At present Duke Energy provides power to 90% of North Carolina energy customers. Thus, Duke Energy has a Monopoly on utility services in North Carolina. ¹ Their current energy production in North Carolina is as follows: Nuclear power provides 51% of the energy; Natural Gas produces 21%; Coal produces 23%; renewable produces 4%; and hydroelectric produces 1%.

The current energy production sources in North Carolina are not sustainable. Even with Duke Energy’s recent 15-year plan, the energy sources are still not tenable. The primary reason for this is because two of the current energy resources used are coal and natural gas, both of which have detrimental effects on the environment. Duke Energy and North Carolina’s energy production can be altered to become sustainable. To offer the most sustainable option to the environment, Duke Energy should redistribute their sources to cause the least adverse environmental effects. Coal should produce 5%, Nuclear should remain at 51%, Natural gas should be depleted to 10%, Renewable Energy should rise to 30%, and Hydroelectricity should rise to 4%. As a result of this change, North Carolina would remain a leader in the country for renewable energy and set a nationwide standard, among other top states.

¹ In this paper, I chose not to use the overall numbers from the Department of Energy because Duke Energy is the largest provider with the most influence on the direction of North Carolina’s energy. Without removing Duke Energy’s monopolistic controls, the ability to change is left in the hands of Duke Energy and the North Carolina Utility Commission.
Currently, coal provides 23% of North Carolina’s energy. This is not a viable figure and should reduced to 5%. The reasoning behind this is that on top of the issues with mining coal, like deforestation and erosion, coal also produces a significant pollutant: coal ash. Coal ash is a toxic, powdery substance that remains after the firing of coal, also known as coal combustion residuals. Coal ash negatively affects the environment and ecosystems because it is comprised of Arsenic, as well as other toxic metals like Lead, Mercury, etc. The toxicity of these metals affects drinking water, air, and food. According to the Physicians for Social Responsibility, “If you live near an unlined wet ash pond (surface impoundment) and you get your drinking water from a well, you may have as much as a 1 in 50 chance of getting cancer”. Coal alone cost Duke energy customers $545 million in cleanup costs and cost $5.2 billion in removing coal pollution. Coal is shipped in from out of state distributors like Kentucky and West Virginia. While it is easy to access, the waste from is severely detrimental to the environment; therefore, it is not sustainable at current figures. Coal production needs to be reduced in order to minimize the effects of coal ash, as well as keep the air and water cleaner.

Natural gas energy source levels are currently at 21% but should be reduced to 10%. Natural gas which utilizes fracking. Fracking is the pressurized insertion of fracking fluids into wellbores in order to extract oil. Fracking is negligent to the environment because the ingredients in it are highly unregulated by the government, meaning that the fluid used to frack could potentially be toxic without public knowledge or direct oversight. This lack of knowledge is frightening because there is always a risk of leaking during the fracking process. If toxic fracking fluid leaks into the ground it can jeopardize water safety. Thousands of homes already use natural gas in North Carolina because it is clean burning, making distribution very popular and feasible, despite the obvious environmental effects caused by fracking. Natural gas is not
sustainable also because it is not an unlimited resource. Due to the excessive environmental risk, natural gas usage should be reduced in order to avoid environmental damage.

Nuclear power provides roughly 51% of North Carolina’s energy and should remain at roughly 51% of North Carolina’s energy provisions. Nuclear power plants are affordable and can operate for sixty years; however, there is waste from nuclear energy, like thermal waste and hazardous materials, that is adverse for the environment and minimizing it as much as possible in the future is important. Due to its wide expanse across the state, minimization in the future must be done slowly because some areas are incredibly reliant on nuclear energy. Distribution wise, nuclear energy occurs at nuclear power plants which are distributed throughout North Carolina, particularly in coastal and piedmont locations.

Renewable energy currently provides 4% of the energy in North Carolina but should be increased to 30% or higher. Renewable energy was only projected by Duke Energy to grow 2%, but after a report prepared by Synapse for the North Carolina Sustainable Energy Association, it was found that Duke can raise that number to 21% by 2033, at least. That number has a chance of being even higher, if the state commits to the change. Renewable energy overall contributed $6.4 billion to North Carolina’s economy.

Solar Energy can be used alongside farmlands, and even when farming certain crops that do not require direct sunlight. Solar energy is economically feasible due to the high number of investors willing to invest in solar energy. Feasibility, waste, and distribution wise, Solar power is becoming more popular and accessible. Also, there are no waste products from solar energy, and companies can travel to a person’s home to make them; therefore, distribution is easy.

Geothermal energy is important but remains nearly constant in economic stimulation; accordingly, it should remain implemented at the same rate or only slightly higher. Geothermal
energy typically costs $7,743 to install a system but will typically pay for itself within roughly 7 years. Geothermal energy can cut energy bills by 30-40%, and there are many different companies offering set ups in a quick, convenient manner. Tax incentives should be given to people in mountainous regions, in particular, to give an alternative option due to less nuclear plants. Finally, there is minimal waste. Feasibly, maintaining geothermal energy would make sense as it is convenient and cost efficient. The only waste from geothermal products that are bad for the environment are hydrogen sulfide and geothermal fluids which in comparison to fracking and coal ash are much better.

Biofuel is a fuel created from agriculture and anaerobic digestion. It is rising in popularity amongst farmers, particularly due to studies like those done by Dr. Ratna Sharma-Shivappa. “She has been working in the field of bio-engineering for over nine years. She says researchers can convert crops such as high energy grasses into fuel using a three-step process”, this possibility of using biofuel for fuel efficiency in farming is an attractive alternative fuel for farmers and bioengineers. Biofuel is typically cheaper than diesel and gasoline in most areas and can be made from lignin to reduce costs. Biofuel is more cost-effective than its competitors, and also produces cleaner burn. The feasibility of biofuel is possible because there are many locations with biofuel available which simplifies distribution; furthermore, the waste from biofuel can be used at landfills as another energy source.

Wind farms are also gaining popularity, bringing the North Carolina economy $786,433,742 in revenue, in one year. Their expansion is predicted, and sustainable. Wind power is extremely cost-effective because fuel is free, it creates jobs, and it takes around $48,000 to build a unit. These units are typically paid back within a few years. There is no waste but a slight
downside to it is the need for space; however, farmlands in North Carolina could easily be repurposed with wind energy in mind.

Hydroelectricity should remain the same in capacity because while it is economically beneficial, it can cut off water from ecosystems, which negatively affects the environment. Hydroelectricity costs $5,000-$10,000 for at home models, but modern hydro turbines convert 90% of energy into electricity. That margin is 40% greater than extremely successful fossil fuel plants, and there is little to no waste, so it should be maintained at its current level.

To achieve this change and make it available for the general public, first it is important to understand that the long-term benefits outweigh the short-term cost. Tax-incentives are already being offered to people who use certain renewable energy outlets and expanding that to all renewable energy sources would create a larger bracket of individuals willing to pay the upfront costs. Loans from the North Carolina government should also be made more readily available for lower to middle class families who cannot support the upfront cost but want to reap the environmental and fiscal benefits of switching to renewable energy.

While this will take many years of planning, government compromise, and compliance from large companies like Duke Energy, the long-term goal that North Carolina wants-being a leader in renewable energy-can be achieved. All resources for energy are important and have positives and negatives. The environmental benefits of clean energy outweigh the negatives because these options pay off quickly, typically in under a decade, they create little to no pollution, and they are more efficient than fossil fuels. Fossil fuels are a method of the past and turning more towards renewable energy options reflects the forward-thinking mindset that North Carolina should have in order to maintain its spot as a leader in the country for renewable energy. Renewable energy sources are vital to the future and should be explored more, but no
solution is the perfect solution. There will always be room for improvement but starting to make small switches of energy sources and changes can make a large impact economically, environmentally, and efficiently. The redistribution of energy sources to Coal-5%, Nuclear-51%, Natural gas-10%, Renewable Energy-30%, and Hydroelectricity-4% reflect the forward-thinking renewable energy reform necessary to lead the country, protect the environment, and ensure a sustainable future for the state.
Works Cited


NCSEA’S INITIAL COMMENTS ON DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC’S INTEGRATED RESOURCE PLANS. starw1.ncuc.net/NCUC/ViewFile.aspx?Id=891ac0cc-7aa9-4835-aed2-b15e9b5713e6.


