

NORTH CAROLINA ENERGY POLICY COUNCIL

2014 Recommendations

Lieutenant Governor Dan Forest, Chairman



ENERGY POLICY COUNCIL

S.L. 2013-365 (Senate Bill 76) created the Energy Policy Council to advise and make recommendations on increasing domestic energy exploration, development, and production within the state and region to promote economic growth and job creation to the governor and the General Assembly. The Council was formed in January 2014 and meets every other month. The goal of the Energy Policy Council is to identify and utilize all domestic energy resources in order to ensure a secure, stable and predictable energy supply and to protect the economy of the state, promote job creation, and expand business and industry opportunities while ensuring the protection and preservation of the state's natural resources, cultural heritage and quality of life. The Energy Policy Council's responsibilities, which may be delegated to the Department of Environment and Natural Resources as appropriate, include:

- Developing and recommending to the governor and General Assembly a comprehensive state energy policy that addresses requirements in the short (10 years), mid (25 years), and long term (50 years), to achieve maximum effective management and use of present and future sources of energy.
- Conducting an ongoing assessment of the opportunities and constraints presented by various uses of all forms of energy to facilitate the expansion of domestic energy supplies and to encourage the efficient use of energy.
- Reviewing and coordinating, on a regular basis, research, education and management programs relating to energy to educate and inform the public about energy matters, and to actively engage in discussions with the federal government to identify opportunities to increase domestic energy supply within North Carolina and its adjacent offshore waters.
- Recommending to the governor and the General Assembly needed energy legislation and rulemaking, and to recommend for implementation such modifications of energy policy, plans and programs.
- Recommending an Energy Efficiency Program designed to assure the public health and safety of the people of North Carolina and to consider the conservation of energy through reducing wasteful, inefficient or uneconomical uses of energy resources.
- Developing contingency and emergency plans to deal with possible shortages of energy to protect public health, safety and welfare, to be compiled into an Emergency Energy Program.

The council members include:

1. Lt. Governor Dan Forest
2. Secretary Donald van der Vaart, Environment and Natural Resources
3. Secretary John Skvarla, Commerce
4. George Baldwin, Piedmont Natural Gas, investor-owned natural gas public utility representative
5. Paolo Carollo, Chemtex International, energy economist/financier
6. Richard Newell, Duke University, energy policy expert
7. Scott Tew, Ingersoll Rand, industrial energy consumer
8. Carl Wilkins, Quanta Technology, knowledgeable in alternative and renewable sources of energy
9. Michael VanWingerden, Metrolina Greenhouses, experienced in trucking, rail or shipping
10. Marshall Cohen, Babcock & Wilcox Company, experienced in energy research and development
11. Vernon Cox, Department of Agriculture, experienced in environmental management



12. Rob Caldwell, Duke Energy, investor-owned electric utilities representative
13. Retired Deputy Assistant Secretary John Brodwell, U.S. Department of Energy, a person experienced in natural gas and hydrocarbon exploration

During 2014, Secretary Sharon Decker and Frank Gorham also served on the Energy Policy Council.

This report serves as an interim report. At this point, the Energy Policy Council recommends the governor and the General Assembly consider needed energy legislation and rulemaking to:

1. Encourage the use of our domestic energy resources,
2. Provide the assurance of fuel during emergency evacuations
3. Ensure the conservation of energy and reduce energy expenses within state government,
4. Require appropriate traffic synchronization measures be employed in roadway design projects as a means of saving fuel, improving air quality and quality of life for commuters and reducing future transportation costs.

In accordance with N.C.G.S.113B-12, the Energy Policy Council will provide a comprehensive energy report to the governor and the Speaker of the House of Representatives, the President Pro Tempore of the Senate, the Environmental Review Commission, the Joint Legislative Commission on Energy Policy, and the chairman of the Utilities Commission by January 2016.



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ENERGY EXPLORATION

Recommendations

Offshore Energy

1. Support Governor McCrory's continued work with the coalition of governors from coastal states to allow the environmentally responsible exploration of offshore energy resources, particularly oil and gas.
2. Support Governor McCrory's position that sharing of federal revenue from lease sales, rents, and royalties is necessary to develop this resource responsibly.
3. Recommend that some portion of the revenue the state receives be allocated to coastal communities for coastal protection, mitigation and restoration projects.
4. Recommend continued outreach to coastal elected officials.

Onshore Energy

5. Recommend the state engage the services of a consulting geologist who is highly recognized by the oil and gas industry to help determine the best use of exploration funds and to provide an independent assessment of NC reserves.
6. Recommend the state pursue a possible joint venture with private companies to maximize the amount of data collected during the assessment of NC reserves.
7. Recommend DENR hire experienced regulators to handle the complex regulatory oversight needed to protect our environment and attract the highest quality oil and gas companies.
8. Recommend that a portion of the severance tax be allocated to the county in which oil and gas development occurs.

Progress Report

Offshore Energy

- On February 24, 2014, Governor McCrory was named chair of the Outer Continental Shelf Governors Coalition. Governor McCrory, along with Governor Phil Bryant of Mississippi and Governor Robert Bentley of Alabama, met with Interior Secretary Jewell to encourage her to grant greater access to offshore resources and to move forward now with responsible oil, natural gas and wind development offshore. In March, Governor McAuliffe of Virginia joined the OCS Governors Coalition.
 - On July 18, 2014, the U.S. Department of the Interior's Bureau of Ocean Energy Management (BOEM) issued a Record of Decision on the Geological and Geophysical Programmatic Environmental Impact Statement (PEIS), which provided the framework for marine seismic surveys to occur in the Mid-Atlantic region including offshore of North Carolina. The last seismic survey for oil & gas exploration off North Carolina occurred in the early 1980's. Advancements in seismic technology that have occurred since that time will greatly improve the assessment of potential oil & gas resources and reduce the number of exploratory wells required.
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- In July and August of 2014, Governor McCrory sent letters to Secretary Jewell on behalf of North Carolina and the OCS Governors Coalition urging her to include all areas, including North Carolina, in the next five year oil and gas leasing program. On July 30, 2014, Lt. Governor Forest, as Lt. Governor and Chair of the Energy Policy Council, sent a letter to BOEM requesting North Carolina's inclusion in the 2017 to 2022 offshore leasing program.
- On August 11, 2014, Interior Secretary Jewell announced three areas off of North Carolina that may be considered for offshore wind energy lease sales.
- On October 9, 2014, Governor McCrory was the keynote speaker at the Coastal Energy Summit in Wilmington.
- On November 6, 2014, Governor McCrory hosted an Outer Continental Shelf Governors Coalition breakfast with representatives from Virginia and South Carolina in attendance.
- On November 6, 2014, North Carolina hosted a Five Year Program Development Meeting with the federal stakeholders, Virginia and South Carolina representatives and staff from North Carolina's congressional delegation. The meeting ended with a question and answer session on offshore energy between DENR Deputy Secretary van der Vaart and Governor McCrory.

Onshore Energy

- On February 28, 2014, the Mining and Energy Commission (MEC) Coordinated Permitting Study Group published a report on the development of a coordinated permitting program for oil and gas exploration and development activities using horizontal drilling and hydraulic fracturing treatments, which established the framework for a single comprehensive environmental permit.
- In the spring of 2014, the MEC study group issued an addendum to their October 1, 2013 Study Group report with additional recommendations for the following matters:
 1. Funding for emergency response operations, specifically to address well blowouts.
 2. Funding for long-term contaminant release mitigation.
- On June 4, 2014, the Energy Modernization Act (Senate Bill 786; S.L. 2014-4) was enacted. This Act extends the deadline for putting rules in place and allows oil and gas exploration, development and production permits to be issued 60 days after the applicable rules become effective.
- As required by law, the draft rules were published in the North Carolina Register Volume 29, Issue 2 - Date: July 15, 2014, with the exception of rule 15A NCAC 05H .2103. This rule was inadvertently omitted from the July 15, 2014 publication and was later published in Volume 29, Issue 3 - Date: Aug. 1, 2014
- The MEC held a comment period from July 15 through September 30, 2014 to receive public input on the draft rules.
- Four public hearings were held by the MEC for the public to present written and verbal comments on the draft rules. Meetings were held on the following dates:
 1. August 20, 2014 - Raleigh
 2. August 22, 2014 - Sanford
 3. August 25, 2014 - Reidsville
 4. September 12, 2014 - Cullowhee



ENERGY ASSURANCE

Recommendation

The State Energy Program in the Department of Environment and Natural Resources (DENR), with the support of the Office of Emergency Programs and the Standards Division in the Department of Agriculture, the Division of Waste Management in DENR, and the Division of Emergency Management in the Department of Public Safety shall study the feasibility of improving fuel availability at commercial fuel stations during power outages, particularly those along hurricane evacuation routes during natural disasters. At a minimum, the study shall:

- A. Classify the energy resiliency status of commercial fuel stations located in North Carolina into one of three categories: (1) station wired with an installed generator; (2) station pre-wired with a transfer switch for a portable generator; and (3) station without any pre-wiring for a generator.
- B. Assess the availability of portable generators within the state that could be temporarily connected to a pre-wired station during the event of a prolonged power outage.
- C. Evaluate the regional supply of fuel available to refill station tanks during an extended energy disruption.
- D. Make recommendations regarding the number of commercial fuel stations that should be pre-wired with a transfer switch or equipped with a permanent generator along major evacuation routes.
- E. Identify the costs and benefits associated with the recommendations and potential funding sources.

DENR shall report its findings to the Energy Policy Council on or before December 1, 2015.

Support for Recommendation

Recent national natural disasters have brought renewed attention to the interdependence between petroleum and electricity and to the disruption of regional motor fuels systems that may follow them. Electrical interruptions prevent most station operators from selling fuel despite having adequate supplies in their storage tanks. First responders, who protect life and property during emergencies, rely on commercial stations to fuel their vehicles.

North Carolina is vulnerable to hurricanes and other natural hazards that may cause prolonged and widespread power outages. Existing data suggests that less than two percent of the approximately 6,700 commercial fuel stations in the state have a permanent generator or are pre-wired for a portable generator. Resiliency of local retail fuel systems would substantially contribute to North Carolina's emergency preparedness. The proposed study will provide the Energy Policy Council with the information needed to make recommendations for improving commercial fuel station resiliency throughout the state and particularly along major evacuation routes. The Standards Division, which ensures gas pumps read accurately and the Waste Management Division, which regulates underground fuel storage tanks, will help identify the resiliency status of each fuel station.



Progress Report

1. The Emergency Energy Committee is coordinating with the Energy Emergency Working Group (EEWG) to plan effective prevention, planning, response, and recovery for energy disruptions.¹ During the past two major storm events, there was a concern about first responders having enough fuel for their emergency vehicles. Determining the amount of fuel needed and the best solutions for managing the fuel will be worked out with the EEWG, API, petroleum marketers and others to manage fuel so that there is enough on hand for first responders.
2. The Emergency Energy Committee of the Energy Policy Council has met with both the NOAH Foundation and Duke Energy. They have evaluated actions taken by Duke Energy to prevent and prepare for EMP, terrorist attacks, and other threats to the grid and do not feel it is necessary to make recommendations at this time.
3. The Emergency Energy Committee is coordinating with NC Emergency Management to ensure appropriate procedures are in place to respond effectively to energy emergencies and the issues that may arise. NC Emergency Management will soon launch a “turbotax” style ESF12 web based platform plan generator to help local governments provide for assurance of adequate energy supplies during emergency situations.

ENERGY EFFICIENCY

Recommendations

State Buildings

1. Revise the state buildings energy use reduction goal to forty (40) percent by 2025, with the potential to achieve an additional \$2 billion in utility cost reductions.
2. Strengthen and support the state’s Utility Savings Initiative (USI) for public facilities by providing a one percent pass-through of the annual avoided utility costs being achieved by the USI program.
3. Establish a program with state governmental units to enable utility savings to be reinvested in short duration / rapid payback energy conservation measures.
4. Pursue a system of electronic data transfer from utility providers to customer’s/owner’s data collection and analysis systems with a focus on EPA Portfolio Manager.
5. Establish a policy that provides for initial and ongoing staff training, resources and retention to provide the skills needed to maintain state buildings in an energy efficient manner.

Traffic

6. Regularly synchronize traffic signals in high volume commuter corridors so as to minimize idle time at red lights, travel time by commuters and fuel consumption by vehicles.

¹ The Energy Emergency Working Group was established in 2013 and includes representatives from Duke Energy, Dominion, NC Electric Membership Corp, SCANA, Williams Pipeline, Colonial Pipeline, NC Petroleum Council, North Carolina Trucking Association. NC Propane Association, Time Warner Cable, Emergency Management, State Energy Office, NC DOT, NC Utilities Commission, NC Department of Agriculture, and others.



7. Design road systems in high volume commuter corridors to minimize idle time at red lights, travel time by commuters and fuel consumption by vehicles.

Support for Recommendations

State Buildings

1. The forty (40) percent energy use reduction goal will provide the encouragement to continue the progress already made under G.S. § 143-64.12, an existing thirty (30) percent energy use reduction goal for state agencies and universities by 2015 with the baseline year of 2002-03. Achieving the new goal would bring the state's cumulative avoided utility costs to greater than \$3 billion, \$2 billion of which will be earned in the next 10 years, with annual avoided costs in excess of \$200 million. Establishment of this goal enhances the state's competitiveness for federal grant funding opportunities. This goal has widespread support by the UNC University System and many state agencies. A legislative proposal for this potential policy has been submitted through DENR.
 2. The state's Utility Saving Initiative, housed within DENR, is a highly successful program that has supported state agencies and universities in avoiding \$700 million in utility cost expenses since the 2002-03 baseline year. State cost reduction-to-annual program investment is greater than 100-to-1. To assist state facilities in meeting the additional 10 percent goal, a minimum operating support budget (one percent pass-through of avoided cost savings) is essential to deliver training, outreach and incentives to leverage energy project investments, as well as to provide more in-depth engineering and technical assistance to state governmental units. Additional fiscal support would equate to approximately \$1.14 million. In conjunction with the new goal requested above, a legislative proposal for this potential policy has been submitted through DENR.
 3. Allowing the cost reductions achieved by energy savings to be reinvested in additional energy projects will provide an incentive to state agencies and universities to continue the improvements already realized through energy reductions. Projects are anticipated to include such measures as retro-commissioning, re-commissioning, building automation system optimization and inexpensive equipment upgrades. UNC General Administration is expected to submit a legislative proposal for this initiative.
 4. Large commercial and public facilities complexes are challenged to track and manage utility use data in an automated and efficient manner. A system of electronic data transfer from utility providers to the customer's data collection and analysis system would help automate utility data transfer in a secure and uniform format. Efficient utility data access, transfer and management is a cornerstone for all energy management programs and improvement efforts.
 5. A policy that provides for initial and ongoing staff training, resources and retention to provide the skills needed to maintain state buildings in an energy efficient manner is essential to keeping building systems properly maintained and optimized for energy efficiency. Employee technical skills are not keeping pace with advances in building system design. Without competent, trained staff with the proper skills, buildings will return to a condition of wasteful operation.
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Traffic

6. Regularly synchronized traffic signals in high volume commuter corridors minimize idle time at red lights, travel time by commuters and fuel consumption by vehicles. With tight budgets and growing traffic congestion, intelligent transportation systems can often improve traffic flow at a fraction of the cost of road construction. The most basic “intelligent” system consists of synchronized traffic lights, which increases vehicle throughput and safety while reducing travel time delays, vehicle emissions and fuel consumption.

FUEL & EMISSIONS SAVINGS

Sim Traffic Simulation Results

	Fuel Used (gal)	HC Emissions (kg)	CO Emissions (kg)	NO _x Emissions (kg)
Before Retiming	2149.4	32.066	1237.106	104.103
After Retiming	2022.1	29.959	1136.873	100.700
Improvement (Before-After)	127.3	2.107	100.233	3.403
Percent Improvement	-5.9%	-6.6%	-8.1%	-3.3%

TRAVEL TIME SAVINGS

Tru-Traffic Study Findings

	Travel Time (sec)	Travel Delay (sec)	Stop Delay (sec)	Stops (per veh)
Before Retiming	547	191	105	3.4
After Retiming	399	42	11	0.6
Improvement (Before-After)	148	149	94	2.8
Percent Improvement	-27%	-78%	-90%	-82%

Summary of Benefits Achieved by Mekuria Engineering Inc. for NCDOT's 2014 Safety Signal Retiming Projects in Division 4, Wilson County, Wilson

Summary of Benefits Achieved by Mekuria Engineering Inc. for NCDOT's 2014 Safety Signal Retiming Projects in Division 4, Wilson County, Wilson

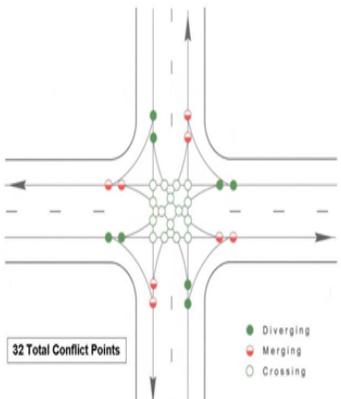
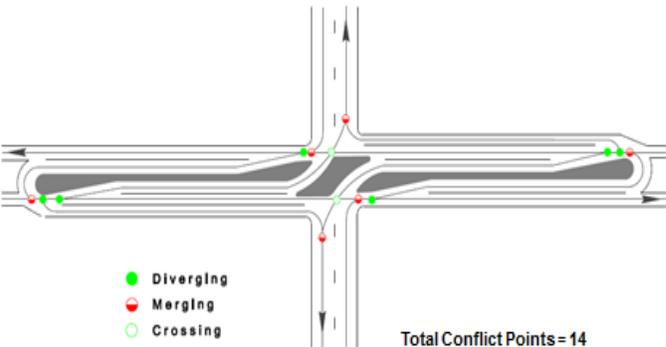
7. Most delays to drivers along a street or corridor occur at signalized intersections. Non-traditional road system designs, such as superstreets, in high volume corridors provide reasonable access to side streets with signal control while improving safety, relieving congestion, reducing vehicle emissions and fuel consumption.

Things to Consider

- All these highways or components of the highways will reach or exceed capacity years before they are expected. There should be corridor plans developed for every roadway that is widened with public funds, or if it is a multi-lane highway. These plans need to include access management plans, traffic operations considerations, and contingency plans for when it reaches or exceeds capacity. The municipality, county and DOT should develop and implement these plans.
- The separation of land use and transportation hinders effective planning for operations. Planning for future traffic operations in an overcapacity condition should be a common practice. Current plans only include adding capacity by additional widening or bypassing. These are very expensive and may be avoided or delayed by effective traffic operations planning.
- We are experiencing an increasing demand on a shrinking funding stream. Traffic operations, infrastructure maintenance, emergency and weather activities are all part of the same funding stream.
- Failing to have an effective signal systems timing program costs millions in wasted fuel and the loss of other benefits.
- Failing to consider traffic operations leads to much costlier transportation projects.



NCDOT PRESENTATION ON SUPERSTREETS

<p>North Carolina DEPARTMENT OF TRANSPORTATION ncdot.gov</p> <p>Conventional Intersection Conflict Points</p>  <p>32 Total Conflict Points</p> <ul style="list-style-type: none"> ● Diverging ● Merging ○ Crossing 	<p>North Carolina DEPARTMENT OF TRANSPORTATION ncdot.gov</p> <p>Superstreet Conflict Points</p>  <p>Total Conflict Points = 14</p> <ul style="list-style-type: none"> ● Diverging ● Merging ○ Crossing 																
<p>Reduction in Crashes</p> <ul style="list-style-type: none"> • Safety impact by collision type for unsignalized superstreets, % <table border="1" data-bbox="316 1018 698 1312"> <thead> <tr> <th>Collision Type</th> <th>Crash Reduction %</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td>-46</td> </tr> <tr> <td>Fatal and injury</td> <td>-63</td> </tr> <tr> <td>Angle and right turns</td> <td>-75</td> </tr> <tr> <td>Rear ends</td> <td>-1</td> </tr> <tr> <td>Sideswipes</td> <td>-13</td> </tr> <tr> <td>Left turns</td> <td>-59</td> </tr> <tr> <td>Other</td> <td>-15</td> </tr> </tbody> </table>	Collision Type	Crash Reduction %	Total	-46	Fatal and injury	-63	Angle and right turns	-75	Rear ends	-1	Sideswipes	-13	Left turns	-59	Other	-15	<p>Economic Benefits of Superstreets</p> <ul style="list-style-type: none"> • Preserves the existing facility • Less expensive than an interchange • Provides good access to both sides of the main road for development • Conserves fuel. <p>Environment Benefits of Superstreets</p> <ul style="list-style-type: none"> • Less acreage impacted by construction and permanent facility • Less time spent idling at a red light • Reduction in environmental pollutants (exhaust fumes / fuel usage)
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Progress Report

The Energy Efficiency (EE) Committee has focused on EE funding mechanisms, high performance buildings, the Utility Savings Initiative Program and weatherization programs. Top priorities have been financing, revolving loan amounts, and budgeting between operations and capital improvements to do EE programs in state buildings and the community. The committee also met with Kevin Lacy, NCDOT, to consider opportunities for energy efficiency pertaining to transportation fuels including traffic light synchronization and corridor improvements. These measures could significantly reduce gasoline consumption and emissions.



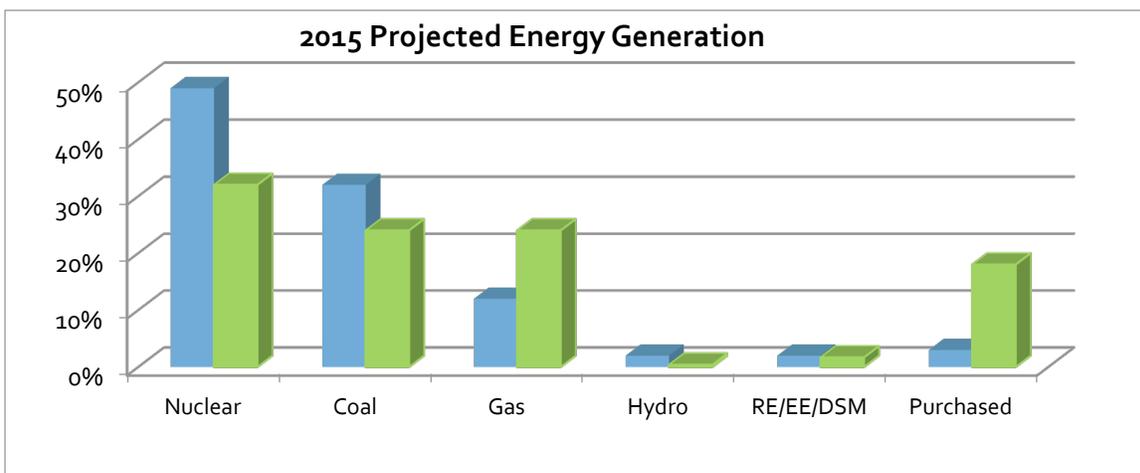
LONG RANGE PLANNING & RENEWABLES

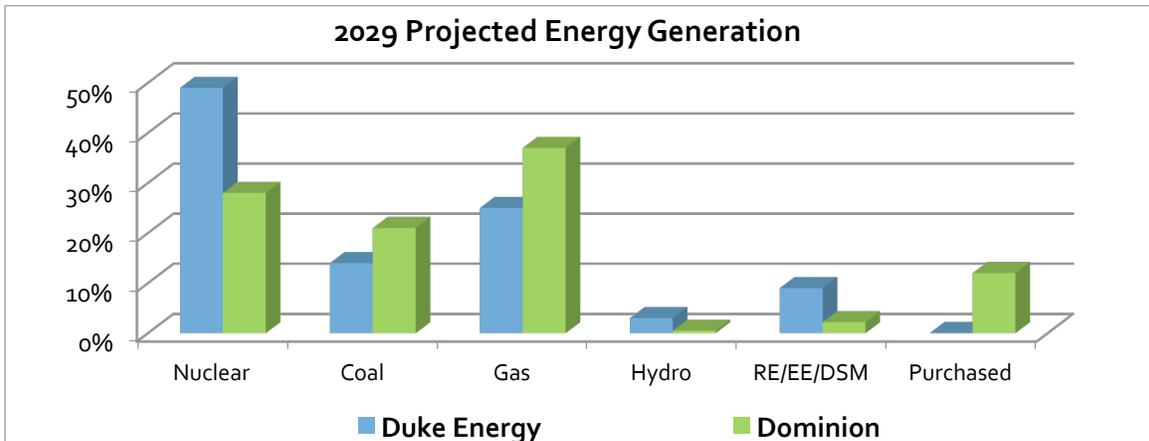
Progress Report

Continuing the modernization of our energy infrastructure with environmentally sound 21st century technologies, increasing our energy supplies and promoting energy conservation will strengthen North Carolina's position as an energy leader. North Carolina's prosperity and growing economy are sustained by affordable, reliable, environmentally clean and safe energy.

The Long Range Energy Generation Planning & Renewable Energy Committee of the Energy Policy Council has been given the difficult task of recommending policy that will ensure economically sustainable energy is available to meet our state's projected energy demands for the next 10, 25 and 50 years. The members of this committee understand that it is vital to carefully consider the environmental and economic impacts of each generation source and potential unintended consequences before making any policy recommendation. They have spent this year meeting with energy experts to better understand our current energy pathway, energy successes and underachievers, new technological advances and the framework for setting short to long-term plans. The experts include representatives from Duke Energy, Williams Transco Pipeline and the solar, wind and nuclear industries as well as the N.C. Utilities Commission Public Staff.

The committee has also reviewed the Integrated Resource Plans (IRPs) for Duke Energy Carolinas, Duke Energy Progress and Dominion NC Power. The IRPs plan energy generation fifteen years in advance and show that Duke Energy will significantly reduce its reliance on coal, keep nuclear generation primary and depend more on natural gas and renewables for meeting load demand and growth. By 2029, 61% of its electricity is projected to be generated with zero-emission resources. In contrast, Dominion plans to continue to generate most of its electricity with emissions-based resources during the next fifteen years.





Next year, the committee plans to collaborate with a work group, which was awarded a \$425,000 grant by the U.S. Department of Energy in October 2014 to develop energy roadmaps for our state and South Carolina. The work group includes Advanced Energy, E4 Carolinas, UNC Charlotte’s Energy Production and Infrastructure Center (EPIC) and the two state energy programs. This group will first develop an energy roadmap baseline by analyzing current energy resources, plans, policies and proposals, reliability and resiliency metrics, infrastructure capacity, regulatory compliance and effectiveness of energy efficiency measures and renewable energy resources. Next, electricity and natural gas demand forecasts and resource availability will be assessed with a focus on time-dependent demand profiles, cost and availability of a variety of energy sources, key economic and demographic drivers and uncertainties, reliability and resiliency, best practice and near, mid and long-term infrastructure constraints. The information gathered will be used to form strategic state-specific energy roadmaps with future projections, goals, recommended actions, expected impacts, timing and milestones, financing mechanisms, and evaluation and measurement strategies.