

Energy Policy Council

Low Carbon Transportation Committee Report

November 5, 2010

To: Tim Toben, Energy Policy Council Chair

From: Rodney Locks, Committee Chair

Steven Burke

Kevin Garrison

Introduction

The Energy Policy Council (Council) is charged by statute with developing and recommending a comprehensive long-range state energy policy to achieve maximum effective management and use of present and future sources of energy. Over the past several months the Low Carbon Transportation Committee¹ (Committee) has been meeting with this charge in mind to develop transportation focused recommendations for the full Council's consideration and approval.

During its discussions and development of its recommendations the Committee developed three foundational long-term goals that helped shape our thinking as we considered short-term recommendations for the upcoming legislative session. These goals are as follows:

1. Create more transportation options, better reliability in those options and greater connectivity among them. Such a system will reduce congestion, protect the environment, stimulate economic development, create jobs and further the national interest.
2. Reduce and eliminate the state's reliance on petroleum use by developing a portfolio of energy diversity options and the infrastructure to sustain their uses.
3. Put in place the most effective policies and incentives for North Carolina to be a leader in the use and development of alternative fuels and advanced technology alternatives for transportation.

¹ The EPC Committee members would like to acknowledge the assistance and participation of all of the interested parties and stakeholders who were a valuable part of the Committee's discussion and formulation of the recommendations. A list of the Low Carbon Transportation Committee members can be found in Appendix II.

In furtherance of these three foundational long-term goals we have developed five specific recommendations. Later in the Committee report we have included explanatory language to accompany each of the recommendations listed below:

Recommendation #1: Clean Vehicles Trust Fund

The General Assembly should modify the state motor vehicle registration fee to a variable rate fee schedule (higher fees for lower miles per gallon/higher emission vehicles). The additional revenue generated by this change should be used to provide grant programs and incentive programs for reducing vehicle miles traveled and developing renewable fuels and alternative vehicles infrastructure.

Recommendation #2: “Greening” the State Motor Fleet

The Governor, the General Assembly and state agencies should establish and implement policies to make the state’s motor vehicle fleet a leader in renewable fuels and alternative vehicles by:

- extending the Petroleum Displacement Plan and setting a new reduction mandate by the year 2020;
- requiring that state purchasing contracts be exclusively E-10;
- requiring state agencies to implement policies that will encourage conservation, make expanded use of hybrid electric vehicles and more effectively utilize existing flex fuel vehicles; and
- establishing more North Carolina Department of Transportation renewable fueling sites.

Recommendation #3: Investing in Alternative Transportation Programs

The Governor and the General Assembly should continue to initiate and invest in state transportation programs focused on public transportation, developing renewable fuels and alternative vehicles infrastructure, emissions reductions and creating jobs focused on low carbon transportation options.

Recommendation #4: Strengthening State Policies and Incentives

The General Assembly should establish policies and incentives that will make North Carolina a regional leader in the development of the renewable fuels and alternative vehicle markets, including initially:

- a 30% tax credit for refueling infrastructure;
- a production credit for biodiesel and ethanol production in state; and
- other tax policies as needed.

Recommendation #5: Evaluating North Carolina’s Alternative Transportation Future

The Energy Policy Council should fund an energy study, “North Carolina’s Transportation Fueling Future: Energy Choices and Outcomes”, focused on the transportation sector in North Carolina (draft scope of work for the transportation study is included as Appendix I).

Background

Transportation Choices in North Carolina

North Carolina's transportation sector plays a key role in almost every facet of our daily lives: transporting children to school on buses; moving manufactured goods and products; providing commuting options for the state's workforce; and contributing to our quality of life in a number of other ways. To date, although public transit choices have increased, transportation in North Carolina is primarily a car dependent option powered by petroleum fuel. There are currently 6.5 million licensed drivers in the state. Population forecasts calling for significant increases in North Carolina over the coming decades will equate to a growing number of drivers and vehicles as well.

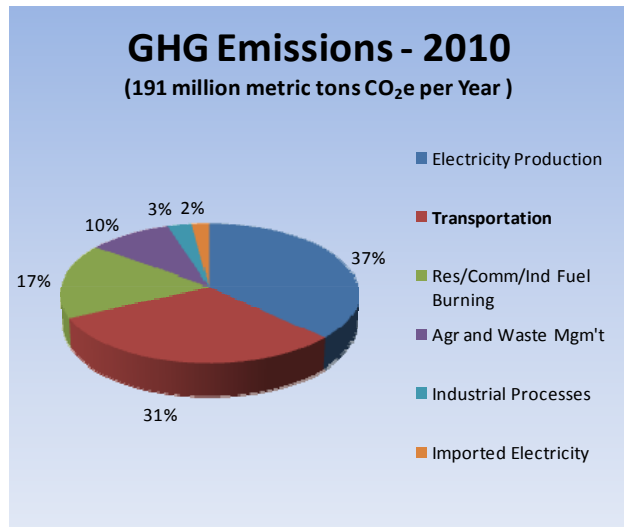
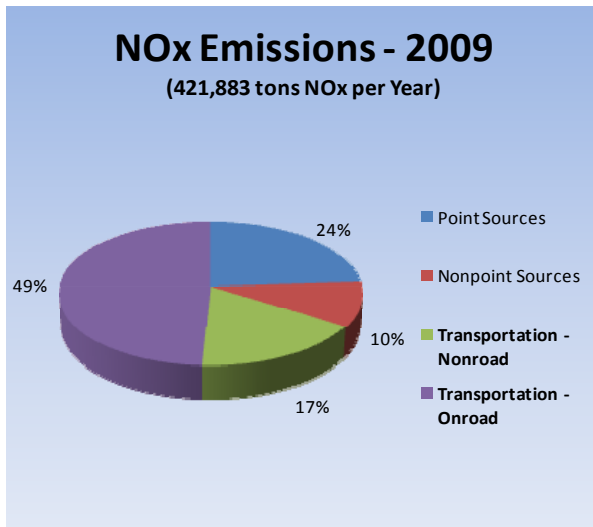
As the number of drivers and vehicles increases in North Carolina the state's reliance on petroleum based fuel is also likely to rise. According to the latest information from the federal Energy Information Administration, North Carolina uses approximately 5.5 billion gallons of petroleum fuels every year. That figure places the state 10th nationally in petroleum consumption.

As demonstrated by the numbers above, North Carolina currently remains almost completely reliant on transportation fuels imported from out of state. In recent years the state has taken initial steps to address that liability. In 2007 North Carolina established a policy goal that by 2017 10% of the state's liquid transportation fuels will be grown and produced in the state. The biofuels industry in North Carolina is still in its infancy, but has several facilities producing biodiesel for in-state consumption and a newly operating ethanol plant in Hoke County capable of producing up to 60 million gallons of fuel per year. A primary barrier to growth in the biofuels industry remains the lack of distribution infrastructure at retail fueling stations throughout the state. While the majority of retail fueling stations now sell E-10, only a small percentage provide consumers with the option of purchasing biodiesel or an E-85 blend.

The growth of the market for usage of alternative vehicles powered by electricity or natural gas also remains a challenge. The primary activity in the alternative vehicle sector is being conducted by the Clean Cities Coalitions and their efforts to green the fleets of municipalities. While market penetration of Plug-in Electric Vehicles (PEV) remains very low, consumer interest in this vehicle option is growing. Much like renewable fuels, a primary barrier to market growth for PEVs is related to the lack of infrastructure. A recent federal grant was awarded to the Triangle Clean Cities Coalition to address this lack of infrastructure. The grant will provide funding for the installation of 80 recharging stations throughout the Triangle.

Air Quality Impacts of the Transportation Sector

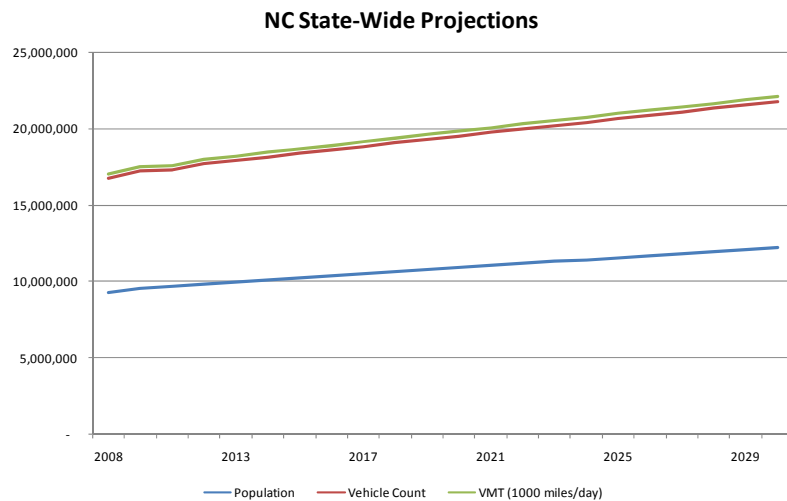
As illustrated by the figures below, emissions from the transportation sector are a significant contributor to air quality concerns in North Carolina. Sources contributing to air pollution include point sources (e.g., power plants, manufacturing plants), non-point sources (e.g., open burning, waste operations), on-road transportation (e.g., vehicles, trucks), and non-road transportation (e.g., construction equipment, marine, aircraft). The following figures illustrate each source category's contribution to NOx and greenhouse gas (GHG) emissions in NC.



According to the state Division of Air Quality the transportation sector contributes about 66% of NC’s NOx emissions and 31% of GHG emissions. GHGs emissions are directly related to the amount and type of fossil fuel burned. Emission reductions of both these air pollutants can be significantly reduced through transportation planning strategies.

In North Carolina, reducing NOx reduces ozone. To comply with federal and state environmental regulations, power plants and other point sources are required to implement air pollution control technologies. Control strategies for new ozone standards will need continued focus on stationary sources. However, since on-road NOx emissions account for roughly half the State’s NOx emissions, additional emphasis needs to be placed on the transportation sector.

Projections of growth in population, vehicle count, and vehicle miles traveled (VMT) indicate that by 2020, demands on the use of the state’s roads will increase by about 30%.



This increased demand, combined with stricter ozone standards, will make reductions from the mobile source sector even more important and will require a comprehensive approach. A multi-faceted strategy will be required to make significant strides in reducing air pollution from the transportation sector. As such, efforts to reduce vehicles miles traveled and to lessen the demand on our state’s roads

will be critical. In addition, a variety of transportation options, including, public transit, renewable fuels, electric and natural gas propelled vehicles will potentially all have a significant role as North Carolina's transportation sector evolves over the coming decades.

Recommendations

Recommendation #1: Clean Vehicles Trust Fund

The General Assembly should modify the state motor vehicle registration fee to a variable rate fee schedule (higher fees for lower miles per gallon/higher emission vehicles). The additional revenue generated by this change should be used to provide grant programs and incentive programs for reducing vehicle miles traveled, and developing renewable fuels and alternative vehicles infrastructure.

North Carolina's transportation sector accounts for a significant percentage (31%) of greenhouse gas emissions and an even higher percentage of NOx emissions (66%). The U.S. Environmental Protection Agency is in the process of tightening the national standards for ozone pollution, of which NOx is a key contributor. Consequently, a larger number of counties in North Carolina may be designated as non-attainment counties. The adverse economic impacts of such a designation would range from a loss of federal funding for highway projects and restrictions on the siting of new manufacturing facilities.

To address the more stringent air quality standards being implemented by EPA North Carolina may have to take a number of actions in all energy sectors. One such action would be to encourage increased usage of less pollution emitting vehicles. A tiered registration fee schedule for motor vehicles would have the benefit of both 1)providing incentives for lower emitting vehicles and 2)generating additional revenue to assist with the development of less polluting alternatives. This concept is similar to past consideration by North Carolina officials of a Clean Air Trust Fund. In this specific instance, the increased revenue would be dedicated to a Clean Vehicles Trust Fund.

Recommendation #2: "Greening" the State Motor Fleet

The Governor, the General Assembly and state agencies should establish and implement policies to make the state's motor vehicle fleet a leader in renewable fuels and alternative vehicles by:

- *extending the Petroleum Displacement Plan and setting a new reduction mandate by the year 2020;*
- *requiring that state purchasing contracts be exclusively E-10; and*
- *requiring state agencies to implement policies that will encourage conservation, make expanded use of hybrid electric vehicles and more effectively utilize existing flex fuel vehicles; and*
- *establishing more North Carolina Department of Transportation renewable fueling sites.*

For more than a decade North Carolina's Department of Transportation has been a national leader in the renewable fuels area through its commitment to the use of biodiesel. North Carolina showed similar commitment to renewable fuels and alternative vehicles in 2005 when the General Assembly required that state agencies meet a 20% reduction or displacement of petroleum usage in their fleet.

However, there is much more that can be done at the state level to demonstrate leadership and to have the state continue its role as first adopter of renewable fuels and alternative vehicles. The 38 state agencies, including universities and community colleges, working towards the petroleum displacement mandate have a fleet of approximately 29,000 vehicles, including 7,000 flex fuel vehicles. Despite the substantial number of flex fuel vehicles in the fleet the opportunity to refuel cars with renewable fuels is limited. Only two of the current 114 DOT refueling sites have E-85 dispensers. Although DOT has announced plans to expand to four additional refueling sites, more must be done to ensure that renewable fuels and other alternative vehicles are utilized within the state fleet. Identifying and correcting inconsistent policies such as the one above will strengthen North Carolina state government's leadership role in this area.

Recommendation #3: Investing in Alternative Transportation Programs

The General Assembly should continue to initiate and invest in state transportation programs focused on public transportation, developing renewable fuels and alternative vehicles infrastructure, emissions reductions and creating jobs focused on low carbon transportation options.

North Carolina is fortunate to have a number of entities working at the intersection of transportation and energy issues; not insignificantly, this fact is a clear reflection of the General Assembly's and other state leaders' commitment to renewable fuels and alternative vehicles.

Among the diverse number of state agencies and non-profits focused on promoting and developing North Carolina's alternative transportation sector are the North Carolina Department of Environment and Natural Resources, the State Energy Office, the Clean Cities Coalition, Advanced Energy and the North Carolina Solar Center. All of these organizations have played a critical role in strengthening the state's alternative transportation sector through funding programs, advocacy and policy development. In recent years, the establishment of the Green Business Fund and the Biofuels Center of North Carolina has provided additional funding for the development and utilization of renewable fuels in North Carolina. It is imperative as the state and nation begin their transition away from petroleum based fuels to renewable fuels and alternative vehicles that the General Assembly maintains its commitment to the funding of these entities.

Recommendation #4: Strengthening State Policies and Incentives

The General Assembly should establish policies that will make North Carolina a regional leader in the development of the renewable fuels and alternative vehicle markets, including initially:

- *a 30% tax credit for refueling infrastructure;*
- *a production credit for biodiesel and ethanol production in state; and*
- *other tax policies as needed.*

In the 2010 legislative session the General Assembly extended a number of existing tax credits for renewable fuel facilities, including credits for construction and dispensing equipment. North Carolina should continue to adopt and extend similar policies to maintain its competitiveness with neighboring

states. One such policy would be the consideration of expanding the state's current fueling infrastructure credit so that it applies to a wider variety of transportation options, such as electric, propane and natural gas vehicles.

North Carolina should also consider enacting policies related to production credits for biodiesel and ethanol. South Carolina has a very attractive per gallon credit for biodiesel producers and Virginia has recently enacted a production credit for ethanol made in its state from native feedstocks. These types of policies will influence companies looking to locate renewable fuel production facilities.

Recommendation #5: Evaluating North Carolina's Alternative Transportation Future

The Energy Policy Council should fund an energy study, "North Carolina's Transportation Fueling Future: Energy Choices and Outcomes", focused on the transportation sector in North Carolina (a draft scope of work for the study is included as Appendix I).

The study would evaluate multiple scenarios of growth in the renewable fuel and alternative vehicles markets and the commensurate impacts of this growth. The study would consider such factors as petroleum reduction, impact on greenhouse gas emissions, and economic development opportunities, including job growth and potential manufacturing related opportunities. Also included in the study would be an analysis of the transportation sector and the potential for growth in the renewable fuel and alternative vehicles markets under existing conditions.

Much like the 2006 La Capra study served as the foundation for the state's renewable energy law the expectation is that this study could serve as the starting point for modifying the state's current transportation/energy policies. The study would also inform the Energy Policy Council's work in future years and ensure that transportation goals are appropriately dovetailed with electric power generation policies.

Conclusion

Addressing energy issues in the transportation sector is a critical component of North Carolina's overall approach to transforming its energy economy from a fossil fuel based one to a low carbon energy economy. The Committee has worked to identify key long-term goals complemented by some short-term recommendations for immediate action.

cc: Jennifer Bumgarner, Assistant Secretary, Department of Commerce

Energy Policy Council members

APPENDIX I

DRAFT: Low Carbon Transportation Committee Study

North Carolina's Transportation Fueling Future: Energy Choices and Outcomes

PROJECT SUMMARY

The North Carolina Energy Policy Council (EPC) seeks proposals to analyze alternatives for future transportation energy.

Information and scenarios gained will provide a foundation for short-term and longer-term policies, programs, commitment, and infrastructure development.

This assessment will yield two key outcomes:

- Credible support for the work of the Energy Policy Council to develop comprehensive energy policy.
- Ensuring that transportation goals and outcomes are appropriately dovetailed with those of electricity and other energy sectors.

The two Scope of Work tasks below are necessarily interrelated and provide a framework for a vendor to address the varied components.

SCOPE OF WORK

Task 1: IMPACTS

Develop an analysis that evaluates eight vehicle scenarios by seven or more factors in three time frames.

VEHICLE SCENARIOS

Based on estimations of on-road private and public vehicles statewide, accounting for expected population growth among other factors:

1. *Status quo*: no measurable movement from petroleum based fuels
2. *Biofuels*: ethanol, biodiesel, and biogasoline or others: small usage increase
3. *Biofuels*: ethanol, biodiesel, and biogasoline or others: substantial usage increase
4. *Natural gas*: small usage increase
5. *Natural gas*: larger usage increase
6. *Electric and battery configurations*: small usage increase
7. *Electric and battery configurations*: larger usage increase
8. *Other possibilities*

FACTORS

1. Environmental, including greenhouse gas reductions and other impacts
2. Public health
3. Petroleum usage
4. Natural gas, electricity, and biofuels requirements, availability, and cost
5. Infrastructure requirements and changes
6. Economic, including job creation, technology, manufacturing, and production
7. State policy, goal, program possibilities
8. Others judged key

TIME FRAMES

1. Short-term: 2015
2. Mid-term: 2020
3. Long term: 2030

Task 2: POTENTIAL

Evaluate the realistic potential for the eight vehicle scenarios in the three time frames, based on these and other appropriate framing factors:

1. Infrastructure requirements and changes
2. Impact of electric vehicles on electricity supply and cost
3. Impact of natural gas vehicles on resource supply and cost
4. Gaining of internal biofuels capacity
5. Consumer attitudes
6. Technology and manufacturing within North Carolina
7. Regulatory and other state frameworks

8. Economic challenges and advantages
9. Other judged key

In completion of this task the vendor shall also:

1. Identify current North Carolina laws, regulations and policies affecting energy transportation policy, including air quality emission reduction grant program and state biofuels goal.
2. Review current state laws, regulations and policies, in particular Southern and mid-Atlantic that can serve offer models or yield information.
3. Identify and recommend necessary related or underlying programs, goals, and policy options in varied areas, including: greenhouse gas reductions, increased usage and production of renewable fuels, increased usage of electric and natural gas vehicles, petroleum reduction, and reduction of vehicle miles traveled.
4. Identify the most effective policies and incentives we would need to put in place for NC to be a leader in transportation technology alternatives to gasoline vehicles.

APPENDIX II

Low Carbon Transportation Committee Membership

Rodney Locks, Chair

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