Global Climate Change Commission Meeting
Thursday, 4 December 2007
10:00 a.m.
Room 643 LOB

The Legislative Commission on Global Climate Change met on Tuesday 4th December 2007 in Room 643 of the Legislative Office Building with Representative Pricey Harrison presiding. Other members present were: The visitor registration is Exhibit A.

Representative Harrison called the meeting to order and gave the floor to Mr. Givens, Commission Counsel, for introductory remarks.

Mr. Givens called the commission member's attention to revisions in schedule of the agenda in respect to the February 11th and 12th meetings. Considered will be Emerging Issues Forum, which is going to focus on energy this year to be held at the McKimmon Center, NCSU and a business Meeting 2:30 to 3:45 in Room 2, McKimmon Center, NCSU . Mr. Givens advised the commission that there would be a registration fee but legislative members on the commission would not be charged a fee and that other members of the commission would be reimbursed at the discretion of the Emerging Issues Institute. He reminded them that they needed to turn in reimbursement forms. Mr. Givens announced that Dr. Pachauri, The chairman of the International Panel on Climate Change, was a co-recipient of the Nobel Peace Prize in 2007, would be a speaker at the forum. Dr. Pachauri is also a graduate of North Carolina State University. Mr. Givins informed visitors that in conformation with open meeting rule, the public would not be responsible for registering or paying a registration fee to attend the Forum

Today's agenda involves an in depth analyses and decision points with respect to the recommendations from CAPAG of Climate control. There were five technical working groups. Today the commission will be working on Agriculture, Forestry, and Waste technical working groups. Some members who have been involved with CAPAG are Robert Slocum and Paul Sherman. Hopefully we will have an open discussion and motions decisions that you want to make concerning the recommendations that have been made by CAPAG. Counsel again reminded the members of the Commission to turn their reimbursements forms and reminded visitors to sign the Visitors Sign in sheet at the rear of the committee room.

Representative Harrison introduced Timothy Profeta, speaking as Jane Pryor, Federal Director of the Nicholas Institute for Environmental Policy Solutions to report on federal activities related to global climate change. He in keeping with the pursuits of the commission should some degree be well calibrated to what the federal government may or may not do with Climate change. So that NC as a state is well positioned to takes opportunities at the Federal Action. Mr. Profit told the commission that the Lieberman Warner Climate Change Bill, a proposal to cap Greenhouse Gases, has passed out of sub-committee and is being considered tomorrow in the Senate Environment Public Works Committee. . Members hope to vote it out of Committee and put it to the Senate floor but the vote is predicted to be very tight (one to two votes). In his opinion the bill will not be law this year but it will be in its final form. The bill is a proposal to cap greenhouse admission gases utility such as 70% reduction by 20-50 and trade entities under the cap or sell to another group who wants to w the bill has a robust program for Forestry and Agriculture sectors of the economy. Senator Pittenger had a question concerning how the bill relates to HOC 23. Mr. Profeta explained that the bill covers all six major gases. There are two programs under the bill that allow grants to get sellable credit. Dr. Smith had a comment on how to deal with Allocations in this bill. There has been a question and much discussion concerning the percentage of auctioning off; the auctioning off of pollutants has risen from 24 % to 74%. The question is should it be 100%. Tim Rogers at Duke has been working on this. Over the next 18 months this there will be robust

discussion concerning the auctioning off at 100%. Dr. Smith offered to share with any one the testimony that has been concerned with the request to auctioning at 100 %. Mr. Profit informed the commission that the Energy Bill is presently in Conference Committee. The provisions in this bill are renewal portfolio standards, fuel economy efficiency standard efficiency fuel standard for vehicles and a robust tax package. The bill does not have the support in the Senate. It has been very controversial and unfavorable. There has been a deal struck with the auto industry. The fuel standard will be raised economy from 35 miles to 22 miles an hour. Mr. Profeta does not believe the renewal program will become law.

Next on the agenda is Mr. William L. Chameides, new Dean of the Nicholas School of the Environment. Duke University. Mr. Chameides will discuss the extent to which carbon offsets may be reliably identified and qualified. New book, The Earth's Farms and Forests Low Crab Economy written by Mr. Chameides. What are offsets-they are Greenhouse gases. You can offset Carbon Cycle where Carbon Dioxide is taken up in the atmospheric Co2. Please refer to Exhibit one "Real and Verifiable Carbon Offsets" – Mr. Chameides presentation. Co2 is increasing because fossil fuels are being burned. We need to quit burning fossil fuels. Temporary Solution to the problem is land management. We need to capture methane emissions from manure, land fills etc. Farmers could be paid to capture the methane and store more carbon in the biosphere. Tim Cerich asked if there are any new programs being considered. Dr. Chameides answered that there is a bill in congress to cut CO2 about 15 % but he feels that it should be 20%. He said that the ideas of offsets have to be correctly done and additionally, it is important that the process for creating offsets be real and variable. Offsets have gotten some bad press and cited a web site www.cheatneutral.com to the commission. He stressed that offsets must be creditable and that the regulators, buyers, and people must have confidence that offsets are real. The process for getting credible offsets is as follows: 1.Set a baseline (what emissions would be in the absence of the offsets), 2. Assess leakage (Sequester carbon) for example you decide not to cut down your trees to send to the lumber company and save the carbon, but your neighbor cuts his trees down and sends the lumber to the pulp and paper mill to make up for loss of the lumber that you decided not to cut. Then, you do not get credit for preserving your trees. This is leakage. 3. Measure the changes in the soil, take samples of the soil and have it tested, 4.IndependentlyVerify (have an auditor verify what the farmer has done), and 5. Register offsets. Keep a detailed account of what one has done in the registry of the offsets.) The most important action is measuring regularly samples of soil to show carbon is building. Dr Chameides told the commission that off sets have a huge potential in North Carolina. Senator Albertson asked if anyone currently was doing No Till and would we have to do soil samples overtime and how much. Dr. Chameides answered that some projects were in effect and that numerous experiments were being done to show that No Till builds carbon in the soil. Auditors must verify. Representative Allen asked if sequestering forestry meant delaying cutting and the answer was yes. She did not feel that it was fair to not receive credit for sequestering and would like to hear from the forestry Association. Dr. Eggers stressed that the "name of the game is sequestration." She brought up the action "Bio Char" where carbon gets re-admitted to the earth. What if people sold land to people who would not cooperate and continue to sequester. Dr. Chameides explanation was that to qualify for offsets a landowner needs to own the land. If he sells it to a company then the company owns the carbon in the soil. There must be a contract. If carbon returns to the atmosphere then the owner needs to make up offset in another way or someone might least the offsets such as a power company. Representative Harrison asked what is "Bio Char"? The answer was darker soils were found in the Amazon where people had settled and would bury organic matter and char the organic matter. They found that plants grew better and faster, the ground retained water and the agriculture flourished. It was found that carbon put in the ground a long time ago is still there. Bio Char is a good sequestion solution. Co- Chair Garrou wanted to know cost per ton of carbon in monitoring and assessing leakage. Dr. Chameides said that it is a great ;opportunity but we must also recognize that if we're in a capped economy we are letting the market place to sort out and individuals will try to make a profit, others might try to innovate and try to figure out how to do it a cheaper way. He did not necessarily want to get into the economics in great detail but felt we should allow land managers

and farmers to compete in the carbon market. It could be a great boom for what's in the climate. Tim Profeta commented that provisions in the federal legislative process concerns putting governing money into projects in and marked and lowering transactions. Representative Carney wanted to know where to register offsets. Mr. Profeta said that were a lot of places but named The Chicago Climate Exchange in Chicago and Environmental Resources Trusts. He said that Project managers will do registrations. Dr. Chameides said that there are different registers and they have different standards. Some are more stringent than others on what they will register. The next question was asked by Co-Chair Representative Harrison. She wanted to know what is going on at the National level. Dr. Chameides said that we are much further along that the European Countries we have a much greater potential than Europe to be competitive internationally. What is not appreciated by many is the fact that 20% of CO2 is emitted from carbon off sets in Europe is the burning of the rain forests which take place in Indonesia land Brazil. There have been a number of proposals made. One is Compensated Reductions which would compensate those who would reduce the rate that deforest which would help in lowering CO2 emissions and would be rather inexpensive. This proposal is being discussed in Bali as we speak. Mr. Profeta added that Europe doesn't have offset provisions. Some of the Europeans are doing projects in the US. The Europeans look toward a voluntary market they have no mandatory system. Representative Thomas asked if there was no standard law for agencies that sell offsets; no federal policy in place it is it all voluntary. Dr. Chameides said that federally have a standard for Climate and, Representative Thomas felt that there needs some law in place Tim Profeta answered that Federal legislation is looking at one standard VCS and a CFTC would regulate the commodities Market and should have some rules is place in a couple of years. Mr. Sherman asked if there was any consideration to alternatives to monorting individual projects because of the problems of leakage and terms of contracts, etc. Are not alternatives that we can look at statistics of the average of research that are based on location, soil samples and climate? Should we be looking at a modification factor that devalues the credits based on the perception of and leakage and regression of certain percentage of those credits? Dr Chameides said that leakage is the most easily best developed through economic modeling, elasticity of price, and demand. There needs to be more modeling than monitoring; however there needs to be some monitoring. Uncertain results will devalue the offset. Mr. Sherman asks Mr. Chameides if his proposal is to do more modeling than monitoring depending on the project and he answers yes. Dr. Eggers wanted to know how we deal with double dipping in off sets. Dr. Chameides response is that in principal it is additionality. One has to show that as a result of your activity, you have decreased the amount of CO 2 in the atmosphere. Dr. Chameides used the example of Corn enathanol – Corn is taking the place of soybean crops in the United States. however biofuel might not be an offset. Brazil and other countries are cutting down their rain forests in order to grow soybeans. Mr.Slocum, Executive Vice President North Carolina Forestry Association, questioned Dr. Chameides about the positivity of active management of forestry and felt that Dr. Chameides had implied that it was a negative when it comes to climate. Dr Chameides responded that it depends on how the wood is used after is has been cut down. A regulatory agency would have to workout a detail analysis of the products themselves. Mr. Slocum brought up the delaying harvesting and how long. He felt that active management of the forests is the answer and that museum management; "look but don't touch" is not the answer. Dr. Chameides agreed and said the concept of sequestration of the forests is a management issue. So not plant the forest and walk away. Mr. Profeta said that we are on line with EPA and there are tools in place to help make project plans. Dr Chameides feels that there needs to be a time line, a plan for a project and go forward with it. Mr. Hopkins had a question what markets would Dr. Chameides advocate. Should there be a Local market, Global market, Regional Market and should the markets be distinguished as to their products. Dr. Chameides said that in general the size of the markets needs to be as large as possible. How you account for leakage is an economics point of view using objectives measures of elasticity of demand and elasticity of Price. You can calculate what will happen in demand as prices increase. In conclusion Dr. Chameides said the size of the market is key in principal and it should be an international market. Dr. George Everette said that in the working group Climate Action Plan process looked at changes in greenhouse gas emissions verses the cost. He wanted to know if a scale could be

charted from graph #2 in Dr. Chameides slide presentation to compare Vehicle mileage and look at a scale differential. Please refer to page 7 of Real and Verifiable Carbon Offsets.

Next on the agenda was a Discussion of Opportunities and Recommendations for Carbon Offset Projects in North Carolina's Agriculture and Forestry Sectors by William C. McDowell, III, Southern Forest Projects Manager Environmental Defense. Mr. McDowell entertained questions from the commission Representative and Co-Chair Harrison wanted to know if the 1.7 million tons for swine carbon emission was based on methane. The answer was yes, and she noted that methane is 20 times more potent than carbon greenhouse gases. She also wanted to know where we stand on the Farm Bill SB 1465. Mr. McDowell said that there is funding for offsets and a renewable energy component that could help landowners get projects started. Mr. Profeta added that the question now is there going to be a new farm bill. There is a large amount of funding for the Bio Energy Bill but it failed in the Senate. Dr.Cecich asked if the Bio Energy project is complimentary to agriculture off sets or do they have a negative effect. Mr. McDowell said that it depends on the projects. Methane is 20% more times potent than carbon. It also depends on the differential standards, some have neutral benefits and others can have net carbon benefits and there are negative effects in some activities. Dr. Smith, referring to SB 1465, wanted to know the significant impact of methane on the atmosphere. He asked if we are on a pathway to catch methane emissions in North Carolina. Mr. McDowell said that there is a need for anti aggression on methane such as hog farms. The hog farms have attracted a lot of investors to capture methane. Mr. McDowell recommended for the commission to be more aggressive in finding funding by working economically and Jane Pryor said there needs to be more investment made in Hog Lagoons. More money should be appropriated to this cause. Senator Pittenger informed the commission of an Article in the Wall Street Journal concerning the conversion of methane and other biogases being studied by major High Tech Firms and Capitol Ventures. George Givens, Counsel for the commission elaborated on SB 1425 and SB 3. According to Mr. Givens the big Energy Bill SB 3 provided for finding ways and appropriately set a side for the generation of renewable energy some of which would undoubtley would accumulate methane through capture. Senate Bill 1465 has a lagoon conversion program that is funded through the agriculture program and through appropriation. It also has a provision for a pilot program on methane capture that capted a max of fifty farms and has a max of 24 mega watts. That has a duration of about seven years that is paid for by a surcharge on rate payers and when you're talking about how you are going to fund these things, it is a matter of considerable negotiations and political sensitivity.

Co-Chair Harrison introduced Mr. Brock M. Nicholson, Deputy Director, Division of Air Quality, DENR, for a presentation and consideration of the recommendations of the Agriculture, Forestry, and Waste Technical Working Group of the Climate Action Plan Advisory Group. Before Mr. Nicholson, Mr. Givins was recognized to address the agenda. In regard to this agenda item he brought to the commission's attention a memo from the Center of Climate Strategies regarding the technical and economic qualifications as received for information and asked that it be put in the record. See Attachment The Center for Climate Strategies dated December 3, 2007, Subject: Center for Climate Strategies Technical and Economic Qualifications. Mr. Brock's opening remarks explained that the CAPAG group was made up of many NC Volunteers, stake overs, and members of this commission. The recommendations that will be the focus of the meeting will be from the Agriculture, Forestry and Waste Areas which are from five working groups or Twig working groups. The recommendations received unanimous consensus from the CAPAG after initial deliberations in the working groups. Mr. Brock said that his presentation would introduce to the commission some thoughts or suggestions by this group and that regarding the course of action that the commission and policy makers in this state might make from this point forward to realize implementation of these recommendations. Mr. Brock, next, began a slide show presentation. See Attachment: DAQ Suggestions for Course of Action on CAPAG AFW Recommendations. The basic criterion that Mr. Nicholson used in suggesting these recommendations is the certainty of whether or not there were savings or costs net up front costs in this analysis and

specifically in the CAPAG analysis. The recommendations, particularly those calling for legislative action is suggested because the CAPAG analysis suggest that there may not be an up front savings net of cost, but long term maybe there would be savings in economic benefits and that would be very positive especially in Jobs. There would be the opportunity to create a whole series of jobs in the process. The idea that there is the need for the Legislature to be involved is because there are complex social questions and should be dealt with by the highest level of policy making in the state which is the legislature. See Attachment: Appendix H of the Draft Mitigation Options for Controlling Greenhhouse Gas Emissions which elaborates and explains at length each recommendation presented in the slide presentation.

Thomas Peterson, President and CEO, Center for Climate Strategies and 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 Foundation and Robert W. Slocum, Jr., Executive Vice President North Carolina Forestry Association were next on the agenda to elaborate on the recommendations, lead discussions and answer questions.

Mr. Peterson introduces Steve Roe who will walk the committee through each of the recommendations on Agriculture, Forestry and waste made by CAPAG. Mr. Roe was the leader of the technical work group. and will show the intent and structure of the options. Mr. Peterson also asked that Bob, Paul, Dennis and Chris to elaborate and be involved in Q and A regarding the individual recommendations. Mr. Peterson noted that the consideration of these recommendations included economic opportunities through market base systems, which included offset opportunities. Considerations of these actions were not limited to their potential as offsets in a credit market either. There are much broader and intergrated opportunities for these actions to move forward and create economic opportunities and emission reductions in NC. So the group looked at a broad net of potential approaches that would be appropriate and sensible as they structured the options and the listing of them is in table form in the beginning of the Chapter of CAPAG on Agriculture, Forestry and Waste Technical Working Group Recommendations. See Attached Appendix H. Each recommendation has a write up that has a dozen elements that were specifically taking in the design and analysis of the options is summarized in the report.

Mr. Roe presents slides to the members. See Attachment DAQ Suggestions for Course of Action on CAPAG AFW Recommendations which is an outline of the recommendations in Appendix H. Steve told the members the costs net end up with a cost savings. He said that the over all costs ended up in a wash. He also said that all the recommendations received a unanimous report and that there were no objections from CAPAG.

Next Mr. Peterson asked that Stephen, Dennis, Paul or Bob elaborate on each option and take questions from the members. Paul spoke on option AFW-1, Manure Digesters and Energy Utilization. He said the cost figures used in this opinion was based on a lot of a NC data project especially dealing with swine. It was a project that doesn't fit in a nice category as where current regulation of swine waste didn't quite meet the now current regulations for a new Lagoon not costs based on a project that just catches methane and doesn't actually look at additional treatment. Most of the costs were based on the Barum Farm project. Steve said that the group used the Barum Farm project that was done in North Carolina which served as the base for the information that the group looked at the Hog Farm. The work group felt that it was good for NC specifically a bit conservative on the cost side as compared to other costs that we are seeing nationally and coming out of projects of projects in other states. Paul added that in his opinion that the status of swine waste to the electricity to the set asides in Senate Bill 3 is .2% of the electricity

generated in the state. He said he was not sure where it falls in the goal that CAPAG has put forth. It is relatively close the CAPAG that we have here is a little higher than n the goal as to what the set aside in Senate Bill 3.

Co Chair Harrison asked is the reference in AFW60 to starch base ethanol corn? Paul answered yes, that basically it is mid-west corn based ethanol and is the predominate source of ethanol in the US today. Rep. Harrison said she had heard that there might be more greenhouse gases emissions associated with corn-based ethanol than associated in fossil fuel. She asked if the group was recommending the production or use of corn-based ethanol. Paul said that the group wanted to show that not only celulosic ethanol be looked at but wanted to show within the options and analysis the benefits of utilizing greenhouse superior, peat stocks and methods. Contemporary wisdom is centering around a slight benefit associated with corn-based ethanol on the order of 18% to 20% relative to gasoline. Celulsoic produces at least 80% benefit relative to gasoline.

Representative Harrison referred to AFW-4b and asked if the reference to the CAPG group is recommending that there be more preservation and production for biomass used for energy purposes can offset fossil fuel use. Was there some size range of tracts of land? She thought that we want to promote more forestry production and conservation as we can. Paul said that it bears some additional clarification. Under 4b we're really looking at to preserve a forest base under 4b so that we aren't losing any more ground, while other options including AFW-9 and 10, we are looking to increasing the level of productivity within the existing forest base. So if there is really no conflict that he sees. His doesn't know of any conflict in the preservation. Bob's concern is that more to do with terminology than anything else. When you say preservation keep in mind that automatically congers up the museum management- take these lands and set them aside and don't touch them- and that's not maintaining the forest base. Regarding size limit, there is no question that management gets smaller. Management options as ownership gets smaller management and management gets more difficult and more expensive. When you get below 10 acres is difficult and you have tremendous costs verses the small acreage and it makes some of these operations more difficult according to Bob Slocum.

Paul asked if there were more questions on AFW 1 and Ivan Urland had a clarifying question on under related programs Federal renewal energy production tax credits and then as it explains the cost analysis and what factors were included. It says renewable energy production census was not included but it could have a small effect on estimated cost. Did the group not include the Federal and did the group not include the State renewable energy tax credits. Paul answered: We did not include the Federal, Are you referring to the energy per kilowatt per hour tax credit? Urland was. That was the one that Paul discussed with the Ag Star program. He said that they were not sure how likely that was going to be available to us within the policy period. On the state side we exclude those with in the CAPAG process not just within our options but across all the other work groups because they are considered to be in state costs. We do take the Federal grant program into consideration.

Questions were put on hold for Dr. Crawford Brown to make a statement. We have thirteen policies that give us 3 % production in CO2 emissions. Am I doing the math right. Seems like an awful lot of policies for a tiny, tiny reduction that 8 million people in NC each with 25 metric tons comes out to be 200 million people in NC each with 25 metric tons- He then with draws this question and goes back to the question regarding the scope and benefit. The scope of these I think and what benefit do you get and if you look down these lists and this is the 1st one (AW1) I urge you as you go through this list of policies in each area there is a cost effectiveness and there's a tons reduce some of which show negative numbers which means savings and certainly we ought to encourage all of those. But when you get to recommendations that have cost per ton that are very high verses the benefit you have to question why they are on the list. I question that process even though it says unanimous consent but without having all of these in one package rather

than in individual categories, That's very difficult to do, but what would be helpful to have a pie diagram that says "here's the source of CO2 emissions per metric tons of carbon emitted from each section and then what these strategies do in cost and the reduction you get. You can do that with this report. It takes a lot of effort but I think it is important to look at that cost effectiveness test and the total emissions reduced out in 20-20 as a result of each those steps that what is very valuable.

Co Chair Harrison asks M. Peterson if he could provide a chart to the commission at the next meeting so that they could put all of this in perspective. Mr. Peterson answered Absolutely. Rep Harrison said that our hope today was to prioritize some of these suggestions. We will go through these items line by line then we'll discuss the merits of the.

The meeting was then turned over to Tom for further discussion. Mr. Profeta had a question. In the 1st two witnesses, I found some good recommendations in terms of how to seize the offset opportunity in terms of extension services educating landowners trying to create standards. Is there any place that we can fit those into this? Or would it be a thing of a separate of recommendations that would be educate land owners and create the standard encouraging investment and does that fit within the concept, should we have our own addendum. How do three recommendations fit in the thirteen.

Tom Peterson: Maybe a slightly way to frame that there are three general principals or approaches that are behind the engineering of most of these actions. One is to create more or some policy driven opportunity or need for reductions so it's really on the demand side to try to create that and to the extent possible and some market driven or market base manner. But also at a policy base manner, secondly to create or enable a supply response to put in place mechanisms whether it is financial assistance standards, education, etc. It would create or enable some response, some supply of the reductions that would meet that demand. And the third is to bring as much flexibility to that as possible so that the transition to going forward to those new actions will best be suited to the markets and parties involved in implementation, creation of demand, creation of supply of flexibility that really are behind all of these and it depends one by one on exactly what levers and mechanisms need to be put in place to do any one of those three pieces.

Mr. Profeta: What is the government's ability to grasp opportunities that are on this chart before us. I think about – well if this commission is going to recommend the policies proposal, we have to think about what is the overlaying government intervention programs, etc. I hope we will grasp the opportunities.

Tom's response to a previous question. 25% of total reductions of the action recommended by the CAPAG are from this particular batch of 13. Mr. Profeta says he wants the Big Hit. He wants 60%. He doesn't want so many policies. He wants a small number of highly effective policies.

Tom Peterson: What was considered by the group in identifying these actions was not only ones that had sheer emission reductions potential but ones that for other reasons might none the less be important to the State, certainly there's an issue of co benefits. It's also to be fair a little bit that some of the recommendations don't look, during this time period, like they are big performers, but in longer time frames, they could be important stage setting to reductions down stream. So there were a variety of considerations going into the list, and demonstrate graphically how that all plays out.

The commission moved next to AFW2, Biodiesel Production (incentives for feedstocks and production plants). Co chair Harrison asked if anyone had any thing to add to Steve's description. There were no additions or questions. Next was AFW 3 Soil Carbon Management (including organic production methods incentives). Bob Slocum had one comment to make: There was a reference in our discussion to Celulosic Ethanol. AFW 4a (Preservation of Working Land – Agriculture Land and AFW – 4b Preservation of Working Land – Forest Land were now up for discussion. Representative Harrison had a

question on Present Use value: Did you all talk about some of the existing centers, the way our Present Use Value is structured? Were you specific in that? The answer was yes there was discussion of Present Use value and Bob Slocum had quite a bit to say on, is there anything that you would like to bring out Bob? Bob: not really there are growing programs that have served landowners very well. – good stimulus to improve actively managed forestland, which is Critical to the landowners. Another answer was that there is some discussion of land use value in AFW 4a and 4b and the reason for that is we just wanted to emphasize the fact that they have shown themselves to be effective programs and want to make sure that they continue.

Dr. Eggers had a question about non working forests and what are the current policies in either of these – just incentives for maintaining land in non working, non economic short term sense? Rep. Harrison said: There are incentives set-ups and the Legislature is working on that. Lands managed for wildlife and conservation. We have some legislation that passed the house last session that's been referred to the Senate – It would allow for different categories for Present Use Value, but it didn't want to actively cultivate your timber but one that set it up for wildlife management, or conservation which provided a new category of Present Use Value and there are others that we have been addressing some in the Legislature.

Bob Slocum: The resistance to that approach comes from the counties early and you probably know this as well as I do, it is the counties that are losing a revenue source if the lands are working in the sense of generating revenue. The counties can be upset of losing that source of taxable revenue. Rep. Harrison says this is accurate. Another question was: There lots of reasons to preserve agriculture, but perhaps from a cost benefit analysis; carbon reduction is not one of them. Did you consider just to remove this recommendation because it is tail wagging is all.

Paul: Great point because it is really tough with in one table to show all of the benefits that might be achieved – carbon or otherwise. As you mentioned I think we do address non carbon benefits within the write up in the policy but it is somewhat misleading to look at only these greenhouse gas reductions related number that you see on the chart, 4a.

Tom Peterson: I think you raise an important point. I think some of the recommendations on this list were actions that the group believed were likely to move forward for reasons other than carbon management, but could be tweaked a bit to try to be as carbon friendly as possible, and in any event, the concern was to try to make sure that we could score out the benefits of those programs as they move forward whether they are enhanced or not. So we've got a record of the benefit associated with it so you are seeing some reflection of that in this on list.

Paul: A lot more of that is that it speaks to cross cutting benefits for some of these that are captured in other areas that haven't been discussed, yet specifically with this one you have some of the transportation and land use options that deal with reducing vehicle miles traveled and part of that is preserving working lands. It's fits in as a small part of the whole. When we break them out in tables like this, they sort of lose a little bit of the focus on some of the larger items.

Bob Slocum: On working lands where we said that we've lost these acres to development and lack of post harvest regeneration it implies that the lack of regeneration equates to the loss of forests land and it doesn't. Simply the lack of post harvest regeneration (intentional act of a land owner) does not equate to the loss of forest lands, in fact, the only way you're going to lose the forest land is if you put a concrete slab on it or pave it over. Nature will take care of it one way or another; it may not be as productive as if a landowner had intentionally re-forested it under a management plan. The other, with regards to forestry, it's important to understand the what land out there from a forestry standpoint is very aggressive and it's

going to require to achieve these benefits and is going to require an unprecedented level of up front costs. An investment somebody is going to have to front a whole lot of money for these things to actually be realized. And from the standpoint of carbon, the benefits are accrued over a long period of time. It's not a one to one immediate benefit. There's a lot of other reasons to do this that make great sense - economically and environmentally. Understand there are some significant up front costs that are going to be necessary to achieve these things.

Paul: I might add that the mobilization of capital is certainly a big issue that turns up in many different place. Bob you raised a very important technical point. I think we want to double check that, and correct me if I'm wrong, but the numbers that were used in terms of the base line and projected conversion rates for changes for forest – cover are from the Natural Resource Inventory NRIUSDA – those are specifically land cover conversions to develop uses which have a technical definition. Those are not land cover changes that are associated with the removal of trees that can be regenerated whether natural or otherwise at whatever level. So that's a different category and so we want to make sure haven't mixed those numbers. On another issue, I think that what comes up is that we need to reinterate the semantics, terminology working lands implication here as these lands are retained in forest cover. That is not to imply that there will be a removal of management practices on the land. Soot the intent was clearly that these could be maintained in some appropriate form of activity management consistent with carbon friendly practices. Did I get that right? Yes

Dennis tells those on the commission that they will get a complete presentation from CAPAG – The social feasible noted in the back of the Appendix. Those of you who are going to be pouring over, I guess, each of the results from all five of these work groups presumably you are going to get the complete presentation from the CAPAG. As we proceeded we noted and were aware and discussed things like fiscal feasibility or social feasibility and they are noted usually in the back of each of the policy options presented. So obviously we don't discuss everything in detail, but they are noted and considerations that are discussed. And also with respect to the forestry options 4b and 8, 9, and 10 that we'll get to and in each or those cases the policy options are largely designed around already demonstrated successful programs of some kind that are either in place or their designed to be like another program that's in place and already working.

Paul: Thank you Dennis and yes the Appendix to the report which is on the website (un audible) is long and has additional references. It has more information and we can provide that.

The Co-chair asks if there is any elaboration on AFW 5 Agriculture Biomass Feedstocks for Electricity of Steam Production. Dennis responds: I would just note again that this one runs pretty well in tandem with Senate Bill 3, and that pretty much addresses the recommendation fairly we.

AFW6 Policies to Promote Ethanol Production is now up for discussion. Chris Hopkins: Along with the other clarifications on technology assumptions I do want to add to this one is that this is also a pretty aggressive set of goals here. I think we didn't quite realize how aggressive it was when we started out. I think people had a feeling that it was, but once we started looking a little bit more at the feasibility and the availability of feed stocks to produce this much celulosic ethanol we found we're starting to but up against the ceiling of what might be available. So I think we noted the need for additional research into feed stock availability, but I think we are really approaching the upper limits of the benefit that could be achieved through this option again in tandem with TOU 7.

Steve explained that AFW 7 was moved to AFW 4b and AFW 8 Afforestation and/or Restoration of Non-forested Lands would the next option to discuss.

Dennis Hazel: My only comment would be that in response to George Everette that as you look through the cost effectiveness of each of these items, for instance nine and ten has the negative number because of the positive benefits of producing forests products and what it does within the economy. For AFW 8 there is none of that because we're talking about establishing new lands. Forest products will not be produced until a time frame beyond the scope of this analysis. These are all new stands.

AFW 9 & 10 Expanded Use of Forest Biomass and Better Forest Management. Dennis: Just a comment on the number that was given when Steve Roe was doing the presentation of $9.00 per acre for these costs. There is no practice that I'm aware of that we can implement on a tract of forestland for $9.00. That is a number that in economic terms is an annualize present value of all practices applied during the life of the stand so it's a way of allowing us to do the analysis. But we recognize that doesn't represent the cost of treating an acre of land with any particular practice. Dennis asks if that's a cost per ton of carbon saved. I think it is the metric that we have up here so its not the cost per acre it is an in put to that calculation. That's a separate calculation. Steve he did mention in puts to that cost and that he did mention $9.00 per acre annualized over all of the treatments that would be used.

Speaker's name not audible: I think on this one, I heard concern from the environmental community about the risk that some of this waste biomass currently provides some habitat for species after timbering is done and that it protects against erosion in areas where the grade is steeper. Can someone comment on whether this is a concern and whether that has been addressed in anyway?

Paul: Most of this discussion concerning this has occurred in context of the newable port standard and we've been in discussions with Environmental Defense. We talked about what would be a reasonable amount of biomass to leave on the landscape. We have general agreement that some snags and some wildlife brush piles would be feasible, relatively easy to accomplish and without any real impact to the total biomass available for energy production. Probably the largest cause of concern that remains would be the widely dispersed coarse weed debris section – what could we leave in terms of coarse weed degree widely dispersed. It's an open question as to what wildlife actually needs. We have, as far as erosion concerns go, we have four (inaudible) acts that should cover any wide scale erosion of soil into the streams and that's not al0oawed in any case biomass harvest or not. The outstanding issue is what coarse weed debris is needed by wildlife and the best we can tell is no definitive answer in the research as exists now. Nobody knows yet the need for that specific species or class of species or type of life form. So this is an open question and one that really does need some research.

Follow Up: I think would wildlife once the forest is removed being the critical habitat then, some of this becomes irrelevant. Just because we don't know wildlife and habitat needs. We know that they are non-zero. I have some concern about the same thing and it's more related to soil and soil management. Through research, I'm familiar within the Specific North West and in British Columbia that has to do mycelium inoculation of the material left on the ground and beneficial enhancement of soil and actually the significantly improvement rate of reforestation and carbon sequestration. I think the recommendations to increase the removable biomass from large areas is moving in the wrong direction for several reasons and it's not all clear to me from a climate perspective it's compelling in any way.

Paul: First of all the biomass- what would we do with the biomass – that's the question and the primary use of that biomass that would be removed is to off set co-combustion… Either use reuse carbon that's already in the eco system in the biosphere or we can use carbon that 's coming geologic sources. One has that life cycle of a year many tens of hundreds of years of life cycle. So we're basically reusing carbon that's already in the biosphere as opposed as to the stuff that is in the geological cycle. No wasn't part of our discussions. The actual – one of the critical habitats needs for wildlife in the State is early sucessional forests, Typically tropical migrant sector, that group of species.. Early successional comes from

harvesting stands that have been (in audible) numerous times. So there are some real wildlife benefits to the harvesting.

Follow up: Yet my comment was not about harvesting at all. It was about the Biomass on the ground So you can just be focusing on that, I agree with what you are saying but I think another aspect of it is obviously the issue is not just as simple as co-off setting with wood but that is we decrease the rate of carbon sequestration of the forest that replaces the forest that was cut down, Then we might not really be gaining. This needs to be thought about.

Chris: And one of the arguments is to increase the fertility and the overall carbon sequestration rate of these forests. We can do that in several ways. 1. Increase the fertility of the sites. Fertilization can get you somewhere between 60 and 80% increases in fertility of the sites and that includes low ground and above ground. 2. Concentrating on growth on larger trees which produce larger products which have a much higher durability. 3. We're taking biomass and we are offsetting coal. Good reasons to consider doing much more aggression toward forest harvesting and forest management.

Follow up: I think actually considering the effects and think we should consider using synthetic fertilizers and we don't have the run off problems and we don't have the nitrogen and phosphorus problems in our surface waters, etc., etc. Nor do we have sedimentation problems which while we have regulations in place to protect our surface waters we know sedimentation is the biggest problem and some of that comes (un audible) I don't support this as written.

Bob: I guess I would caution about trying to look at this particular option too narrowly and just focus on the so-called Bio fuels aspect. Economics is going to drive Bio fuels and I tell you right now even if you gave wood away the economics of simply moving from point A to B make it non competitive. So how much of this stuff is actually used for Bio fuels – follow the money- will tell you and how much is actually there is in pure logging residue. I've got a fair number people in my associations that actually question how much really buyable material is going unused now. I think the Bio fuels side of it maybe driven by pre-commercial finning and some are bad in using some standing timber as opposed to the residues. I think a lot of foresters share the concern about long term impacts on soil fertility, but what I think this option really does speak to is improving the use expanding use of wood products in general which when it comes to carbon, certainly is superior to concrete and steel. And I caution, don't just get caught up in the Bio fuels aspect. This is a lot broader.

Co Chair Harrison: I want to point out a concern that we had about wood in regard to the biomass issue for energy is the environmental impact of the emissions and we heard a discussion during the Senate Bill 3 about how it was actually dirtier that coal and that the (un audible) will help us develop some recommendations to get at that.

Paul: Any further discussion and 9 and 10?

George Givins. Bob Slocum did use and is correct especially with this option about this being an unprecedented size program. It's built around cost sharing. Now we just mentioned that with this option, as many others, it's not necessarily an all or nothing If it seems wise to do a portion of it, then you get the corresponding benefit and it is recognized that this would be an enormous unprecedented wrap up, particularly in place sharing program. I would add landowners do respond to cost sharing programs real favorably and when money is allocated it gets used.

Question for Chris: As you were going through the list of things that were considered, I didn't hear methane from forest residue left in place or if it just degrades.

Chris: I think methane is only produced an optic environment. You don't get large amounts of methane from forest residues unless you've got them covered over with old landfills or water. So I don't think methane is necessarily an issue with forests residues. They tend to be pretty well air rated

AFW 11 Landfill Methane and Biogas Energy Programs. Name of speaker (inaudible) where in the process did we look at solid waste incinerators?

Tom: That was not something that we looked at in this process. In both the waste management options, the first is pretty narrowly defined in making sure that we're capturing more landfill methane. Second one is really just focused on increasing recycling rates.

Follow up: Was that perhaps captured in another sub-group? Solid waste incinerators and it's impact

Tom: No, I think within our original catalog of options that we looked at waste to energy is one of those, it just was not one that the overall work group felt inclined to bring into our initial list of priorities which you are seeing here.

AFW 12 Increased Recycling Infrastructure and Collection. Representative Underhill was recognized: I just feel like this particular piece in AFW we that we need to look at and examine how other states ahead of us or behind us. Because when ever I ask people about their local recycling opportunities, everyone seems to want to do it but the local agencies are just not making that possible and a lot of the things on your list are very, very significant when a narrow number of people are involved with them. The recycling program is a place where the public can buy in and feel like they are at least doing something to help lower carbon emissions in their own wan and I think it's important to have a fairly simple piece that everyone's always throwing up that it's too expensive. I just don't think we can ignore recycling as a motivational tool in our state. The litter problem that we have is incredibly difficult. I'm glad this is on here.

AFW 13 Urban Forestry Measures Mr. Hopkins makes a statement: Looking over the numbers and taking in the earlier discussions about the overall table 6 – the two largest benefits are in terms of negative net present value are 9 and 10 and 13 and I think just looking over some of the assumptions in 13, I probably challenge whether that's an achievable number in terms of over all reductions, savings and (un audible) I will probably address them on line or I will say there is a typo on page H 63 of Appendix H where cooling cost not winter cost in the summer.

Representative Allen: What parts of our state have urban forests. Chris: we don't have an actual number for what you would call urban forests. We can tell you pretty clearly what the forestland cover of the state is. How that intersects with what you would call urban because urban forests can be not only be a tree cover around a house, but a park, a lot of urban parks can qualify as forested. Speaker not identified: One of the things this recommendation makes me think of is there are a lot of community based organizations in NC assessing solar resource in the residential sector for the use of solar power. While it is a great thing to be planting more trees, there seems to be there could be a refinement of this recommendation you don't absolutely have to plant three more trees on a property where it is going to eliminate your ability to use solar hot water and solar electric, If this recommendation could be cognizant of that and try to recommend a balanced approach so that a very concerned land owner could utilize both solutions.

Paul asked for any additional questions or comments on AFW 13 being none Tom closed the discussion.

Tom: In conclusion, I would just add that kind of more broadly a reminder that the numbers that you see on the screen in front of you- these are what we call stand alone numbers or the reduction potential on the costs of cost savings per ton of individual actions but when they're combined together not only within this work group area but with other sectors such as transportation, power generation etc. We pulled together agric numbers in terms of greenhouse emission potential and agric cost effectiveness for all of the CAPAG actions combined. It's significant because there are many integrated and interactive effects between the options, some of them were quite deliberate, others were not but have to be recognized quantatively in terms of deliberated integration. There are a number of measures that are (un audible) contain both supply side and demand side approaches that sit in different places, for instance, we see biofuels supply side issues residing here in Ag. Forestry and waste and the demand issues typically residing in transportation and land use but it is anticipated that the implementation of an overall plan would glue these together. There is a three components of that which would be to even bring additional flexibility to that which could be related to their marked base systems or measurement systems that insure crediting, etc.- that's picked up by the cross cutting issues work group. So I think while we're presenting these one by one and presenting just this work group it should be recognized this is a part of a larger integrated whole that came out of the process. The other point, just a reminder Chairman Garrou in response just to reinterate the point you made earlier- the numbers that we have up here in terms of the cost or cost savings are really the direct costs of implementation of this particular action. They don't include actuary benefits or costs to certainly the issue Co benefits is a significant one in many areas and that's documented elsewhere. These numbers also do not include thee secondary economic impact in terms of jobs, value added income that is the subject of the Appalachian State University study that's going on right now. That is additional secondary information that's not on the chart

Chairwoman Harrison: At this point we would like to take any additional comments and input from the commission.

Jane Preyer: Two things pop up to me today. After hearing all the comments today, one is what George Everette said at looking closely at the cost effectiveness combined with the green house reductions per time and combining those big boosts. Second one is some of the carbon offsets per discussion we heard and the opportunities potential the position NC to be more ready for this or to get in lead on this and get out front. So I would throw out that those are potentially two criteria to think about set of recommendations and the next step somehow getting more specific about some proposals that might feed on those criteria some way.

Dr. Smith: I agree with that. Is there a way just a way just looking at the way CCS has come up with their cost effectiveness? Some of the things that were presented here earlier about the offsets – is there a net present value type calculation that can actually be brought into the overall equation here so we can try to compare apples to apples and then someway – Has that already been done? Will you give us a sense of that or I think if we add that in, which I would encourage that we certainly take a look at, I think a lot of benefits would be interesting to do that.

Steve Roe: Just to underscore that the cost effectiveness numbers that we produced which are essentially direct costs per cost savings per ton are not necessarily the same as the transaction costs that might occur in the market, either for an offset or for a tradable credit because other things go into the termination of that price set up. Actually scrub it down to an offset price would take a little bit more analysis, but I think what you see is one of the most important inputs to that which is cost per across the series to get the marginal abatement actions.

Dr. Smith: Well I guess the question I have is do we want to try to have a discussion here about some agreed upon methodology prioritizing this? Because I think the other overlay to just be very frank about is you've got greenhouse gas reduction cost effectiveness and than you have this sort of politically reality constrained and I think those all have to be sort of factored in here if we're looking at how we take these from the paper and the process we've gone through to where they get in some from of implementation. So it would be interesting to have a discussion with it about how to prioritize these in some way and see if we can get some general agreement from the various members here about how we might do that and what that might look like.

Chairwoman Harrison: I think it's entirely pertinent that we have that discussion today. Do you have some input?

Paul Sherman: Just wanted to add a little bit of background as to what the Farm Bureau has been doing outside this process. We have had several state holder group meetings with various organizations and it sort of led us down the road of organizing several carbon trading work shops that we are going to have actually next week. To do some of the things that are recommended here mainly is the education piece is bringing in land owners whether it be farm or forest as well as co-operative extension in soil and water conservation, district folks, NRCS, educating them about what carbon credit or what carbon credit trading is, how it all comes about and even bring in currently one and maybe in the future multiple variations of the voluntary trading markets that are out there and ways that they can participate in those markets. And sort of something in the back of our mind is part of this process is we can certainly look at what's been done here in the CAPAG . But there are ways that some of the costs of these, some of this education is a whole lot lower cost as far as participating in markets that are already out there that you and see the benefits expect mental to the cost. As far as just helping to promote those types of things that steer up toward a goal without being too terribly forceful about it. With the mechanisms we have out there and then with the Federal mechanisms that are likely down the road.

Mr. Tobin: Madam Chair these recommendations have been developed over the last couple of years by a broad state holder group represented within the CAPAG. And It seems to me that given the presentation of those results the analysi8s that's been done on those items and relative lack of objection to the items that were presented today that we might be at a point where a motion could be made to have the commission adopt these recommendation and to begin the process of developing these items either individually or in some into a bill and it seems that we've got at least four other presentations of items of a similar complexity. And Those, I think it was hoped this is a point of order that Mr. Givens can clarify that some of those might be developed for 2008 session. And it looks to me like with maybe one or two exceptions on this list there is some consensus here that we have a good starting point from which to develop some legislation that could be considered by the General Assembly. So I would just submit that if the time is right, then perhaps a motion could be made and again Mr. Givens could (in audible) if this the time but to go ahead and see if the commission is ready to accept these recommendations made by the CAPAG. Several of whom are serving in both committees but to go ahead and get to the next stage which is a drafting stage where these specific points can be aired for a broader audience.

Chairwoman Harrison: Thank you. I'm going let Mr. Givens have first crack.

George Givens: Well let me at some risk, I will observe that the consensus in this or consensus within the CAPAG is not necessarily translated to consensus across the street or in this room which is populated by the Finance Committee, The Appropriations Committee, or whatever. I think that, well let me say this, I purposely didn't orchestrate some particular outcome to this meeting because I wanted to give you all an opportunity to discuss and how this would go. As a practical matter, I can tell you that (in audible) bills to implement all 54 or l57, whatever the number is, we just don't have the resources to do that and the

General Assembly s0 not have the resources, in time, I think particularly in the Short Session to give all those adequate consideration. Therefore I would encourage you to take observations that Mr. Everett has on cost effectiveness and then factor in there some estimation for reality and we as a staff would like to work on the ones that it appears have the best chance of going forward in 08. Now I would observe to you the following factors, you've got the LCAPAG recommendations as somebody just pointed out and saw some of this in the discussion of we had in February leading up to the Long Session. The recommendations in the CAPAG report are not the be all and end all. There are other ideas that people have that can be looked at. In addition to those issues there's the adaptation issue we're going to begin the discussion of that at the January meeting. There is the question of the goal and that question of the goal really, I thought we would, it was my intention that we have more discussion on that issue at this time. The fact that we haven't is our fault and we will try to remedy that next time. I don't start with presumption; the legislation doesn't start with a presumption that there should be a goal. It says we need to figure that out, but a goal is a guide to how you choose which of these measures you want to pursue. Beyond that there is the question, at least in my mind that the future of this commission is presently set to sunset. When I say this I don't mean this particular this group is appointed constituted but whether we do about Climate Change going forward, what we do about adaptation, what we do about additional mitigation measure. I have some ideas about that as I suspect many of you have some ideas about that. So I think at this point, probably what I would like to hear is if there's further discussion on these proposals in light of what might actually be politically do-able, one of the good features of this commission is that we have a broad in put from outside the legislature that comes at the expense of the fact that you have relatively few people like Senator Albertson, Representative Underhill and Representative Harrison who would have paid to get these bill shepherded through. I can tell you it's from my own experience of 20 some years in looking at the effort that went into Senate Bill e is controversial (in audible) effort hard for it to get one item through the Legislature. And so that's my gloss on it, in other words, I think to answer your question directly a motion to go out and do good, however commendable , is not particularly helpful at this point. We need something a little more surgical, and if we're not prepared to do that today then we need to figure out how we're going to get there. And I'm prepared to help you do that.

Mr. Garrou: One of the things that I think this commission needs to decide and this is a political question, I'm not sure in the Legislature so I don't know how to answer it. Do we really want to recommend 54 things or do we want recommend 3 things, 5 things? So I would suggest that we don't want to adopt all these things today, but we want to wait until we see the whole package and then say do we really want to recommend all these things or do we want to push a half a dozen of them.

Harrison: And I can just add to that when we issue our report we can still contain these recommendations and then we'll have specific goal proposals as well. So its not that these recommendations will be left out, if that helps at all.

Mr. Slocum: Yes, I think the (in audible) of Mr. Givens is well taken and when I look at the recommendations that are made in this group and are made in this section and then how do you get there now there are a few things that come to mind. Almost every one of them is a money issue that actually makes it happen and there are a couple established programs that really touch on or would get at several of these. The Agriculture and Farmland Preservation and Trust Fund gets some of this. The existing car share programs for forest and agriculture get at a large part of this. We've got Senate Bill 3 created a center for biofuels in NC which really gets at the biofuels section, so there may be some specific things that can be recommended that w3ould get us toward a large range of large number of these but it's a small number. The reality of how much more money is available. I leave that to the astute guidance of Senator Albertson, the chair, and Representative Underhill; but unfortunately to get to where we want to go or where this report recommends, It's a money issue to a large degree and now where the money is going to come from.

Co-Chair Harrison: Thank you. Mr. Profeta

Mr. Profeta: Thank you madam chairman. I would agree with the comments of many of you in terms of trying to prioritize these recommendations. I think we've heard from George Everett we need to create some const effectiveness, bang for the buck criteria by which we are (inaudible). We want to ask for the chart and you certainly in ranking (in audible) I would say to Bob the reason I thought we might be able to pick up the three pieces that were in the McDowell testimony and because that's one way to facilitate some money not from the State but from private investment stream. And I think we seem to be fertile ground for that sort of investment and we probably should encourage to act fast, and encourage the investment stream to come. So when I hear Paul Sherman talking about we need more education for landowners – that's a piece of it, and when I hear Representative Thomas talk about we need a single standard that's a part of it. NC is on the board of the 40 State Climate Registry could advocate for one national standard on these offsets that would promote investment so I would suggest to the commission informally, not procedurally, is that we somehow ask for a cost effectiveness evaluation of CAPAG recommendations but also consider a package just to create the fertile investment environment and off sets.

Dr. Crawford: I do want to clarify my position. What I'm really much more interested in is that column which – what is the actual savings in CO 2 and what worries me about (inaudible) of this that having 50 recommendations is that each recommendation requires a champion that has to use their personal energy in chits and so forth to move things forward and I just think if we have a large number of these things each with small impact there's too much of a chance that at the end of the day a few of them go through and you end up with 8% drop in CO 2. I'd rather see bogus effort of a numbered people around e or 4 really big issues where at the end of the day we say boy did we make a big drop in the CO w emissions for the State

Mr. Urlaub: Thank you, following up on Douglas Brown's and George Everett's comments what I'm thinking is – could we have some kind of one pager that maps out the inner relationship of across the five sector groups. There was mention of several of these agriculture, forestry and waste management options that they're incremental above and beyond one or more other options and other categories and if we could have maps or word piece options where these options do naturally group together and where they're incremental to each other then we could maybe start to see a bigger picture where there's several options across sectors that could formulate into one agri-gret recommendation or policy action.

George Givens: I see Mr. Peterson nodding his head and I think that would be useful in a number of ways when you're looking at cost and cost benefits to get some across the board comparisons as opposed to just within individual sectors.

Tom Peterson: If I might just elaborate, it's fairly typical as a follow up phrase to the more detail line item planning recommendations to bundle actions phanatically or bundle them in a way that makes sense functionally in terms of implementation. So it would be very reasonable to expect that in terms of implementation, packages a list of l50 some will shrink (in audible) 10 or less in terms of structuring implementation programs and I would certainly anticipate that that's something that could be done as a next step here to integrate just as you suggest . The other thing I would just note is with respect to the cost effectiveness numbers, it will probably not be too long before we could add to these direct cost numbers the results of the Appalachian State Study which would indicate the potential benefits these actions might have in terms of jobs, income in value added that could be considered as a part of quote unquote "band for the buck" calculation so is the commission would be interested in seeing those results added to have a bit broader picture in terms of economic opportunity that could be done as well.

Harrison: I think we would, I think that we would appreciate that. Thank You.

Dr. Eggers: Because we're having this discussion it seems like we're starting to kind of identify more of a triple bottom line issue that it's not just simple economic analyses, we have not simple in terms of effort but we need additional economic information and then major social impact that'll happen because of jobs and the major social impacts that will happen because of quality of life issues that will be affected by this for future generation and environmental impacts and so I would encourage us to because of the profound ethical obligation of this commission to consider all three of those bottom lines.

Harrison: Thank for that point.

Dr. Everett: Tom, I know that the draft final report says do note quote or cite. But we've all at least a large portion of us have seen it and in that at least in my October 16th version, I don't know which version we're on. There is a ranking that you've already done which would be helpful. I think to everybody when you're at a point when you're ready to share it. And the good news I would say about that ranking is in terms of reductions of emissions the number one item by far in the graph is done. So feel good about where we are. The next item on the list achieves about half of what item one does in terms of reduction of emissions and in terms the next table which is figure 1-4, it is I think very instructive to look over there on the far right hand side of that chart which is a ranking of dollars by ton and you'll see maybe where you can quickly begin to not worry about some of these items and they'll fall off pretty quickly so I think it does bring value to look at the whole set land not to take one of these working groups and do the whole package. We ought to selectively go through them just like this has attempted to do and it's very helpful to look at those charts. They're not definitive by themselves but they're helpful.

Dr. Smith: Well I don't disagree with that at all, I think ;that if we were, We should reach, I guess, some sort of agreement about how we want to go forward on this and what are going to be the methodologies if we're going to attempt to rank them try to drill down some very specific items. I do want to caution, although. I'm very aware of the political realities of the cost of going forward. I want people to remember because we haven't engaged in this discussion at the level that I think ultimately we're going to need to engage in it but there is a cost in-action and I think people have got to constantly remember that when we get into the adaptation and some of the things that the State is facing and some of the things, it's very easy to immediately look at the cost that you're dealing with and real time but I have to think we don't have, I think, fully the understanding of all the potential costs of in-action which may be able to shift that the political possibility equation. When we begin to really look at some of the costs that NC is going to surely incur from the need for adaptation and some of the things are in motion. So I just and I don't know how we are going to qualify that, and bring that in ultimately, but I think it's got to be part of overall calculus here because the financial political realities we are in today are not going be the same that we're going to be in the not too distant future. As these manifestations continue to unfold and for those of us who are dealing with issues like drought, this past year and other things like that and see some of the emerging issues that continue to sort of come at us very rapidly, I think it would be a mistake to only be looking at it in the context of sort of a politically reality and financial reality today because doing nothing on some of these issues is not an option. We're going end up paying one way or the other.

Co Chair Harrison: Very good point, thank you for that. Anybody else? I guess if there's nobody else who has anything to say, we'll adjourn. Thank you all for coming and our next----Mr. Profeta.

Tim Profeta: I'm sorry Madam Chair. Are there any other analyses like that George has describes that would be useful for our assessments. I think we should ask that question or I can just leave the question

out there to be banged around with staff, but I, it strikes me if that analyses exists, I would like to see it and any similar, I would like to see them as will.

Harrison: And that analyses he references is in the summary document that we got last time and is on page I.17 summary to the CAPAG and we will redistribute that.

Profeta: Well I have that. So maybe the answer is no there are no others.

Harrison: But I will let Mr.Givens respond in more detail.

George Givens: Well what I was going to do is follow what Doug Brown said about the companions and the fact or the matter is that there are only some number of people to handle the bill regardless of how many recommendations you've got. And it would service commission's legacy well to propose six and get five than to propose 57 and get 4. What I think what we'll do is have some further discussion off line in addition to all the criteria that have been mentioned, the ones Dr. Everett and Dr. Eggers mentioned the political realities. I value most highly those suggestions that meet all those criteria and that there's always some draft legislation to use as a guide and we'll be looking for those and for those of you who have good samples that you've acquired from some place or other, we should be happy to have staff to see those and we'll be talking with many of you off line as to how to resolve the questions and issues we've raised today.

Harrison: Any thing else? I hope on the addition adaptation, if we bring up any of these other subject areas we're discussing, we will let you know in enough time so that you can review your document that we got at the last meeting or get the section out to you. So I guess with no further business, we'll adjourn. Thank you all for coming.

Respectfully Submitted

Representative Harrison

Anne Misenheimer
Committee Clerk

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APPENDICES

Exhibit A	Visitor Registration
Exhibit B	Agenda
Exhibit C	William C. McDow III
Exhibit D	Bill Chameides
Exhibit E	The Center for Climate Strategies
Exhibit F	DAQ Suggestions for Course of Action on CAPAG AFW Recommendations
Exhibit G	Climate Action Plan Advisory Group
Exhibit H	A Legislative Proposal to Prepare NC's Agriculture & Forestry Sectors for Emerging Carbon Marketplace
Exhibit I	Climate Action, Forestry, and Waste Technical Working Group (Appendix H)
Exhibit J	Chapter 6 Agriculture, Forestry, land Waste Management
Exhibit K	Climate Action Plan Advisory Group, Chapter 6 Controlling Greenhouse Gas Emissions