

NORTH CAROLINA GENERAL ASSEMBLY



HOUSE SELECT COMMITTEE ON ENERGY INDEPENDENCE AND ALTERNATIVE FUELS

INTERIM REPORT TO THE
2012 SESSION
of the
2011 GENERAL ASSEMBLY

MAY 1, 2012

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TRANSMITTAL LETTER

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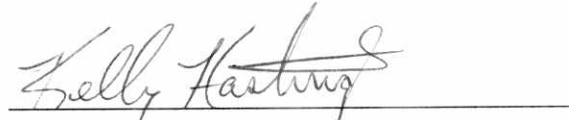
TO THE MEMBERS OF THE HOUSE OF REPRESENTATIVES:

Attached for your consideration is the interim report of the House Select Committee on Energy Independence and Alternative Fuels established by the Speaker of the House of Representatives pursuant to G.S. 120-19.6(a1) and Rule 29 of the House of Representatives of the 2011 General Assembly. The House Select Committee on Energy Independence and Alternative Fuels respectfully submits the following report.

Respectfully submitted,



Representative Mike Hager
Co-Chair



Representative Kelly Hastings
Co-Chair

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PREFACE

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The House Select Committee on Energy Independence and Alternative Fuels was established by letter, by Speaker of the House of Representatives Thom Tillis on September 1, 2011 to study: North Carolina's future energy needs; the use of fuels, other than petroleum, for vehicles; and the development of energy resources in the State to assure energy security. The Committee is made up of 10 members¹, appointed by the Speaker of the House of Representatives.

Since its creation, the Committee has held the following six meetings in the Legislative Complex in Raleigh:

October 6, 2011	March 6, 2012
November 2, 2011	April 19, 2012
December 7, 2011	
February 8, 2012	

Based on reports and presentations received, the House Select Committee on Energy Independence and Alternative Fuels presents the recommendations contained in this report. A complete record of each meeting is available in the Committee notebook which is filed in the Legislative Library. Copies of the presentations made and handouts distributed to the Committee are available at the Committee website at:

<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=162>

¹ A list of the full Committee membership is included in Appendix A of this report.

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AUTHORIZING LETTER

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Office of Speaker Thom Tillis
North Carolina House of Representatives
Raleigh, North Carolina 27601-1096

HOUSE SELECT COMMITTEE ON ENERGY INDEPENDENCE AND ALTERNATIVE FUELS.

**Revised*

TO THE HONORABLE MEMBERS OF THE NORTH CAROLINA HOUSE OF REPRESENTATIVES

Section 1. The House Select Committee on Energy Independence and Alternative Fuels (hereinafter "Committee") is established by the Speaker of the House of Representatives pursuant to G.S. 120-19.6(a1) and Rule 26 of the Rules of the House of Representatives of the 2011 General Assembly.

Section 2. The Committee consists of the nine members listed below, appointed by the Speaker of the House of Representatives. Members serve at the pleasure of the Speaker of the House of Representatives. The Speaker of the House of Representatives may dissolve the Committee at any time.

Representative Mike Hager, Co-Chairman
Representative Kelly Hastings, Co-Chairman
Representative Mitch Gillespie
Representative G.L. Pridgen
Representative Pat McElraft
Representative Fred Steen
Representative Pricey Harrison
Representative Beverly Earle
Representative William Brisson
Representative Mike Stone

Section 3.

- (a) The Committee shall study the following:
- (1) The State's future energy needs.
 - (2) The possible use of compressed natural gas, liquid propane, and biofuels as fuel sources for vehicles.
 - (3) The development of natural gas, oil, wind, solar, and other energy resources capable of energy production for the purposes of North Carolina becoming more self-reliant as to its energy supplies.
 - (4) How the State can become more independent of foreign energy markets, which may be volatile and steeply fluctuating due to energy and political crises.
 - (5) How the State can avoid the potential of being completely cut off from foreign fuel due to political unrest and instability in the Middle East.
- (b) As part of its study, the Committee may examine the following:
- (1) Infrastructure changes needed to facilitate the use of alternative fuel vehicles, including integration with gas distribution lines.
 - (2) Incentives for alternative fuels for vehicles, including tax incentives.
 - (3) Feasibility of using alternative fuel vehicles for the State fleet.
 - (4) Impact of alternative fuel vehicles on fuel supply.
 - (5) The potential for job creation and market growth as a result of the use of compressed natural gas and biofuels as fuel sources for vehicles.
 - (6) The environmental impact of the production and use of alternative fuels in the State.
 - (7) Any other relevant issues relating to the use of compressed natural gas and biofuels to fuel vehicles.
 - (8) Identification of prospective energy companies that explore for and produce energy from natural gas, oil, wind, solar, or other energy resources capable of energy production and their availability to present the General Assembly with specific proposals for the production of energy in North Carolina.
 - (9) Actions that would promote the development of natural gas, oil, wind, solar, and other energy resources capable of energy production in North Carolina, including the use of tax credits and other financial incentives, and changes to State law to reduce the regulatory burden on energy development and production in North Carolina.

Section 4. The Committee shall meet upon the call of its Co-Chairs. A quorum of the Committee shall be a majority of its members.

Section 5. The Committee, while in the discharge of its official duties, may exercise all powers provided for under G.S. 120-19 and Article 5A of Chapter 120 of the General Statutes.

Section 6. Members of the Committee shall receive per diem, subsistence, and travel allowance as provided in G.S. 120-3.1.

Section 7. The expenses of the Committee including per diem, subsistence, travel allowances for Committee members, and contracts for professional or consultant services shall be paid upon the written approval of the Speaker of the House of Representatives pursuant to G.S. 120-32.02(c) and G.S. 120-35 from funds available to the House of Representatives for its operations.

Section 8. The Legislative Services Officer shall assign professional and clerical staff to assist the Committee in its work. The Director of Legislative Assistants of the House of Representatives shall assign clerical support staff to the Committee.

Section 9. The Committee may submit an interim report on the results of the study, including any proposed legislation, on or before May 1, 2012, by filing a copy of the report with the Office of the Speaker of the House of Representatives, the House Principal Clerk, and the Legislative Library. The Committee shall submit a final report on the results of its study, including any proposed legislation, to the members of the House of Representatives prior to the convening of the 2013 General Assembly by filing the final report with the Office of the Speaker of the House of Representatives, the House Principal Clerk, and the Legislative Library. The Committee terminates upon the convening of the 2013 General Assembly or upon the filing of its final report, whichever occurs first.

Effective this the 1st day of September, 2011.

Thom Tillis
Speaker

**Revised October 5, 2011 to add Rep. Mike Stone*

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COMMITTEE PROCEEDINGS

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The Committee conducted a thorough review of energy independence and alternative fuels issues during the 2011-2012 legislative interim including the receipt of over 20 presentations from many different local, State, and national expert speakers.

AGENDA

10:00 a.m. Thursday October 6, 2011
Room 1228 Legislative Building
Raleigh, North Carolina

1. Call to order
Representative Hager, Presiding
2. Introductory remarks by Cochairs (*5 minutes*)
Representative Mike Hager
Representative Kelly Hastings
3. Introduction of Members and Staff (*10 minutes*)
4. Presentation of the Committee Charge (*5 minutes*)
Jennifer Mundt, Committee Analyst
Research Division
5. Presentation of the history and recommendations of the State Energy Policy Council and an overview of the energy-related programs housed within the Department of Commerce (*1 hour*)
Dale Carroll, Deputy Secretary
Department of Commerce
6. Remarks from Representative Pridgen, sponsor of House Bill 585 (*5 minutes*)
7. Committee discussion and announcements
8. Adjourn

October 6, 2011

The first meeting of the Committee was held on Thursday October 6, 2011 at 10:00 a.m. in Room 1228 of the Legislative Building. Representative Mike Hager presided.

[Mr. Dale Carroll](#), Deputy Secretary for the Department of Commerce presented to the Committee on the history and recommendations of the State Energy Policy Council as well

as an overview of the energy-related programs that are housed within the Department. Mr. Carroll first discussed the State Energy Office in the Department, which is responsible for numerous energy programs including: State Energy Program; Energy Efficiency Conservation Block Grants (distributed \$37.1 million for energy efficiency programs for local governments); Weatherization Assistance Program (\$139.1 million to weatherize nearly 9,500 residential units); EnergyStar Appliance Replacements/Rebates (\$10.8 million towards this program with 80% funded through the federal American Recovery and Reinvestment Act); and NC Energy Assurance (\$1 million grant from Department of Energy to develop a plan between the State Energy Office and the Division of Emergency Management in the Department of Crime Control and Public Safety to strengthen and expand North Carolina's ability to react to energy emergencies and to understand the impact of emerging technologies).

Mr. Carroll then outlined other programs that are coordinated, but not administered, by the State Energy Office including: the Utility Savings Initiative which since the program's inception in 2003 has saved more than \$325 million while investing \$11 million into utility savings improvements); and Performance Contracting which uses utility savings to help pay to replace obsolete and inefficient equipment.

Mr. Carroll then provided the Committee with an overview of the Energy Policy Council. Mr. Carroll highlighted themes from the Council's [March 2011 Report](#), including recommendations from the Baseload, Renewables, Energy Efficiency, and Low-Carbon Transportation Committees. In the March 2011 Report, the Council unanimously affirmed that [Senate Bill 3](#) (Promote Renewable Energy/Baseload Generation) was the key to building the State's energy economy however the body did not reach agreement on any of the committee recommendations. Mr. Carroll stated that the most significant work of the Council was the submission of the March 2011 Report.

Following Mr. Carroll's presentation, Committee member Representative Pridgen made remarks about the First Edition of House Bill 585, which he sponsored. Much of the study language in the First Edition of House Bill 585 was used in the letter authorizing this Committee.

AGENDA
1:00 p.m. Wednesday November 2, 2011
Room 414 Legislative Office Building
Raleigh, North Carolina

1. Call to order
Representative Kelly Hastings, Presiding
2. Introductory remarks by Cochairs (*5 minutes*)
Representative Kelly Hastings
Representative Mike Hager
3. Adoption of the Committee budget
4. Presentation of alternative fuels use and alternative-fuel vehicles in service by State agencies (*20 minutes*)
Terry Gibson, State Highway Administrator
Department of Transportation

Speros Fleggas, Senior Deputy Secretary
Department of Administration
5. Discussion of North Carolina's alternative fuels portfolio (*1 hour and 30 minutes*)
Propane autogas
Stuart Weidie, President and CEO
Alliance AutoGas

Compressed natural gas
Rich Kolodziej, President
NGVAmerica

Biofuels
W. Steven Burke, President and CEO
Mark Conlon, Vice President, Sector Development
Biofuels Center of North Carolina
6. Committee discussion and announcements
7. Adjourn

November 2, 2011

The second meeting of the Committee was held on Wednesday November 2, 2011 at 1:00 p.m. in Room 414 of the Legislative Office Building. Representative Kelly Hastings presided.

Two presentations on the use of alternative fuels and alternative-fuel vehicles by State agencies were made to the Committee. Mr. [Terry Gibson](#), State Highway Administrator in the Department of Transportation (DOT) provided a history of alternative fuels use by (DOT) and stated that DOT began experimenting with alternative fuels in 1994 including electric power equipment, propane, compressed natural gas, various ethanol blends, and biodiesel, each with varying degrees of success. Mr. Gibson identified four criteria that the Department considers in choosing alternative fuels:

- (1) The fuel must be available at all 114 DOT fueling sites.
- (2) The fuel must be portable, that is, able to fuel equipment in the field.
- (3) The cost of infrastructure and conversion must produce a return on investment as well as meet the requirements of the federal Clean Air Act and Energy Policy Act.
- (4) The fuel chosen must work towards achieving the statutory directive to reduce petroleum use by 20% by June 2013.

Mr. [Speros Fleggas](#), Senior Deputy Secretary for the Department of Administration (DOA) provided an overview of the applicable programs operating under DOA. The Motor Fleet Management Division manages the 7,716 vehicles in the State's fleet, of which more than 70% are either flex fuel or hybrid. In October 2011, the Motor Fleet Management Division submitted its first report on its compliance with the "vehicle preference" statutes and Mr. Fleggas stated that of the 109 cars purchased in 2011, 88 were for law enforcement (exempt), but the remainder were in the top 15% for fuel economy and life-cycle cost, as required by statute. Mr. Fleggas reported that the State Parking Division received its first of two electric vehicles in August 2011 and that the new Green Square parking deck has 23 electric car chargers for use by both employees and visitors. The State Parking Division also provides commuter alternatives for Raleigh-based State employees. The State Construction Office implements the Sustainable Energy Efficient Buildings Program which requires specific energy and water efficiency standards for major new and renovated State-funded buildings. Lastly, the Facility Management Division's mission is to "maintain State facilities managed by DOA in a cost-effective, energy efficient, and service-oriented manner." DOA conducts monthly performance measures to track the number of kWh consumed per square foot of space (133 facilities consisting of more than 5.5 million square feet of office space).

Three presentations on alternative fuels by industry experts were made to the Committee. [Stuart Weidie](#), President and CEO of Alliance AutoGas provided an overview of propane autogas as an alternative fuel. Mr. Weidie reported that North Carolina ranked second, behind only California, in state propane gas use. Propane autogas is liquid petroleum gas, or propane, when used as a vehicle fuel and is the third most widely used vehicle fuel in the world (behind petroleum and diesel). Some of the benefits of autogas include:

- Lower fuel costs. Autogas costs an average of \$1.25 per gallon less than gasoline.
- Reduced air emissions. Autogas generates less carbon dioxide emissions than either gasoline or diesel fuel combustion (Approximately 20% less emissions).
- Domestic resources. 90% of the world's autogas is produced in the United States.

The United States accounts for only 2% of the world autogas vehicle market. It costs between \$150,000 and \$175,000 to install an autogas refueling station that can service 500 to 750 vehicles. The average autogas vehicle conversions cost between \$5,000 and \$8,000.

Mr. [Rich Kolodziej](#), President of NGV America provided an overview of natural gas as an alternative fuel. Mr. Kolodziej reported that growth in the world natural gas vehicle (NGV) market has grown almost five-fold since 2003 to 13.9 million vehicles in 2011. In the United States, there are only 120,000 NGVs out of 250 million vehicles on the road.

The markets that NGVs are targeting include largely diesel-dependent industries that rely on: heavy-duty freight trucks; transit, shuttle, and school buses; metropolitan fleet management and public works departments; vocational work vehicles; medium-duty delivery and commercial service trucks; and taxis and light-duty service vehicles. Mr. Kolodziej stated that NGVs have the strongest foreign oil displacement potential of all the alternative fuels due to the domestic supply (projected 90-110 year supply). NGVs can provide air quality benefits – fewer criteria pollutant emissions than gasoline- and diesel-fueled vehicles and between 20% and 30% less greenhouse gas emissions.

Mr. [Steven Burke](#), President and CEO of the Biofuels Center of North Carolina, provided the Committee with a status report on North Carolina's biofuels endeavor. Mr. Burke reported that the State's policy is to gain large capacity for biofuels and that by 2017, 10% of the State's liquid transportation fuels (approximately 600 million gallons) will come from biofuels grown and produced within the State. New feedstocks, other than corn, are being investigated including wood and cellulosic energy grasses. Mr. Burke referenced a [map illustrating the State's biofuels landscape](#) that contemplates methods by which the State may achieve the 10% biofuels displacement goal with new (existing and proposed) production facilities and potential feedstock geography. Mr. Burke noted that the Biofuels Center commissioned the first statewide survey of biofuels jobs that revealed 443 North Carolinians are working in the biofuels field.

Mr. [Mark Conlon](#), Vice-President for Sector Development for the Biofuels Center also presented on biofuels in the State. Mr. Conlon explained that corn, as a feedstock, is not a viable option for biofuels in North Carolina because of the limited acreage that is suitable for corn in the State; corn is already imported to supply swine and poultry industries' and by policy, the State is pursuing cellulosic biofuels. In order to be viable, energy crops must provide greater value to the farm than the existing crop practices and be economical. Mr. Conlon pointed to the State's swine industry wherein higher market value from sprayfields may be achieved through growing energy grasses rather than Coastal Bermuda grass. There is vast opportunity for the State regarding energy grasses considering there are more than 200,000 acres of swine industry-related sprayfields.

AGENDA
1:00 p.m. Wednesday December 7, 2011
Room 544 Legislative Office Building
Raleigh, North Carolina

1. Call to order
Representative Mike Hager, Presiding
2. Introductory remarks by Cochairs (*5 minutes*)
Representative Mike Hager
Representative Kelly Hastings
3. Adoption of the minutes from the October 6 and November 2, 2011 Committee meetings
4. Remarks from the new State Assistant Secretary for Energy
Jonathan Williams, Assistant Secretary for Energy
Department of Commerce
5. Presentation of the 2010-2011 Petroleum Displacement Program Report
Anne Tazewell, Transportation Program Manager
North Carolina Solar Center
6. Continuation of the discussion of North Carolina's alternative fuels portfolio
Electric Vehicles
Anne Tazewell, Transportation Program Manager
North Carolina Solar Center

Ken Dulaney, Vice President of Engineering
Advanced Energy
7. Presentation on air quality programs implemented by the Division of Air Quality (DAQ) in the Department of Environment and Natural Resources (DENR) and how those programs apply to energy generation and use in the State
Sheila Holman, Director
DAQ, DENR
8. Update on the DENR shale gas study (Section 4, S.L. 2011-276)
Robin Smith, Assistant Secretary for Environment
DENR
9. Committee discussion and announcements
10. Adjourn

December 7, 2011

The third meeting of the Committee was held on Wednesday December 7, 2011 at 1:00 p.m. in Room 544 of the Legislative Office Building. Representative Mike Hager presided.

The Committee heard remarks from Jonathan Williams, the newly appointed Assistant Secretary for Energy in the Department of Commerce (DOC) who commenced in the role on November 1, 2011. Mr. Williams explained that many of the energy programs in DOC are federally funded, much due to the American Reinvestment and Recovery Act. Mr. Williams explained his vision for the Energy Division to make North Carolina a leader in the energy economy.

Substituting for Ms. Anne Tazewell, Ms. [Marcy Bauer](#), Clean Transportation Specialist for the North Carolina Solar Center, presented the 2010-2011 Petroleum Displacement Plan (PDP) Program Report. Ms. Bauer explained that the PDP is a statutory program that requires all State agencies, universities, and community colleges that have State-owned vehicle fleets to develop and implement plans to achieve a 20% reduction or displacement of petroleum products consumed by January 1, 2016 compared to the 2004-2005 baseline. Agencies report annually to the North Carolina Solar Center which then prepares the report for the Energy Division in DOC for submittal to the General Assembly. Ms. Bauer reported that total petroleum use in FY 2010-2011 was 21.9 million gallons, which was a reduction of 4.2 million gallons or 16% reduction from the baseline. Contributing to the reduction of petroleum use were increased use of E10 fuels and biofuels; reduced mileage; and increased fuel efficiency. Ms. Bauer identified tools to increase conservation and efficiency and made recommendations for the future of the Program.

The Committee then returned to its previous discussion of alternative fuels with two presentations on electric vehicles (EVs) and associated infrastructure. Ms. [Anne Tazewell](#), Transportation Program Manager for the North Carolina Solar Center provided an overview of electric vehicles. Ms. Tazewell explained that electric vehicles are more efficient than internal combustion engines (33% fuel energy lost in emissions) with zero tailpipe emissions. Ms. Tazewell listed some of the benefits of electric vehicles to include lower operational costs (\$0.50 - \$0.70 per gallon equivalent and reduced maintenance) and improved air quality. Neighborhood Electric Vehicles, with ranges between 30 and 50 miles per charge, can be deployed to fulfill tasks in urban centers and campuses. Plug-In Hybrid Electric Vehicles (PHEVs) extends the performance of the electric hybrids such that the vehicle can run from 10 to 40 miles on electricity alone. Extended Range Electric Vehicles (EREVs), such as the Chevy Volt, is capable of running in an all-electric mode for 40 miles and has a backup gasoline generator to extend the range to more than 300 miles when needed. Battery Electric Vehicles (BEV), such as the Nissan Leaf, operates on a lithium battery alone and provides a range of 70 to 100 miles per charge. Ms. Tazewell reported that trucks and buses that stop and go and idle are excellent applications for electric vehicle technologies. According to a graph created by the Electric Power Research Institute, the projected growth in the EV market share is largely dependent on future oil prices, State and federal incentives, and how vehicle manufacturers respond to new federal fuel economy requirements.

Mr. [Ken Dulaney](#), Vice President of Engineering at Advanced Energy, discussed infrastructure to support PHEVs. Mr. Dulaney described the types of charging stations and related necessary infrastructure. Mr. Dulaney pointed out that there is a need to address planning, codes and standards, policies and incentives, maintenance, training, and education and outreach as more electric vehicles and charging stations are employed. Lastly, Mr.

Dulaney talked about the NC PEV Taskforce that has formed to address barriers to PHEV adoption and the potential for EVs to link to the Smart Grid.

Ms. [Sheila Holman](#), Director of the Division of Air Quality (DAQ) in the Department of Environment and Natural Resources (DENR), presented the State's Air Quality Program and provided information on the role of alternative fuels. Ms. Holman stated that State and federal efforts have resulted in air quality improvements over the last 10 years. Ms. Holman described the federal and State air quality regulations and discussed the State's status in meeting federal air quality standards for the six criteria pollutants. Mobile source emissions are addressed in the State through federal regulation (engine-based, fuel-based, transportation policies), State regulation (vehicle emissions inspection, idle reduction rule), State-incentives (school bus retrofit program, mobile sources emission reduction grant program), and education and outreach programs. Ms. Holman then briefly discussed alternative fuels, the benefits of their use, alternative fuel options, and challenges to their use.

Ms. [Robin Smith](#), Assistant Secretary for Environment in DENR, provided the Committee with an update of the Department's shale gas study. Ms. Smith explained the draft outline of the study and its nine substantive sections to include:

1. Potential oil and gas reserve – generally where is the resource and how much is commercially viable?
2. Processes for oil and gas exploration and extraction with a focus on shale gas extraction.
3. Potential infrastructure impacts.
4. Potential environmental and health impacts.
5. Potential economic impacts, both direct and indirect. Much of this section is being done by the Department of Commerce.
6. Potential social impacts.
7. Proposed regulatory framework.
8. Consumer protection and legal issues (with the assistance of the Office of the Attorney General).
9. Recommendations and limitations.

Ms. Smith stated that she expects the Department to complete the study and submit it to the Environmental Review Commission by May 1, 2012.

AGENDA
1:00 p.m. Wednesday February 8, 2012
Room 544 Legislative Office Building
Raleigh, North Carolina

1. Call to order
Representative Kelly Hastings, Presiding
2. Introductory remarks by Cochairs
Representative Kelly Hastings
Representative Mike Hager
3. Adoption of the minutes from the December 7, 2011 Committee meeting
4. The state of biofuels in North Carolina
Mark Conlon, Vice President of Sector Development
Biofuels Center of North Carolina
5. Discussion of petroleum fuel supply and related infrastructure
Sam Whitehead, Public Affairs Manager
Colonial Pipeline Company
6. Fueling transportation needs with Compressed Natural Gas (CNG)
Ken Valentine, Vice President of Business Development and Technology Services
Piedmont Natural Gas

George Giesler, Owner and President
All Bright Sanitation, Columbus, North Carolina
7. Committee discussion and announcements
8. Adjourn

February 8, 2012

The fourth meeting of the Committee was held on Wednesday February 8, 2012 at 1:00 p.m. in Room 544 of the Legislative Office Building. Representative Kelly Hastings presided.

Mr. [Mark Conlon](#), Vice-President for Sector Development for the Biofuels Center made a presentation on the state of biofuels in North Carolina. Mr. Conlon provided the Committee with information about the Biofuels Center mission and objectives and how those align with State and federal policy. Mr. Conlon reported that while liquid transportation fuels will continue to dominate the transportation sector, biofuels are projected to represent roughly 20% of the nation's transportation fueling demands. Much of the use of biofuels is largely the result of the requirements to meet the renewable fuel standards enacted in the Energy Independence and Security Act of 2007. Mr. Conlon

provided the Committee with gasoline and diesel data for the State for 2000 through 2010 which appears to have remained largely steady over the past 10 years and also explained that the State currently has 13 million gallons of biodiesel capacity with only 2.2 million gallons in production. Mr. Conlon reported that over 95% of the gasoline sold in the State is E10 (10% ethanol), which in 2010 amounted to 400 million gallons of fuel ethanol consumed, while all imported from Midwestern states. Mr. Conlon discussed biofuels demand in light of compatibility with the existing petroleum infrastructure (need to retrofit vehicles with oxygen sensors for using blends with ethanol content of 15% or more) and the location and distribution of biofuels feedstocks.

Mr. [Sam Whitehead](#), Public Affairs Manager for Colonial Pipeline Company, made a presentation on fuel supply and infrastructure. Mr. Whitehead described the Colonial Pipeline (Colonial) distribution system and provided some statistics about Colonial's history, supplies, and ownership. Mr. Whitehead explained that Colonial delivers over 70% of the liquid fuel supply to North Carolina, South Carolina, Georgia, Tennessee, and Virginia and that the south Atlantic states have limited alternatives for supply. Colonial's largest facility is located in Greensboro; the two mainlines (one gasoline and one distillates) empty into Greensboro where products are also distributed to the north. In North Carolina, Colonial has more than 700 miles of pipeline, 92 tanks with almost 8 million barrels total capacity. In 2011, North Carolina was delivered 76.6 million barrels of gasoline and 40.7 million barrels of distillates. Mr. Whitehead explained that Colonial owns no facilities or truck racks, Colonial only has custody of the products while it is in the system. Colonial never owns the product; Colonial's customers decide what product and how much to ship within the bounds of allocation if the customers collectively wish to distribute an amount that is greater volume that is available in five days. Colonial uses an algorithm to determine each customer's allocation within the system. With regard to renewable fuels, Mr. Whitehead explained that while Colonial does not transport ethanol or ethanol blends due to operational and equipment compatibility concerns, the company does incorporate renewable diesel into the distillate stream. Mr. Whitehead also touched on some of the capacity expansions planned for the system, monitoring and leak detection systems, and tools used to protect the pipeline.

Mr. [Ken Valentine](#), Vice President of Business Development and Technology Services for Piedmont Natural Gas (Piedmont), made a presentation on fueling transportation needs with compressed natural gas (CNG). Mr. Valentine reported that the growing difference in prices among fuels is driving interest in natural gas vehicles (NGV) which appears to bear out in the futures market as well. Mr. Valentine echoed previous speakers by stating that increased interest in NGVs is driven by the view that natural gas is a green, low-carbon alternative to traditional petroleum-based fuels. NGVs also have reported reduced maintenance and higher reliability. Mr. Valentine stated that Piedmont is in the midst of converting between one-third and one-half of its vehicle fleet and that Piedmont is interested in the fleet market and then will look to passenger vehicles down the road. North Carolina receives all of its natural gas from out of state via the Transcontinental Gas Pipeline (Transco) which originates in the Gulf of Mexico. In North Carolina, Piedmont has between 1,000 and 2,000 miles of transmission which feed into 10s of thousands of miles of distribution infrastructure. In terms of the existing infrastructure capabilities, Mr. Valentine reported that the system can absorb increasing demand before significant infrastructure spending will be necessary translating into service for 10s of thousands of high-mileage fleet vehicles before impacts to Piedmont's cost structure are realized. Lastly, Mr. Valentine provided statistics on the five existing public and internal CNG fill stations and customer usage.

Mr. [George Giesler](#), Owner and President of All Bright Sanitation in Columbus, North Carolina, made a presentation to the Committee on his decision to convert his business fleet from diesel to CNG. Mr. Giesler stated that as a small business owner, he was experiencing issues with the very volatile petroleum fuels market. Unable to control fuel costs and unable to pass along those costs to his customers, Mr. Giesler decided to invest \$1.7 million to build a compressor, fueling equipment, and convert his fleet of six garbage trucks to run on CNG, rather than diesel fuel. Mr. Giesler stated that he realized a return on his investment in 25 months and has calculated a 60% reduction in his fuel costs, the second-most costly business expense behind wages.

AGENDA
1:00 p.m. Tuesday March 6, 2012
Legislative Building Auditorium
Raleigh, North Carolina

1. Call to order
Representative Mike Hager, Presiding
2. Introductory remarks by Cochairs
Representative Mike Hager
Representative Kelly Hastings
3. Adoption of the minutes from the February 8, 2012 Committee meeting
4. Exxon Mobil's Energy Outlook to 2040
Kyle Countryman, Corporate Strategic Planning – Energy Advisor
Exxon Mobil Corporation
5. Turning oil into salt: how to reduce the strategic importance of oil
Anne Korin, Co-Director of the Institute for the Analysis of Global Security
and Chair of the Set America Free Coalition
6. Committee discussion of recommendations for consideration in the Committee's interim report
7. Adjourn

March 6, 2012

The fifth meeting of the Committee was held on Tuesday March 6, 2012 at 1:00 p.m. in the Auditorium of the Legislative Building. Representative Mike Hager presided.

Mr. [Kyle Countryman](#), Corporate Strategic Planning – Energy Advisor for Exxon Mobil Corporation, presented the Committee with Exxon Mobil's outlook for energy through 2040. Mr. Countryman provided the context for his presentation by explaining how the energy outlook model is prepared and listed a few of the many variables included in the model. Mr. Countryman explained that the energy outlook is an important foundation for Exxon Mobil's business investments of between \$30 and \$35 billion a year. Global progress (as measured by population growth and gross domestic product (GDP) by the model) drives energy demand. For the countries in the Organization of Economic Cooperation Development (OECD), energy demand in 2040 is projected to be relatively flat compared with those countries that are not part of OECD (including China, India, and Africa) whose energy demand is expected to increase by almost 50%. In the United States, electricity demand is projected to increase across all sectors in 2040, but the fuel mix will shift compared with 2012, including increased electricity generation from gas and nuclear, wind, solar, biomass, and other renewables with a significant drop in coal. Mr. Countryman explained that the costs to establish baseload power generation using alternative may decrease if the U.S. establishes a price for carbon emissions.

Regarding transportation fuels, Mr. Countryman reported that by 2040, 90% of global transportation will run on liquid petroleum-based fuels. In the U.S., the light duty vehicle fleet is projected to be made up of approximately 50% hybrid vehicles and the remainder conventional gasoline and diesel, CNG and LPG, and plug-in/electric vehicles. The liquids supply is projected to continue to diversify out to 2040. Mr. Countryman displayed a map showing the source of U.S. gross liquids imports in million barrels per day in daily oil equivalent (MBDOE) and explained that roughly half the domestic liquids demand is met by imports. Lastly, Mr. Countryman displayed a map of the world identifying global gas resources and explained that there is more than 250 years' worth of gas at current demand remaining in the world.

Ms. [Anne Korin](#), Co-Director of the Institute for the Analysis of Global Security, presented the Committee with recommendations for energy independence and turning oil into a "normal" commodity rather than a strategic commodity. Ms. Korin discussed the link between oil and international security concerns and reported that of the conventional oil resources, 80% are controlled by the Organization of Petroleum Exporting Countries (OPEC) which accounts for 36% of the production and supply. Ms. Korin likened oil as a commodity to salt in the past when it was the only means to preserve food and explained that U.S. energy independence would make oil a "normal" commodity like salt. The way to achieve this is to provide for competition among energy commodities because at present, there is no competition to reduce the price of oil. Every attempt to increase U.S. energy security by either increasing domestic supply or reducing demand has resulted in OPEC manipulating the global price of oil. Ms. Korin reported that U.S. imports of foreign oil have decreased over the past several years, while the price of oil has continued to increase.

Ms. Korin stated that there needs to be other energy commodities to compete with oil and let the consumer decide what they want to utilize based on the price and recommended an open fuel standard allow consumers to choose the liquid fuels for their vehicles. An open fuel standard would increase the transportation fuel supply overall and result in pricing equilibrium between oil and other energy fuels. Ms. Korin described how Brazil fared with an open fuel standard in 2008 when oil prices spiked and more people filled their tanks with ethanol from cane sugar than oil.

AGENDA
1:00 p.m. Thursday April 19, 2012
643 Legislative Office Building
Raleigh, North Carolina

April 19, 2012

The sixth meeting of the Committee was held on Thursday April 19, 2012 at 1:00 p.m. in Room 643 of the Legislative Office Building. Representative Kelly Hastings presided.

LEGISLATIVE PROPOSALS

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GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2011

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BILL DRAFT 2011-TAz-24 [v.6] (03/01)

(THIS IS A DRAFT AND IS NOT READY FOR INTRODUCTION)
4/12/2012 4:43:28 PM

Short Title: Establish Alternative Fuels Study Commission.

(Public)

Sponsors: .

Referred to:

1 A BILL TO BE ENTITLED
2 AN ACT TO ESTABLISH THE NORTH CAROLINA COMMISSION ON
3 ALTERNATIVE FUELS TO STUDY THE USE AND APPLICATION OF
4 ALTERNATIVE FUELS FOR NORTH CAROLINA'S TRANSPORTATION
5 SECTOR, AS RECOMMENDED BY THE HOUSE SELECT COMMITTEE
6 ON ENERGY INDEPENDENCE AND ALTERNATIVE FUELS.

7 The General Assembly of North Carolina enacts:

8 SECTION 1. Chapter 113B of the General Statutes is amended by
9 adding a new article to read:

10 "Article 3.

11 "North Carolina Commission on Alternative Fuels.

12 **§ 113B-30. Legislative findings.**

13 The General Assembly finds that:

- 14 (1) Stable, affordable transportation is vital to the economy and
15 security of North Carolina and its citizens.
- 16 (2) It is in the State's best interest to study the development of
17 alternative fuels for the transportation sector that are secure,
18 stable, and predictable.
- 19 (3) Research, development, and commercialization of alternative
20 fuels have the potential for economic growth, job creation, and
21 expanded business opportunities in North Carolina.
- 22 (4) Access to alternative fuels and greater fuel efficiency within the
23 State's transportation sector may both protect North Carolina and

1 its citizens from the volatility of the global oil market and
2 provide reductions in air emissions that harm public health.

3 **§ 113B-31. Definitions.**

4 For purposes of this article, the following definition shall apply:

- 5 (1) 'Alternative fuel' means methanol, denatured ethanol, and other
6 alcohols; mixtures containing eighty-five percent (85%) or more
7 by volume of methanol, denatured ethanol, and other alcohols
8 with gasoline or other fuels; natural gas, including liquid fuels
9 domestically produced from natural gas; liquefied petroleum gas;
10 hydrogen; coal-derived liquid fuels; fuels (other than alcohol)
11 derived from biological materials; electricity (including
12 electricity from solar energy); and any other fuel the North
13 Carolina Commission on Alternative Fuels determines is
14 substantially not petroleum.

15 **§ 113B-32. North Carolina Commission on Alternative Fuels – creation;**
16 **purposes.**

17 (a) The North Carolina Commission on Alternative Fuels is created within
18 the Department of Commerce to study and make recommendations on the use and
19 development of alternative fuels for transportation in the State.

20 (b) The Commission shall serve as the central study and planning body of
21 the State for alternative fuels for the transportation sector and shall communicate
22 and cooperate with federal, State, regional, and local agencies and entities to study
23 and recommend alternative fuels policies for North Carolina.

24 **§ 113B-33. Duties and responsibilities of the North Carolina Commission on**
25 **Alternative Fuels.**

26 (a) The North Carolina Commission on Alternative Fuels shall:

- 27 (1) Conduct an in-depth examination of the State's public- and
28 private-sector use of petroleum-based fuels and alternative fuels
29 for transportation.
30 (2) Review and evaluate existing State laws, practices, and programs
31 pertaining to alternative fuels to determine where efficiencies
32 exist and identify opportunities for inter- and intragency
33 collaboration.
34 (3) Review and evaluate other state's laws, practices, and programs
35 pertaining to alternative fuels to determine the applicability,
36 feasibility, and advisability of implementing such programs for
37 North Carolina.
38 (4) Evaluate opportunities to facilitate the expansion of alternative
39 fuels within the State. This evaluation shall include a short-,
40 mid-, and long-term examination of the following:
41 a. State and local government agencies, including the public
42 schools, expanded use of alternative fuels, the

- 1 infrastructure necessary to support the use of alternative
2 fuels, and the barriers to implementation.
3 b. Commercial fleets expanded use of alternative fuels, the
4 infrastructure necessary to support commercial use of
5 alternative fuels, and the barriers to implementation.
6 c. Residential use of alternative fuels, the infrastructure
7 necessary to support residential use of alternative fuels,
8 and the barriers to implementation.
9 (5) Examine and evaluate financial and other incentives,
10 requirements, programs, and mechanisms that may facilitate the
11 use of alternative fuels in the State.
12 (6) Consider issues related to consumer acceptance and costs
13 associated with use of alternative fuels and identify methods to
14 address or mitigate barriers that may exist to use alternative fuels.
15 (7) Identify funding opportunities to support alternative fuels
16 research and development in the State.
17 (8) Explore any other issues associated with alternative fuels use and
18 related infrastructure that the Commission determines
19 appropriate.

20 (b) The Commission shall report annually to the Joint Legislative
21 Transportation Oversight Committee, the Environmental Review Commission, the
22 House Appropriations Subcommittees on Transportation and Natural and
23 Economic Resources and the Senate Appropriations Subcommittees on
24 Department of Transportation and Natural and Economic Resources and any other
25 legislative body with jurisdiction over energy-related matters no later than
26 December 1 of each year on the activities, findings, and recommendations of the
27 Commission.

28 "**§ 113B-34. Composition of the North Carolina Commission on Alternative**
29 **Fuels; appointments; qualifications; terms; vacancies;**
30 **compensation.**

- 31 (a) Members, appointment. – The North Carolina Commission on
32 Alternative Fuels shall consist of 15 members as follows:
33 (1) One appointed by the Speaker of the House of Representatives
34 who shall have industry experience with biofuels and emerging
35 fuels.
36 (2) One appointed by the Speaker of the House of Representatives
37 who have industry experience with electric vehicles.
38 (3) One appointed by the Speaker of the House of Representatives
39 who shall, at the time of the appointment, conduct research on
40 alternative fuels for transportation and represent a community
41 college or university in the State.

- 1 (4) One appointed by the Speaker of the House of Representatives
2 who shall have industry experience with the management of
3 commercial motor fleets.
- 4 (5) One appointed by the Speaker of the House of Representatives
5 who shall have industry experience with the infrastructure
6 necessary to support the use of alternative fuels for transportation
7 including, but not limited to fueling stations and pipeline
8 systems.
- 9 (6) One appointed by the Speaker of the House of Representatives
10 who shall, at the time of the appointment, represent a municipal
11 or county government.
- 12 (7) One appointed by the President Pro Tempore of the Senate who
13 shall have industry experience with natural gas (including
14 compressed natural gas and liquefied natural gas) as it is used for
15 transportation.
- 16 (8) One appointed by the President Pro Tempore of the Senate One
17 who shall have industry experience with liquefied propane gas,
18 or autogas, as it is used for transportation.
- 19 (9) One appointed by the President Pro Tempore of the Senate who
20 shall have industry experience with hydrogen, as it is used as a
21 fuel for transportation.
- 22 (10) One appointed by the President Pro Tempore of the Senate who
23 shall have industry experience with the alternative fuel vehicles
24 industry, other than electric vehicles.
- 25 (11) One appointed by the President Pro Tempore of the Senate who
26 shall have experience with State or local government motor fleet
27 management.
- 28 (12) One appointed by the President Pro Tempore of the Senate who
29 shall be an economist with expertise in or familiarity with
30 alternative fuels energy markets.
- 31 (13) The Secretary of Commerce or the Secretary's designee.
- 32 (14) The Secretary of Transportation or the Secretary's designee.
- 33 (15) The Director of the North Carolina Solar Center or the Director's
34 designee.

35 (b) Terms. – The term of office of members of the Commission appointed
36 pursuant to subdivisions (1) through (12) of subsection (a) of this section shall be
37 for three years. A member may be reappointed to any number of successive
38 three-year terms. Upon the expiration of a three-year term, a member shall
39 continue to serve until a successor is appointed and duly qualified. The term of
40 members appointed under subdivisions (1), (4), (7), and (10) of subsection (a) of
41 this section shall expire on June 30 of years evenly divisible by three. The term of
42 members appointed under subdivisions (2), (5), (8), and (11) of subsection (a) of

1 this section shall expire on June 30 of years that precede by one year those years
2 that are evenly divisible by three. The terms of members appointed under
3 subdivisions (3), (6), (9), and (12) of subsection (a) of this section shall expire on
4 June 30 of years that follow by one year those years that are evenly divisible by
5 three.

6 (c) Vacancies. – Members appointed by the Speaker of the House of
7 Representatives and the President Pro Tempore of the Senate shall be made in
8 accordance with G.S. 120-121, and vacancies shall be filled in accordance with
9 G.S. 120-122. In accordance with Section 10 of Article VI of the North Carolina
10 Constitution, a member may continue to serve until a successor is duly appointed.

11 (d) Compensation. – The members of the Commission shall receive per
12 diem and necessary travel and subsistence expenses in accordance with the
13 provisions of G.S. 138-5.

14 **"§ 113B-35. North Carolina Commission on Alternative Fuels – meetings;**
15 **quorum; officer; organization; staff.**

16 (a) Meetings. – The Commission shall meet at the call of the chair, or upon
17 written request of eight members.

18 (b) Quorum. – A majority of the Commission shall constitute a quorum for
19 the transaction of business.

20 (c) Chair. – The Commission shall elect one of its members to serve as
21 Chair. The Chair shall serve two-year terms and may serve any number of terms,
22 but not more than two terms consecutively.

23 (d) Responsibilities of the Chair. – The chair shall guide and coordinate the
24 activities of the Commission in fulfilling its duties set out in this article. The Chair
25 shall report to the General Assembly as provided in subsection (b) of
26 G.S. 113B-33 on the activities of the Commission.

27 (e) Procedure and organization. – The Commission shall determine its
28 organization and procedure in accordance with the provisions of this article. The
29 provisions of the most recent edition of Robert's Rules of Order shall govern any
30 procedural matter for which no other provision has been made.

31 (f) Staff. – All staff support required by the Commission shall be supplied
32 by the Energy Division in the Department of Commerce."

33 **SECTION 2.** This act is effective when it becomes law. The first report
34 required pursuant to subsection (b) of G.S. 113B-33, as enacted by Section 1 of
35 this act, is due December 1, 2012.

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**GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2011**

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BILL DRAFT 2011-TAxz-31 [v.3] (03/01)

**(THIS IS A DRAFT AND IS NOT READY FOR INTRODUCTION)
4/16/2012 7:14:14 AM**

Short Title: NCSU & UNC-C/Alt Fuels Research Funds.

(Public)

Sponsors: .

Referred to:

**A BILL TO BE ENTITLED
AN ACT TO APPROPRIATE FUNDS TO THE BOARD OF GOVERNORS OF
THE UNIVERSITY OF NORTH CAROLINA FOR NORTH CAROLINA
STATE UNIVERSITY AND THE UNIVERSITY OF NORTH CAROLINA
CHARLOTTE TO RESEARCH AND STUDY ALTERNATIVE FUELS FOR
TRANSPORTATION, AS RECOMMENDED BY THE HOUSE SELECT
COMMITTEE ON ENERGY INDEPENDENCE AND ALTERNATIVE
FUELS.**

The General Assembly of North Carolina enacts:

SECTION 1. There is appropriated from the General Fund to the Board of Governors of the University of North Carolina the sum of two hundred and fifty thousand dollars (\$250,000) for the 2012-2013 fiscal year to be allocated to North Carolina State University and the University of North Carolina Charlotte to provide funds to conduct research on alternative fuels for the State's transportation sector.

SECTION 2. This act becomes effective July 1, 2012.

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GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2011

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BILL DRAFT 2011-TAz-23 [v.2] (03/01)

(THIS IS A DRAFT AND IS NOT READY FOR INTRODUCTION)
4/16/2012 12:55:13 PM

Short Title: Amend HOV Lane Exemptions/Alt Fuel Vehicles. (Public)

Sponsors: Representative.

Referred to:

1 A BILL TO BE ENTITLED
2 AN ACT TO AUTHORIZE VEHICLES THAT RUN ON CERTAIN
3 ALTERNATIVE FUELS TO OPERATE IN HIGH OCCUPANCY VEHICLE
4 LANES, AS RECOMMENDED BY THE HOUSE SELECT COMMITTEE
5 ON ENERGY INDEPENDENCE AND ALTERNATIVE FUELS.

6 The General Assembly of North Carolina enacts:

7 SECTION 1. G.S. 20-4.01 reads as rewritten:

8 "§ 20-4.01. Definitions.

9 Unless the context requires otherwise, the following definitions apply
10 throughout this Chapter to the defined words and phrases and their cognates:

11 ...
12 (23a) Hybrid-electric motor vehicle. – A four-wheeled motor vehicle
13 that meets each of the following requirements:

- 14 a. Satisfies the emissions and power criteria identified for
15 'New qualified hybrid motor vehicle' as defined in the
16 Internal Revenue Code at 26 U.S.C. § 30B(d)(3) (2012
17 Edition).
18 b. Is made by a manufacturer primarily for use on public
19 streets, roads, and highways and meets National Highway
20 Traffic Safety Administration Standards included in 49
21 C.F.R. §571.
22 c. Has not been modified from original manufacturer
23 specifications with regard to power train or any manner of
24 powering the vehicle.
25 d. Is powered by an internal combustion or heat engine using
26 consumable fuel and a rechargeable energy storage
27 system. For purposes of this subsection, consumable fuel

1 means any solid, liquid, or gaseous matter which releases
2 energy when consumed by an auxiliary power unit.

3 e. Is rated at not more than 8,500 pounds unloaded gross
4 vehicle weight.

5 f. Has a maximum speed capability of at least 65 miles per
6 hour.

7 (30a) Propane or liquefied propane gas vehicle. – A four-wheeled
8 motor vehicle that meets each of the following requirements:

9 a. Is made by a manufacturer primarily for use on public
10 streets, roads, and highways and meets National Highway
11 Traffic Safety Administration Standards included in 49
12 C.F.R. §571.

13 b. Has not been modified from original manufacturer
14 specifications with regard to power train or any manner of
15 powering the vehicle.

16 c. Is powered by either a dedicated propane or liquefied
17 propane gas engine or a bi-fuel propane or liquefied
18 propane gas engine. For purposes of this subsection,
19 liquefied propane gas has the same meaning as in
20 G.S. 119-54.

21 d. Is rated at not more than 8,500 pounds unloaded gross
22 vehicle weight.

23 e. Has a maximum speed capability of at least 65 miles per
24 hour."

25 **SECTION 2.** G.S. 20-146.2(a) reads as rewritten:

26 "(a) HOV Lanes. – The Department of Transportation may designate one or
27 more travel lanes as high occupancy vehicle (HOV) lanes on streets and highways
28 on the State Highway System and cities may designate one or more travel lanes as
29 high occupancy vehicle (HOV) lanes on streets on the Municipal Street System.
30 HOV lanes shall be reserved for vehicles with a specified number of passengers as
31 determined by the Department of Transportation or the city having jurisdiction
32 over the street or highway. When HOV lanes have been designated, and have been
33 appropriately marked with signs or other markers, they shall be reserved for
34 privately or publicly operated buses, and automobiles or other vehicles containing
35 the specified number of persons. Where access restrictions are applied on HOV
36 lanes through designated signing and pavement markings, vehicles shall only cross
37 into or out of an HOV lane at designated openings. A motor vehicle shall not
38 travel in a designated HOV lane if the motor vehicle has more than three axles,
39 regardless of the number of occupants. HOV lane restrictions shall not apply to
40 any of the following:

41 (1) Motorcycles.

42 (2) Vehicles designed to transport 15 or more passengers, regardless
43 of the actual number of occupants.

- 1 (3) Emergency vehicles. As used in this subdivision, the term
2 "emergency vehicle" means any law enforcement, fire, police, or
3 other government vehicle, and any public and privately owned
4 ambulance or emergency service vehicle, when responding to an
5 emergency.
- 6 (4) Plug-in electric vehicles as defined in G.S. 20-4.01(28a),
7 regardless of the number of passengers in the vehicle. These
8 vehicles must be able to travel at the posted speed limit while
9 operating in the HOV lane.
- 10 (5) Dedicated natural gas vehicles as defined in G.S. 20-4.01(5a),
11 regardless of the number of passengers in the vehicle. These
12 vehicles must be able to travel at the posted speed limit while
13 operating in the HOV lane.
- 14 (6) Fuel cell electric vehicles as defined in ~~G.S. 29-4.01(12a)~~, G.S.
15 20-4.01(12a), regardless of the number of passengers in the
16 vehicle. These vehicles must be able to travel at the posted speed
17 limit while operating in the HOV lane.
- 18 (7) Hybrid-electric motor vehicles as defined in G.S. 20-4.01(23a),
19 regardless of the number of passengers in the vehicle. These
20 vehicles must be able to travel at the posted speed limit while
21 operating in the HOV lane.
- 22 (8) Propane or liquefied propane gas vehicles as defined in
23 G.S. 20-4.01(30a), regardless of the number of passengers in the
24 vehicle. These vehicles must be able to travel at the posted speed
25 limit while operating in the HOV lane."

26 **SECTION 3.** This act is effective when it becomes law.

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APPENDIX A

COMMITTEE MEMBERSHIP

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