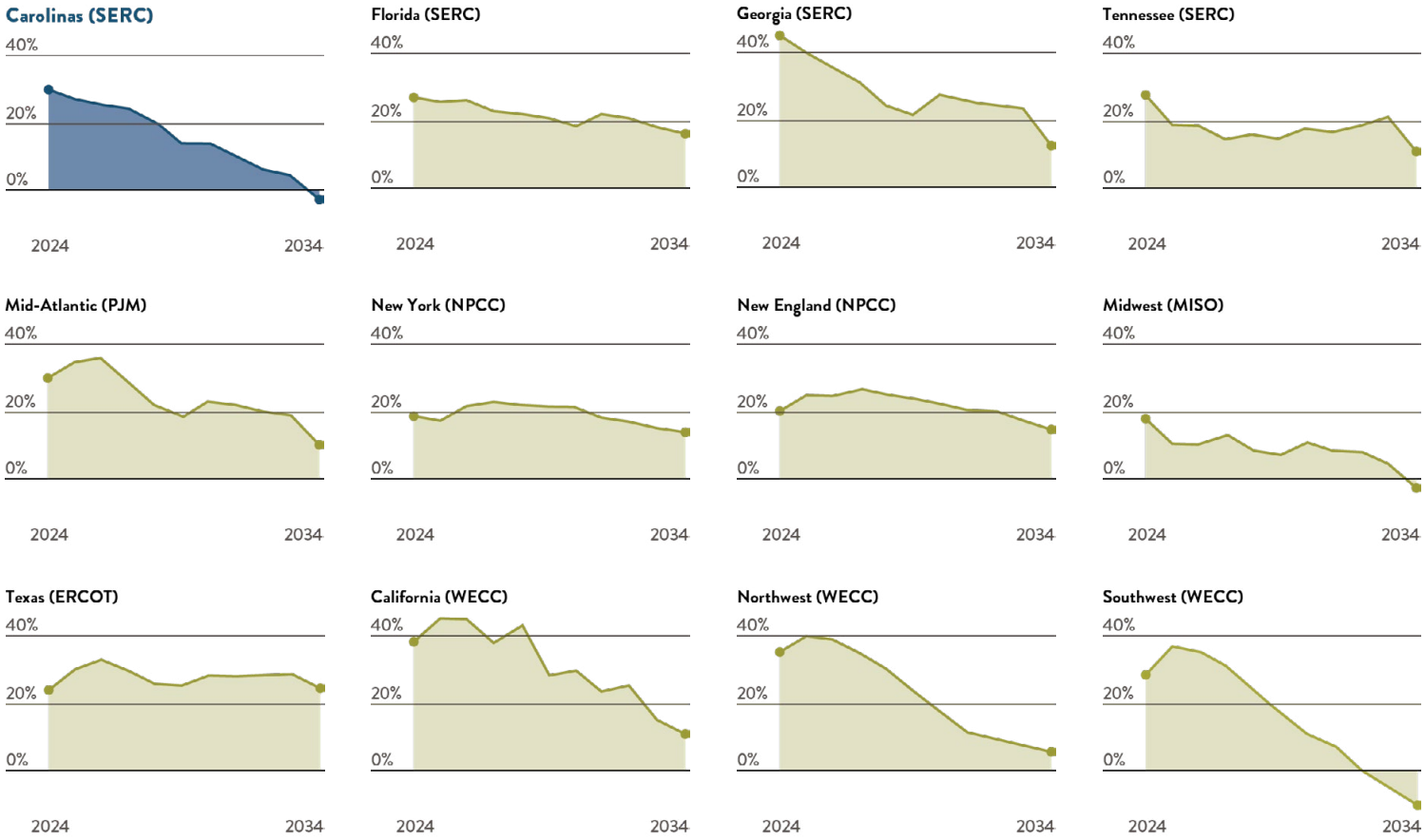
6. ourenergypolicy.org/resources/rethinking-load-growth-assessing-the-potential-for-integration-of-large-flexible-loads-in-us-power-systems
7. datacenterdynamics.com/en/news/bit-digital-acquires-manufacturing-site-in-north-carolina-plans-99mw-data-center
8. maps.nrel.gov/slope
9. climateimpact.com/news-insights/fortune-global-500-climate-commitments

Without diverse, local energy sources, North Carolina's economic growth and quality of life faces constraints and risks.

As these macroeconomic trends drive demand, North Carolina's electrical grid faces growing reliability risks. In its 2024 assessment, the North American Electric Reliability Corporation (NERC) projected that by 2034, peak seasonal energy demand in the Carolinas will exceed available supply. This analysis considered the amount of new generation expected to come online compared to the number of power plants - primarily coal facilities - scheduled for retirement over the next decade.

According to NERC, the Carolinas are at risk during "extreme weather conditions that cause demand to soar while supplies are threatened by generator performance, fuel issues, and inability to obtain emergency transfers." Unlike other states with native coal or natural gas resources, North Carolina imports nearly all of its fossil fuels. [10, 11]

The Carolinas are projected to lose their energy reserve margin during peak season by 2034.



Projected electricity reserve margins by regional entity. Reserve margin shows the level of additional resource capacity the area has above its peak summer (June-September) and winter (December-February) seasonal demand.
Source: North American Electric Reliability Corporation

10. eia.gov/coal/distribution/quarterly/pdf/24q4_destination.pdf
11. eia.gov/dnav/ng/ng_prod_sum_a_EPG0_FGW_mmcf_m.htm

Additionally, transmission and distribution hardware shortages represent a serious risk to achieving load growth necessary to meet demand. These shortages are aggravated by growing storm activity and natural disasters.[12]

These risks materialized in September 2024, when Hurricane Helene damaged or destroyed 2,000 transformers and 12,000 power poles across western North Carolina and flooded multiple substations.[13] Many areas experienced power outages for several weeks and disrupted the lives and well-being of thousands of people.

In the weeks that followed, one case study emerged as a model for resilient, local power. Just a year before the storm, Duke Energy deployed a 4.4 MW battery storage system paired with a 2 MW solar PV array, capable of providing 100% of the Town of Hot Springs' peak load for up to six hours. During Hurricane Helene, when severe flooding shut down the main substation and cut off Hot Springs from the grid, this "microgrid" was activated and operated continuously for nearly six days, supplying critical services and avoiding what would have been an 11-day outage.[14] The Hot Springs microgrid experience serves as a model for how reliable, local energy resources can temper the impact of major shocks or disruptions to a region's economy.

12. nrel.gov/news/detail/program/2024/how-many-transformers-will-the-us-distribution-grid-need-by-2050
13. commercerecovery.nc.gov/state-north-carolina-action-plan
14. sepapower.org/resource/case-study-hurricane-helene-hot-springs-microgrid

North Carolina's economic future demands an "all-of-the-above" energy strategy and investments in infrastructure.

To meet the rapidly growing demand in the electric sector with affordable and reliable power, North Carolina will need an "all-of-the-above" energy strategy that does not constrain deployment of new generation, from natural gas and nuclear to wind and solar. The demand growth is too large for any one form of generation to meet, and hedging for reliability and costs requires diversity in fuels.

Moreover, community-based power solutions such as microgrids limit overall demand needs for utilities while adding an auxiliary component to natural disaster disruption. If communities are empowered to develop bespoke solutions to power needs, they can control more of their economic decision-making and improve quality of life.

Infrastructure investments, especially middle-mile transmission infrastructure, are the riskiest chokepoints in the chain. North Carolina has an opportunity to streamline this risk through planning and coordination between utilities, communities, and regulators to improve project delivery times and reduce costs. Targeting the onshoring of critical hardware, like transformers, will further reduce project delivery time and storm response efforts.

North Carolina has both the assets and the opportunity to support an "all-of-the-above" energy strategy that generates power locally, promotes security, and meets the needs of all electricity consumers. In the next white paper, we will explore North Carolina's current energy mix and how the state has both the economic and natural assets that could help diversify its energy sources.

The Energy and Infrastructure Office (EIO) at the North Carolina Department of Commerce helps the state capture future economic opportunities by ensuring access to affordable, reliable, and diverse energy sources. EIO guides communities, businesses, and policymakers through the energy transition while maximizing economic benefits from an "all-of-the-above" strategy. The office collaborates with local governments, utilities, industry leaders, and workforce experts to promote job creation in the evolving energy economy and position North Carolina's industries for long-term competitive advantage.

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