



FIFTH MEETING OF THE GOVERNOR'S COMMISSION ON CLIMATE CHANGE

June 17, 2008

The German Club Manor

Virginia Tech Campus – Blacksburg, Virginia

I. Call to Order

The Honorable L. Preston Bryant, Jr., Chairman, called the fifth meeting of the Governor's Commission on Climate Change to order at 9:03 a.m.

II. Attendance

The following Commission members were present: The Honorable L. Preston Bryant, Jr., Mr. Alleyn Harned (representing The Honorable Patrick O. Gottschalk), Mr. Ralph M. Davis (representing The Honorable Pierce R. Homer), Mr. Stephen A. Walz, Ms. LuAnn L. Bennett, The Honorable Donald S. Beyer, Jr., The Honorable Joseph F. Bouchard, The Honorable David L. Bulova, Mr. R. Daniel Carson, Jr., The Honorable John W. Daniel, II, The Honorable Paul Ferguson, Mr. Robert J. Fledderman, Mr. Stuart A. Freudberg, Mr. Dale A. Gardner, Ms. Jodi Gidley, Mr. William S. Greenleaf, The Honorable Penelope A. Gross, Mr. David A. Heacock, Mr. Michael L. Lipford, Roger Mann, Ph.D., The Honorable Robert E. Martínez, Mr. Tyrone W. Murray, The Honorable Ralph S. Northam, Mr. R. Paul Orentas, The Honorable Kenneth R. Plum, Mr. Oliver A. Pollard, III, Mr. Michael J. Quillen, The Honorable Ron Rordam, Mr. Harrison B. Rue, Dr. Jagadish Shukla, The Honorable Bruce Smart, Mr. William A. "Skip" Stiles, Mr. Michael S. Townes, and The Honorable Frank W. Wagner.

Those not in attendance were: Christine Chmura, Ph.D., The Reverend Richard Cizik, The Honorable R. Creigh Deeds, Mr. Felix Garcia, The Honorable John H. (Jack) Gibbons, Mr. Robert F. Hemphill, Jr., Ms. Ann F. Jennings, The Honorable Joe T. May, and Dr. Lydia W. Thomas.

III. Welcome and Opening Remarks

Chairman Bryant welcomed Virginia Tech's President, Dr. Charles W. Steger, and expressed thanks to the University for its hospitality and for hosting the meeting.

Dr. Steger briefed the Commission on climate change activities underway at Virginia Tech (VT). He pointed out that well over 100 researchers are focusing on climate change-related problems. Dr. Steger highlighted several accomplishments: VT's efforts to become sustainable; a six million dollar investment in one of the campus's boiler plants, an effort that reduced particulates by 98%; one of VT's faculty members who worked with the International Committee on Climate Change was recognized in the 2007 Nobel Peace Prize process; VT initiated an industry partnership project to retrofit major buildings so as to reduce emissions that would be equivalent to taking 45,000 cars off the road; and VT will be hosting the October 15-19, 2008, conference of the Society of Environmental Journalists, an organization representing major environmental journalists from all over America and other countries as well. Brochures for the upcoming

conference were made available at the sign-in table. Dr. Steger concluded his remarks by saying his school would be happy to offer its services and assistance to the Commission.

Chairman Bryant recognized The Honorable Ron Rordam, Mayor of the Town of Blacksburg, who serves as a Commission member. Mayor Rordam welcomed the audience to Blacksburg and spoke of the wonderful cooperation between the Town and the University.

Chairman Bryant next outlined the goals of the day's meeting: to talk of transportation and land use and to discuss what local governments are doing. Chairman Bryant also alerted the Commission members that at about 3 p.m. he would like to entertain a two-hour discussion among Commission members that would address five questions: (i) what has surprised you the most over these past five meetings in terms of what you have learned? (ii) what have you heard over the past five meetings that has confirmed or underscored that which you thought was the case? have your own thoughts been confirmed? (iii) in terms of global warming's likely impacts in Virginia, what concerns you the most? (iv) what are the two or three things that must be a part of the criteria for the Commission's upcoming deliberations? and (v) if you were king or queen for a day, as the Commission looks to its December report, what should be part of the recommendations?

Referencing an email sent to Commission members, Chairman Bryant indicated that the Commission would be organizing work groups: electricity generation, transportation / land use, and adaptations to built environment. The Chairman requested that Commission members, if they had not already done so, provide him with their first, second, and third preference.

IV. Federal Legislative Action

The Honorable Rick Boucher

Congressman Boucher began by saying he would speak primarily about the federal role in addressing greenhouse gas emissions. He serves on the House Committee on Energy and Commerce and as Chair of the Subcommittee on Energy and Air Quality. The Congressman discussed some of the work done by his committee to help delineate the respective roles of federal, state, and local governments in combating climate change.

In December 2007, President Bush signed into law a comprehensive energy bill, which originated in the Energy and Air Quality Subcommittee. Accomplishments from this bill included: passing a 30% increase in corporate average fuel economy for the U.S. automotive fleet by the year 2022, promoting general efficiency standards in consumer appliances, phasing out incandescent light bulbs by 2012, facilitating the arrival of a smart electricity grid, and promoting the targeting of waste heat from industrial operations to be captured and turned into electricity. Congressman Boucher estimates that the outcome of the legislation will be a cumulative 10 billion ton CO₂ savings by the year 2030.

Forthcoming in the next Congress will be a cap-and-trade law that will have the goal of reducing greenhouse gas emissions by between 60 and 80 percent by the year 2050. Congressman Boucher emphasized that people should not take the wrong message from the much-publicized demise of the Senate's cap-and-trade bill earlier this month. One would be mistaken to assume that the debate regarding cap-and-trade is over at the federal level; cap-and-trade legislation is, in fact, coming.

Scientific opinion, the Congressman continued, is deeply solidified globally around the premise that human activity is largely the cause of rising global temperatures. The United States is the only industrial nation that does not have a mandatory means of controlling greenhouse gases and now has to step up. Practical reasons for adopting cap-and-trade legislation within the next four years are based in part on the Supreme Court's decision to declare CO₂ as an air pollutant. Regulation of greenhouse gases will come either from the U.S. Environmental Protection Agency or Congressional action. Given that choice, industrial emitters of greenhouse gases would prefer that the Congress act. Everyone now is a part of the conversation and realizing not whether we are going to have cap-and-trade but rather when it will happen. Congressman Boucher estimated that next year, the prospects for passing cap-and-trade legislation are 80% or better.

Congressman Boucher offered a broad sense of the legislation his committee intends to bring forth. The legislation will be a cap-and-trade bill, economy-wide in scope, and the result of a bi-partisan process that will consult industry and have industry support. He believes that we have to recognize the role of coal, as it is critical to our long-term energy future.

One other federal role is to promote the early arrival of carbon capture and sequestration technologies. Congressman Boucher recently proposed legislation that would create a special fund to carry forward research in this area. The source of revenue for the fund would be fees on distribution utilities for all fossil fuel-based electricity delivered to retail consumers, and these fees would be imposed by a Carbon Storage Research Corporation. The creation of the Corporation would be contingent on a referendum of electric distribution utilities.

The Congressman concluded his remarks by saying that the Commission's work is critically important and added that the Congressman's subcommittee published an in-depth position paper on the respective roles of local, state, and federal governments. The paper is published on the website of the House Committee on Energy and Commerce.

V. Approval of Minutes

Chairman Bryant indicated that minutes from the Commission's last meeting had been distributed electronically and then asked for a motion to adopt the minutes. The motion was moved and seconded, and passed unanimously.

VI. Presentation: Adapting To Climate Change Impacts

Nikki Rovner, Deputy Secretary of Natural Resources

Chairman Bryant underscored the importance of adaptation to climate change. Deputy Secretary of Natural Resources Nikki Rovner provided an overview of adaptation and noted that the adaptation work group would be delving deeper into the topic.

Ms. Rovner reviewed the five tasks contained in Executive Order 59 and stated that the adaptation component calls for identifying what Virginia needs to do to prepare for the likely consequences of climate change. The Pew Center on Global Climate Change offers a clear definition of adaptation and identifies adaptation options based on assessments of efficacy, risks, and costs.

It is important to look at adaptation, Ms. Rovner continued, because limits on emissions will not have an effect soon enough to avoid all impacts of climate change. Carbon dioxide and other greenhouse gases can remain in the atmosphere for decades.

Adaptation efforts are necessary to reduce the cost and severity of both climate change impacts and mitigation efforts. Many of the adaptation actions need to be taken at the local level; therefore, the Commission may choose to focus on the question of what the state can do to facilitate local initiatives. Ms. Rovner provided examples of climate-related impacts and adaptation responses: impacts of human health, wildlife, and land use.

VII. Presentation: Summary of Mid-Atlantic State Climate Action

Paula Jasinski, NOAA

Chairman Bryant explained that Ms. Paula Jasinski, who is with National Oceanic and Atmospheric Administration's Chesapeake Bay Office, is serving on a detail in the Office of the Secretary of Natural Resources. Ms. Jasinski briefed the Commission on what other states are doing with respect to climate change planning. She reported that 37 states already have addressed climate change by either having completed a climate action plan or is in the process of developing one.

Ms. Jasinski reviewed actions being taken with respect to planning in the Mid-Atlantic states. Pennsylvania currently is focused on developing an energy-independent strategy to increase its reliance on domestic energy sources, including alternative forms. Maryland is producing a Climate Action Plan addressing mitigation and adaptation strategies, which is due July 2008. North Carolina expects its final report to be issued by summer 2008, with approximately 56 recommendations, including one to establish a Blue Ribbon Commission on Adaptation to Climate Change. South Carolina released its Climate Action Plan in June 2008. Recommendations in South Carolina's plan cross several areas, including energy supply, transportation, and agriculture/forestry. Ms. Jasinski also spoke of the U.S. Mayors Climate Protection Agreement, which has Kyoto protocol-like policies. The agreement represents the support of 852 mayors, including Blacksburg and eight other Virginia localities.

VIII. Actions To Address Climate Change Being Undertaken By Virginia Localities

A. Presentation: Starting a Green Government Program in Your Community

Kenneth Cronin, Director of General Services, City of Roanoke

Mr. Cronin posed the question, how do you get folks motivated to do something about climate change? The first thing to do, he told Commission members, is start looking at your energy costs and secure a commitment among local government managers. It is extremely important that localities define their carbon footprint. Roanoke utilizes a software program to determine the carbon footprint. Roanoke has joined ICLEI-Local Governments for Sustainability and has followed the ICLEI model that identifies five milestones for establishing a green government program. Roanoke City Council launched its Clean and Green Campaign that has the support of the Roanoke Business Environmental Leadership Council. As a part of the Campaign, some of Roanoke's largest businesses have said they would calculate their carbon footprint.

Mr. Cronin cited Roanoke's efforts to become a green government community: its first LEED project, reforestation efforts, the Safe Route to Schools Program, replacement of incandescent lights with CFLs, replacement of T12 lamps with T8 lamps in municipal buildings, swapping pneumatic controls for digital controls, replacing incandescent traffic lights with LEDs, and using products that have the Energy Star rating. Roanoke boasts being the first local government in southwest Virginia to use biodiesel and ethanol. These efforts, between the baseline year of 2005 and the end of 2007, resulted in a reduced carbon footprint. Through its success, Roanoke offers a number of tips for other communities in starting a green government program. Responding to a question from Chairman Bryant, Mr. Cronin indicated that the cost of the carbon footprint software is about \$1,600.

B. Presentation: Virginia Municipal League's "Go Green" Initiative

Jay Fissette, Arlington County Board of Supervisors and President of the Virginia Municipal League

Mr. Fissette serves on the Arlington County Board and serves as the President of the Virginia Municipal League (VML). For the day's presentation, Mr. Fissette was speaking in the latter role. Mr. Fissette noted that the Commission had a great resource of its own in terms of issues of local government: Mr. Paul Ferguson, who in his last year on the Arlington County board put forward a very significant initiative on the environment which addressed climate change.

Mr. Fissette provided background information about VML, which includes all the cities of Virginia, towns, and several urban counties. Mr. Fissette recognized that many of the jurisdictions in VML are not focused on climate change because they are confronted by many other issues. Some are skeptical. The goal of the Go Green Initiative, launched in

January and February of 2008, is to introduce the issue to these jurisdictions, engage them in a meaningful way, and educate them. Mr. Fisette walked through several elements of the initiative and referred the audience to the Go Green Virginia website, www.GoGreenVA.org, which offers resources and links, articles about Virginia towns and cities, regional forums, The Green Book (best practices), and the Green Government Challenge, which is the centerpiece of the initiative. Mr. Fisette provided handouts of the Green Government challenge and reprints of the Go Green Virginia Newsletter. Mr. Fisette noted that two of the Commission's members, Mr. Steve Walz and Mr. Stuart Freudberg, are on Go Green Virginia's advisory committee. The Challenge identifies 11 categories of local government actions and 30 specific actions, the largest number of which are associated with energy efficiency. The Challenge is intended to be a friendly competition among local governments and an effort to lead by example.

Mr. Fisette concluded his presentation by requesting help for the local level – urging the Commission to provide education and tax incentives for zoning codes, transportation money to connect transportation with land use, updating of building codes, increasing consumer education, providing home energy audits, and creating sustainability impact assessments for localities.

C. Discussion Of Local Efforts

Commissioners

i. The Honorable Penelope A. Gross

Ms. Gross distributed a handout that outlined what Fairfax County has been doing on climate change. Ms. Gross reiterated that local government is where the action is. Fairfax County has already done a number of things: purchased hybrid vehicles; entered into a three-year wind energy contract; established a transit program that includes providing subsidies for mass transit systems and supporting metro-check and teleworking; being a leader in tree planting and tree preservation; developing green building policies; retrofitting municipal lighting; and investigating means by which to transition the largest school bus fleet in the country to a greener system.

ii. Mr. Stuart Freudberg

Mr. Freudberg reviewed highlights of the Metropolitan Washington Council of Governments (COG) Climate Change Initiative from his handout distributed to Commission members. The Climate Change Initiative began a year ago and established best practices, a greenhouse gas emissions inventory and forecast, regional reduction goals, advocacy positions, and a number of recommended actions. COG's business as usual (BAU) projections of regional greenhouse gas emissions are expected to reflect a 43 percent increase by 2050. Using 2005 as the baseline, COG's goals include a 10 percent reduction below BAU by 2012, 20 percent below 2005 BAU levels by 2020, and 80% below 2005 BAU by 2050. To achieve the goals, actions must be taken by individuals and businesses and by utilization of technology. COG is supporting a 20% renewable portfolio standard and a commitment by local governments to reduce their

energy use by 15 percent by 2012. COG plans to partner with George Mason University on an outreach program and to establish a permanent climate and energy policy committee.

iii. The Honorable Ron Rordam

Mayor Rordam of the Town of Blacksburg discussed what is being done in Blacksburg and referred Commission members to the Public Works webpage found under the Government tab on www.Blacksburg.gov/. Mayor Rordam posed a series of questions: How do we encourage in-fill and transportation efficiencies? How do we encourage reducing vehicle miles traveled? How do we bring developers on board to plan for workforce housing that is close to town?

To address these concerns, the Blacksburg Planning Commission is coordinating zoning efforts in localities in the New River Valley to encourage green development. Blacksburg also has asked, how do you get the community involved? In response, the Town devised Sustainable Blacksburg, which is comprised of the Town of Blacksburg, representatives from VT, and community leaders. Each year, Sustainable Blacksburg sponsors a week-long program that offers educational opportunities and discussions. Secretary Bryant attended the most recent program.

IX. Presentation: Green Building Methods That Reduce Energy Use

Elizabeth Schilling, U. S. Green Building Council (USGBC)

Ms. Schilling introduced herself as a member of the USGBC's Core Committee, which has been developing the LEED-ND, an acronym for Leadership in Energy and Environmental Design for Neighborhood Development, over the past four years. The LEED-ND has been developed as a national rating system. The ND rating system is unique in that it has been developed by a partnership of three organizations and involves the Natural Resources Defense Council and the Congress for New Urbanism. The ND rating system incorporates transportation and location aspects – regional accessibility and vehicle miles traveled. LEED-ND certification must meet nine prerequisites, location, building design, and greenhouse technology. Forty points are required for basic certification. There are about 260 projects that expressed interest in participating in LEED-ND's pilot program.

Ms. Schilling explained that there are three parts to LEED-ND that try to cover the entire range of energy impacts in a new development: green construction and technology; neighborhood pattern and design (that is, internal site design and how buildings relate to one another and how well they relate to the street for walkability); and smart location and linkages in relation to transportation systems, transit accessibility, and re-use of existing sites. As the number of households per acre increases, tremendous benefits are realized in reducing vehicle miles traveled.

Ms. Schilling concluded by saying that although LEED-ND is targeted to the private sector, there are policy applications for local government, such as structural and financial incentives for green neighborhoods and evaluation of building codes and ordinances.

X. Presentation: Providing Transportation Choices To Reduce Greenhouse Gas Emissions

Petra Mollet, American Public Transportation Association

Commission member Michael Townes referenced his letter dated March 28, 2008, to Chairman Bryant in which he asserted that recognizing the need to change land use patterns along with recognizing the need to increase utilization of public transportation will not be sufficient to ensure that Virginians change their travel patterns. He further asserted that public transportation is not adequately funded. He provided evidence in his correspondence that suggests that there is a real and critical need to increase alternative choices for public transportation. Mr. Townes introduced the meeting's next speaker, Ms. Petra Mollet, to speak on this issue.

Ms. Mollet began by presenting a number of statistics on greenhouse gas emissions and pointed out that private vehicle use is the largest contributor to a household's carbon footprint. One of the biggest challenges we are facing in terms of reducing carbon emissions is that vehicle miles traveled in the United States are still growing significantly. It will be difficult to reduce carbon emissions without a dramatic shift from automobile use to other forms of transportation options. Public transportation results in a CO₂ savings and eases congestion. With respect to household actions, taking mass transit to work has a much larger impact than adjusting the thermostat or replacing old appliances.

Referencing a study by the Brookings Institute, Ms. Mollet indicated that higher density with a concentration of development and rail transit equates to smaller per capita footprints. Now is the best of times and the worst of times for public transportation, she stated, because despite record ridership, rising operational costs potentially necessitate a reduction in services. Policy makers need to protect existing public transportation services. There is a need for investment and public transportation expansion. In conclusion, Ms. Mollet said we need to develop policies that give the localities the tools they need to reduce congestion while ensuring management of greenhouses.

XI. The Connection Between Climate Change and Development Patterns

A. *John V. Thomas, Ph.D. , Development, Community, and Environment Division, U.S. Environmental Protection Agency*

Dr. Thomas's presentation focused on the important connection between urban development and smart growth as a climate change strategy. Dr. Thomas started by returning to the argument as to why it is important to consider land use planning, smart growth, and compact urban development as a climate change strategy. The rapid growth of vehicle miles traveled undermines the progress we make on improving fuel economy and lowering the carbon content of fuels. Secondly, there is a business case for smart growth. Most importantly, what we get from focusing on smart growth and better land

use planning as a climate change strategy are communities that are attractive, convenient, and economically-viable places.

Vehicle travel, Dr. Thomas continued, is shaped by where and how a community grows. Dr. Smart provided definitions of smart growth at the street level, which includes intersection design, and smart growth at the neighborhood level, which replaces looping, circular travel with a better connection of streets and a mix of housing types, while looking for the opportunities to locate civil buildings, ground-floor retail, and other activities that are in close proximity for walk-ability. Dr. Thomas provided several examples of smart growth across the country and in Virginia, including Atlantic Station in Atlanta and the Carlyle Neighborhood in Alexandria. In closing, Dr. Thomas indicated that two policy tools are needed to promote smart growth: updated land use regulations and the provision of incentives.

B. *Eric J. Walberg, Principal Planner, Hampton Roads Planning District Commission*

Mr. Walberg introduced the two central themes of his presentation as (i) linking strategic environmental planning and urban design, sometimes thought of as green infrastructure, and (ii) the emphasis on building quality communities, i.e., protecting critical natural resources while having energy-efficient communities and multi-modal transportation. Mr. Walberg cited the Conservation Fund for a definition of green infrastructure: “a planned network of green spaces that benefits wildlife and people and links urban settings to rural ones.” The focus of green infrastructure is on services provided by natural systems. For coastal areas in particular, the concept of green infrastructure has much to offer in terms of how we will deal with sea level rise and storm surges. Mr. Walberg cited the American Forest Study of the D.C. Metro region to quantify the value of these natural systems. The Virginia Department of Conservation and Recreation’s Natural Heritage Program has provided a Virginia Conservation Lands Needs Assessment, which is relied upon as a valuable tool by the Hampton Roads Regional Planning District. The Assessment’s forests economic model underscores the economic value of forestry based in Virginia. Mr. Walberg cited Prince George’s County in Maryland as an example of how one locality has taken a green infrastructure plan and tied it to its development approval process.

Turning to transit-oriented development, Mr. Walberg noted that mixed use development is a major component of good transit-oriented design. One example of transit-oriented development is Wasatch Front in Envision, Utah, outside Salt Lake. Mr. Walberg concluded his presentation with an overview of form based codes and recommendations.

XII. Presentation: Carbon Capture and Storage

Michael Karmis, Stonie Barker Professor, Department of Mining and Minerals Engineering & Director, Virginia Center for Coal and Energy Research, Virginia Tech

Chairman Bryant noted that the Commission had heard a great deal about carbon capture and storage technology and could not come to VT without tapping into the University's expertise on the subject. Chairman Bryant welcomed Dr. Michael Karmis.

Dr. Karmis first responded to the question, "why carbon capture and storage (CCS)?" Dr. Karmis said that CCS has been called "the critical enabling technology that would reduce CO₂ emissions significantly while also allowing coal to meet the world's pressing energy needs." He indicated this is a key piece of technology to any kind of future carbon reduction policy. CCS has very wide support and is a key piece of the research portion of the Virginia Energy Plan as well as proposed legislation in Congress. Dr. Karmis further indicated that the impact of policies based on technologies currently under development may not be realized if not properly funded. Carbon capture and storage comprises three elements: capture, transport, and geological storage.

Dr. Karmis stated that the U.S. Department of Energy has looked at various carbon sequestration options: geologic, oceanic, and terrestrial. Indicating that saline aquifers are by far the most significant kind of geology for sequestration, he provided a graphic that illustrated the steps involved in geologic storage. Dr. Karmis explained three project phases of his research. Phase I – geological characterization and initial feasibility – has been completed. Phase II – to expand the study area and to perform reservoir modeling and pilot CO₂ injection testing – is ongoing and is expected to run through 2009. Phase II includes target areas in the Central Appalachian Basin in Virginia and in the Black Warrior Basin in Alabama. Phase III – planning stage – involves a test of one million tons of CO₂ in an injection process. Dr. Karmis emphasized that there is a need for large volume tests in different geologies and that cost-share funding is urgently needed. He concluded his presentation by reiterating the importance of CCS and the need for large-scale tests and significant public and private funding.

XIII. Public Comment

At this point of the meeting, the Chairman opened the floor for public comment.

- Steve Hill of Newport, Virginia, a VT graduate, now a local developer. Mr. Hill said he supports the Dominion Power Company's Wise County power plant and asked the Commission to facilitate utility growth to meet Virginia's growing energy needs without pandering to special interest groups. Mr. Hill asked why we do not build more clean coal-fired power plants.
- Waldon Kerns, a resident of Blacksburg, and a professor emeritus at VT. Dr. Kerns voiced his support for Dominion's proposed hybrid energy center in Wise County and the new technology that will be needed to protect the environment. He believes we can have economic development and protection of

- environmental quality if we invest in new and innovative technologies. Dr. Kerns requested the Commission to help find funding to develop carbon capture and storage technologies.
- William Hall, an adjunct faculty member at University of Virginia School of Engineering. In looking at how electric utilities in Virginia have managed their portfolios, Mr. Hall sees a good balance and diverse generation assets – nuclear, coal, oil, gas, hydro-electric, and alternative energy. Maintaining that balance of energy assets is a wonderful risk management tool for managing exposure to volatility in fuel prices and fuel supply shortages. He indicated we need to invest more in clean technologies.
 - Eugene Brown, member of the faculty at VT's Department of Mechanical Engineering. Professor Brown supports Dr. Karnis's call for the establishment of environmentally-acceptable ways to use Virginia's natural source of coal to supply our growing energy needs. He further stated there is a need for research underwritten by state support and that VT provides examples of what a university can do with state support.
 - John Randolph, Professor of Environmental and Urban Planning at VT. Dr. Randolph put forth several premises: that states have been policy innovators, localities the implementers; that we need a mix of energy sources; that energy efficiency is a long-term opportunity; that we must prepare ourselves for the cost of a low carbon future, and that we need to tap a huge amount of enthusiasm in the area of climate protection. Virginia needs to take a lead role in climate change initiatives – to build better partnerships with utilities and embrace localities as our implementers by providing technical and financial support.
 - Robert Smith, business owner and resident of Floyd County. Mr. Smith suggested evening meetings, and then he explained he was at the meeting to represent the interest of rural landowners. On the topic of carbon sequestration, Mr. Smith noted that with the vast undeveloped areas of the state, there is a lack of incentives for landowners like him to keep the land undeveloped. Landowner options now are either to cut timber, raise cattle, or sell for development.
 - Jack Davis, Dean of College of Architecture and Urban Studies at VT. Professor Davis said that many LEED-like innovative programs offer a lower cost and marketing appeal but are often underwritten silently by special interest groups and that none offer the volume of accredited professionals that can serve to guide, design, and be third-party validation officials. Professor Davis supports LEED-NC (LEED-New Construction). He stated the LEED-NC standards, if applied through legislative action to Virginia's state-funded projects, could reduce this state's greenhouse gas and carbon emissions substantially.
 - Angie DeSoto, a VT student and member of the Coalition for Campus Sustainability. Ms. DeSoto invited Commission members to serve on a panel at the Power Shift 2008, a conference for speaking about and find solutions for climate change-related problems to be held October 10-12. Ms. DeSoto also voiced her opposition to coal as a fuel. Ms. DeSoto disputed the term clean coal because the combustion process of burning coal and the end product produced do not make coal a clean fuel nor is coal sustainable. Ms. DeSoto further disputed

the cheap cost of electricity generated from coal that is only true if one is speaking in economic terms and not taking account of the costs associated with of greenhouse gas emissions.

- Sara Murrill, a forestry student at VT. Ms. Murrill asserted that the term clean coal does not take into account the extraction methods and mountain top removal. We need to try to explore more clean and renewable energy sources. Ms. Murrill urged the Commission to explore clean and renewable energy options before resorting to coal, which is not sustainable, as a last resort.

XIV. Commission Round Table Discussion

Commission Members

Chairman Bryant commenced the round table discussion by stating that the Commission was fortunate to have one member of the Intergovernmental Panel on Climate Change (IPCC), Dr. Shukla. Dr. Shukla spoke briefly on the seriousness of the climate change problem. Dr. Shukla recalled for the Commission that the IPCC was an inter-governmental panel, representing governments all over the world. When we read the IPCC report that says that global warming will be anywhere between two degrees and four degrees, he indicated that is the range agreed upon by governments and is not necessarily the best range established by science. To counter that, Dr. Shukla and a group of researchers set out to determine why that range was there, and they concluded there was no way to prove which of these ranges is correct for the future. Dr. Shukla and other scientists concluded that if you use any scientific metric, the results will indicate that the problem of global warming is far more serious than what a consensus-based organization like IPCC tells us. As the Commission begins to write its recommendations, Dr. Shukla urged its members to take a strong position and take into account that we are faced with a huge problem.

The Chairman then turned the Commission's attention to the round table discussion, the purpose of which was, in part, for the staff to begin preparing for work groups and to secure a good understanding of where the thinking was on the part of each of the Commission members.

Chairman Bryant proceeded to solicit input from Commission members on the questions posed during the welcome and opening remarks segment of the meeting.

Question 1: As we look back on what the Commission has heard and discussed, what has surprised you the most?

- Senator Wagner indicated he had not heard any real talk of exploring nuclear energy. He also expressed concern about the double-edged sword of promoting renewable energy while not removing permitting obstacles. If we are serious about renewable energy sources – wind and solar – we need to develop workable policies and streamline permitting processes.
- Mr. Carson stated the impact of the Lieberman-Warner Bill and the cap-and-trade legislation referenced by Congressman Boucher did have a serious effect – one

- that will affect consumers. In passing laws, we need to make sure that what we do is correct. Mr. Carson commented that when modeling, we need to understand the degree of certainty we have in determining impacts of global warming.
- Dr. Shukla said the most important conclusion by the IPCC is that human activities are affecting climate and that there is a high confidence level that they are. Models detailing regional impacts still need refining and more research.
 - Mr. Beyer stated the most surprising thing he had heard was that the average Virginian consumes twice as many BTUs per year as the average European.
 - Ms. Bennett indicated she was surprised by how long greenhouse gas emissions stay in the atmosphere, a factor that makes it so important that adaptation be part of the Commission's work. She further said we want to avoid putting forth legislation without having considered unintended consequences.
 - Mr. Rue indicated he was surprised by the military support and call for action.
 - Mr. Smart said he was surprised by what has been going on at the local level. A great deal has been going on, but it has not been well publicized.
 - Mr. Davis expressed the desire to echo Ms. Bennett's comments that the Commission consider unintended consequences and that it focus on the effect of VMT.
 - Ms. Gross indicated she would like to echo Senator Wagner's comment on nuclear energy, which does not emit greenhouse gases, and the issue needs further exploration. Ms. Gross was disappointed in learning that solar availability is not as easy as she thought it would be. The need for education did not surprise her, but Ms. Gross indicated it should be part of the report. Ms. Gross cautioned against demonizing people who do not use public transit to get to work – a lot of people cannot use transit to travel to work.
 - Mr. Murray stated he was impressed by local government actions. Also, since most of the technologies that need to be developed are 20 to 25 years in the future, it is very important that conservation efforts be put into place immediately. Mr. Murray, too, would have liked to have heard more on nuclear.
 - Mr. Heacock said he was surprised by the growth in vehicle emissions. Also, with regard to wind power, Highland County would be a wonderful resource.
 - Mr. Townes said he had heard little with regard to freight transportation.
 - Mayor Rordam said the adaptation presentation was very valuable and his revelations were to consider where people would go and that we all have to plan for various degrees of adaptation.
 - Mr. Bulova said he would have liked more focus, from the development standpoint, on LED lights, as opposed to the compact fluorescent lights. Mr. Bulova would have preferred more discussion on infrastructure – do we need to plan now to ensure our local land use policies will accommodate fueling stations, say if we go to hydrogen, for alternative fuel vehicles?
 - Dr. Shukla spoke in support of the nuclear suggestion and how it would be linked to transportation. He asserted we have to consider power sources in electrifying rail lines – passenger and freight, and as well as plug-in hybrid vehicles.
 - Mr. Heacock said the key to using plug-in hybrid vehicles is the ability to use the energy off-peak for charging – we cannot have the public charging vehicles at

5 p.m. We would require smart technology to control mechanisms to allow for charging off-peak.

Question 2: *What in the presentations that you have seen underscored or confirmed that which you thought or felt intuitively?*

- Mr. Rue offered that the land use presentations underscored the work and value of what has been done in Charlottesville and added that the rural conservative boards of supervisors have been very supportive. Mr. Rue noted that land use efforts require funding.
- Mr. Fledderman expected a little more attention on the issue of energy security. There are a lot of opportunities to improve energy efficiencies that are cost effective.
- Mr. Gardner posed the question as to how many people think we can just conserve our way out? We need a secure, stable energy supply. Mr. Gardner expressed skepticism – what if, in the end, the measures we might take to combat global warming are not effective? Adaptation, for this reason, is so very important.
- Dr. Shukla was impressed by the younger generation and stated we should take them seriously. Is there a way by which the Commission can channel their input?
- Mr. Ferguson said that Mr. Gardner's points were well taken – whatever we do, global warming is likely to continue, given the scientific data. Presentations provided by local governments illustrate that local efforts motivate other localities, and likewise, what we do in Virginia may motivate other states, and hopefully, then, the federal government will eventually act. So part of what we are doing as a Commission is being a piece of the puzzle in the big picture of trying to solve global warming.

Question 3: *Of what you have heard in the last five months in terms of impacts, what concerns you the most?*

- Mr. Rue said that coastal impacts on our developed areas concern him the most and the military. Additionally, Mr. Rue is concerned that Virginia will not take advantage of its greatness – Virginia needs to be a leader rather than a follower. If Germany can do it, we can too.
- Delegate Bouchard indicated that sea level rise causes him the most concern. Sea level rise is not a hypothetical future; it is already happening. Delegate Bouchard is additionally troubled that economic and energy security concerns may stifle the innovation we need to devise the right solutions to climate change.
- Senator Northam commended the young scholars from VT who bravely spoke and offered their opinions and agreed that the Commission needs to get the young people involved in some of its decisions. The Senator also said we should look into solar, wind, alternative energy, and nuclear power – that we should be visionary rather than reactionary. Senator Northam pointed out that his district is surrounded by the Chesapeake Bay, and we need to plan 15-30-50 years down the road and to shy away from coastal development.

- Delegate Bulova indicated he had not heard about the impacts on agriculture. Will viticulture be sustainable in a new climate? What will be the impact on our apple industry? We need to assist farmers in migrating to other crops.
- Senator Wagner indicated sea level rise concerns him. Have we accounted for more plankton activity, which decomposes at the ocean floor to form crystal methane, a constant carbon sink – a sequestration of nature? We have to consider the earth's own ability to respond to global warming. We want to be very cautious in our recommendations.
- Mr. Quillen stated sea rise concerns him the most. We need to have an action plan to protect all of eastern Virginia's assets. What will our state, our society, be willing to do, and what will we be able to do, and at what cost? We need to look at nuclear power.
- Mr. Greenleaf stated his concern is that given most of the consequences of climate change happen gradually, how do we educate citizens of Virginia of the impacts and that the recommendations which this Commission makes will be realized?
- Mr. Freudberg said the Commission might want to contact Dr. Ed Maibach, Director of the Center for Climate Change Communication at George Mason University about how to engage students. Also, Mr. Freudberg said no one had mentioned the Chesapeake Bay temperature, which has been rising .3 degree centigrade every ten years since 1930; the Commission should include the impact on the Chesapeake Bay in its report.

Questions 4-5: *What are two or three things you would like to see under recommendations? If you were king, queen for the day, what would you put forth?*

- Mr. Smart stated he would like to see an effort to change financial incentives for power generating companies so that they become dependent on solving this problem, not just selling more power. Mr. Smart also would recommend increasing the gas tax in Virginia to the extent it that it would match gas taxes in surrounding states and establishing a communications program.
- Dr. Shukla said we should study the feasibility of replacing Virginia's tobacco fields with another crop.
- Mr. Bulova indicated we should devise a good system of carrots and sticks regarding land use policies. Furthermore, we should recommend establishing a revolving loan fund for up-front capital and using algae as a biofuel.
- Ms. Gidley said we should find ways in which to compliment and enhance what local governments are already are doing. Where feasible, move to a four-day work week to reduce the number of vehicles on the road.
- Mr. Orentas recommended a pay-as-you go approach regarding miles driven by a person. The biggest impact could be with the use of biofuels.
- Mr. Lipford noted that some of the steps needed to address climate change would be better enacted at the federal level. For baseline purposes, we need inventory reporting of greenhouse gas emissions. Additionally, there is a need to expand mass transmit, to inventory carbon sinks, and a means by which to continue this work beyond the duration of this Commission.

- Mr. Townes said we need to legislatively link land use and transportation. Mr. Townes cited the letter he had sent to Commission members in which he wrote that transit is not good in Richmond because it is not funded well. We must view transit and transportation as not merely a municipal issue, but a regional issue, and as such, treat funding and operations on a regional basis. Mr. Townes would change the greenhouse gas reduction goal from reaching 2000 levels by 2030 to an 80 percent reduction by 2030. Mr. Townes recommends giving young people some real authority in the decision making.
- Mr. Stiles reiterated the need for outreach and education. We have got to prepare the public and establish public support. Mr. Stiles recommends state leadership in local planning departments.
- Dr. Mann stated that the 30 percent goal is too conservative. The Commission has been entrusted, in essence, in doing an accounting exercise. For every action proposed, the Commission needs to attach justifying numbers. The challenge is to generate proposals and recommendations with supporting numbers.
- Senator Wagner spoke on the conservation side of the equation. He cautioned for the need to “turn that ship slowly.” The Commission must be sensitive to economic consequences. We can do a lot with building codes and residential incentives. The Senator further recommended funding for transportation.
- Mr. Greenleaf recommended a state energy research fund, as well as finding the means to ensure that the Commission’s recommendations are not altered significantly once they pass through the General Assembly legislative process.
- Mr. Rue asserted that the Commission should be thinking about value and bang for the buck; that is, set a value to what developers are building. We need to develop strategies to build public support, and one way to do that would be to offer transportation choices.

XV. Adjournment

The meeting adjourned at 5:06 p.m.