Comments on the Draft LCGCC Report submitted by Richard Andrews – March 22, 2010

Andrews proposed findings

A recent report by the American Council for an Energy-Efficient Economy found that while North Carolina has already taken steps toward its clean energy future, the potential for greater energy efficiency is significant and can meet nearly a quarter of the state's electricity needs by 2025. By making significant investments in energy efficiency technologies and practices, the state also stands to gain 38,000 net jobs in 2025 compared to its current expected track and save consumers a net $3.6 billion cumulative by 2025 in lower energy and water bills. http://aceee.org/pubs/e102.htm

Findings from UNC-CH report on climate change and North Carolina (The University of North Carolina at Chapel Hill Climate Change Committee Report, ed. Band and Salvesen, 2009): http://www.ie.unc.edu/PDF/Climate_Change_Report.pdf

Climate model forecasts suggest an increase in temperature locally to range from 4-7o F. The rising temperatures will affect energy use, public health, recreation, and even the types of plants that grow in the state.

Increasing temperatures are expected to worsen air quality. Two pollutants of chief concern are ozone and fine particulate matter. Both ozone and fine particulate matter can enter the lungs and cause health problems.

Data from the U.S. Energy Information Administration show that North Carolina currently consumes far higher amounts of electricity per capita than the national average (1100 kwh/month compared to a national average of 800 and 500 in California), and higher even than neighboring southern states such as Florida and Georgia.

The U.S. Energy Information Administration also estimates that households earning less than $10,000 per year pay as much as 18 percent of their income on energy, and those making $10,000 to $25,000 pay as much as 7 percent, whereas higher-income residents pay only an estimated 3 percent. Energy saving actions to reduce carbon emissions could also have significant benefits to low- to moderate income North Carolinians.

North Carolina, once a leader in foresighted coastal management, is now far behind other states like California, Maryland, and Maine, which have been working on sea level rise problems for the past decade. The NC Division of Coastal Management still has no guidance for local land use plans on sea level rise.

In 2004, transportation became the leading energy consuming sector in North Carolina. From 2000 to 2005, vehicle-miles traveled on interstate roads in the state increased 13%. Between 1980 and 2004, transportation became the fastest growing source of greenhouse gas emissions from fossil fuels among all economic sectors. In absolute terms, in 2005 the transportation sector in North Carolina emitted 53.4 million metric tons of carbon dioxide, second only to the electric power sector's 74.7 million metric tons. Since 1980, the residential, commercial, and industrial sectors have decreased their per capita emissions of greenhouse gases, while emissions from transportation activity have increased at a rate of 7.5 percent per decade. In 2005, the average person in the state traveled 25.9 miles per day, with residents of some counties traveling more than 50 miles per day. By mixing land uses, residents can decrease miles traveled and greenhouse gases.

In 2003, North Carolina ranked 46th in terms of efficiency spending per capita. Of its neighbors, only Virginia ranked lower (49th). This means that the state can improve its relative wealth by investing in energy efficiency, gaining for its citizens and corporations the numerous co-benefits of living and doing

business in an energy efficiency state. In contrast, to the extent other states are fashioning and aggressively funding their own energy efficiency programs, North Carolina's economic profile will drift lower in the absence of its own programs.

Full adoption and implementation of the CAPAG's recommendations was estimated to reduce gross GHG emissions by approximately 47%, from 256 million metric tons of carbon dioxide equivalent (MMTCO2e) in the reference case forecast to 137 MMTCO2e by 2020, or within 1% of 1990 levels. Cumulative GHG reductions from 2007-2020 from complete adoption and implementation were estimated to be as high as 828 MMTCO2e. The associated economic analysis (considering both plus and minus costs) indicated significant cost savings for the state's economy over the period 2007-2020. If these findings are confirmed by further analysis, they offer a promising road map for North Carolina not only to reduce the potential costs of climate change impacts, but even to gain net economic benefits by doing so.

A number of other states have already taken aggressive steps to reduce greenhouse gas emissions and mitigate climate change. Maryland, for instance, has set goals of 10% reduction below 2006 levels by 2012 (using a consumption based approach), and will use this to drive early reductions and as a reduction target for the State Action Plan. By 2015, Maryland's plan mandates a 15% reduction below 2006 levels, and 25% below 2006 levels by 2020, to serve as the "minimum" driver for Global Warming Solutions (GWS) legislation. GWS programs will reward over-control, link to implementation of broader regional or national programs, and achieve 90% reductions below 2006 levels by 2050. The plan is consistent with the IPCC recommendations for carbon neutrality and will include a mid-course review every four years.

Findings from U.S. Global Change Research Program, *Global Climate Change Impacts in the U.S.: Southeast* http://www.globalchange.gov/images/cir/region-pdf/SoutheastFactSheet.pdf

The number of very hot days is projected to rise at a greater rate than the average temperature. Under a lower emissions scenario, average temperatures in the region are projected to rise by about 4.5°F by the 2080s, while a higher emissions scenario91 yields about 9°F of average warming (with about a 10.5°F increase in summer, and a much higher heat index).

The intensity of Atlantic hurricanes is likely to increase during this century with higher peak wind speeds, rainfall intensity, and storm surge height and strength. Even with no increase in hurricane intensity, coastal inundation and shoreline retreat would increase as sea-level rise accelerates, which is one of the most certain and most costly consequences of a warming climate.

The warming projected for the Southeast during the next 50 to 100 years will create heat-related stress for people, agricultural crops, livestock, trees, transportation and other infrastructure, fish, and wildlife. The average temperature change is not as important for all of these sectors and natural systems as the projected increase in maximum and minimum temperatures. Examples of potential impacts include increased illness and death due to greater summer heat stress, unless effective adaptation measures are implemented; the reduction in cold-related deaths is not expected to offset the increase in heat-related deaths. Other expected impacts include decline in forest growth and agricultural crop production due to the combined effects of thermal stress and declining soil moisture; increased buckling of pavement and railways; decline in dissolved oxygen in stream, lakes, and shallow aquatic habitats leading to fish kills and loss of aquatic species diversity; decline in production of cattle and other rangeland livestock. Significant impacts on beef cattle occur at continuous temperatures in the 90 to 100°F range, increasing in danger as the humidity level increases. Poultry and swine are primarily raised in indoor operations, so warming would increase energy requirements.

Other effects of the projected increases in temperature include more frequent outbreaks of shellfish-borne diseases in coastal waters, altered distribution of native plants and animals, local loss of many threatened and endangered species, displacement of native species by invasive species, and more frequent and intense wildfires.

Decreased water availability due to increased temperature and longer periods of time between rainfall events, coupled with an increase in societal demand is very likely to affect many sectors of the Southeast's economy.

Increasing evaporation and plant water loss rates alter the balance of runoff and groundwater recharge, which is likely to lead to saltwater intrusion into shallow aquifers in many parts of the Southeast.

An increase in average sea level of up to 2 feet or more and the likelihood of increased hurricane intensity and associated storm surge are likely to be among the most costly consequences of climate change for this region. Current buildings and infrastructure were not designed to withstand the intensity of the projected storm surge, which would cause catastrophic damage. As temperature increases and rainfall patterns change, soil moisture and runoff to the coast are likely to be more variable. The salinity of estuaries, coastal wetlands, and tidal rivers is likely to increase in the southeastern coastal zone, thereby altering coastal ecosystems and displacing them farther inland if no barriers exist.