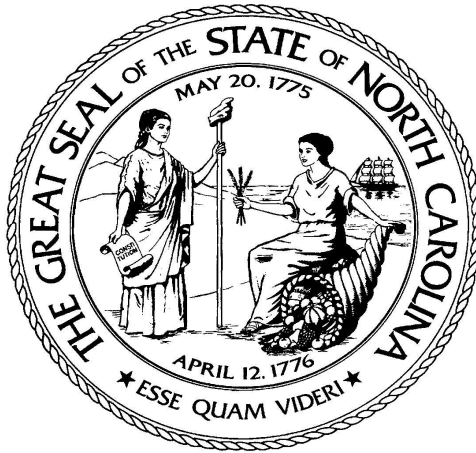


NORTH CAROLINA GENERAL ASSEMBLY



LEGISLATIVE COMMISSION ON GLOBAL CLIMATE CHANGE

FINAL REPORT TO THE GENERAL ASSEMBLY AND THE ENVIRONMENTAL REVIEW COMMISSION

MAY 2010

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TABLE OF CONTENTS

Transmittal Letter.....	5
Preface	7
Introduction	9
Commission Proceedings.....	15
Review of the Science of Climate Change.....	17
Economic Implications of Climate Change.....	19
Potential Impacts of Climate Change on North Carolina.....	21
Actions Taken in North Carolina.....	23
Actions Taken by Other States to Address Climate Change.....	27
Actions Taken Nationally and at the International Level	29
Policy Options to Consider.....	31
Other Elements of the Commission Charge	35
Commission Findings.....	37
Previously Approved Recommendations of the Commission.....	39
Recommendations for Future Consideration.....	41
Legislative Proposals.....	47
<u>Appendixes:</u>	
Appendix A: Authorizing and Extending Legislation.....	49
Appendix B: Commission Membership.....	59
Appendix C: Commission Meeting Agendas (Chronological order)	65
Appendix D: Summary table of CAPAG Recommended Mitigation Options.....	79

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TRANSMITTAL LETTER

TO THE MEMBERS OF THE 2010 GENERAL ASSEMBLY:

Pursuant to Section 11 of S.L. 2005-442, as amended by S.L. 2006-73, S.L. 2008-81, and S.L. 2009-306, the Legislative Commission on Global Climate Change submits this Final Report to the Environmental Review Commission and the 2010 General Assembly.

Representative Pricey Harrison
Co-Chair

Mr. John L.W. Garrou
Co-Chair

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PREFACE

The Legislative Commission on Global Climate Change was established in S.L. 2005-442 to conduct an in-depth study of issues related to global climate change. The authorizing language for the Commission is contained in Appendix A of this report. The Commission consists of 34 members, nine appointed by the President Pro Tempore of the Senate, nine appointed by the Speaker of the House of Representatives, and 16 named members, or their designees, that represent a variety of industries, organizations, and academic institutions. The full Commission membership, including past and current members, is included in Appendix B.

The Commission met on the following occasions:

February 3, 2006

March 7, 2006

April 4, 2006

April 25, 2006

October 3, 2006

November 27, 2006

December 11, 2006

January 12, 2007

February 22, 2007

October 23, 2007

December 4, 2007

January 16, 2008

February 11, 2008

March 5, 2008

April 22, 2008

November 14, 2008

December 9, 2008

January 13, 2009

November 17, 2009

January 13, 2010

March 9, 2010

April 7, 2010

Agendas for each of the Commission meetings are included in Appendix C. Copies of the presentations and handouts that were presented to the Commission are available on the Commission's website at:

<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

A complete record of the Commission's proceedings is available in the Legislative Library.

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INTRODUCTION

Background and Acknowledgments:

The Legislative Commission on Global Climate Change (Commission) was established in S.L. 2005-442 to conduct an in-depth study of issues related to global climate change. The Commission consists of 34 members, nine appointed by the President Pro Tempore of the Senate, nine appointed by the Speaker of the House of Representatives, and 16 named members, or their designees. The membership, listed in Appendix B, is broadly expert and philosophically diverse, including legislators, scientists, economists, attorneys, environmental advocates, and representatives from the energy, agriculture, forestry, and manufacturing sectors.

The Commission met in full 23 times over the course of its existence, starting in February 2006 and ending in May 2010, when this final report was adopted. Meetings were held primarily in the Legislative Office Building in Raleigh. The Commission's work was supported by central staff from the Legislative Services Office, and was greatly assisted by professionals from the Department of Environment and Natural Resources (DENR), the Department of Commerce, the Department of Transportation, the Department of Crime Control and Public Safety, and the Department of Agriculture and Consumer Services. Experts from institutions of higher education located in the State, including Appalachian State University, and Duke University, East Carolina University, North Carolina State University, the University of North Carolina at Asheville, and the University of North Carolina at Chapel Hill were frequently called upon for information and analysis. In addition, national and international experts from a variety of organizations were brought in from around the country to speak to the Commission to help inform its deliberations.

The time committed to this process by the members of the Commission has been significant. Many of the Commission members presented information and issue items to the Commission, provided recommendations for the Commission to consider, and participated in the discussions of the Commission's findings, recommendations, and legislative proposals. The work of the Commission represents the first comprehensive analysis by a legislative body of climate change issues facing North Carolina to date.

The Commission applauds Senator Charles Albertson for being the primary sponsor of the legislation to establish the Commission (Senate Bill 1134, 2005 Session) and appreciates the General Assembly's decision to enact the legislation and support the efforts of the Commission over the past four years. The Commission also appreciates the leadership of its co-chairs, including John Garrou from 2006 to 2010, Representative Joe Hackney from 2006 to 2007, and Representative Pricey Harrison from 2007 to 2010.

Need for State Action:

Since climate change is a global problem, national and international solutions are needed in order to achieve the most significant reductions in greenhouse gas emissions. However, because the

effects of climate change on North Carolina will be significant, the General Assembly should not wait for national or international action before responding to these threats. Moreover, many of steps to reduce greenhouse gas emissions will require state action.

The Commission believes that the actions taken by the states can have a significant effect on global greenhouse gas levels. The important role states can serve in addressing climate change is illustrated by data from the World Resources Institute indicating that the combined emissions of eight southeastern states (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia) are greater than all but four countries in the world.¹

The Commission urges the General Assembly to give serious consideration to the findings and recommendations included in this report and to act quickly with regard to the legislative proposals. The Commission hopes that other institutions and agencies involved in climate change deliberations in North Carolina, whether legislative or executive, find the information in the report instructive and useful.

Commission Charge:

The original enabling legislation for the Commission, S.L. 2005-442, provided the Commission with the following purposes and duties:

- (1) *The Commission shall conduct an in depth examination of issues related to global climate change. This examination shall include all of the following:*
 - a. *A review of current scientific literature on the possible natural and anthropogenic causes of global climate change.*
 - b. *A review of actions taken by the federal government and by other states to address global warming.*
 - c. *An examination of the emissions of greenhouse gases from within the State and the extent to which reductions in the emissions of these gases in the State, region, nation, and worldwide could be expected to affect global climate change.*
 - d. *An evaluation of the economic opportunities for the State that may result from international, national, and State action to address global climate change and the emerging carbon market.*
 - e. *The potential impacts of global climate change on the citizens, natural resources, and economy of the State, including agriculture, travel and tourism, recreation, coastal real estate, insurance, and other economic sectors.*
 - f. *The costs of any action taken by the State to address global climate change on individuals, individual households, local governments, businesses, educational institutions, agricultural operations, the State government, and other institutions and economic sectors.*

¹ Damassa, T. 2009. Energy by the Numbers (Data Supplement). Washington, DC: World Resources Institute. Available online: <http://www.wri.org/publication/southeast-energy-policy>.

- g. The benefits of any action taken by or within the State or other states and at the national or international levels to address global climate change on individuals, individual households, local governments, businesses, educational institutions, agricultural operations, the State government, and other institutions and economic sectors.*
- (2) If, in the course of its examination, the Commission determines that it would be appropriate and desirable for the State to establish a global warming pollutant reduction goal, the Commission may develop a recommended global warming pollutant reduction goal for the State.*
- (3) In conducting its examination of global climate change, the Commission shall consider and integrate the findings and recommendations of the study of issues related to the development and implementation of standards and plans to control emissions of carbon dioxide required by Section 13 of S.L. 2002-4.*

This charge formed the basis for all of the activities of the Commission. The Commission did not start with a set agenda or any assumptions about climate change. Instead, the Commission attempted to develop a common foundation of information on these topics from which formal recommendations and legislative proposals, if needed, could be developed. To accomplish this task, the Commission proceeded using the following basic framework:

- (1) A thorough review of the science of climate change.
- (2) Discussion of the economic implications of climate change.
- (3) Evaluation of potential impacts of climate change on North Carolina.
- (4) Analysis of actions taken to date in North Carolina.
- (5) Review of actions taken by other states to address climate change.
- (6) Review of actions taken or pending at the international and national level.
- (7) Discussion of policy options to consider in North Carolina.

The activities of the Commission are described in greater detail in the Commission Proceedings section of this report. The agendas from each of the Commission's 23 meetings are listed in Appendix C.

Input from the North Carolina Climate Action Plan Advisory Group (CAPAG):

During the time the Commission was meeting, a parallel process was underway in North Carolina. Section 13 of the 2002 Clean Smokestacks Act (S.L. 2002-4) directed the Division of Air Quality of DENR to "study issues related to the development and implementation of standards and plans to control emissions of carbon dioxide (CO₂) from coal fired generating units and other stationary sources of air pollution" and to "evaluate available control technologies and ...estimate the benefits and costs of alternative strategies to reduce emissions of CO₂." The Division of Air Quality issued its final report pursuant to this study in 2005 and included as one of its recommendations that a public stakeholder process should be started to continue greenhouse gas mitigation planning in the State. Based on this recommendation, DENR embarked on the process of establishing the North Carolina Climate Action Partnership Advisory Group (CAPAG). The CAPAG process culminated with the release of a final report in October 2008 entitled "Recommended Mitigation Options for Controlling Greenhouse Gas Emissions."

The report included a comprehensive analysis of various mitigation options related to climate change, including 56 recommended options that are believed to be the most important for mitigating greenhouse gas emissions in North Carolina.

During the Commission's proceedings, the participants and facilitators in the CAPAG process frequently presented and contributed information to the Commission's discussions. The detail and analysis in the CAPAG report was very beneficial to members of the Commission and the CAPAG recommendations formed the framework for much of the Commission's discussions on policy options. A table of the CAPAG recommendations and actions taken in response to those recommendations is included at Appendix D. The CAPAG final report and many supplemental materials are available online at: <http://www.ncclimatechange.us/capag.cfm>.

Interim report by the Commission:

The Commission prepared a draft interim report in February 2007 that provided a preliminary overview of the activities taken by the Commission. As part of its development of the interim report, the Commission discussed and approved 17 early action recommendations suggested by CAPAG for inclusion in the report. Although the interim report was never submitted to the General Assembly by the Commission, the recommendations that were approved for inclusion in the interim report are included in the Previously Approved Recommendations section of this report.

Development of the Final Report:

Following the Commission's investigational work, the Commission developed a set of findings and conclusions that could be drawn from the information gathered by the Commission. These findings are listed in each section of the Commission proceedings and are also summarized in the Findings section of this report. In addition, the Commission members submitted over 100 possible policy recommendations for the Commission to consider. Following discussion of these items at the March and April 2010 meetings of the Commission, a list of recommendations for future consideration was adopted by the Commission, and several legislative proposals were also developed. The recommendations for future consideration and the legislative proposals are provided at the end of this report.

How to Interpret the Commission's Actions on this Report:

In adopting this final report, Commission members endorsed the need to take actions to reduce greenhouse gas emissions and adapt to changes in North Carolina's climate. However, the issuance of this report does not reflect unanimity among Commission members on the selected findings, recommendations, or legislative proposals. Instead, it simply means that the majority of the Commission members agreed with most of what is contained in the document. If a bill is referenced in the recommendations section of the report, the reference is meant for illustrative purposes only and should not be interpreted as an endorsement of that legislation. Commission members' reservations reflect the complexity of the issues that the Commission faced, including

the time scale involved, the ongoing debates at the international and federal level, and remaining questions about the uncertainty of the science.

Testimony and presentations made before the Commission were from many perspectives, including some disputing the basic premise of climate change and the underlying science on which most climate change projections are based. The information presented to the Commission was not necessarily endorsed by each Commission member, but was again designed to provide for a thorough and full discussion of the issues involved in the climate change debate.

Commission Action on the Findings

The Commission's findings were voted on as a whole set.

Commission Action on the Recommendations for Future Consideration

The recommendations for future consideration were voted on as a whole set. These recommendations include items submitted by Commission members as proposals that have merit as mitigation or adaptation policy alternatives, but lacked sufficient detail, dealt with issues that were already being addressed in another forum, or were sufficiently controversial that they lacked the general support necessary to be considered as a legislative proposal by the Commission.

Commission Action on the Legislative Proposals

The legislative proposals were voted on individually, not as a set. The proposals that received approval of the Commission are included in the Legislative Proposals section of this report.

Difficulty in Quantifying Costs and Benefits

It is important to note that Commission members would have been more comfortable with the recommendations if more specific information regarding the quantifiable costs and benefits had been available. The CAPAG process and some of the presentations received by the Commission provide useful information on the costs and benefits of various policy recommendations, but detailed analysis of each recommendation was not possible given the time and resource constraints on the Commission. Additional analysis of cost issues will be part of the task of the General Assembly in considering the recommendations and the agencies tasked with implementing the recommendations in the report.

Post-Commission Positions by Commission Members

As noted, most Commission members agree with most of what is contained in this report. However, Commission members are free, as they have been throughout the Commission's deliberations, to rely on the testimony of specific presenters and the findings and recommendations that they find most persuasive and credible. Now that the Commission's work is complete, members remain free to express their own opinions on the report's findings, recommendations, and legislative proposals as they are debated in the future in various forums.

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COMMISSION PROCEEDINGS

The Commission conducted a thorough review of climate change issues, including the receipt of over 90 presentations from more than 60 different speakers. In general, the topics that were considered fall within the following categories, each drawn from the Commission's charge:

- Review of the science regarding the causes of climate change.
- Review of the potential impacts of climate change.
- Economic implications and opportunities related to climate change.
- Actions taken in North Carolina.
- Actions taken internationally, at the national level, and by other states.
- Discussion of possible policy options.

These items are discussed in further detail in the following sections:

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REVIEW OF THE SCIENCE REGARDING THE CAUSES OF CLIMATE CHANGE

S.L. 2005-442(1)(a) directed the Commission to conduct a "review of current scientific literature on the possible natural and anthropogenic causes of global climate change." The Commission focused much of its early attention on establishing a base level of understanding of climate change science and the debate over the causes of climate change. The following presentations were focused on developing this background level of understanding on climate change science.

February 3, 2006:

- Introduction to, and discussion of, the state of the science related to global climate change
 - William H. Schlesinger, Dean, Nicholas School of Environmental & Earth Sciences, Duke University, James B. Duke Professor of Biogeochemistry.

March 7, 2006

- Continuation of the discussion of the state of the science related to global climate change
 - Robert C. Balling, Jr., Professor, Department of Geography, Arizona State University
 - Stanley R. Riggs, Distinguished Research Professor, Department of Geology, College of Arts and Sciences, East Carolina University
 - Robert B. Jackson, Jr., Faculty Director, Center on Global Change; Professor of Biology and Environmental Sciences, Duke University
 - Sethu Raman, State Climatologist and Professor of Meteorology, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University

April 2006:

- Discussion of the state of the science related to global climate change
 - David R. Easterling, Chief, Scientific Services Division, National Climatic Data Center, National Oceanic and Atmospheric Administration (NOAA) Asheville, North Carolina
 - Patrick J. Michaels, Research Professor and State Climatologist, Virginia State Climatology Office, University of Virginia, Charlottesville, Virginia
 - William L. Chameides, Chief Scientist, Environmental Defense, New York, New York
 - Michael C. MacCracken, Chief Scientist for Climate Change Programs, Climate Institute, Washington, D.C.

December 11, 2006:

- Perspectives on global climate change from the faith community of North Carolina
 - Michael H. Cogsdale, President, North Carolina Council of Churches and Rector at St. James Episcopal Church in Lenoir, North Carolina

January 16, 2008:

- Preparation for the 11 February 2008 meeting of the Commission: Summary of the "Synthesis Report from Climate Change 2007" prepared by the Intergovernmental Panel on Climate Change (IPCC)
 - Dolores M. "Dee" Eggers, Commission member and Associate Professor, Department of Environmental Studies, University of North Carolina at Asheville

February 11, 2008:

- Presentation on the state of the science on global climate change, what developing countries are doing to address climate change in relation to what the United States and other industrialized countries are doing and should do in this regard, and what the State of North Carolina should do with regard to climate change
 - Dr. Rajendra Pachauri, Chair, Intergovernmental Panel on Climate Change, and Director General, The Energy and Resources Institute

REVIEW OF THE POTENTIAL IMPACTS OF CLIMATE CHANGE

In addition to evaluating the causes of climate change, the Commission evaluated the "potential impacts of global climate change on the citizens, natural resources, and economy of the State, including agriculture, travel and tourism, recreation, coastal real estate, insurance, and other economic sectors." (S.L. 2005-442 (5)(1)(e)). The Commission evaluated this issue as follows:

Global impacts:

January 12, 2007:

- Discussion of the effects of global climate change as they relate to coastal adaptation
 - Discussion of coastal vulnerability to erosion, storm hazards, and potential sea-level rise
 - S. Jeffress Williams, Coastal Marine Geologist, United States Geological Survey, Woods Hole Science Center
 - Presentation of the National Academy of Sciences report Mitigating Shore Erosion along Sheltered Coasts
 - Debra Hernandez, President, Hernandez and Company

January 16, 2008:

- Summary of the "Synthesis Report from Climate Change 2007" prepared by the Intergovernmental Panel on Climate Change (IPCC)
 - Dolores M. "Dee" Eggers, Commission member and Associate Professor, Department of Environmental Studies, University of North Carolina at Asheville

February 11, 2008:

- Presentation on the state of the science on global climate change, what developing countries are doing to address climate change in relation to what the United States and other industrialized countries are doing and should do in this regard, and what the State of North Carolina should do with regard to climate change
 - Dr. Rajendra Pachauri, Chair, Intergovernmental Panel on Climate Change, and Director General, The Energy and Resources Institute

Impacts on North Carolina:

January 12, 2007:

- Discussion of the projected impacts of global climate change on coastal ecosystems in North Carolina
 - Douglas N. Rader, Principal Scientist for Oceans and Estuaries, Environmental Defense

- Discussion of the implications of sea level rise for coastal development policy
 - Courtney T. Hackney, Chair, Coastal Resources Commission
 - Walter Clark, Coastal Community and Policy Specialist, North Carolina Sea Grant

January 16, 2008:

- Presentation of the report: "Measuring the Impacts of Climate Change on North Carolina Coastal Resources" prepared for the National Commission on Energy Policy
 - Christopher F. Dumas, Associate Professor, University of North Carolina at Wilmington
- Presentation of the report: "When it Rains, it Pours: Global Warming and the Rising Frequency of Extreme Precipitation in the United States" prepared by Environment America
 - Travis Madsen, Policy Analyst, Frontier Group, Environment North Carolina

November 14, 2008:

- Discussion of global warming adaptation strategies to conserve fish and wildlife habitats and maintain healthy and genetically diverse wildlife populations
 - Michael R. Bryant, Project Leader, North Carolina Coastal Plain Refuges Complex, Alligator River National Wildlife Refuge
- Presentation on estuarine shoreline erosion and coastal hazards in the changing climate of North Carolina
 - Dr. D. Reide Corbett, Ph.D., Associate Professor and Assistant Chair
 - Dr. J.P. Walsh, Ph.D., Assistant Professor, East Carolina University

December 9, 2008:

- Presentation of the report "North Carolina Coasts in Crisis: A Vision for the Future"
 - Stephen J. Culver, Professor and Department Chairperson
 - David J. Mallinson, Associate Professor, Department of Geological Sciences, East Carolina University

ECONOMIC IMPLICATIONS AND OPPORTUNITIES RELATED TO CLIMATE CHANGE

S.L. 2005-442(5)(1)(d) directed the Commission to evaluate the economic opportunities for the State that may result from “international, national, and state action to address global climate change and the emerging carbon market.” In addition, subdivisions (f) and (g) directed the Commission to evaluate the following:

- "f. The costs of any action taken by the State to address global climate change on individuals, individual households, local governments, businesses, educational institutions, agricultural operations, the State government, and other institutions and economic sectors.
- g. The benefits of any action taken by or within the State or other states and at the national or international levels to address global climate change on individuals, individual households, local governments, businesses, educational institutions, agricultural operations, the State government, and other institutions and economic sectors."

The Commission evaluated these economic implications and opportunities at the following meetings:

April 4, 2006:

- Discussion of activities taken by businesses in the State and the United States to address global climate change
 - Truman T. Semans, Director for Markets and Business Strategy, Pew Center on Global Climate Change, Washington, D.C.
 - Robert L. Kee, Senior Vice President, Document Management, Bank of America, Charlotte, North Carolina
 - William F. Bailey, Principal Consultant, DuPont, Charlotte, North Carolina
 - Thomas Darden, Chief Executive Officer, Cherokee Investment Partners, Raleigh, NC

November 27, 2006:

- Overview of recent reports on the economic impacts of climate change
 - Stern Review Report on the Economics of Climate Change, Her Majesty's Treasury, United Kingdom
 - Impacts on U.S. Energy Expenditures of Increasing Renewable Energy Use, RAND Corporation
 - Tim Toben, Member, Legislative Commission on Global Climate Change and Chief Executive Officer of Carolina Green Energy Corporation

December 11, 2006:

- The investment policy of North Carolina as it relates to global climate change

- Richard H. Moore, State Treasurer, North Carolina

October 23, 2007:

- Presentation of draft preliminary results of a macroeconomic analysis conducted on various climate mitigation options recommended by CAPAG
 - David W. Ponder, Graduate Research Assistant, Department of Political Science/Criminal Justice, College of Arts and Sciences, Appalachian State University

April 22, 2008:

- Presentation of final results of the macroeconomic analysis conducted on various climate mitigation options recommended by Climate Action Plan Advisory Group (CAPAG)
 - David W. Ponder, Graduate Research Assistant, Department of Political Science/Criminal Justice, College of Arts and Sciences, Appalachian State University
- Presentation on the economics of climate change legislation in North Carolina
 - David G. Tuerck, Executive Director, Beacon Hill Institute for Public Policy Research, and Professor and Chairperson, Economics Department, Suffolk University

December 9, 2008:

- Discussion of green jobs in North Carolina
 - Paul J. Quinlan, Director, Economic Research and Development, North Carolina Sustainable Energy Association

ACTIONS TAKEN IN NORTH CAROLINA

The Commission was not acting in isolation in North Carolina. There were a number of prior actions that had already taken place related to climate change and a number of parallel processes currently underway that were looking at similar issues to those being discussed by the Commission. The Commission made efforts to utilize this information and to integrate these efforts.

The Clean Smokestacks Bill of 2002

In 2002, the General Assembly enacted the Clean Smokestacks Bill, officially titled the Air Quality/Electric Utilities Bill (SB 1078), which requires significant emissions reductions from coal-fired power plants in North Carolina. Under the Act, power plants must reduce their nitrogen oxide emissions by 77% in 2009 and sulfur dioxide emissions by 73% in 2013. The Act also directed DENR to study "issues related to the development and implementation of standards and plans to implement programs to control emissions of carbon dioxide from coal-fired generating units and other stationary sources of air pollution." (S.L. 2002-4, Sec. 13).

S.L. 2005-442(5)(3) directed the Commission to "consider and integrate the findings and recommendations" from this study as part of its investigation. The Commission looked at these issues as follows:

February 2, 2006:

- Issues related to the development and implementation of standards and plans to implement programs to control emissions of carbon dioxide from coal-fired generating units and other stationary sources of air pollution (S.L. 2002-4, Sec. 13)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR
- Remarks regarding ongoing efforts by the Department of Environment and Natural Resources (DENR) to control emissions of carbon dioxide and other greenhouse gases
 - William G. Ross, Jr., Secretary of Environment and Natural Resources
- Report on specific activities and plans of the Division of Air Quality of the Department of Environment and Natural Resources to develop and implement standards and plans to control emissions of carbon dioxide and other greenhouse gases
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR

The CAPAG Process

One of the largest and most comprehensive of these approaches was the one taken by the Department of Environment and Natural Resources Climate Action Plan Advisory Group, commonly referred to as CAPAG. The following presentations highlighted some of the interactions between the CAPAG process and the activities of the Commission:

March 7, 2006

- Update on activities of the Department of Environment and Natural Resources (DENR) and the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR

April 4, 2006:

- Update on activities of the Department of Environment and Natural Resources (DENR) and the Climate Action Plan Advisory Group
 - B. Keith Overcash, Director, Division of Air Quality, DENR

April 25, 2006:

- Update on activities of the Department of Environment and Natural Resources (DENR) and the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR
 - Karl Hausker, Senior Advisor, Center for Climate Strategies, Harrisburg, Pennsylvania

October 3, 2006:

- Update on and discussion of activities of the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources
- Next Steps for the Climate Action Plan Advisory Group (CAPAG)
 - Tom Peterson, Executive Director, The Center for Climate Strategies

November 27, 2006:

- Update on activities of the Climate Action Plan Advisory Group (CAPAG) of the Department of Environment and Natural Resources (DENR) to develop and implement standards and plans to control emissions of carbon dioxide and other greenhouse gases
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources

January 12, 2007:

- Update on and discussion of activities and possible recommendations of the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources
 - Tom Peterson, Executive Director, The Center for Climate Strategies

October 23, 2007:

- Report on activities of the Department of Environment and Natural Resources (DENR) to develop and implement standards and plans to control emissions of carbon dioxide and other greenhouse gases:
 - Discussion of recommendations considered by the Climate Action Plan Advisory Group (CAPAG) at its meeting on 16 October 2007
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources

- Tom Peterson, Executive Director, Center for Climate Strategies

January 16, 2008:

- Report on progress in consolidation of the recommendations of the Climate Action Plan Advisory Group (CAPAG)
 - Thomas D. Peterson, President and CEO, Center for Climate Strategies

Climate change-related actions taken by the General Assembly

To be fleshed out in greater detail. (2006 to 2009, including pending legislation of interest)

November 17, 2009:

- Report on legislation related to climate change that was enacted during the 2009 Regular Session or is pending for the 2010 Regular Session
 - Jennifer Mundt, Commission Analyst

Utilities Commission Study of Renewable Energy Portfolio Standards (REPs)

October 3, 2006:

- Update on the study by the Utilities Commission of a renewable energy portfolio standard
 - James Y. Kerr II, Commissioner, North Carolina Utilities Commission
- Report on the proposal by the Public Staff of the North Carolina Utilities Commission to create a public benefits fund
 - Robert Gruber, Executive Director, Public Staff, North Carolina Utilities Commission

January 12, 2007:

- Report on the study by the North Carolina Utilities Commission of a Renewable Energy Portfolio Standard (REPS) for the State of North Carolina and related issues
 - James Y. Kerr II, Commissioner, North Carolina Utilities Commission
 - Sam Watson, Staff Attorney, North Carolina Utilities Commission

Implementation of S.L. 2007-397 and related proceedings by the Utilities Commission

October 23, 2007:

- Discussion of legislation enacted by the 2007 Regular Session of the General Assembly to provide for a renewable energy portfolio standard (REPS) for the State (Promote Renewable Energy/Baseload Generation, S.L. 2007-397 (Senate Bill 3))
 - George F. Givens, Commission Counsel

January 13, 2010:

- Report on the implementation of the North Carolina Renewable Energy and Energy Efficiency Portfolio Standards and subsequent proceedings (S.L. 2007-397; Senate Bill 3)
 - Edward S. Finley, Jr., Chairman, North Carolina Utilities Commission

Energy Policy Council

November 17, 2009:

- Report on the activities and objectives of the Energy Policy Council
 - Tm Toben, Chair, North Carolina Energy Policy Council

Other activities underway in the State

November 17, 2009:

- Report on Progress Energy's plans to retire eleven coal-fired electric generating units in North Carolina by 2017
 - Caroline Choi, Director - Energy Policy & Strategy, Progress Energy
- Report on climate initiatives within the Department of Environment and Natural Resources; Update on the activities of the Interagency Leadership Team with regard to climate change
 - David W. Knight, Assistant Secretary for Natural Resources, DENR

ACTIONS TAKEN BY OTHER STATES, BY THE FEDERAL GOVERNMENT, AND BY INTERNATIONAL BODIES

S.L. 2005-442 (5)(1)(b) directed the Commission to conduct a "review of actions taken by the federal government and by other states to address global warming." The Commission evaluated these activities as follows:

Actions taken by state and local governments

February 3, 2006:

- Report on actions taken by other state and local governmental units in the United States to address global climate change
 - Judith M. Greenwald, Director of Innovative Solutions, Pew Center on Global Climate Change

November 27, 2006:

- Discussion of the Northeast Regional Greenhouse Gas Initiative (RGGI)
 - Franz T. Litz, Climate Change Policy Coordinator, New York State Department of Environmental Conservation

October 3, 2006

- Report on actions taken or under consideration by other states to address global climate change
 - Joshua Bushinsky, State Solutions Fellow, Pew Center on Global Climate Change

October 23, 2007:

- Report on actions taken by other governmental units in the nation related to global climate change during the past year
 - Patrick Hogan, Solutions Fellow, Pew Center on Global Climate Change

January 16, 2008:

- Emissions reduction goals and standards in the state of Maryland
 - George S. "Tad" Aburn Jr., Director, Air and Radiation Management Administration, Maryland Department of the Environment
- Adaptation to the effects of climate change in the state of Maryland
 - Kenneth A. Colburn, Senior Consultant, Center for Climate Strategies
 - Bill Dougherty, Senior Scientist, Center for Climate Strategies

January 13, 2009:

- Presentation of the report "New Climate World: Integrating State and Regional Programs into an Emerging Federal System for Greenhouse Gas Regulation"

- Robert B. McKinstry, Senior Advisor, Center for Climate Strategies
- Presentation of "Greenhouse Gas (GHG) Emission Reductions Between California GHG Standards and Federal Corporate Average Fuel Economy (CAFE) Standards" (S.L. 2008-181, Sec. 6.2)
 - Janice L. Godfrey, Environmental Engineer, Division of Air Quality, DENR

November 17, 2009:

- Report on recent actions taken by state and local governments to address climate change
 - Thomas Peterson, President, Center for Climate Strategies

National actions

December 4, 2007:

- Update on federal activities related to global climate change
 - Timothy Profeta, Director, Nicholas Institute for Environmental Policy Solutions, Duke University

December 9, 2008:

- Brief discussion on anticipated federal actions on energy and climate change
 - Timothy H. Profeta, Director, Nicholas Institute for Environmental Policy Solutions, Duke University

November 17, 2009:

- Report on recent federal actions related to climate change
 - Victor Flatt, Tom & Elizabeth Taft Distinguished Professor of Environmental Law, School of Law, University of North Carolina Chapel Hill

International actions

January 16, 2008:

- Summary of the "Synthesis Report from Climate Change 2007" prepared by the Intergovernmental Panel on Climate Change (IPCC)
 - Dolores M. "Dee" Eggers, Commission member and Associate Professor, Department of Environmental Studies, University of North Carolina at Asheville

February 11, 2008:

- Presentation on the state of the science on global climate change, what developing countries are doing to address climate change in relation to what the United States and other industrialized countries are doing and should do in this regard, and what the State of North Carolina should do with regard to climate change
 - Dr. Rajendra Pachauri, Chair, Intergovernmental Panel on Climate Change, and Director General, The Energy and Resources Institute

January 13, 2010:

- Update on federal and international actions related to climate change, including the activities and outcomes of the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change in Copenhagen, Denmark
 - Victor Flatt, Tom & Elizabeth Taft Distinguished Professor of Environmental Law , School of Law, University of North Carolina Chapel Hill

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DISCUSSION OF POSSIBLE POLICY OPTIONS

The Commission spent a considerable amount of time examining possible policy options that may play a role in helping the State mitigate greenhouse gas emissions, as well as technologies and policies that would help the state adapt and better manage the climate change impacts on the State.

Mitigation Options:

April 25, 2006:

- Discussion of the technology options related to global climate change by sector
 - Transportation sector
 - David L. Greene, Corporate Fellow, Oak Ridge National Laboratory, Knoxville, Tennessee
 - Electricity sector
 - Edward S. Rubin, Director, Center for Energy and Environmental Studies, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, Pennsylvania
 - Construction and building sector
 - Marilyn A. Brown, Interim Director, Engineering Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee
 - Forestry and agriculture sector
 - Dennis W. Hazel, Professor, Forestry and Environmental Outreach Program, North Carolina State University, Raleigh, North Carolina

October 23, 2007

- Technical Working Group Updates and Discussion:
 - Agriculture, Forestry, and Waste
 - Mitchell A. “Mitch” Peele
 - Energy Supply
 - Tim Toben and George T. Everett
 - Residential, Commercial, and Industrial
 - Michael Shore
 - Transportation and Land Use
 - Michael Shore
 - Cross-Cutting Issues
 - Stephen A. Smith
- Next Steps for the Climate Action Plan Advisory Group (CAPAG)
 - Tom Peterson, Executive Director, The Center for Climate Strategies

November 27, 2006:

- Discussion of the options for production and use of biofuels in North Carolina

- Kurt S. Creamer, P.E., Biomass Program Manager, North Carolina Solar Center and Animal and Poultry Waste Management Center, North Carolina State University

December 11, 2006:

- Discussion of the Chicago Climate Exchange's greenhouse gas emission registry and reduction and trading system for greenhouse gases, including a discussion of the benefits to North Carolina agriculture of methane capture offsets at animal operations
 - Michael J. Walsh, Senior Vice President, Chicago Climate Exchange
- Discussion of combined heat and power (CHP) as a method of reducing greenhouse gas emissions and increasing energy efficiency
 - Thomas R. Casten, Founder and Chair, Alliance for Clean Technology and founder and former Chief Executive Officer of Trigen Energy and Primary Energy Ventures
 - Raymond E. DuBose, Director, Energy Services Department, University of North Carolina at Chapel Hill

January 12, 2007:

- Proposed recommendations for inclusion in the Interim Report from members of the Commission
 - Stanley R. Riggs, James H. Stephenson, and Walter Clark
 - Dolores "Dee" Eggers
 - Timothy Profeta
 - Michael Shore

December 4, 2007:

- Discussion of the extent to which carbon offsets may be reliably identified and quantified
 - William L. Chameides, Dean, Nicholas School of the Environment, Duke University
- Discussion of opportunities for, and recommendations related to, carbon offset projects in the agriculture and forestry sectors
 - William C. McDow III, Southern Forest Projects Manager, Environmental Defense
- Presentation and consideration of the recommendations of the Agriculture, Forestry, and Waste Technical Working Group of the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources (DENR)
 - Thomas D. Peterson, President and CEO, Center for Climate Strategies
 - Stephen Roe, Senior Scientist, E.H. Pechan and Associates and Facilitator Agriculture, Forestry, and Waste Management Technical Work Group and Lead Consultant for Emissions Inventory, Center for Climate Strategies
 - Dennis W. Hazel, Assistant Professor and Extension Specialist, Department of Forestry and Environmental Resources, NCSU

- Christopher B. Hopkins, Outreach Associate, Department of Forestry and Environmental Resources NCSU
- M. Paul Sherman, Director of Air Quality and Energy Programs, North Carolina Farm Bureau Federation
- Robert W. Slocum, Jr., Executive Vice President North Carolina Forestry Association

March 5, 2008:

- Presentation of the Recommended Mitigation Options of the Climate Action Plan Advisory Group (CAPAG) (Consolidated format)
 - Thomas D. Peterson, President and CEO, Center for Climate Strategies

April 22, 2008:

- Presentation of the results of the Intergovernmental Panel on Climate Change in the context of creating a greenhouse gas emissions reduction goal for the State of North Carolina
 - Robert B. Jackson, Faculty Director, Center on Global Change, and Professor of Biology and Environmental Sciences, Duke University
- Presentation on electricity technologies in a carbon-constrained world
 - Bryan Hannegan, Vice President of Environment and Generation, Electric Power Research Institute

November 14, 2008:

- Discussion of four key action areas related to climate change (energy efficiency, clean energy, pollution capture, and long-range planning), discussed in the publication “Cornerstones,” issued by the Southern Alliance for Clean Energy
 - John D. Wilson, Research Director, Southern Alliance for Clean Energy

December 9, 2008:

- Discussion of green buildings and green building codes
 - R. Christopher Mathis, President, MC2 Mathis Consulting Company

January 13, 2009:

- Discussion of whether to set a goal to reduce State greenhouse gas emissions
- Discussion of whether to establish energy efficiency standards for buildings constructed with State funds
- Discussion of whether and how to amend the State Building Code in order increase the energy efficiency of buildings constructed or substantially renovated in the State
- Discussion of recycled energy and combined heat and power recommendations
 - Stephen A. Smith, Executive Director, Southern Alliance for Clean Energy

Adaptation options:

March 5, 2008:

- Presentation of options for State and local governments to consider with regard to plans for and adaptation to the impacts of global climate change
 - William E. Holman, Visiting Senior Fellow, Duke University Nicholas Institute for Environment Policy Solutions
- Presentation of the "North Carolina Green Cities Plan" by the Centers for Environmental and Climatic Interaction
 - Mack B. Pearsall, Advisory Board Member, Centers for Environmental and Climatic Interaction

December 9, 2008:

- Discussion of adaptation strategies for rural and conservation lands and waters
 - Sam H. Pearsall, Southeast Regional Manager for Land, Water, and Wildlife, Environmental Defense Fund

January 13, 2009:

- Discussion of adaptation recommendations
 - James H. Stephenson, Policy Director, North Carolina Coastal Federation

Future role and purpose of legislative commission on climate change

January 13, 2009:

- Discussion of whether to establish a permanent global climate change commission and Global Climate Change Advisory Council
 - Dr. Dolores M. Eggers, Assistant Professor, University of North Carolina at Asheville
 - Michael S. Regan, Policy Manager, Environmental Defense Fund

OTHER ELEMENTS OF THE COMMISSION CHARGE

Greenhouse Gas Reduction Goal:

Subsection (2) of S.L. 2005-442 authorized the Commission "to develop a recommended global warming pollutant reduction goal for the State" if the Commission, in the course of its examination "determines that it would be appropriate and desirable for the State to establish a global warming pollutant reduction goal."

The Commission discussed the appropriateness and desirability of setting a pollutant reduction goal at the following meetings:

April 22, 2008:

- Presentation of the results of the Intergovernmental Panel on Climate Change in the context of creating a greenhouse gas emissions reduction goal for the State of North Carolina
 - Robert B. Jackson, Faculty Director, Center on Global Change, and Professor of Biology and Environmental Sciences, Duke University

January 13, 2009:

- Commission discussion of whether to set a goal to reduce State greenhouse gas emissions

The Commission also heard presentations on regional approaches to establishing greenhouse gas emissions reduction goals at the following meetings:

November 27, 2006:

- Discussion of the Northeast Regional Greenhouse Gas Initiative (RGGI)
 - Franz T. Litz, Climate Change Policy Coordinator, New York State Department of Environmental Conservation

January 13, 2009:

- Presentation of the report "New Climate World: Integrating State and Regional Programs into an Emerging Federal System for Greenhouse Gas Regulation"
 - Robert B. McKinstry, Senior Advisor, Center for Climate Strategies

Organization and participation in a regional climate change forum in the Southeast:

Section 6 of S.L. 2005-442 authorized the Commission to "work cooperatively with other state and national governments to organize a forum on global climate change, including its causes, impacts, challenges, and opportunities in the southeastern United States. The Commission may also work

cooperatively with other State agencies with respect to the agencies' areas of responsibilities regarding greenhouse gas emissions and climate change."

The Commission was not directly involved in the organization of a forum on global climate change in the southeast, but actively solicited information on activities taking place in other states in the Southeast and mid-Atlantic region, as follows:

January 16, 2008:

- Emissions reduction goals and standards in the state of Maryland
 - George S. "Tad" Aburn Jr., Director, Air and Radiation Management Administration, Maryland Department of the Environment
- Adaptation to the effects of climate change in the state of Maryland
 - Kenneth A. Colburn, Senior Consultant, Center for Climate Strategies
 - Bill Dougherty, Senior Scientist, Center for Climate Strategies

November 14, 2008:

- Overview of various reports on climate change issued by the National Conference of State Legislators
 - Glen Andersen, Program Principal, National Conference of State Legislators, Environment, Energy, and Transportation Program

November 17, 2009:

- Summary of "Southern Regional Economic Assessment of Climate Policy Options and Review of Economic Studies of Climate Policy" completed for the Southern Governor's Association
 - Thomas Peterson, President, Center for Climate Strategies

In February 2008, the Commission held its business meeting as part of the Emerging Issues Forum entitled: "North Carolina's Energy Futures." The members of the Commission also took part in a number of additional conferences and proceedings related to climate change in the Southeast.

FINDINGS

On February 11, 2008, the Commission met as part of the Emerging Issues Forum entitled "North Carolina's Energy Futures." One of the invited speakers at the Commission was Dr. Rajendra Pachauri, Nobel Prize Winner and former Chairman of the Intergovernmental Panel on Climate Change. Following Dr. Pachauri's presentation, the Commission adopted a resolution acknowledging the following findings:

Finding #1: Climate change is real.

Finding #2: Human activity is a factor in that change.

Finding #3: The Commission should move forward to address the issues faced by the State.

Since that time, the Commission has continued to give serious consideration to its charge and makes the following additional findings:

Findings related to the science of climate change:

Finding #xx:

Findings related to the global impacts of climate change:

Finding #xx:

Findings related to potential impacts of climate change on North Carolina:

Finding #xx:

Findings related to the economic considerations of climate change:

Finding #xx:

Findings related to actions taken by North Carolina to respond to climate change:

Finding # xx:

Findings related to actions taken by other states:

Finding #xx:

Findings related to actions taken at the national and international level:

Finding #xx:

Findings related to current policy options:

Finding #xx:

Findings related to future policy options to consider:

Finding #xx:

Steps to move forward:

Finding #xx:

PREVIOUSLY APPROVED RECOMMENDATIONS

At its February 22, 2007 meeting, the Legislative Commission on Global Climate Change (Commission) adopted the following proposals for inclusion as recommendations in the Commission's Interim Report.

1. CAPAG Residential Commercial and Industrial Mitigation Option 2 (RCI-2): Expand Energy Efficiency Funds.
2. CAPAG Residential Commercial and Industrial Mitigation Option 3 (RCI-3): Energy Efficiency Requirements for Government Buildings, with the addition of reasonable language from Commission member Bob Slocum, North Carolina Forestry Association, who supplied the following two options on 27 February 2007: "Adherence to energy related guidelines in LEED+ or Green Globes standards." OR "For the purposes of determining LEED certification, credit may be awarded for the use of wood-based materials derived from all credible sources, including the Sustainable Forestry Initiative Program, the Canadian Standards Association, the American Tree Farm System and other credible certified sources programs."
3. CAPAG Residential Commercial and Industrial Mitigation Option 4 (RCI-4): Market Transformation and Technology Development Programs.
4. CAPAG Residential Commercial and Industrial Mitigation Option 5 (RCI-5): Improved Appliance and Equipment Efficiency Standards.
5. CAPAG Residential Commercial and Industrial Mitigation Option 6 (RCI-6): Building Energy Codes.
6. CAPAG Residential Commercial and Industrial Mitigation Option 7 (RCI-7): "Beyond Code" Building Design Incentives and Targets, Incorporating Local Building Materials and Advanced Construction.
7. CAPAG Residential Commercial and Industrial Mitigation Option 8 (RCI-8): Education (Consumer, Primary/Secondary, Post-Secondary/Specialist, College and University Programs).
8. CAPAG Residential Commercial and Industrial Mitigation Option 11 (RCI-11) Residential, Commercial, and Industrial Energy and Emissions Technical Assistance and Recommended Measure Implementation.
9. Energy Supply Mitigation Options 3 and 9 (ES-3 and ES-9): Removing Barriers and Providing Incentives to Combined Heat and Power (CHP) and Clean Distributed Generation (DG). Commission Counsel will send a letter to the North Carolina Utilities Commission (NCUC) on behalf of the LCGCC to request that the NCUC study issues

related to interconnection that are barriers to the development of CHP systems. In particular, the LCGCC will request that the NCUC open a docket for the purpose of establishing an interconnection standard for the power interval between 100 kilowatts and the FERC standard (2 megawatts or 20 megawatts, needs clarification).

10. CAPAG Cross Cutting Issues Mitigation Options 1, 2, and 3 (CC-1, CC-2, and CC-3): Greenhouse Gas Inventories and Forecasts (I&F), State Greenhouse Gas Reporting, and State Greenhouse Gas Registry, with inclusion of "possible consequences" in Mitigation Option CC-1 as recommended by Commission member Dr. Stan Riggs.
11. CAPAG Cross Cutting Issues Mitigation Option 4 (CC-4): State Climate Public Education and Outreach.
12. CAPAG Cross Cutting Issues Mitigation Option 5 (CC-5): State Climate Change Adaptation Strategy, with the inclusion of the following three additions:
 - a. Include the State Hazard Mitigation Planning Group (Dr. Boyles).
 - b. Address major storm/critical events (Dr. Riggs).
 - c. Address coastal hazards disclosure (Rep. Harrison).
13. CAPAG Cross Cutting Issues Mitigation Option 6 (CC-6): Options for State Greenhouse Gas Goals or Targets. The Commission will establish a State greenhouse gas emissions goal when the Commission resumes meeting after the 2007 Session of the General Assembly adjourns.
14. The Commission endorses concept of a Renewable Energy Portfolio Standard (REPS) (similar to that described in ES-2) without setting a specific target percentage.
15. Management of Hog Manure proposal made by Commission member Tim Profeta (NC Commission Member Additional Option 8), as modified on motion of Commission member Dr. Riggs that subsidies be provided for lagoon conversion to achieve greenhouse gas reductions. Mr. Profeta provided draft legislation on this proposal.
16. The Commission recommends that legislation be enacted to change net metering regulations to allow more use as proposed by Commission member Dr. Dee Eggers (NC Commission Member Additional Option No. 17). Dr. Eggers provided draft legislation on this proposal.
17. The following statement will be included in the report of the Commission on motion of Commission member Stephen Smith: "The Commission acknowledges that substantial greenhouse gas reductions can be achieved in the transportation sector. The Commission will continue to study ways to achieve these reductions."

RECOMMENDATIONS FOR FUTURE CONSIDERATION

The General Assembly, through a new permanent Commission or through other existing oversight bodies, should consider the following policy alternatives to potentially mitigate climate change impacts, adapt to the changing climate, and seek to provide long-term benefits to the economy and citizens of North Carolina:

Adaptation:

1. The State should develop a comprehensive Climate Change Adaptation Plan (CCAP) that includes the following elements:
 - a. Designation of a single lead agency to coordinate efforts, but includes the full involvement and cooperation by all other State agencies.
 - b. Developed in close coordination with State and federal agencies, commissions, local governments, non-profit organizations, and universities
 - c. Provides opportunities for public involvement.
 - d. Inventories existing federal, State, local programs, and plans that address adaptation to climate change.
 - e. Develops and adopt climate adaptation goals and principles.
 - f. Identifies policy recommendations that will protect the long-term environmental and economic health of the state, and set priorities for adaptation that will minimize adverse impacts of climate change.
 - g. Identifies methods to better coordinate and integrate State natural hazard planning and regulatory programs.
 - h. Conducts an economic analysis to determine the potential costs and benefits of a “status quo” alternative and of implementing recommendations proposed in the CCAP.
 - i. Prioritizes recommendations in the plan based on the certainty of impact, and minimization of adverse impacts to citizens, ecosystems, and local economies.
 - j. Focuses on adaptation needs resulting from sea level rise, as well as changes in rainfall and temperature that could alter traditional industries such as agricultural, forestry, and fishing.
 - k. Should consider impacts to water quantity and water quantity.
 - l. Should evaluate the sufficiency of current funding resources related to adaptation and mitigation.
 - m. Consider whether to establish NC Hazard mitigation fund.
 - n. Pursue federal funding of southeast regional adaptation study.
 - o. Should provide significant opportunities for public outreach and education, including the following:
 - i. Providing maps of sea level rise estimates to local governments, realtors, conservation organization, and the public via NC One Map.
 - ii. DENR and the University system should jointly develop a framework for a publicly available database to make economically and environmentally prudent adaptation decisions (mapping, surveys, inventory, and monitoring stations within the NC coastal zone).

- p. Study possible policy approaches, including, but not limited to:
- i. Consider the findings and recommendations that resulted from the Beach Management Summit, held in March 2009 in Beaufort, North Carolina hosted by the North Carolina Coastal Federation and the UNC Center for the Study of Natural Hazards and Disasters.
 - ii. Increase protection of coastal wetlands and their ability to migrate inland by directing the CRC to prohibit new bulkheads and hard structures in "critical wetland protection areas" or "areas of environmental concern."
 - iii. Consider utilizing the consistency provisions of CAMA and federal Coastal Zone Mgmt Act to help resolve conflicts between existing policies and programs.
 - iv. Require DCM to report annually on the loss of coastal wetlands due to estuarine shoreline hardening and other uses.
 - v. Require applicants for permits to harden the estuarine shoreline outside of areas of environmental concern to mitigate their impacts on wetlands.
 - vi. Direct local governments in the coastal plain to develop plans considering how they will adapt to potential changes in tax revenue based on projected increases in sea level over the next century.
 - vii. Authorize the use of coastal management grants to local governments to plan for and adapt to sea level rise.
 - viii. Mechanisms to promote the use of "living shoreline" management methods on estuarine shorelines, and explore incentives and regulatory changes that would encourage the use of climate-ready erosion control strategies.
 - ix. Direct the NC Albemarle/Pamlico National Estuary Program to review US EPA's proposed "Climate Ready Estuaries" program and plan for and adapt to climate change and sea level rise in its work.
 - x. Evaluate the disclosure of coastal hazards to prospective purchasers of coastal property.

Energy Efficiency and Conservation:

2. Develop and implement more comprehensive lifecycle cost calculations for energy consumption by new buildings than are currently required under State law.
3. Provide additional financial support and incentives for public and private investments in conservation and efficiency.
4. Increase implementation and enforcement of existing policies that promote conservation and efficiency.
5. Continue to invest in job creation through conservation and efficiency programs.

Electricity and Power Generation:

6. Develop a comprehensive permitting system for wind energy facilities. (Senate Bill 1068 (Permitting of Wind Energy Facilities) was introduced during the 2009 Session of the General Assembly).
7. CAPAG Energy Supply Option ES-5: Legislative Changes to address environmental and other factors:
 - a. Evaluate and revise Utilities Commission guiding language for electric utilities to significantly increase their investment in conservation, efficiency, and renewable energy sources.
 - b. Allow utilities to make higher profit from kilowatts saved than kilowatts generated, e.g., through efficiency and conservation programs.
 - c. Consider the inclusion of a carbon adder (see CAPAG ES-5) requiring utilities to consider potential future carbon costs when developing their biennial integrated resource plans (IRPs).
8. Consider the potential benefits, if any, of encouraging or providing incentives for switching from electric to gas appliances, or vice versa, due to differences in delivered efficiency.
9. Simplify considerably the net-metering sign up process and increase the kWh purchase price for energy from renewable sources under that program.
10. Remove remaining barriers for interconnection.
11. Consider prohibiting the construction of new coal-fired power plants that do not capture and sequester carbon dioxide.
12. Consider changes to the State renewable energy portfolio standard (REPS) to allow greater use of combined heat and power (CHP) and energy recycling technologies.
13. CAPAG Energy Supply Options ES-3 and ES-9: Remove the barriers to implementation and permitting of energy recycling.
14. Authorize the sale of thermal energy.
15. Provide additional incentives to encourage demand side management (see CAPAG RCI-1).
16. CAPAG Energy Supply Option ES-7: Public Benefits Fund. Evaluate the potential benefits of a public benefit charge or independent administrator for energy efficiency activities. (House Bill 1050 (NC Saves Energy) was introduced during the 2009 Session of the General Assembly and the Utilities Commission considered a proposal in Docket No. E-100 Sub 120).

Development and Transportation:

17. Consideration of additional CAPAG Transportation and Land Use Options (TLU-1 through TLU-13).
18. Change DOT long-range planning for new road construction and road-widening so it reduces annual vehicle miles traveled and anticipates population densities that can support public transportation.
19. Support a mandate to significantly improve vehicle fuel efficiency in state and local fleets and encourage alternative fuel vehicles, including compressed natural gas vehicles.
20. Continue to promote transportation initiatives that reduce greenhouse gas emissions. Examples include efforts to promote rail use, reduce vehicle miles traveled, and green vehicle purchase incentives.

Building practices and Standards:

21. CAPAG Residential, Commercial, and Industrial Option RCI-6: Require the Building Code Council to adopt the latest published version of the International Building Code, in particular the International Energy Conservation Code (IECC), within six months of its publication.
22. Require new, renovated, and expanded commercial and government buildings to comply with the latest version of the IECC.
23. CAPAG Residential, Commercial, and Industrial Option RCI-7: Consider development of "beyond code" building design incentives and targets, incorporating local building materials and advanced construction.

Greenhouse Gas Reduction Plan and Emissions registry:

24. Adopt a resolution supporting federal legislation on climate change.
25. CAPAG Cross-Cutting Issues Options CC-1, CC-2, and CC-3: Develop greenhouse gas inventory and forecast, reporting, and registry.

Agriculture/Forestry/Offsets:

26. Study feasibility and advisability of establishing carbon offset credits program in State for agriculture and forestry practices.

27. Promote development of soil carbon and forest carbon sequestration opportunities in the State.
28. Support continued implementation of S.L. 2007-523 (Swine Farm Env. Performance Standards), including consideration of the following options:
 - a. increased financial support for the lagoon conversion program
 - b. expansion of the swine farm methane capture pilot program
 - c. Mandatory phase-out of existing lagoons that do not meet environmental performance standards.
29. Evaluate potential uses of biochar and microalgae.
30. Ensure sustainable utilization of biomass, utilizing the comments and recommendations received from the Renewable Energy Committee of the Environmental Management Commission in March 2010.
31. CAPAG Agriculture, Forestry, and Waste Options AFW-11 and AFW-12: Promote policies that decrease GHG emissions associated with solid waste mgt.

Cross-cutting Issues/ Education/Outreach:

32. Encourage additional outreach to provide public education and technical assistance in each category.
33. Make maps, data, and other information related to climate change widely available.
34. Develop training and educational opportunities to improve awareness of climate change impacts, mitigation options, and adaptation measures.

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LEGISLATIVE PROPOSALS

Based on the findings and recommendations listed above, the Legislative Commission on Global Climate Change recommends the following legislative proposals for consideration to the 2010 Session of the General Assembly:

- 1. *The General Assembly should enact a permanent climate commission and separate technical advisory committee.***
 - a. (Legislative proposal #1).
 - b. The new commission, with the assistance of the advisory committee, will continue to evaluate the additional General Policy Recommendations listed above.
 - c. The new commission will receive reports directed below from DENR, the Utilities Commission, the Department of Commerce, and other agencies.
- 2. *The General Assembly should direct the Department of Environment and Natural Resources, with the full participation and assistance of other State agencies, to develop a State climate change adaptation plan.***
 - a. (Legislative proposal #2).
 - b. CAPAG Cross-Cutting Option 2 (CC-5)
 - c. The plan may include an evaluation of the elements listed in adaptation section of the "Recommendations for Future Consideration" listed above.
- 3. *The General Assembly should direct the Utilities Commission to evaluate various mechanisms and programs that could result in further improvements in energy efficiency and conservation, as well as those that reduce carbon emissions.***
 - a. (Legislative proposal #3).
 - b. Could include an evaluation of items #6 -16 in the "Recommendations for Future Consideration" listed above.
- 4. *The General Assembly should direct Department of Commerce, in conjunction with DENR and the Department of Agriculture and Consumer Services to (a) study of carbon offset and carbon sequestration potential in North Carolina; and (b) investigate the feasibility and desirability of establishing a carbon sequestration market place in NC.***
 - a. (Legislative proposal #4).
 - b. Could incorporate "Recommendations for Future Consideration" #26-30 above.
- 5. *The General Assembly should provide funding for improved data collection and monitoring of climate change and its impacts on North Carolina.***
 - a. (Legislative proposal #5).
 - b. \$500,000 appropriation to expand the existing North Carolina Environment and Climate Observing Network (ECONet).
 - c. \$500,000 appropriation to create a coastal adaptation resource mapping and monitoring program (CARMAP) based on the existing framework available in DENR and the UNC System.
 - d. Make information collected under these programs publicly available.

6. *The General Assembly should amend the General Statutes related to State long-term planning and environmental review programs to require consideration of environmental impacts associated with climate change.*

a. (Legislative proposal #6)

- i. Amend the State Environmental Policy Act (SEPA), G.S. 113A-1 et seq., to add consideration of emission of greenhouse gases, climate change, and sea level rise to issues that must be addressed in environmental documents.
- ii. Amend the Coastal Area Management Act (CAMA), G.S. 113A-100 et seq., to require the Coastal Resources Commission, the Division of Coastal Management, and local governments to consider sea level rise when approving land use plans and major CAMA permits.
- iii. Amend G.S. 143-279.8 to direct DENR to evaluate and consider the impacts of climate change and sea level rise when developing its coastal habitat protection plan (CHPP).
- iv. Amend G.S. 62-110.1 to require the utilities in the State to consider the impacts of climate change in their biennial integrated resource plan (IRP) filings.
- v. Direct the Board of Transportation to consider climate change impacts as part of its development and approval of the State Transportation Improvement Program (TIP) Plan.
- vi. Identify and evaluate other areas where the State is involved in long-term planning.

APPENDIX A: AUTHORIZING LEGISLATION

GENERAL ASSEMBLY OF NORTH CAROLINA SESSION 2005

SESSION LAW 2005-442 SENATE BILL 1134

AN ACT TO ESTABLISH THE LEGISLATIVE COMMISSION ON GLOBAL CLIMATE CHANGE; TO DIRECT THE COMMISSION TO STUDY ISSUES RELATED TO GLOBAL WARMING, THE EMERGING CARBON ECONOMY, AND WHETHER IT IS APPROPRIATE AND DESIRABLE FOR THE STATE TO ESTABLISH A GLOBAL WARMING POLLUTANT REDUCTION GOAL; AND, IF THE COMMISSION DETERMINES THAT THE ESTABLISHMENT OF A GOAL IS APPROPRIATE AND DESIRABLE, TO AUTHORIZE THE COMMISSION TO DEVELOP A RECOMMENDED GOAL.

The General Assembly of North Carolina enacts:

SECTION 1. Commission Established; Membership. – The Legislative Commission on Global Climate Change is hereby established. The Commission shall consist of 34 members as follows:

- (1) Nine members appointed by the President Pro Tempore of the Senate.
- (2) Nine members appointed by the Speaker of the House of Representatives.
- (3) The President of Duke Power or the President's designee.
- (4) The President of Progress Energy or the President's designee.
- (5) The President of the North Carolina Citizens for Business and Industry or the President's designee.
- (6) The President of the Manufacturers and Chemical Industry Council of North Carolina or the President's designee.
- (7) The President of the North Carolina Farm Bureau Federation or the President's designee.
- (8) The President of the North Carolina Forestry Association or the President's designee.
- (9) The Southeast Regional Director of Environmental Defense or the Regional Director's designee.
- (10) The Executive Director of the Southern Alliance for Clean Energy or the Executive Director's designee.
- (11) The Executive Director of the North Carolina Coastal Federation or the Executive Director's designee.
- (12) The Executive Director of the North Carolina Conservation Council or the Executive Director's designee.
- (13) The Dean of the Nicholas School of the Environment and Earth Sciences, Duke University, or the Dean's designee.
- (14) The Dean of the College of Agriculture and Life Sciences at North Carolina State University or the Dean's designee.

- (15) The Dean of the School of Agriculture and Environmental Sciences at North Carolina Agricultural and Technical State University or the Dean's designee.
- (16) The Director of the Carolina Environmental Program at the University of North Carolina at Chapel Hill or the Director's designee.
- (17) The Distinguished Research Professor (with expertise in sea level change), Department of Geology at East Carolina University.
- (18) The North Carolina State Climatologist.

SECTION 2. Cochair. – The Commission shall have two cochair, one designated by the President Pro Tempore of the Senate and one designated by the Speaker of the House of Representatives from among their respective appointees. The Commission shall meet upon the call of the cochair.

SECTION 3. Quorum. – A quorum of the Commission shall consist of 18 members.

SECTION 4. Vacancies. – Any vacancy on the Commission shall be filled by the original appointing authority.

SECTION 5. Purpose and Duties. – The Commission shall have the following purposes and duties:

- (1) The Commission shall conduct an in-depth examination of issues related to global climate change. This examination shall include all of the following:
 - a. A review of current scientific literature on the possible natural and anthropogenic causes of global climate change.
 - b. A review of actions taken by the federal government and by other states to address global warming.
 - c. An examination of the emissions of greenhouse gases from within the State and the extent to which reductions in the emissions of these gases in the State, region, nation, and worldwide could be expected to affect global climate change.
 - d. An evaluation of the economic opportunities for the State that may result from international, national, and State action to address global climate change and the emerging carbon market.
 - e. The potential impacts of global climate change on the citizens, natural resources, and economy of the State, including agriculture, travel and tourism, recreation, coastal real estate, insurance, and other economic sectors.
 - f. The costs of any action taken by the State to address global climate change on individuals, individual households, local governments, businesses, educational institutions, agricultural operations, the State government, and other institutions and economic sectors.
 - g. The benefits of any action taken by or within the State or other states and at the national or international levels to address global climate change on individuals, individual households, local governments, businesses, educational institutions, agricultural operations, the State government, and other institutions and economic sectors.
- (2) If, in the course of its examination, the Commission determines that it would be appropriate and desirable for the State to establish a global warming pollutant reduction goal, the Commission may develop a recommended global warming pollutant reduction goal for the State.
- (3) In conducting its examination of global climate change, the Commission shall consider and integrate the findings and recommendations of the study of issues related to the development and implementation of

standards and plans to control emissions of carbon dioxide required by Section 13 of S.L. 2002-4.

- (4) Based on its examination of global climate change, the Commission shall develop findings and recommendations, including any legislative proposals it determines to be appropriate, for consideration by the General Assembly.

SECTION 6. Additional Duties. – The Commission may work cooperatively with other state and national governments to organize a forum on global climate change, including its causes, impacts, challenges, and opportunities in the southeastern United States. The Commission may also work cooperatively with other State agencies with respect to the agencies' areas of responsibilities regarding greenhouse gas emissions and climate change.

SECTION 7. Expenses of Members. – Members of the Commission shall receive per diem, subsistence, and travel allowances in accordance with G.S. 120-3.1, 138-5, or 138-6, as appropriate.

SECTION 8. Staff. – Upon the prior approval of the Legislative Services Commission, the Legislative Services Officer shall assign professional staff to the Commission to aid in its work.

SECTION 9. Consultants. – The Commission may hire consultants to assist with the study as provided in G.S. 120-32.02(b).

SECTION 10. Meetings. – The Commission may meet in the Legislative Building or the Legislative Office Building upon the approval of the Legislative Services Commission.

SECTION 11. Report. – The Commission shall report its findings and recommendations to the General Assembly and the Environmental Review Commission on or before 1 November 2006, at which time the Commission shall terminate.

SECTION 12. Funding. – From funds appropriated to the General Assembly, the Legislative Services Commission shall allocate funds for the purpose of conducting the study provided for in this Part.

SECTION 13. Effective Date. – This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 31st day of August, 2005.

s/ Beverly E. Perdue
President of the Senate

s/ James B. Black
Speaker of the House of Representatives

s/ Michael F. Easley
Governor

Approved 3:15 p.m. this 27th day of September, 2005

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**GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2005**

**SESSION LAW 2006-73
SENATE BILL 1591**

AN ACT TO EXTEND THE LEGISLATIVE COMMISSION ON GLOBAL CLIMATE
CHANGE, AS RECOMMENDED BY THE ENVIRONMENTAL REVIEW
COMMISSION.

The General Assembly of North Carolina enacts:

SECTION 1. Section 11 of S.L. 2005-442 reads as rewritten:

"SECTION 11. Reports. – The Commission shall submit an interim report to the General Assembly and the Environmental Review Commission no later than 15 January 2007 and may submit interim reports at other times at its discretion. The Commission shall submit a final report, including any findings and recommendations, to the General Assembly and the Environmental Review Commission on or before 15 April 2008, at which time the Commission shall terminate."

SECTION 2. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 30th day of June, 2006.

s/ Beverly E. Perdue
President of the Senate

s/ Richard T. Morgan
Speaker Pro Tempore of the House of Representatives

s/ Michael F. Easley
Governor

Approved 3:00 p.m. this 10th day of July, 2006

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**GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2007**

**SESSION LAW 2008-81
HOUSE BILL 2529**

AN ACT TO EXTEND THE LEGISLATIVE COMMISSION ON GLOBAL CLIMATE CHANGE, AS RECOMMENDED BY THE ENVIRONMENTAL REVIEW COMMISSION.

Whereas, the Legislative Commission on Global Climate Change was established by S.L. 2005-442 to conduct an in-depth examination of issues related to global climate change; and

Whereas, the Legislative Commission on Global Climate Change has met regularly since its inception in pursuit of its legislative charge; and

Whereas, the Legislative Commission on Global Climate Change needs additional time to carry out its legislative charge; Now, therefore,

The General Assembly of North Carolina enacts:

SECTION 1. Section 11 of S.L. 2005-442, as amended by S.L. 2006-73, reads as rewritten:

"**SECTION 11.** Reports. – The Commission may submit interim reports at its discretion. The Commission shall submit a final report, including any findings and recommendations, to the 2009 General Assembly and the Environmental Review Commission on or before 1 October 2009, at which time the Commission shall terminate."

SECTION 2. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 2nd day of July, 2008.

s/ Beverly E. Perdue
President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

s/ Michael F. Easley
Governor

Approved 12:03 P.M. this 11th day of July, 2008

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**GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2009**

**SESSION LAW 2009-306
SENATE BILL 835**

AN ACT TO EXTEND THE LEGISLATIVE COMMISSION ON GLOBAL CLIMATE CHANGE.

Whereas, the Legislative Commission on Global Climate Change was established by S.L. 2005-442 to conduct an in-depth examination of issues related to global climate change; and

Whereas, the Legislative Commission on Global Climate Change has met regularly since its inception in pursuit of its legislative charge; and

Whereas, the Legislative Commission on Global Climate Change needs additional time to carry out its legislative charge; Now, therefore,

The General Assembly of North Carolina enacts:

SECTION 1. Section 11 of S.L. 2005-442, as amended by S.L. 2006-73 and S.L. 2008-81, reads as rewritten:

"**SECTION 11.** Reports. – The Commission may submit interim reports at its discretion. The Commission shall submit a final report, including any findings and recommendations, to the General Assembly and the Environmental Review Commission on or before October 1, 2010, at which time the Commission shall terminate."

SECTION 2. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 9th day of July, 2009.

s/ Walter H. Dalton
President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

s/ Beverly E. Perdue
Governor

Approved 5:21 p.m. this 17th day of July, 2009

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APPENDIX B: COMMISSION MEMBERSHIP

Session Law 2005-442, which established the Legislative Commission on Global Climate Change, provides that the Commission shall consist of 34 members. 18 of these members are appointed by the President Pro Tempore of the Senate and the Speaker of the House of Representatives as indicated below. The remaining 16 members are ex officio voting members designated as indicated on the second part of this membership list.

President Pro Tempore of the Senate Appointments²:

John L. W. Garrou, Co-Chair
P. O. Box 5958
Winston-Salem, NC 27113
(336) 245-2500
E-mail: johngarrou@yahoo.com

Senator Charlie Albertson
136 Henry Dunn Picket Road
Beulaville, NC 28518
(910) 298-4923
E-mail: Charlie.Albertson@ncleg.net

Senator Josh Stein
P.O. Box 10382
Raleigh, NC 27605
(919) 715-6400
Josh.Stein@ncleg.net

Senator Jim Jacumin
3690 Miller Bridge Road
Connelly Springs, NC 28612
(828) 397-3723
Jim.Jacumin@ncleg.net

Speaker of the House of Representatives Appointments³:

Representative Pricey Harrison, Co-Chair
P.O. Box 9339
Greensboro, NC 27429
(336) 292-1953
E-mail: Pricey.Harrison@ncleg.net

Representative Lucy Allen
312 North Main Street,
Louisburg, NC 27549
(919) 496-5111
Email: Lucy.Allen@ncleg.net

Representative Becky Carney
P.O. Box 32873
Charlotte, NC 28232
(704) 332-1893
E-mail: Becky.Carney@ncleg.net

Representative Alice Underhill
3910 Country Club Road
New Bern, NC 28562
(252) 633-2270
E-mail: Alice.Underhill@ncleg.net

² Past appointments by the President Pro Tempore of the Senate include: former Senator Janet Cowell (2006-2008) and former Senator Robert Pittenger (2006-2008).

³ Past appointments by the Speaker of the House include: Speaker Joe Hackney who served as Commission Co-Chair from January 2006 to January 2007 and former Representative Wilma Sherrill (2006-2008).

Walter Clark, Deputy Director⁴
Blue Ridge Rural Land Trust
Old Orchard Creek Farm
410 Swansie Shepherd Road
Lansing, NC 28643
(336) 384-2774
oldorchard@skybest.com

Representative W. A. “Winkie” Wilkins
210 Fair Oaks Drive
Roxboro, NC 27574
(336) 599-7336
E-mail: Winkie.Wilkins@ncleg.net

Dr. Dolores “Dee” Eggers
Department of Environmental Studies
CPO#2330
University of North Carolina Asheville
Asheville, NC 28804-8511
(828) 251-6654
E-mail: eggers@unca.edu

Honorable Charles C. Thomas
900 Hendersonville Road
Suite 302
Asheville, NC 28803
(828) 274-4002
Email: charles@thomaswealth.com

Dr. Edward W. Erickson
Professor of Economics
Box 8110, North Carolina State University
Raleigh, NC 27695-8110
(919) 513-2876
E-mail: ed_erickson@ncsu.edu

Thomas F. Cecich
113 Kenneth Ridge Court
Apex, NC 27523
(919) 303-6802
E-mail: tom@tfc-assoc.com

Tim Toben
8300 Pickards Meadow Road
Chapel Hill, NC 27516-4861
(919) 280-1103
E-mail: tobent@bellsouth.net

Robert J. Glaser
1029 Wade Ave.
Raleigh, NC 27605-2167
(919) 828-4421
E-mail: rglaser@ncada.com

Ivan Urlaub
P. O. Box 6465
Raleigh, NC 27628
(919) 832-7601
E-mail: ncseapolicy@mindspring.com

Susan Tompkins
815 Hungerford Place
Charlotte, NC 28207
(704) 375-3276
E-mail: Susantompkins@carolina.rr.com

Ex Officio Members:

The President of Duke Power or the
President's designee

Dr. George T. Everett
Director of Environmental and Legislative Affairs
Duke Power
225 Hillsborough Place, Suite 160
Raleigh, NC 27603
(919) 235-0955
E-mail: gteverett@duke-energy.com

⁴ Walter Clark tendered his resignation from the Commission in 2009.

The President of Progress Energy or the President's Designee

Ms. Caroline Choi
Director – Energy Policy & Strategy
Progress Energy
410 South Wilmington Street, Suite 1505
Raleigh, NC 27601
(919)-546-3775
E-mail: caroline.choi@pgnmail.com

The President of the North Carolina Citizens for Business and Industry or the President's designee⁵

S. Lewis "Lew" Ebert
President and CEO
North Carolina Chamber
701 Corporate Center Dr., Suite 400
Raleigh, NC 27607
(919) 836-1410
E-mail: lebert@nccbi.org

The President of the Manufacturers and Chemical Industry Council of North Carolina or the President's designee

A. Preston Howard, Jr.
President
Manufacturers and Chemical Industry of North Carolina (MCIC)
620 N. West Street, Suite 101
Raleigh, NC 27603
(919) 834-9459
E-mail: preston.howard@mcicnc.org

The President of the North Carolina Farm Bureau Federation or the President's designee

Mitchell A. "Mitch" Peele
Director of Public Policy
North Carolina Farm Bureau Federation
P.O. Box 27766
Raleigh, NC 27611
(919) 788-1004
E-mail: mitch-peelee@ncfb.net

The President of the North Carolina Forestry Association or the President's designee

Robert W. Slocum, Jr.
Executive Vice President
North Carolina Forestry Association
1600 Glenwood Avenue, Suite I
Raleigh, NC 27608
(919) 834-3943
E-mail: rhslocum@ncforestry.org

⁵ Mr. Barry Eveland represented the North Carolina Citizens for Business and Industry from January 2006 through August 2006.

The Southeast Regional Director of Environmental Defense or the Regional Director's designee⁶

Michael S. Regan
Policy Manager, North Carolina Office
Environmental Defense
4000 Westchase Blvd., Suite 510
Raleigh, NC 27607
(919) 881-2917
E-mail: mregan@edf.org

The Executive Director of the Southern Alliance for Clean Energy or the Executive Director's designee

Stephen A. Smith, DVM
Executive Director
Southern Alliance for Clean Energy
29 North Market Street, Suite 604
Asheville, NC 28801
(865)567-7429
E-mail: sasmith@cleanenergy.org

The Executive Director of the North Carolina Coastal Federation or the Executive Director's designee⁷

Todd Miller
Executive Director
North Carolina Coastal Federation
3609 Highway 24 (Ocean)
Newport, NC 28570
(252) 393-8185
E-mail: toddm@nccoast.org

The Executive Director of the North Carolina Conservation Council or the Executive Director's designee⁸

Daniel E. Crawford
Director of Governmental Relations
Conservation Council of North Carolina
112 S. Blount Street
Raleigh, NC 27601
(919) 839-0020
E-mail: dan@conservationcouncilnc.org

The Dean of the Nicholas School of the Environment and Earth Sciences, Duke University, or the Dean's designee⁹

Todd Wooten
Director, Southeast Climate Resource Center
Nicholas Institute for Environmental Policy Solutions
Duke University
Durham, NC 27708
(919) 613-8701
E-mail: tw78@duke.edu

⁶ Michael Shore served as the Environmental Defense designee from January 2006 through January 2009.

⁷ Jim Stephenson served as the designee from the North Carolina Coastal Federation from January 2006 through January 2009.

⁸ Michael Nelson served as the designee from the Conservation Council of North Carolina from January 2006 through January 2009.

⁹ Tim Profeta served as the designee from the Nicholas School of the Environment at Duke University from January 2006 through March 2010.

The Dean of the College of Agriculture and Life Sciences at North Carolina State University or the Dean's designee

Dr. Daniel J. Phaneuf
Associate Professor of Agriculture and Resource Economics
Box 8109
North Carolina State University
Raleigh, NC 27695
(919) 515-4672
E-mail: dan_phaneuf@ncsu.edu

The Dean of the School of Agriculture and Environmental Sciences at North Carolina Agricultural and Technical State University or the Dean's designee

Dr. Godfrey A. Uzochukwu
Professor of Earth and Environmental Sciences
North Carolina Agricultural and Technical State University
261 Carver Hall
Greensboro, NC 27411
(336) 334-7030
E-mail: uzo@ncat.edu

The Director of the Carolina Environmental Program at the University of North Carolina at Chapel Hill or the Director's designee¹⁰

Dr. Richard N. L. "Pete" Andrews
Chair, Department of Public Policy
University of North Carolina at Chapel Hill
202A Abernethy Hall, CB# 3435
Chapel Hill, NC 27599-3435
(919) 843-5011
E-mail: pete_andrews@unc.edu

The Distinguished Research Professor (with expertise in sea level change), Department of Geology at East Carolina University

Dr. Stanley R. Riggs
Distinguished Research Professor
Department of Geology, College of Arts and Sciences
East Carolina University
Room 101, Graham Building
Greenville, NC 27858
(252) 328-6015
E-mail: riggss@ecu.edu

The North Carolina State Climatologist¹¹

Dr. Ryan Boyles
Director and State Climatologist
Research III Building, Centennial Campus
Box 7236, North Carolina State University
Raleigh, NC 27695-7236
(919) 513-2816
Email: ryan_boyles@ncsu.edu

¹⁰ Dr. Doug Crawford-Brown served as the designee from UNC Chapel Hill from January 2006 to December 2007.

¹¹ Dr. Sethu Raman, the State Climatologist from January 2006 through July 1, 2006, served as a member of the Commission.

Commission Staff¹²

Jeff Hudson, Commission Counsel
Jennifer McGinnis, Commission Counsel
Jennifer Mundt, Commission Analyst
Tim Dodge, Commission Counsel
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(919) 733-5775

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2125 Legislative Building
16 West Jones Street
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(919) 733-5649

¹² *George Givens served as Commission Counsel from 2006 to 2009. The Commission Cochairs and Staff would like to thank Mr. Givens and the following people who contributed to the work of the Commission over the course of its investigation: Mary Watson, Genie Clark, Jessica Proctor, and Deladier Miller.*

APPENDIX C: COMMISSION AGENDAS

February 3, 2006

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Introduction to, and discussion of, the state of the science related to global climate change
 - William H. Schlesinger, Dean, Nicholas School of Environmental & Earth Sciences, Duke University, James B. Duke Professor of Biogeochemistry
- Remarks regarding ongoing efforts by the Department of Environment and Natural Resources (DENR) to control emissions of carbon dioxide and other greenhouse gases
 - William G. Ross, Jr., Secretary of Environment and Natural Resources
- Final report on issues related to the development and implementation of standards and plans to implement programs to control emissions of carbon dioxide from coal-fired generating units and other stationary sources of air pollution (S.L. 2002-4, Sec. 13)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR
- Report on specific activities and plans of the Division of Air Quality of the Department of Environment and Natural Resources to develop and implement standards and plans to control emissions of carbon dioxide and other greenhouse gases
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR

March 7, 2006

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Continuation of the discussion of the state of the science related to global climate change
 - Robert C. Balling, Jr., Professor, Department of Geography, Arizona State University
 - Stanley R. Riggs, Distinguished Research Professor, Department of Geology, College of Arts and Sciences, East Carolina University
 - Robert B. Jackson, Jr., Faculty Director, Center on Global Change; Professor of Biology and Environmental Sciences, Duke University
 - Sethu Raman, State Climatologist and Professor of Meteorology, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University
- Update on activities of the Department of Environment and Natural Resources (DENR) and the Climate Action Plan Advisory Group

- Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR

April 4, 2006

Handouts and presentations from the Commission meetings are available online at:

<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Update on activities of the Department of Environment and Natural Resources (DENR) and the Climate Action Plan Advisory Group
 - B. Keith Overcash, Director, Division of Air Quality, DENR
- Discussion of the state of the science related to global climate change
 - David R. Easterling, Chief, Scientific Services Division, National Climatic Data Center, National Oceanic and Atmospheric Administration (NOAA) Asheville, North Carolina
 - Patrick J. Michaels, Research Professor and State Climatologist, Virginia State Climatology Office, University of Virginia, Charlottesville, Virginia
 - William L. Chameides, Chief Scientist, Environmental Defense, New York, New York
 - Michael C. MacCracken, Chief Scientist for Climate Change Programs, Climate Institute, Washington, D.C.
- Discussion of activities taken by businesses in the State and the United States to address global climate change
 - Truman T. Semans, Director for Markets and Business Strategy, Pew Center on Global Climate Change, Washington, D.C.
 - Robert L. Kee, Senior Vice President, Document Management, Bank of America, Charlotte, North Carolina
 - William F. Bailey, Principal Consultant, DuPont, Charlotte, North Carolina
 - Thomas Darden, Chief Executive Officer, Cherokee Investment Partners, Raleigh, NC

April 25, 2006

Handouts and presentations from the Commission meetings are available online at:

<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Discussion of the technology options related to global climate change by sector
 - Transportation sector
 - David L. Greene, Corporate Fellow, Oak Ridge National Laboratory, Knoxville, Tennessee
 - Electricity sector
 - Edward S. Rubin, Director, Center for Energy and Environmental Studies, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, Pennsylvania
 - Construction and building sector

- Marilyn A. Brown, Interim Director, Engineering Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee
- Forestry and agriculture sector
 - Dennis W. Hazel, Professor, Forestry and Environmental Outreach Program, North Carolina State University, Raleigh, North Carolina
- Update on activities of the Department of Environment and Natural Resources (DENR) and the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR
 - Karl Hausker, Senior Advisor, Center for Climate Strategies, Harrisburg, Pennsylvania
- Discussion of the economic implications of climate change policy
 - The costs of climate policy options
 - Joseph E. Aldy, Fellow, Resources for the Future, Washington, D.C.
 - The costs of inaction,
 - John C. Whitehead, Associate Professor, Department of Economics, Appalachian State University, Boone, North Carolina
 - Economic implications for forestry and agriculture (DEFERRED)
 - Brian C. Murray, Director for Economic Analysis, Nicholas Institute for Environmental Policy Solutions, Duke University, Durham, North Carolina
 - Economic questions regarding climate change
 - Margo Thorning, Vice President and Chief Economist, American Council for Capital Formation, Washington, D.C.
 -
 - Costs and benefits of climate policy options (DEFERRED)
 - Karl Hausker, Senior Advisor, Center for Climate Strategies, Harrisburg, Pennsylvania

October 3, 2006

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Report on actions taken or under consideration by other states to address global climate change
 - Joshua Bushinsky, State Solutions Fellow, Pew Center on Global Climate Change
- Update on the study by the Utilities Commission of a renewable energy portfolio standard
 - James Y. Kerr II, Commissioner, North Carolina Utilities Commission

- Report on the proposal by the Public Staff of the North Carolina Utilities Commission to create a public benefits fund
 - Robert Gruber, Executive Director, Public Staff, North Carolina Utilities Commission
- Update on and discussion of activities of the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources
- Technical Working Group Updates and Discussion:
 - Agriculture, Forestry, and Waste
 - Mitchell A. “Mitch” Peele
 - Energy Supply
 - Tim Toben and George T. Everett
 - Residential, Commercial, and Industrial
 - Michael Shore
 - Transportation and Land Use
 - Michael Shore
 - Cross-Cutting Issues
 - Stephen A. Smith
- Next Steps for the Climate Action Plan Advisory Group (CAPAG)
 - Tom Peterson, Executive Director, The Center for Climate Strategies

November 27, 2006

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Update on activities of the Climate Action Plan Advisory Group (CAPAG) of the Department of Environment and Natural Resources (DENR) to develop and implement standards and plans to control emissions of carbon dioxide and other greenhouse gases
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources
- Discussion of the Northeast Regional Greenhouse Gas Initiative (RGGI)
 - Franz T. Litz, Climate Change Policy Coordinator, New York State Department of Environmental Conservation
- Discussion of the options for production and use of biofuels in North Carolina
 - Kurt S. Creamer, P.E., Biomass Program Manager, North Carolina Solar Center and Animal and Poultry Waste Management Center, North Carolina State University

- Overview of recent reports on the economic impacts of climate change
 - Stern Review Report on the Economics of Climate Change, Her Majesty's Treasury, United Kingdom
 - Impacts on U.S. Energy Expenditures of Increasing Renewable Energy Use, RAND Corporation
 - Tim Toben, Member, Legislative Commission on Global Climate Change and Chief Executive Officer of Carolina Green Energy Corporation

December 11, 2006

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- The investment policy of North Carolina as it relates to global climate change
 - Richard H. Moore, State Treasurer, North Carolina
- Discussion of the Chicago Climate Exchange's greenhouse gas emission registry and reduction and trading system for greenhouse gases, including a discussion of the benefits to North Carolina agriculture of methane capture offsets at animal operations
 - Michael J. Walsh, Senior Vice President, Chicago Climate Exchange
- Discussion of combined heat and power (CHP) as a method of reducing greenhouse gas emissions and increasing energy efficiency
 - Thomas R. Casten, Founder and Chair, Alliance for Clean Technology and founder and former Chief Executive Officer of Trigen Energy and Primary Energy Ventures
 - Raymond E. DuBose, Director, Energy Services Department, University of North Carolina at Chapel Hill
- Perspectives on global climate change from the faith community of North Carolina
 - Michael H. Cogsdale, President, North Carolina Council of Churches and Rector at St. James Episcopal Church in Lenoir, North Carolina

January 12, 2007

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Discussion of the effects of global climate change as they relate to coastal adaptation
 - Discussion of coastal vulnerability to erosion, storm hazards, and potential sea-level rise
 - S. Jeffress Williams, Coastal Marine Geologist, United States Geological Survey, Woods Hole Science Center

- Presentation of the National Academy of Sciences report Mitigating Shore Erosion along Sheltered Coasts
 - Debra Hernandez, President, Hernandez and Company
- Discussion of the projected impacts of global climate change on coastal ecosystems in North Carolina
 - Douglas N. Rader, Principal Scientist for Oceans and Estuaries, Environmental Defense
- Discussion of the implications of sea level rise for coastal development policy
 - Courtney T. Hackney, Chair, Coastal Resources Commission
 - Walter Clark, Coastal Community and Policy Specialist, North Carolina Sea Grant
- Report on the study by the North Carolina Utilities Commission of a Renewable Energy Portfolio Standard (REPS) for the State of North Carolina and related issues
 - James Y. Kerr II, Commissioner, North Carolina Utilities Commission
 - Sam Watson, Staff Attorney, North Carolina Utilities Commission
- Update on and discussion of activities and possible recommendations of the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources
 - Tom Peterson, Executive Director, The Center for Climate Strategies
- Proposed recommendations for inclusion in the Interim Report from members of the Commission
 - Stanley R. Riggs, James H. Stephenson, and Walter Clark
 - Dolores "Dee" Eggers
 - Timothy Profeta
 - Michael Shore

October 23, 2007

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Report on actions taken by other governmental units in the nation related to global climate change during the past year
 - Patrick Hogan, Solutions Fellow, Pew Center on Global Climate Change
- Discussion of legislation enacted by the 2007 Regular Session of the General Assembly to provide for a renewable energy portfolio standard (REPS) for the State (Promote Renewable Energy/Baseload Generation, S.L. 2007-397 (Senate Bill 3))

- George F. Givens, Commission Counsel
- Discussion of recommendations considered by the Climate Action Plan Advisory Group (CAPAG) at its meeting on 16 October 2007
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources
 - Tom Peterson, Executive Director, Center for Climate Strategies
- Presentation of draft preliminary results of a macroeconomic analysis conducted on various climate mitigation options recommended by CAPAG
 - David W. Ponder, Graduate Research Assistant, Department of Political Science/Criminal Justice, College of Arts and Sciences, Appalachian State University

December 4, 2007

Handouts and presentations from the Commission meetings are available online at: <http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Update on federal activities related to global climate change
 - Timothy Profeta, Director, Nicholas Institute for Environmental Policy Solutions, Duke University
- Discussion of the extent to which carbon offsets may be reliably identified and quantified
 - William L. Chameides, Dean, Nicholas School of the Environment, Duke University
- Discussion of opportunities for, and recommendations related to, carbon offset projects in the agriculture and forestry sectors
 - William C. McDow III, Southern Forest Projects Manager, Environmental Defense
- Presentation and consideration of the recommendations of the Agriculture, Forestry, and Waste Technical Working Group of the Climate Action Plan Advisory Group (CAPAG)
 - Brock M. Nicholson, Deputy Director, Division of Air Quality, Department of Environment and Natural Resources (DENR)
 - Thomas D. Peterson, President and CEO, Center for Climate Strategies
 - Stephen Roe, Senior Scientist, E.H. Pechan and Associates and Facilitator Agriculture, Forestry, and Waste Management Technical Work Group and Lead Consultant for Emissions Inventory, Center for Climate Strategies
 - Dennis W. Hazel, Assistant Professor and Extension Specialist, Department of Forestry and Environmental Resources, NCSU
 - Christopher B. Hopkins, Outreach Associate, Department of Forestry and Environmental Resources NCSU
 - M. Paul Sherman, Director of Air Quality and Energy Programs, North Carolina Farm Bureau Federation

- Robert W. Slocum, Jr., Executive Vice President North Carolina Forestry Association

January 16, 2008

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

Discussion of strategies to mitigate and adapt to global climate change

- Emissions reduction goals and standards in the state of Maryland
 - George S. "Tad" Aburn Jr., Director, Air and Radiation Management Administration, Maryland Department of the Environment
- Adaptation to the effects of climate change in the state of Maryland
 - Kenneth A. Colburn, Senior Consultant, Center for Climate Strategies
 - Bill Dougherty, Senior Scientist, Center for Climate Strategies
- Report on progress in consolidation of the recommendations of the Climate Action Plan Advisory Group (CAPAG)
 - Thomas D. Peterson, President and CEO, Center for Climate Strategies
- Presentation of the report: "Measuring the Impacts of Climate Change on North Carolina Coastal Resources" prepared for the National Commission on Energy Policy
 - Christopher F. Dumas, Associate Professor, University of North Carolina at Wilmington
- Presentation of the report: "When it Rains, it Pours: Global Warming and the Rising Frequency of Extreme Precipitation in the United States" prepared by Environment America
 - Travis Madsen, Policy Analyst, Frontier Group, Environment North Carolina
- Preparation for the 11 February 2008 meeting of the Commission: Summary of the "Synthesis Report from Climate Change 2007" prepared by the Intergovernmental Panel on Climate Change (IPCC)
 - Dolores M. "Dee" Eggers, Commission member and Associate Professor, Department of Environmental Studies, University of North Carolina at Asheville

February 11, 2008

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

Presentation on the state of the science on global climate change, what developing countries are doing to address climate change in relation to what the United States and other

industrialized countries are doing and should do in this regard, and what the State of North Carolina should do with regard to climate change

- Introduction of Dr. Pachauri
 - George F. Givens, Commission Counsel
- Presentation
 - Dr. Rajendra Pachauri, Chair, Intergovernmental Panel on Climate Change, and Director General, The Energy and Resources Institute

March 5, 2008

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Presentation of the recommendations of the Climate Action Plan Advisory Group (CAPAG) (Consolidated format)
 - Thomas D. Peterson, President and CEO, Center for Climate Strategies
- Presentation of options for State and local governments to consider with regard to plans for and adaptation to the impacts of global climate change
 - William E. Holman, Visiting Senior Fellow, Duke University Nicholas Institute for Environment Policy Solutions
- Presentation of the "North Carolina Green Cities Plan" by the Centers for Environmental and Climatic Interaction
 - Mack B. Pearsall, Advisory Board Member, Centers for Environmental and Climatic Interaction

April 22, 2008

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Presentation of the results of the Intergovernmental Panel on Climate Change in the context of creating a greenhouse gas emissions reduction goal for the State of North Carolina
 - Robert B. Jackson, Faculty Director, Center on Global Change, and Professor of Biology and Environmental Sciences, Duke University
- Presentation on electricity technologies in a carbon-constrained world
 - Bryan Hannegan, Vice President of Environment and Generation, Electric Power Research Institute
- Presentation of final results of the macroeconomic analysis conducted on various climate mitigation options recommended by Climate Action Plan Advisory Group (CAPAG)

- David W. Ponder, Graduate Research Assistant, Department of Political Science/Criminal Justice, College of Arts and Sciences, Appalachian State University
- Presentation on the economics of climate change legislation in North Carolina
 - David G. Tuerck, Executive Director, Beacon Hill Institute for Public Policy Research, and Professor and Chairperson, Economics Department, Suffolk University

November 14, 2008

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Overview of various reports on climate change issued by the National Conference of State Legislators
 - Glen Andersen, Program Principal, National Conference of State Legislators, Environment, Energy, and Transportation Program
- Discussion of four key action areas related to climate change (energy efficiency, clean energy, pollution capture, and long-range planning), discussed in the publication “Cornerstones,” issued by the Southern Alliance for Clean Energy
 - John D. Wilson, Research Director, Southern Alliance for Clean Energy
- Discussion of global warming adaptation strategies to conserve fish and wildlife habitats and maintain healthy and genetically diverse wildlife populations
 - Michael R. Bryant, Project Leader, North Carolina Coastal Plain Refuges Complex, Alligator River National Wildlife Refuge
- Presentation on estuarine shoreline erosion and coastal hazards in the changing climate of North Carolina
 - Dr. D. Reide Corbett, Ph.D., Associate Professor and Assistant Chair
 - Dr. J.P. Walsh, Ph.D., Assistant Professor, East Carolina University

December 9, 2008

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Discussion of green jobs in North Carolina
 - Paul J. Quinlan, Director, Economic Research and Development, North Carolina Sustainable Energy Association
- Discussion of green buildings and green building codes

- R. Christopher Mathis, President, MC2 Mathis Consulting Company
- Brief discussion on anticipated federal actions on energy and climate change
 - Timothy H. Profeta, Director, Nicholas Institute for Environmental Policy Solutions, Duke University
- Discussion of adaptation strategies for rural and conservation lands and waters
 - Sam H. Pearsall, Southeast Regional Manager for Land, Water, and Wildlife, Environmental Defense Fund
- Presentation of the report "North Carolina Coasts in Crisis: A Vision for the Future"
 - Stephen J. Culver, Professor and Department Chairperson
 - David J. Mallinson, Associate Professor, Department of Geological Sciences, East Carolina University

January 13, 2009

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Presentation of the report "New Climate World: Integrating State and Regional Programs into an Emerging Federal System for Greenhouse Gas Regulation"
 - Robert B. McKinstry, Senior Advisor, Center for Climate Strategies
- Presentation of "Greenhouse Gas (GHG) Emission Reductions Between California GHG Standards and Federal Corporate Average Fuel Economy (CAFE) Standards" (S.L. 2008-181, Sec. 6.2)
 - Janice L. Godfrey, Environmental Engineer, Division of Air Quality, DENR
- Discussion of whether to set a goal to reduce State greenhouse gas emissions
- Discussion of whether to establish a permanent global climate change commission and Global Climate Change Advisory Council
 - Dr. Dolores M. Eggers, Assistant Professor, University of North Carolina at Asheville
 - Michael S. Regan, Policy Manager, Environmental Defense Fund
- Discussion of whether to establish energy efficiency standards for buildings constructed with State funds
- Discussion of whether and how to amend the State Building Code in order increase the energy efficiency of buildings constructed or substantially renovated in the State
- Discussion of adaptation recommendations
 - James H. Stephenson, Policy Director, North Carolina Coastal Federation

- Discussion of recycled energy and combined heat and power recommendations
 - Stephen A. Smith, Executive Director, Southern Alliance for Clean Energy

November 17, 2009

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Report on recent federal actions related to climate change
 - Victor Flatt, Tom & Elizabeth Taft Distinguished Professor of Environmental Law, School of Law, University of North Carolina at Chapel Hill
- Report on recent actions taken by state and local governments to address climate change
 - Thomas Peterson, President, Center for Climate Strategies
- Report on legislation related to climate change that was enacted during the 2009 Regular Session or is pending for the 2010 Regular Session
 - Jennifer Mundt, Commission Analyst

January 13, 2010

Handouts and presentations from the Commission meetings are available online at:
<http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14>.

- Update on federal and international actions related to climate change, including the activities and outcomes of the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change in Copenhagen, Denmark
 - Victor Flatt, Tom & Elizabeth Taft Distinguished Professor of Environmental Law, School of Law, University of North Carolina Chapel Hill
- Report on the implementation of the North Carolina Renewable Energy and Energy Efficiency Portfolio Standards and subsequent proceedings (S.L. 2007-397; Senate Bill 3)
 - Edward S. Finley, Jr., Chairman, North Carolina Utilities Commission
- Report on the activities and objectives of the Energy Policy Council
 - Tim Toben, Chair, North Carolina Energy Policy Council
- Report on Progress Energy's plans to retire eleven coal-fired electric generating units in North Carolina by 2017
 - Caroline Choi, Director - Energy Policy & Strategy, Progress Energy
- Report on climate initiatives within the Department of Environment and Natural Resources; Update on the activities of the Interagency Leadership Team with regard to climate change

- David W. Knight, Assistant Secretary for Natural Resources, DENR
- Report on the Division of Emergency Management's development of a statewide risk assessment of sea-level rise and changes in storm frequency and intensity associated with climate change in coastal North Carolina (DEFERRED)
 - John Dorman, Assistant Director, Division of Emergency Management, Department of Crime Control and Public Safety

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APPENDIX D: SUMMARY OF ACTIONS ON CAPAG RECOMMENDATIONS:

Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Residential, Commercial, and Industrial (RCI)					
RCI–1	Demand Side Management Programs for the RCI Sectors - Recommended Case: "Top-Ten States" EE Investment	Yes		No	77.1	Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Energy Policy Council - Energy Efficiency Subcommittee
RCI–2	Expand Energy Efficiency Funds	Yes		Yes	54.8	Energy Policy Council - Energy Efficiency Subcommittee Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Session Law 2007-381, SB 581: Bldg. Permit Fee Reductions/Rebates...
RCI–3	Energy Efficiency Requirements for Government Buildings	Yes		Yes	6.4	Session Law 2007-546, SB 668: Energy Conservation in State Buildings
RCI–4	Market Transformation and Technology Development Programs	Yes		Yes	10.5	
RCI–5	Improved Appliance and Equipment Efficiency Standards	Yes		Yes	5.3	Energy Policy Council - Energy Efficiency Subcommittee
RCI–6	Building Energy Codes	Yes		Yes	23.1	Energy Policy Council - Energy Efficiency Subcommittee Session Law 2008-203, SB 1947-HB2532: Codify Energy Efficiency in Public Buildings

Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Residential, Commercial, and Industrial (RCI)					
RCI–7	“Beyond Code” Building Design Incentives and Targets, Incorporating Local Building Materials and Advanced Construction	Yes		Yes	34.2	Session Law 2007-381, SB 851: Building Permit Fee Reductions/Rebates to Promote Energy Efficient Building Construction Energy Policy Council - Energy Efficiency Subcommittee
RCI–8	Education (Consumer, Primary/Secondary, Post-Secondary/ Specialist, College and University Programs)	Yes		Yes	Not Applicable (NA)	
RCI–9	Green Power Purchasing (required for state facilities) and Bulk Purchasing Programs for Energy Efficiency or Other Equipment	Yes			3.5	
RCI–10	Distributed Renewable and Clean Fossil Fuel Power Generation	Yes			33.5	Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS)
RCI–11	Residential, Commercial, and Industrial Energy and Emissions Technical Assistance and Recommended Measure Implementation	Yes		Yes	14.9	
	SECTOR TOTAL AFTER ADJUSTING FOR OVERLAPS				218.7	

Table prepared by the Division of Air Quality of DENR, last updated March 3, 2010. Please refer to the CAPAG final report at: <http://www.ncclimatechange.us/capag.cfm> for a full description of each of the CAPAG mitigation options.

Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Energy Supply (ES)					
ES-1	Renewable Energy Incentives	Yes			0.33	Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Session Law 2009-548, HB 512: Incentives for Energy Conservation Session Law 2009-553, HB 1387: Solar Collectors on Residential Properties
ES-2	Environmental Portfolio Standard					
ES-2a	Original Analysis	Yes			288.7	
ES-2b	20% Combined Target	Yes			166.2	
ES-2c	Load Growth Offset Target	Yes			160.3	
ES-3	Removing Barriers to Combined Heat and Power and Clean Distributed Generation	Yes		Yes	20.1	Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Energy Policy Council - Energy Efficiency Subcommittee
ES-4	CO ₂ Tax and/or Cap-and-Trade					
ES-4a	Electric Sector Only		Yes		20.4	
ES-4b	Economy-wide		Yes		47.7	
ES-5	Legislative Changes to Address Environmental and Other factors	Yes			NA	
ES-6	Incentives for Advanced Coal					Energy Policy Council - Energy Supply Subcommittee
ES-6a	Replacement of New 800 MW Pulverized Coal Plant	Yes			31.0	Session Law 2009-390, SB 1004: Amend Certain Electricity Generation Laws

ES-6b	Replacement of Existing 800 MW Pulverized Coal Plant	Yes			42.9	Progress Energy Carolinas plans to retire select unscrubbed coal plants in N.C.
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Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Energy Supply (ES)					
ES-7	Public Benefit Charge		Yes		24.4	
ES-8	Waste to Energy	Yes			0.02	Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Energy Policy Council - Energy Supply Subcommittee
ES-9	Incentives for Combined Heat and Power and Clean Distributed Generation	Yes		Yes	NA	Energy Policy Council - Energy Supply Subcommittee Session Law 2009-522, HB 1389: Revolving Load Fund For Energy Improvements
ES-10	NC GreenPower Renewable Resources Program	Yes			0.95	
	SECTOR TOTAL AFTER ADJUSTING FOR OVERLAPS				375	
	REDUCTIONS FROM RECENT ACTIONS (None)				0	
	SECTOR TOTAL PLUS RECENT ACTIONS				375	

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Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Transportation and Land Use (TLU)					
TLU-1a	Land Development Planning		Yes		58.2	Energy Policy Council – Low Carbon Transportation Subcommittee Session Law 2009-95, SB 52: Various Localities Energy Development Incentives Department of Environment and Natural Resource is coordinating a Land Use Planning and Development Working Group
TLU-1b	Multi-Modal Transportation and Promotion (formerly TLU-2)	Yes			52.4	Energy Policy Council – Low Carbon Transportation Subcommittee
TLU-3a	Surcharges to Raise Revenue		Yes		15.7	
TLU-3b	Rebates/ Feebates to Change Fleet Mix		Yes		2.8	
TLU-4	Truckstop Electrification	Yes			NA	
TLU-5	Tailpipe GHG Standards		Yes		44.5	Proposed Federal Rule: Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards for Model Years 2011 – 2016
TLU-6	Biofuels Bundle	Yes			35.4	Energy Policy Council – Low Carbon Transportation Subcommittee
TLU-7	Procure Efficient Fleets	Yes			NA	Energy Policy Council – Low Carbon Transportation Subcommittee Session Law 2009-241, HB 1079 – Energy Efficient State Motor Vehicle Fleet
TLU-8	Idle Reduction/Elimination Policies	Yes			2.2	Energy Policy Council – Low Carbon Transportation Subcommittee Division of Air Quality Rule Awaiting Legislative Review - Heavy-Duty Vehicle Idling Restrictions (15A NCAC 02D 1010)

Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Transportation and Land Use (TLU)					
TLU-9	Diesel Retrofits	Yes			13.5	Session Law 2007 – 420, SB 1277: State diesel vehicles, Warrantees/B20 Fuel
TLU-11	Pay-As-You Drive Insurance		Yes		42.0	
TLU-12	Advanced Technology Incentives	Yes			NA	
TLU-13	Buses – Clean Fuels	Yes			NA	Session Law 2007 – 423, SB 1452: Diesel School Buses to Use Minimum B20
	SECTOR TOTAL AFTER ADJUSTING FOR OVERLAPS				232.3	
	REDUCTIONS FROM RECENT ACTIONS (None)				0	
	SECTOR TOTAL PLUS RECENT ACTIONS				232.3	

Table prepared by the Division of Air Quality of DENR, last updated March 3, 2010. Please refer to the CAPAG final report at: <http://www.ncclimatechange.us/capag.cfm> for a full description of each of the CAPAG mitigation options.

Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Agriculture, Forestry, and Waste (AFW)					
AFW-1	Manure Digesters & Energy Utilization	Yes			6.4	Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Session Law 2007, SB 1465: Methane Capture Pilot Program
AFW-2	Biodiesel Production (incentives for feedstocks and production plants)	Yes			5.1	Session Law 2007-206, SBI 2051 and HB 1990: Establish the Biofuels Center of NC/Funds
AFW-3	Soil Carbon Management (including organic prod. methods incentives)	Yes			3.0	
AFW-4a	Preservation of Working Land–Agricultural Land	Yes			2.6	
AFW-4b	Preservation of Working Land–Forest Land (formerly AFW-7)	Yes			36	
AFW-5	Agricultural Biomass Feedstocks for Electricity or Steam Production	Yes			0.2	
AFW-6	Policies to Promote Ethanol Production	Yes			38	Clean Transportation Program Clean Fuel Advanced Technology 2006-09, NC Solar Center/NCSU Session Law 2005-276, State Fleet Petroleum Displacement Plan Requirement Various North Carolina Alternative Fuel Incentives
AFW-8	Afforestation and/or Restoration of Nonforested Lands	Yes			15	
AFW-9&10	Expanded Use of Forest Biomass and Better Forest Management	Yes			48	
AFW-11	Landfill Methane and Biogas Energy Programs	Yes			20	Session Law 2007-397, SB 3: Renewable Energy and Energy Efficiency Portfolio Standard (REPS)

Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Agriculture, Forestry, and Waste (AFW)					
AFW-12	Increased Recycling Infrastructure and Collection	Yes			4.1	
AFW-13	Urban Forestry Measures	Yes			34	
	SECTOR TOTAL AFTER ADJUSTING FOR OVERLAPS				213	
	REDUCTIONS FROM RECENT ACTIONS (None)				0	
	SECTOR TOTAL PLUS RECENT ACTIONS				213	

Table prepared by the Division of Air Quality of DENR, last updated March 3, 2010. Please refer to the CAPAG final report at: <http://www.ncclimatechange.us/capag.cfm> for a full description of each of the CAPAG mitigation options.

Mitigation Option Name		CAPAG Level of Support		Approved By LCGCC	Cumulative GHG Reductions 2007–2020 MMtCO ₂ e	Implementation Status
		Unanimous Consent	Supermajority Consent			
	Cross-Cutting Issues (CC)					
CC-1	GHG Inventories and Forecasts	Yes		Yes	NA	Division of Air Quality Developing State Specific Emissions Inventory Projection Tool Department of Environment and Natural Resource is coordinating a Emissions Reduction & Green Energy Development Working Group
CC-2	GHG Reporting	Yes		Yes	NA	EPA EHG Mandatory Reporting Rule for Facilities Emitting Greater Than 25,000 metric tons CO ₂ e per year
CC-3	GHG Registry	Yes		Yes	NA	NC Department of Environment and Natural Resources Serves as state board member and reporter of department's carbon footprint.
CC-4	Public Education and Outreach	Yes		Yes	NA	NC Department of Environment and Natural Resources led efforts for workshops, information tools, and other resources related to climate change mitigation and adaptation
CC-5	Adaptation	Yes		Yes	NA	NC Department of Environment and Natural Resources is leading state effort to develop a Climate Action Plan for NC Department of Environment and Natural Resource is coordinating a Sea Level Rise Working Group
CC-6	Options for Goals or Targets (for CAPAG in support of LCGCC)	Yes		Yes	NA	

Table prepared by the Division of Air Quality of DENR, last updated March 3, 2010. Please refer to the CAPAG final report at: <http://www.ncclimatechange.us/capag.cfm> for a full description of each of the CAPAG mitigation options.