

**Advanced Coal Technology Work Group Meeting**  
**Double Tree Hotel (Crystal City), 300 Army Navy Drive, Arlington VA 22202**  
**Tuesday, June 5, 2007, 8:30am-5:00pm**

**Meeting Objectives**

- To finalize the Work Group's Interim Report
- To discuss next steps to transmit the Interim Report to the CAAAC and communication materials to accompany the report
- To discuss and agree on Work Group activities and goals for the next six months
- To learn about the Supreme Court's decision in *Massachusetts v. EPA*

**Welcome and Overview of Meeting Objectives**

Ben Henneke, Clean Air Action Corporation, welcomed the Work Group.

Elizabeth Stolpe, Shell Oil, who was sitting in for James Burns, Shell Oil, introduced herself.

Rob Brenner, US EPA, thanked the Work Group for their hard work. He saluted the Work Group vision and the Work Group's collaborative process. EPA and other groups working on climate issues have successfully used a collaborative process; however, this process has been used for over a year and the collaborative process used by the Advanced Coal Technology (ACT) Work Group has only been used for 6 months. Mr. Brenner stressed that the issues related to ACT must be addressed sooner rather than later. Mr. Brenner said there is a lot of work being done in the energy and climate areas. He is involved with 3 different hearings in the coming weeks. There are legislative drafts on the Hill which need comment and there is a rulemaking in response to a presidential executive order. A lot of this is unprecedented, much like the work of the ACT Work Group. Mr. Brenner said there are also groups outside of the government that are addressing climate issues such as the United States Climate Action Partnership (USCAP). Clean coal technology and sequestration was an area within climate and energy which needed attention. This topic was not on people's radar screen a few years ago. It is important to determine how to implement these technologies sooner rather than later. With their six month interim report, the Work Group will enable others, who did not previously understand the framework and technology, to have better discussions with regard to these issues. Mr. Brenner said he hopes that over the next six months, the interim report will trigger a set of discussions that will help people think through the various implementation options and how they can be packaged together.

Mr. Brenner said that although he came to the Work Group meeting to give credit to the Work Group's efforts, he also wants to push the Work Group even further. The more specific the Work Group's options and concepts are, the better the ensuing debate over the next few months and the better informed those on the Hill who are drafting legislation. He suggested that the Work Group refine the options and be specific about which options are leading candidates. This will enrich the debate over the next few months. Mr. Brenner said there are groups that exist for vehicles and fuels and for stationary sources, but not for utilities and coal. He said that he looks forward to working with the Work Group over the next few months and looks forward to receiving the final paper at the end of the year.

John McManus, American Electric Power (AEP), said at the first meeting in January, Mr. Brenner said the Work Group should look broadly at all technologies and avoid a narrow focus. He said this comment was very helpful and set the stage for their work. Mr. Brenner thanked Mr. McManus and said he knew it was often tempting to jump to a particular approach or a particular technology. He said the six month interim report appropriately discussed this approach.

Mr. Henneke said no one from the press was present; however, should someone from the press arrive, he would remind them that the six month interim report will be public and posted on the website once it is sent to the subcommittee. Mr. Henneke then reviewed the meeting objectives.

### **Recap of Work Accomplished on May 8<sup>th</sup> and Subsequent Conference Calls**

Anna Wood, US EPA, provided an overview of the May 8<sup>th</sup> meeting, summarized in slide 3 and slide 4 of her PowerPoint presentation. She mentioned that the Advanced Coal Technology Work Group Statement would serve as a touchstone for the communication package that will be forwarded to the subcommittee with the interim report. Ms. Wood reminded the Work Group that the August Work Group meeting would be held in Santa Fe.

Ben Hengst, US EPA, reviewed the process for generating the interim report.

Ben Henneke, Clean Air Action Corporation, reviewed the highlights from the Clean Air Act Advisory Committee (CAAAC) meeting on May 10<sup>th</sup>. The Advanced Coal Technology (ACT) Work Group had an hour and a half discussion at the meeting. Julio Friedmann, Lawrence Livermore National Laboratory (LLNL), who also presented at the January ACT meeting, gave a PowerPoint presentation. This presentation was different from the January presentation because there have been new developments in this field since January and Mr. Friedmann included some of the work of the ACT Work Group. The subsequent discussion of the whole committee focused on the opportunity to use coal and the importance of addressing the environmental impacts of coal utilization.

Bill Auberle, Northern Arizona University, said the CAAAC members are placing great importance on the Work Group's work and are very encouraging of their work.

John Campbell, Caterpillar, said Mr. Friedmann's presentation was excellent. He commented that the work associated with this topic is fast paced. CAAAC members do not understand the complications of the process, much like the Work Group members did not understand the complications in January. The ACT Work Group's work product will help others understand what must be done.

Mr. Henneke said listening to Mr. Friedmann's summary presentation five months later was very useful; everything fell into place.

Mark MacLeod, Environmental Defense, agreed with Mr. Henneke. He was better able to absorb the information after the second presentation.

### **Discussion re: Advanced Coal Technology Work Group statement**

Anna Wood, US EPA, said she revised the Advanced Coal Technology (ACT) Work Group Statement after receiving feedback from the last Work Group meeting and making changes based on the conference calls. She asked the Work Group to comment if there was anything missing or incorrect.

Rick Bolton, Center for Toxicology and Environmental Health, asked about the intent of the statement. Ms. Wood said the statement would serve as a communication piece for Work Group members to share within their organizations and explain what the Work Group is trying to accomplish. This statement will allow everyone to communicate consistently.

John McManus, American Electric Power (AEP), said the statement has limited life because the last sentence of the statement which addresses the interim report submission date will soon be outdated. Ms. Wood said she would change this sentence once the interim report was issued.

David Foerter, Institute of Clean Air Companies (ICAC), asked if the statement was serving as a mission statement or a process statement. Ms. Wood said the statement serves as a process statement.

Mark MacLeod, Environmental Defense, said the word “streamline” in topic #5 (ways to streamline or accelerate permitting of projects involving ACTs), has many meanings. He suggested removing this word.

Patrice Simms, Natural Resources Defense Council, seconded Mr. MacLeod’s suggestion. He said that his group was working on this topic and they were talking about addressing delays in the permitting process.

Mr. Bolton suggested keeping the word “streamline”. Streaming to him is exactly what Mr. Simms said. The permitting process is about potential delays and the uniqueness of the process warrants a challenge to the regulatory process.

Mark Fessmire, New Mexico Oil Company, said he agreed with Mr. MacLeod. They need to be clear that they do not intend to shortcut the process, but rather that there needs to be a way to accelerate the process.

Anne Weeks, Clean Air Task Force, said she thinks removing “streamline” and keeping “accelerate” is consensus. Some individuals think the solution is simply to do permitting correctly from the beginning. Removing “streamline” avoids negative connotations and leaving in accelerate or addressing delays is consensus to her.

David Berg, Department of Energy (DOE) suggested substituting the word “facilitate” for all the words there now.

Mr. Fessmire said he did not think they were trying to weaken the statement, but simply clarifying that they want to accelerate a valid permitting process, not shortcut it.

Ms. Wood asked Mr. Bolton if he was comfortable with removing “streamline” and leaving “accelerate”. Mr. Bolton said he possibly would be comfortable with this, but he would have to think about it.

Ms. Wood said she would bracket this statement and would come back to Mr. Bolton.

Mr. Foerter said some states have streamlined permitting (i.e., identified projects to facilitate). They often set up a whole process to quickly move these projects forward.

Dan Cunningham, PSEG, said streamlining rang a bell for him. When streamlining, something is taken out of normal process and if it meets a certain criteria because of its nature, it is moved ahead.

John Campbell, Caterpillar, suggested replacing “streamline or accelerate” with “ways to prioritize and accelerate”.

Mr. MacLeod said this statement provides a summary of the recommendations in the interim report. However, the permitting recommendation in the interim report does not define streamline and everyone defines streamline differently. Therefore, streamline should be defined in the interim report if it is used in the statement.

Mr. Henneke reiterated that if streamline is included in the statement, it should be included in the recommendation in the interim report.

Ms. Wood said they would bracket this statement and proceed with the wording if Mr. Bolton was comfortable with it. She asked if the rest of the Work Group was comfortable with the wording. There were no objections.

Barbara Bankoff, Siemens Power Generation, had two points. First, the statement does not address what ACT means. Second, under the education and outreach recommendation, she felt the concept of transparency (e.g., costs, risks, and liabilities) needed to be addressed. With regard to Ms. Bankoff’s second point, Ms. Wood said there would need to be a parallel change in the interim report.

Ms. Weeks seconded Ms. Bankoff’s comment; the language explaining ACT is vague. To her, it means ACT needs to include carbon capture and sequestration (CCS). Ms. Wood said that if the Work Group comes to a definition that is useful and agreeable, they will include the definition in the statement.

Patrice Simms, Natural Resources Defense Council, said the first sentence of the second paragraph, talks about recommendations to accelerate the development and use of ACTs. He suggested changing the first sentence to “recommendations to accelerate transition to ACTs.”

Mr. Berg suggested moving research, development, demonstration and deployment (RDD&D) from the first paragraph to the second paragraph where it now says “commercial development deployment and use”. He also agreed with Mr. Simms’ suggestion.

Ms. Weeks said she wondered if dropping RDD&D and talking about acceleration or market transformation to ACT does not capture all the points without getting into detail.

Mr. Campbell said it would be a mistake to drop RDD&D. Mr. Berg said RDD&D is in the third paragraph, but the language is not consistent, which was his concern.

Ms. Wood asked the Work Group to confirm the language "... a shared set of recommendations that could be undertaken by various stakeholders to accelerate the use and market transformation of ACTs" in the second paragraph, first sentence.

A Work Group member asked what "shared" meant. Ms. Wood responded that in order to advance ACT, there are a number of pieces that need to come together. There is shared responsibility for different actions. The interim report addresses this. There are a number of things that need to happen to make the technology move forward and this is the responsibility of various stakeholders. The recommendations, therefore, are holistic. The responsibility is shared; not one sole entity is responsible for the recommendations. All stakeholders have a responsibility to move ACT forward.

Patrice Simms said he wanted to change the language from the first sentence of the second paragraph "...the use and market transformation of..." to "...to use of ACTs". Ms. Wood read the revised sentence: "The Work Group is developing a set of shared recommendations that could be undertaken by various stakeholders to accelerate the market transformation to use of ACTs."

Mr. Foerter asked if the Work Group was saying that market transformation is the same as RDD&D. Mr. Simms said market transformation is the goal and RDD&D will achieve this goal. Mr. Foerter suggested saying exactly that. Ms. Wood said they would try to work on this and build it in.

Ms. Weeks said it is not just an RDD&D problem. She suggested discussing the goal and then listing the various elements needed to achieve the goal. The statement should not focus on only one element.

Mr. Foerter said if the Work Group comes to a definition or common understanding, they need to state it.

Ms. Wood suggested keeping this as a note.

Jeff Hopkins, Rio Tinto Energy, said in point number 4 in final paragraph, he took the wording on liability mechanisms to mean establishment of mechanisms to assign liability. He thinks "liability mechanisms" is out of place and inconsistent with the intent of risk characterization and risk management goals. He thinks rephrasing "liability mechanisms" to "mechanisms to address liability concerns" is more consistent with the other two objectives in point 4. Everyone agreed with the change.

Mr. Berg noted that the first sentence says “to create incentives under the Clean Air Act” and the Work Group has looked beyond the Clean Air Act, so they need to say “and elsewhere.” Ms. Wood agreed and said they could expand this.

### **Discussion to Finalize the Interim Report**

Ben Hengst, US EPA, announced that there were two goals for the discussion to finalize the interim report:

- Identify the types of ACT for which there are substantial opportunities to provide recommendations for incentives
- Identify a consensus on the definition of ACTs

Ben Henneke, Clean Air Action Corporation, showed a series of slides titled “Coal Technologies and Environmental Footprints (2030, 2020, and 2010).” The different slides reflect the definition of ACT at various points in time. Mr. Henneke said that the Work Group should try to come to a decision about where they would allow both regulatory and financial incentives for each year mentioned.

Mark MacLeod, Environmental Defense, said that he thought there had been a textual definition agreed upon a while back. He said he was uncertain about this approach because when you talk about incentives, there is a whole range of options. To try to do a matrix of the level of incentive for the level of technology for a given year may not work. He added that everything done by the Work Group so far has been qualitative and directional, and therefore a textual directional definition could be better. For example, we could describe the goals of ACT instead of the specific details for efficiency percentages.

Mr. Henneke said that the Work Group should try the exercise and that it would not necessarily go in the report. The purpose in the write-up is not to publish any of these diagrams, but rather to try to get some clarity on the level of consensus.

Ann Weeks, Clean Air Task Force, said that perhaps the best place to start if you have to do this exercise is 2010 and not 2030, because 2030 requires an assessment of further regulatory drivers.

Alvaro Linero, Florida Department of Environmental Protection, said that if the group would just start the exercise, we would find people clustering.

John McManus, AEP, said that the chart is a good chart to explain what we are talking about for transitioning technologies.

Bill Auberle, Northern Arizona University, said that the chart seems a bit misleading; the metric should be CO<sub>2</sub> emissions instead of the environmental footprint context.

David Berg, Department of Energy, said that this is not an all-inclusive table; it does not include feed stocks for industrial processes, or unit processes that are advanced, such as better scrubbers. We are falling into a trap of focusing on the technology rather than the objective. We should think more broadly that we are in a growing economy and that we must progress and address new problems.

Robert Hilton, ALSTOM, asked what about CFBs and Oxyfired CFBs?

David Foerter, Institute of Clean Air Companies, said that we should add existing power plants into the process and document what we think the incentives are to date with technologies.

Mr. Henneke said that we have another slide like this for replacement and retrofit. We are trying to find out where we are as a group.

Patrice Simms, Natural Resources Defense Council, said that with the spectrum from larger to smaller environmental footprint, it does not appear that the coal to liquid plant with CCS is in the right place. It seems like it is a step backwards environmentally from some of the other options.

***Discussion re: 2030 slide***

Mr. Henneke asked if on the 2030 slide, would we first begin to incentivize 40% efficiency + CC ready? Mr. Linero asked if this is net of sequestration? Mr. Henneke said we drop the 40% at the end.

John Campbell, Caterpillar, asked are we getting to a point where we are not deciding to provide incentives for anything? To say that there are not going to be any incentives at all in some of these areas is a little bit difficult to understand. Mr. Henneke responded that we are just trying gauge the group's consensus.

Bob Wyman, Latham and Watkins, said that there are some regulatory incentives, such as government taking the long term liability risks for some of the sequestration.

John McManus, AEP, said that he might consider incentives for 40%+ efficiency if you are pushing for efficiency at 50 or 55%.

Judi Greenwald, Pew Center on Global Climate Change, asked what does carbon capture ready mean? Mr. Henneke responded that this is the type of question we are dealing with. It means there is space and there are equipment hookups in the right places with geologic assessments.

Jeff Hopkins, Rio Tinto Energy, asked what do offsets mean? Are you distinguishing if the capture is locally captured? Mr. Henneke confirmed and said that we are trying to simplify the charts.

Ms. Weeks said that it depends on the incentive. For example, would the incentive enable a plant to do sequestration? Mr. Henneke said that is a misunderstanding – you are only giving an incentive to develop, not giving an incentive to become better.

Mr. Hilton said that financial incentives go with technology that needs development commercially; technology and development in 2030 is something we do not even know about now.

Tony DeLucia, East Tennessee State University, said that states and regions are going to be very concerned about how economic development occurs, so they could be willing to do a lot more.

Mr. Henneke next asked if the group would be willing to incentivize coal to liquids plant with CCS (75%)? A few people said they would be ready to provide incentives. Greg Schaefer, Arch Coal, said he would incentivize, especially with carbon storage as a focus.

David Berg, Department of Energy, said that he thought it depends a lot on things we do not know now.

Mr. Henneke next asked if any one would be ready to incentivize 40+ % efficiency + CCS (50%)? Some Work Group members said yes.

Mr. Henneke next asked if any one would be ready to incentivize PC or IGCC + CCS (75%). Some Work Group members said yes, but it is still less than a third of the group.

Mr. Henneke next asked if any one would be ready to incentivize zero footprint technology. Some Work Group members said yes.

Barbara Bankoff, Siemens Power, said that it depends on the alternatives. She said she was not willing to give incentives if nuclear is an option at the time.

Ms. Greenwald said that by 2030, we should have a climate policy in place, which should require CCS. She said that she thought incentives were an interim measure to bring the costs down by the time people build, which hopefully will be sooner than 2030. She said that she would be willing to give incentives earlier so that by the time this is all required, we have brought the costs down.

Mr. Simms said that he agreed with Ms. Greenwald's points. Nuclear will also be really important, for example, with what happens with energy efficiency at that time.

Mr. Linero said that it sounds like by 2030, we have given all of this back to the market system and do not need artificial incentives.

***Discussion re: 2020 slide***

Below are the technologies listed and the estimates of the number of people who would agree to incentivize the technologies in 2020.

- A few Work Group members agreed to 40% efficiency offsets.
- A few more Work Group members agreed to 40% efficiency CC ready with geologic assessments plus offsets.
- More Work Group members agreed to coal to liquids plant with CCS.
- A few Work Group members agreed to 40% efficiency plus CCS.
- More Work Group members agreed to a PC or IGCC.
- Most Work Group members agreed to a zero footprint.

Some Work Group members did not agree with any incentives at all.

Ms. Bankoff asked if incentives include permitting. Mr. Henneke responded that accelerated permitting is included as an incentive.

The consensus was that most Work Group members could agree on incentives between 40+% efficiency + CCS and PC or IGCC for 2020.

***Discussion re: 2010 slide***

Steve Jenkins, CH2M Hill, said that anything we do today is not going to have an effect on 2010 because plants going online in 2010 were started a few years back. Mr. Henneke: said that 2010 is not a start date; this is getting it on the drawing boards.

Below are the technologies listed and the estimates of the number of people who would agree to incentivize the technologies in 2010.

- Everyone agreed to zero footprint.
- Most everyone agreed to PC or IGCC.
- Most everyone (22 out of 23) agreed to 40+% efficiency +CCS (50%).
- About half (11 out of 23) agreed to coal to liquids.
- 16 out of 23 Work Group members agreed to 40+% efficiency CC geologic assessment.
- Less than half of the Work Group members agreed to 40% efficiency and offsets.
- Only a few Work Group members agreed to IGCC.
- Only a few Work Group members agreed to ultra supercritical PC.
- No one agreed to supercritical.
- No one agreed to uncontrolled plants.

The consensus for 2010 was around 40+% efficiency + CCS (50%) for financial and regulatory incentives.

Ms. Weeks said that she thought the coal to liquids issue is tricky enough that maybe you should take the vote. One side or another is a big divide. Mr. Henneke said that for Coal to Liquids, there are 11 people in support. For coal to liquids, there is a separate issue for a later discussion.

Mr. McManus said that the purpose of this morning's meeting is to finalize interim report. It seems like if you include this exercise, you need to let us review anything written up. Mr. Hopkins suggested handing out a form and have people mark their position, which will leave us with a record that can be presented in a systematic way. Mr. Henneke said we will not put this in the interim report; maybe just the final report.

Ms. Greenwald said that on coal to liquids, it seems that we have not been adequately briefed on the issue. Even with that level of CCS, you are somewhat worse off than you would be with gasoline. Mr. Henneke responded that we would discuss this today. Ms. Greenwald responded that on that point, it is misleading. Also, we do not use the term "carbon capture ready" any more. However, she said she would be willing to incentive lower than 50% CCS. She added that it was her understanding that you can really cheaply do 25% capture with IGCC, which might be worthwhile to incentive. If you have a date between 2010 and 2020, you might find some more incentives we are okay with and settle in on distinctions.

John Campbell, Caterpillar, said that he thought we were going to put in some recommendations for actions in the report. Mr. Henneke responded that the document is not going to go in the report. A sentence or two may be included.

Mr. Berg responded that we are so focused on a particular outcome of carbon and particular technologies that we have lost sight of people who are going to build and own projects. You have to walk before you run. There is probably not going to be an IGCC with CCS built early in the process; it is a lot of risk that no one wants to invest in. People want to dip their toe in and there are large risks we must be aware of. Our recommendations must keep this in mind.

Ms. Weeks said that offsets do not mean anything unless the offsets are able to be monitored and enforceable and we have not defined that. We each have different understanding of the meanings of these words.

Mr. McManus said we also all have different views on what kind of incentives we are talking about, so it would not be a good idea to use the results of this exercise in the report. He suggested instead trying the exercise in the next six months.

Mr. MacLeod said that he liked the interim report. However, he was worried that none of the major comments had been addressed yet. The Work Group has a general consensus that regulatory and financial incentives exist on a sliding scale. This sentence could be used to capture the time dimension and performance. He added that we should spend more time on the rest of the report.

#### ***Discussion re: retrofits and replacements 2020***

Below are the technologies listed and the estimates of the number of people who would agree to incentivize the technologies in 2020 for retrofits and replacements.

17 of 20 Work Group members agreed to 40+% efficiency + CCS.

20 of 20 Work Group members agreed to PC or IGCC.

#### ***Discussion re: retrofits and replacements 2010***

Below are the technologies listed and the estimates of the number of people who would agree to incentivize the technologies in 2010 for retrofits and replacements.

12 of 20 Work Group members agreed to 40% efficiency plus offsets.

13 of 20 Work Group members agreed to 40+% efficiency.

20 of 20 Work Group members agreed to 40 plus CCS.

#### **Discussion to Finalize the Interim Report, continued**

Ann Weeks, Clean Air Task Force, said the Clean Air Task force had three main points with regard to the Interim Report:

- (1) Advanced Coal Technology (ACT) must include carbon capture at some level;
- (2) An understanding of what partial capture can do to move carbon capture and sequestration (CCS) moving forward is missing and should be included; and

- (3) List recommendations from the following topics in this order:
- (a) regulatory policy drivers to accelerate the near- and long-term deployment of ACTs;
  - (b) incentives to encourage early commercial use of ACTs;
  - (c) education and outreach to inform the public and other affected stakeholders about the importance and need for advanced coal technology;
  - (d) risk characterization, risk management, and liability mechanisms related to carbon capture and storage;
  - (e) ways to streamline or accelerate permitting of projects involving ACTs;
  - (f) mechanisms to accelerate ACT research, development and demonstration.

Ben Henneke, Clean Air Action Corporation, said Ben Hengst, US EPA, would include Ms. Week's recommendation order when the Work Group voted on the order of the recommendations.

Anna Wood, US EPA, said she wanted to have a conversation about what the Work Group meant when they refer to ACT. Page three, line 10-17, of the interim report is how they thought the Work Group defined ACT. Ms. Wood read lines 10-14 of the interim report, which says that ACT includes a suite of innovative processes and technologies that reduces or eliminates the CO<sub>2</sub> footprint.

David Foerter, Institute of Clean Air Companies (ICAC), said that ACT should reduce or eliminate all aspects of the environmental footprint. Ms. Wood said lines 14-17 addressed this. She asked the Work Group if they were comfortable with this definition of ACT.

David Berg, Department of Energy (DOE), said ACT can be as simple as a better scrubber or a water treatment system. After the morning session, he is concerned that the Work Group is losing this concept.

Michael Ling, US EPA, asked what he would do with a technology that the Work Group decides qualifies as ACT, but does not provide ways to incentivize it.

Ms. Wood asked how the Work Group characterizes what is in this realm given where they are today and is it ACT and if so what does this mean and what are the implications?

Steve Jenkins, CH2M Hill, said when the Work Group started six months ago, he thought ACT included a suite of processes and technologies that not only reduced or eliminated CO<sub>2</sub>, but also reduced or eliminated smaller environmental footprints which include air, water, and waste. If the Work Group arrives at a definition that only includes carbon capture and sequestration, they have not met their mission which was to reduce the environmental footprint from all coal-based energy processes. The interim report says that ACT reduces the carbon footprint and other things can qualify, but it does not necessarily include them. This takes away from the mission of what they are going to do to address the overall environmental footprint. It is pushing out air, water, and waste. Ms. Wood asked if Mr. Jenkins' suggestion was to make "can qualify" stronger. Mr. Jenkins confirmed and said that the language should say what constitutes ACT. Ms. Wood mentioned that Mr. Ling was asking why they would include an ACT technology and

not provide ways to incentivize it. Mr. Jenkins said this is what they are moving towards. Mr. Wood clarified that there is value in defining this for their work in the next 6 months. Mr. Jenkins agreed and said there is also value in defining this for that day's discussion on the definition of ACT.

John McManus, American Electric Power (AEP), agreed that the report focuses too narrowly on carbon rather than on the overall environmental footprint. He said Mr. Ling's suggestion was also important. Mr. McManus said everyone had different views on the previous discussion about incentives. He asked if an appropriate approach to take was to provide incentives to promote improving the efficiency of existing units and reducing their immediate carbon footprint in the near term as back end technologies in the long term are being developed. Mr. McManus also said that the interim report is missing the concept of time. There needs to be some time to develop both the generation technologies and the backend control technologies. The definition of ACT can be a definition for a long term goal and it can also be a definition of what steps are necessary to reach the long term goal. The time element needs to be factored into the definition.

Ben Henneke, Clean Air Action Corporation, said it appeared that the definition of ACT was broader than what might be chosen to incentivize. He said they could work to incentivize other technologies in the next 6 months.

Judi Greenwald, Pew Center, said the most important thing to her is what they incentivize. She also said that she did not understand the phrase "technologies that meet technology forcing criteria." Ms. Wood said that when the Work Group tried to identify characteristics of ACT, there were 4 criteria that the Work Group set. The fourth criteria was ACTs or technologies that meet technology forcing criteria that are performance based to drive down emissions and other media implications. Ms. Wood said she thought the Work Group intended to get towards the concept of performance based standards that consistently drive you to a better environmental result on all measures of environmental performance.

Mr. McManus said he circled the same words. If the intent is a mandatory performance standard, then he is not comfortable with these words.

Mark MacLeod, Environmental Defense, said he liked the old definition. It was directional and performance-oriented. He also thinks that ACT is evolutionary. Ms. Wood said they could revisit this definition to see if it resonates better. She said they tried to capture input from Bruce Rising's, Siemens Power, group as well as the input from the whole Work Group.

Patrice Simms, Natural Resource Defense Council, said he had concerns about the current language in the draft. He is not sure that the intent is to have a perpetually applicable definition of ACT that will always lead to the next step. From his view, ACT is focused on making a basic transition in the way energy is produced from coal. This should include conventional pollutants and other environmental impacts in addition to CO<sub>2</sub> reductions. He does not think they can identify a definition of ACT that will always make sense. Mr. Simms said they need to focus on what they are thinking about now as they face current issues in the transition of the coal energy sector. He thinks the first paragraph of the definition is an important part of this. He suggested adding "and emission control technologies that substantially reduce conventional pollutants

and/or other environmental impacts” to the end of the first paragraph. He thinks, however, that CO<sub>2</sub> should be highlighted.

Mr. MacLeod agreed that CO<sub>2</sub> should be highlighted. For the interim report, he is not very concerned about wordsmithing because the Work Group can wordsmith the language as they proceed. He said perhaps the Work Group’s approach for the next report could be about defining what is ACT and what is not ACT and providing examples.

Mr. Henneke pointed to a slide showing various technologies and asked where ACT began in terms of retrofits and replacements.

Ms. Weeks said she would discuss what ACT does rather than match it to a particular technology.

Mr. Henneke responded that their definition of ACT encompasses more than before.

Ms. Weeks said that Mr. Henneke placed his hand next to a particular technology. She said the Work Group is thinking about the definition of ACT as a goal, not a particular technology. She thought they were defining a conceptual goal for ACT.

Mr. Berg said that the slide listed types of plants and the “I” in “IGCC” stands for integrated. There are a lot of pieces that go into a particular technology or process and looking at the defined plant is not a good way to proceed.

Barbara Bankoff, Siemens Power Generation, said that line 19 and 20 encapsulates some of the broader goals of what the charge was from the Clean Air Act Advisory Committee (CAAAC).

Ms. Wood said that there was a suggestion to change “also qualify to as” to “also constitute as”. She asked if this change was acceptable. No one objected.

Mr. Jenkins said that perhaps instead of defining ACT in two paragraphs, it could be defined in one paragraph and include air, water, and waste. Ms. Wood asked if the Work Group was comfortable with defining ACT in one paragraph.

Ms. Greenwald asked if this suggestion was tied together with the suggestion of more of an environmental performance as opposed to technology categories.

Ms. Wood said Mr. McManus raised a question about what they meant by technology forcing performance criteria. Ms. Wood said leaving this unclear right now may be best.

Mr. McManus said this made sense to him. Another way to say it might be “technology and incentivizing performance goals”. Mr. McManus said the definition is a moving definition, so the concept of time and evolution needs to be worked into the definition.

Mr. Simms suggested saying something qualitative about substantially reducing or eliminating. Incremental tightening around the margins is already part of the regulatory requirements for new sources. Making baby steps does not lead to ACT.

Ms. Wood confirmed that they would add the qualifier “substantially” before “reduce” and merge the two paragraphs.

Ms. Greenwald said the economic piece in lines 19-21 of the interim report is problematic; carbon capture and sequestration (CCS) is going to be more expensive. She suggested changing the wording to make sure it is clear that cost effectiveness and achieving environmental goals is important, but they will not necessarily decrease the cost.

Mr. Simms asked if a period had been inserted after the word “processes” in line 11. Ms. Wood asked if this was acceptable. No one objected.

Mr. MacLeod said on page 4 of the interim report, the paragraph beginning on line 14 talks about hurdles and costs and he thinks it should be balanced by a sentence such as “however, all of these costs need to be placed in the context of the cost of inaction on climate change.”

Ms. Wood thanked Mr. MacLeod for raising this point. She said they would come to a portion in agenda when they would talk about what is substantively wrong with the interim draft.

Mr. Henneke said the Work Group would go through a sticker exercise to rank the order of the recommendations in report. He reminded the Work Group that the order had no meaning.

During the break, Work Group members voted on the priority rankings for the recommendations in the report. Below are the results of the rankings for the recommendations:

- RD&D – 4<sup>th</sup>
- Incentives – 1<sup>st</sup>
- Regulatory and Policy Drivers – 2<sup>nd</sup>
- Risks and Liability – 3<sup>rd</sup>
- Permitting – 5<sup>th</sup>
- Education and Outreach – 6<sup>th</sup>

### **Work Group Discussions**

On the applicability of incentives, Mr. Henneke said we should determine if any additions are needed.

Bill Auberle, Northern Arizona University, asked what does “coal-based energy production processes” mean? Mr. Henneke responded that it is not just power plants.

David Berg, Department of Energy, said that he would add incentives.

Patrice Simms, Natural Resources Defense Council, said that we have a section that deals with incentives. We should instead talk here about the suite of recommendations. The question is what

set of technologies should the recommendations be targeting? The other recommendations are about incentivizing RD,& D, for example.

Judi Greenwald, Pew Center on Global Climate Change, asked how about our “general consensus that our recommendations (including regulatory and financial incentives) directed...”?

Mr. Simms agreed that would be fine.

Mr. Henneke said that we need a general consensus on this statement. Is there general agreement?

David Foerter, Institute of Clean Air Companies, said that he was not sure if he agreed with higher performing projects. We should say we want an increasing performance.

Mr. Henneke said that we want a lower level of agreement. Is this okay? Everyone agreed.

Mr. McManus said that he was okay with the first sentence, but not the second.

Mr. Henneke said that we need to listen to what we have agreed to. We might have some different opinions, but we are trying to find the final overlap of agreement.

Mr. Berg said that we have a whole section on incentives. What we have here brings in a dimension we did not put in but we can, if the group agrees. How about adding that more incentives might be available for higher performance? This is a statement that we cannot live with because it does not include the context of our own section we wrote on incentives.

Steve Jenkins, CH2M Hill, said that on the second sentence, it seems that the opposite is true.

Mark MacLeod, Environmental Defense, said that earlier we were talking about incentives, not all of the recommendations.

Mr. Foerter said that if there is a high performing project, why should we be creating huge incentives for small projects with limited applicability?

Mr. Henneke responded that today we are not teasing out that level of detail. We will be doing this work in the next six months.

Rick Bolton, Center for Toxicology and Environmental Health, said the statement seems to capture what we are looking for.

John Campbell, Caterpillar, said that on second paragraph, could you say “although other incentives were discussed”?

Mr. Henneke agreed. He added that we will find a way to do that when we are ready to wordsmith.

Ms. Greenwald asked if we can have some framing language about how we are not done and that there will be some more discussion, but so far, this is the case? It seems important to say that this is a report in progress.

Mr. Henneke said lets put this as the first sentence in the executive summary.

Alvaro Linero, Florida Department of Environmental Protection, suggested that on second sentence, it should be “at a minimum.”

Patrice Simms, Natural Resources Defense Council, said are you asking us if the concept about the greater incentives or greater degree of available mechanism for higher performing projects is a core principle? I think there is a basic problem of talking about just incentives instead of recommendations, but the principle is appropriate.

Mr. Henneke said that we need to come to substantial consensus agreements. If we want to say something useful you have to listen to others and say that it is okay if the document is not perfect. Substantial consensus means you can live with it. Mr. Henneke next talked about the definition of ACT in the draft report. He asked, can we live with this statement, or is it wrong?

Bruce Rising, Siemens Power, suggested eliminating “environmental footprint.” Mr. Henneke said that offsets make that possible, so that is why it is there.

Bill Auberle, Northern Arizona University, said that as we move forward with education and outreach, we need to think about using terms like environmental footprint as a well-known term.

David Foerter, Institute of Clean Air Companies, said that he does not like the word “substantially.” Maybe “increasingly reducing” is better. Anna Wood, US EPA, said that she thought we had consensus on that issue last time.

Mr. Henneke said that maybe applicability of incentives can go in the second paragraph of executive summary. The first paragraph will be the “this is just a report-out” section. After the second paragraph, we would go into the “six recommendations.”

Mr. MacLeod said that maybe there should be less reliance on incentives and more incentives on policy drivers. Mr. Henneke said that he agreed. Mr. Berg said that he did not agree with Mr. MacLeod. Incentives have a function for helping to address risk. Just having a regulatory hammer will not address the risk. You still need the incentives 20 years from now to address that point. Mr. Henneke said that we are just trying to figure out if this is the place for the discussion. These things are covered in the rest of the document.

Michael Ling, US EPA, said that it seems like you are trying to talk about a lot of incentives in one sentence. Maybe the problem is just that the phrase regulatory and financial incentives is too specific.

Mr. Simms said that “regulatory, financial, and other incentives” will pull everything back together in the applicability of incentives. We should also say “substantial consensus” in the

second paragraph. Mr. Henneke asked is there anyone else who does not want to keep the location of these paragraphs here? Everyone said it was okay.

Bob Wayland, US EPA, said that we need to add “accelerate the development and design of ACT.” Mr. Henneke said that he is trying to get agreement on this statement and move on for the rest of the document.

Mr. McManus said that the incentives statement should be not before the broad statement. The Work Group agreed to drop the second sentence in applicability of incentives and to address it later.

Ms. Wood said the sentence should be: “The Work Group reached consensus that projects that at a minimum incorporate CCS in early time frames should be eligible to receive incentives.” Everyone agreed. This sentence can be in the discussion section or the incentives section.

Mr. MacLeod said that with the addition of Ms. Greenwald’s language at the beginning, he is fine with the report as is.

Greg Schaefer, Arch Coal, said that he was still concerned over the regulatory drivers section, particularly the tone.

Mr. Henneke said that the Work Group should spend 15 minutes asking for substantive issues that are a deal-breaker issues. He said that we should get those issues on the table. Are there any of those things that need to be brought up?

Mr. McManus said that he also agreed that he has major issues with regulatory drivers and the way the options are described in that section. If you put some of those things in place too soon, you will actually kill the development of the technology.

Mr. Henneke asked if there was a specific issue in that section that is a major issue on the regulatory process. If you knew it was going to slow down deployment, is there any one who would want to keep this wording? No one agreed. Everyone agreed to try to fix it.

Dan Cunningham, PSEG, said that on page 8, line 7, he objected to “provide...” and would like to see it taken out.

Mr. Simms said that we need to keep emphasizing substantial consensus. Mr. Henneke said that we need to emphasize that this is an interim report and that we will later discuss issues for the next six months.

Mr. Rising said that on the “Regulatory Drivers and Policy” section, the 1100 pounds number is a deal-breaker. Mr. Linero agreed. Mr. Rising said it should not be an example included.

Mr. Foerter said that on page 4, line 10, it is too cloudy as a conclusion and should be treated as a recommendation/observation instead of a result.

Ms. Greenwald said that in streamlining, accelerating permitting, and education/outreach, we need to talk about public health.

Mr. Henneke asked if it was okay to put it in one place? The report is already too long, but there can be room for one short sentence to go in the executive summary.

Ms. Greenwald said that our whole acceptance of the incentives piece is contingent on having regulatory drivers section.

Mr. Campbell said that there is a timing and context issue as well.

Ms. Bankoff said that under the “Drivers” section, with the last paragraph starting at line 38 on page 8, you cannot say that all 5 recommendations are required. Additionally, BACT/LAIR is a deal breaker.

Mr. Berg said that the growing economy being sustained should be added somewhere. Mr. Henneke said that he could put this in the executive summary. Mr. Berg also said that on page 3, we are covering a multi-media environmental footprint, not just CO<sub>2</sub>.

Mr. Schaefer said that on page 8, he is not ready to be tied to a carbon tax as a regulatory driver. Mr. Henneke said that you just have to be able to convince everyone else on this issue on page 8 line 32 or 33.

Mr. Hopkins said that on page 1 and 2 he would like the references to mining and transport in addition to coal removed. Mr. Henneke said that it probably would not work.

Mr. Hopkins suggested putting the Work Group charge in the executive summary, or just a sentence about why this group was brought together as the context.

The Work Group took a 20 minute break to review the comments from the group.

### **Massachusetts v. EPA**

Ben Hengst, US EPA, introduced John Hannon, senior attorney at EPA’s Office of General Council. Mr. Hannon supervises a group of attorneys who handle the federal mobile source program as well as the National Ambient Air Quality Standards (NAAQS) standards setting. As part of the mobile source work, they were involved with writing the decision on denying the petition to regulate under Section 202 of the Clean Air Act for greenhouse gases, litigating it before the DC Circuit, and litigating it with the Department of Justice and the Supreme Court.

Mr. Hannon showed a PowerPoint slide listing the plaintiffs. The petition was submitted by only a few organizations, but the issue around it was so compelling that it brought many parties of the country together to push the issue.

The issue, as framed both by the petitioners and by the court, was whether EPA has abdicated its responsibility to regulate CO<sub>2</sub> under the Clean Air Act. In addition to CO<sub>2</sub>, the petition included methane, nitrous oxide, and hydrofluoric carbons, and it covered all motor vehicles. According

to the petitioners, EPA had a duty to regulate because it had already found that these emissions endanger public health and welfare. EPA's view was that it had an initial threshold decision to make on the endangerment issue and any obligation to regulate would come from this.

EPA defended its decision on three grounds: 1) EPA does not have the authority to regulate; 2) even if EPA did have the authority to regulate, it was not the right time to regulate greenhouse gases; and 3) the players that sued EPA constitutionally did not have the right to go to court.

Mr. Hannon next reviewed the definition of standing. The Constitution limits the Courts to actual "cases" and "controversies". Almost 200 years ago the Supreme Court decided that "cases" and "controversies" meant that a case had to be a real world conflict and the issues must be presented by people who care about the issue and have a stake in the issue. Therefore, there has to be a specific injury, an injury that is actual or imminent, and the injury, in this case, had to come from the government. Additionally, it had to be shown that changing the government's action would change the injury. Without these findings, the government could not be sued.

The Court decision was relatively close (vote 5-4). There was a dissent on merits and a dissent on the standing issue. On the dissent on merits, the four judges thought that EPA was correct on the authority issue; it was a reasonable interpretation that the Clean Air Act did not authorize regulation of greenhouse gases and EPA was correct in that it had a discretion not to make a decision at this time even if it did have the authority. Mr. Hannon said he thought the standing issue was an important precedent coming out of the case. It has already started to show up in the case law; he thinks this will be an important case to which the court will be turning.

The court found that Massachusetts had injury. For example, there was land loss because of rising sea levels. Because Massachusetts is a sovereign, the court felt that there should be a special difference given to protect citizenry and state property. However, Mr. Hannon said that he is not sure that the reference to Massachusetts as a state is going to make a difference in the subsequent case law. The court also looked at whether the injury was traceable to the government action. EPA argued that emissions from new cars are only part of United States emissions. U.S. emissions are only part of global emissions, and the injury comes from the global pool of greenhouse gases. The U.S. argued that the percentage contribution from new cars and trucks in the U.S. is so small that they could not show that there was any injury from U.S. failure to regulate these cars and trucks. They pointed to the fact that the affidavit submitted by the parties could not show that this regulation would lead to other regulation. They made arguments that other countries would follow U.S. lead and EPA said this was speculation. The court paid relatively little attention to these arguments and on the majority rejected this quickly. The court also said that small steps matter.

Mr. Hannon reviewed what Section 202(a)(1) of the Clean Air Act meant with regard to merits.

There were several points made with regard to EPA's authority to regulate greenhouse gases. EPA said that it was not going to make the decision about whether to regulate. EPA said it did not have authority to decide this and it is not the right timing to decide this. The Court said greenhouse gases were air pollutants. The court read the definition of air pollutant similarly to the legal opinion by the General Council's office under the Clinton administration. They

rejected EPA's argument that the statute is ambiguous. EPA's primary argument was that you should not look at the words in isolation. It makes sense to look at this as a real world context. EPA tried to form an analogy with a case concerning cigarettes. EPA rejected the analogy saying that they did not have a long history of telling Congress that they could not regulate greenhouse gases. They did not have a situation where regulating greenhouse gases would be directly contrary to something that Congress had done.

EPA's other argument, which was unique to mobile sources, was that Congress could not have intended EPA to regulate greenhouse gases from cars and trucks because this amounts to regulating fuel economy and Congress specifically authorized the Department of Transportation to do this. The court said that Congress can decide to have separate agencies address the same problem for different purposes. This change in EPA's authority under the Clean Air Act will affect every household and sector in the country. This case, however, is not a major precedent of the law.

Mr. Hannon said their third basis for denying the petition was that they had the discretion of not making a decision now. This part of the decision will have major ramifications. EPA took the position that when the statutes said "we shall regulate if in our judgment we make a determination..." this gave the discretion to decide whether or not to make a judgment. This stems from the idea that agencies should be able to order their priorities. The Court said that based on this provision, EPA had no discretion. They had to make a decision on the merits and endangerment. Once the parties petitioned EPA to make this finding, they needed to make a decision and were limited to what the statute decided. The implication is that agencies can now be required to make a decision on the merits and often will be constrained in making this decision and agencies may enter into regulatory programs which they may not have chosen to enter at that time and place. This part of EPA's decision will not only influence EPA, but also other administrative agencies. The court said that their judgment could only relate to whether greenhouse gases cause or contribute to air pollution that endangers. They could not look at other factors. The Court did not say how to regulate if EPA finds that there is endangerment.

Mr. Hannon ended his presentation by reviewing the core of the decision. EPA offered no lawful explanation for its refusal to decide whether greenhouse gases met the endangerment criteria under 202(a). EPA's action was therefore arbitrary and capricious and EPA needs to make a decision on whether greenhouse gas emissions from new motor vehicles cause or contribute to air pollution that can be reasonably anticipated to endanger public health and welfare. Mr. Hannon emphasized that (1) the decision on the substance of their authority has a dramatic impact on regulation of greenhouse gases and will have less of an impact on case law in general about how to interpret statutes; (2) the decision on standing will be influential; and (3) with regard to the Agency's discretion on whether it has to get to the merits when petitioned to take action, all elements of society will be looking at whether they can use this to their advantage.

Judi Greenwald, Pew Center, asked if they talked beyond mobile sources in the Massachusetts case. Mr. Hannon said the standing issue is beyond mobile sources because the injury was from global climate change and the effect on Massachusetts. Also, the definition of air pollutant encompassing greenhouse gases is not limited to mobile sources.

Nikki Buffa, Latham and Watkins, asked Mr. Hannon if there was anything that surprised him about the Court's decision. Mr. Hannon said he was surprised by the issue about EPA's discretion on whether they have to go to the merits on a petition.

Patrice Simms, Natural Resources Defense Council, asked Mr. Hannon his sense of the implications of the court's substantive analysis on standing for the Agency's finding on endangerment. Mr. Hannon said it technically should have no effect; they are different issues. At the same time, the Court is saying that there is a low threshold for standing. In endangerment, the case law goes along somewhat similar lines. They are conceptually different issues, but the endangerment finding is more complicated. This is a tone in the background of which everyone is aware.

John Campbell, Caterpillar, asked if the court decision implied that CO<sub>2</sub> is a hazardous pollutant and what are the implications of that. Mr. Hannon said that the Court said CO<sub>2</sub> is an air pollutant under the Clean Air Act; however, this is only the start of the issue in front of the Agency. The next step is for EPA to make a decision on endangerment which starts to get into the issue of whether it is harmful. The fact that CO<sub>2</sub> is an air pollutant under this definition does not mean that it is harmful. Once EPA makes an endangerment decision, there will be a public position by EPA on endangerment. Endangerment is not the same thing as a hazardous substance. There is a different criteria for listing under Section 112 as a hazardous air pollutant. Therefore, this decision should not be read that CO<sub>2</sub> is a hazardous air pollutant; however, EPA at some point may be asked to make this decision.

Barbara Bankoff, Siemens Power Generation, asked if the Agency is starting to see the effects of the standing aspect of the decision. Are they starting to get petitions that they might not have otherwise received? Mr. Hannon said he is not aware of getting any petitions. The case has been cited in a recent opinion by the DC Circuit granting standing to the National Association of Clean Air Agencies (NACAA). The petition that EPA denied is coming back to EPA. On June 7<sup>th</sup>, the parties are submitting papers to the DC Circuit. In early April, the President announced an executive order directing the administrator and directors from various agencies and departments to work together on regulations of greenhouse gases involving motor vehicles, non-road engines, and vehicles and their fuels. EPA is initiating a rulemaking addressing vehicles and fuels and is hoping to finalize a regulation by the end of 2008. The issue of endangerment may be folded into this rulemaking.

Ben Hengst, US EPA, asked if there were any stipulations in terms of the timing for making an endangerment finding. Mr. Hannon said the statute does not mandate a certain time period.

Michael Ling, US EPA, said that there are cases in the stationary source world that were held in advance until this decision was made. He asked Mr. Hannon to speak to this. Mr. Hannon said there is a New Source Performance Standard (NSPS) that was held in advance for that. There is an upcoming deadline for the parties to present their position to the court on what should happen with that case in the context. The NSPS issues are more complicated under Section 202.

Bob Wayland, US EPA, asked if NSPS would only deal with the CO<sub>2</sub> issue and not the other pollutants that were already regulated. Mr. Hannon said this was his understanding.

### **Discussion to Finalize the Interim Report Cont'd**

Jeff Hopkins, Rio Tinto Energy, said that on page 1, line 41 and page 2, line 26, we should add “life cycle” before “environmental impacts” and drop “mining and transporting” and add only “of using coal.” Patrice Simms, Natural Resources Defense Council, said that we are aiming this at people who may not know what a life cycle of coal use is. As a parenthetical, we need “e.g. from mining transportation, combustion, or energy conversion.” This is not intrinsic knowledge of everyone reading. Ben Henneke, Clean Air Action Corporation, said that only three people want to add this.

Alvaro Linero, Florida Department of Environmental Protection, said that on page 8, line 29, we should get rid of references to California emissions standards and its numbers, with the rationale being that it is an efficient use of natural gas and does not mean much. Judi Greenwald, Pew Center for Global Climate Change, offered an alternative. She suggested adding “and the California emissions standard, which applies to the GHG procurement standards” in order to bring clarity to the statement. Mr. Linero replied that there was no reason to mention California.

The Work Group decided to add “see Appendix A” in the Executive Summary.

John McManus, AEP, mentioned issues related to the regulatory policy drivers on pages 7 and 8. The problem is that regulatory drivers suggest under existing statutory authority. Some of the options we discussed require some new statutory authority, so you should think about using some of this language in the report. Mr. Henneke asked if we could call it legislative and regulatory policy drivers? Everyone responded that they were okay with this change.

Mr. McManus said that on timing and availability of technologies, the paragraph on line 9 with “any policy that is implemented...” needs a few sentences afterwards that reads “premature implementation of policy drivers could result in delays of deployment, for example, BACT/LAIR...” Everyone agreed that this was an acceptable revision.

Ms. Greenwald made a comment about agreeing with avoiding perverse incentives, but asked for some edits.

Mr. McManus said that on page 8, these requirements are not necessary, but are simply presented as options. This needs to be considered.

David Berg clarified RD & D as they relate to deployment and incentives. There needs to be an emphasis on incentives in this section.

Ms. Greenwald said that on page 7 in Mark MacLeod’s sentence, the worst consequences section should be deleted. Also, under streamlining, permitting, accelerating outreach, on page 8 at the bottom, add “consistent with protection of public health and the environment.” Mr. Henneke said that this is fine, but we can only do this in one place, not three places. He suggested adding a bullet on the first page so that it covers the rest of the document. Mr. McManus said that you could go above those bullets and add the public health piece there.

Nikki Buffa, Latham and Watkins, said that on page 4, line 14, we should remove the first portion of this sentence, beginning with “while potential reductions” because the 90% is confusing. Bruce Rising, Siemens Power, agreed.

Dave Foerter, Institute of Clean Air Companies, said that on page 4, line 9, take out from “in general” to the end of the paragraph. Mr. Rising agreed.

Dan Cunningham, PSEG, said that at the top paragraph on page 8, the last sentence – advocacy should probably be omitted, or at least changed to recognize state prerogatives and authorities. Mark Fessmire, New Mexico Oil Conservation Department, said that he thought this seemed a little broad. The states can put in more stringent requirements than we can recommend on a federal level. Mr. Henneke responded that the problem is that some states cannot go further than the federal level.

Steve Jenkins, CH2M Hill, said that on page 3, line 25, the last sentence of the paragraph should be deleted because it is misleading. The multimedia footprint piece is misleading.

Mark MacLeod, Environmental Defense, said that on page 4, with the paragraph that begins on line 14, the discussion of cost and cost hurdle needs to be put in some sort of context. At the end of that paragraph, we should add something about the cost of inaction on climate change. Also, Mr. MacLeod said that permits are the bedrock of the air quality system. In the permitting section, could we have a sentence that recognizes the role of permitting in the deployment of technology.

David Berg, Department of Energy, said that he could create a sentence on the first paragraph of executive summary about the growing economy. Mr. Berg said that in the R, D, and D bullet, we should delete the word accelerate and replace it with “extend the pool of ACTs available for” because you do not accelerate deployment through R,D, and D. All R D and D does it get technologies ready. Ms. Greenwald suggested “enable” instead of accelerate. Ben Hengst, EPA, added “indirectly accelerate.”

Patrice Simms, Natural Resources Defense Council, said that on the third paragraph of the executive summary, the discussion is about accelerating deployment, but we should add “accelerate the transition to” instead. Mr. Simms also said that we should add a sentence at end of second paragraph that said that the Work Group has not decided on the specific types of technology that should be determined to be eligible for incentives. Mr. Berg objected because he said we should focus on outcome, not on technology that could waste money. We need to focus on outcomes.

Mr. Schaefer said that we are not all in agreement with the recommendations on page 8, such as cap and trade.

Michael Ling, EPA, said that for BACT/Lair, we mention a specific CAA provision, which we might not want to do. Do the items included in this document have special status, or might they be deleted, or added to at the end of the road? We should just say that the options listed in this

paper have been considered, there has not been consensus, and that new options may be added. Mr. Henneke provided a place on page 8 under options where this issue could be cleared up.

Bob Wyman, Latham and Watkins, said that he thought Mr. Schaefer's request was reasonable and that the Work Group should support him. He said that we could add "potential options."

Mark MacLeod, Environmental Defense, said that we should find the language Mr. Schaefer is comfortable, but we should make this parallel so that some sections do not look like they are locked in stone while others are not. Mr. Henneke said that we can add a total deniability section at the beginning.

Barbara Bankoff, Siemens Power, said that with the BACT/LAIR option, even though this is an interim report with lots of caveats, this section has not been examined enough. There are just too many policy issues that are loaded. She said that we should take that one out for now and talk about it.

Mark MacLeod said that we need to address the issue presented by Mr. Schaefer. Mr. Henneke suggested something in the Executive Summary along the lines of "not every member is in agreement with all of these recommendations." Robert Hilton, ALSTOM, said that this is already in the definition of substantial consensus. Mr. Henneke said how about we add it again regarding options. Mr. Ling said we could point out that there is substantial consensus about recommendations, but that the options are still being explored. Mr. Simms said that we could put this at the beginning instead of watering down the rest of the document.

Mr. Schaefer said that on page 2, line 12, we should add "Background on CO<sub>2</sub> from Coal."

Ms. Greenwald said that on page 4, line 20, "capture ready" is unclear. Maybe we can delete the sentence or delete "capture ready designs." There was agreement to delete the sentence.

Ms. Bankoff said that she would like to add BACT/LAIR as a topic of discussion for the next six months.

Anna Wood, US EPA, asked if we wanted to add the ACT definition to the Work Group statement? There was agreement to make this revision.

### **Time for additional discussion on August 7 meeting, activities and goals the next six months**

The following areas were identified as areas needing to be addressed in future Work Group meetings:

- Finance/Build issues need to be discussed more
- How to get comfortable w/detail & definition of terms (esp. offsets)
- Some incentives for partial or periphery CCS should be explored
- Additional technology to study
- BACT later

Anna Wood, US EPA, said a portion of the August 7<sup>th</sup> meeting would be devoted to what the Work Group wants to accomplish over the next few months. The meeting following the August

meeting would be held on September 18<sup>th</sup> in conjunction with the Clean Air Act Advisory Committee (CAAAC) meeting and subcommittee meetings.

Mr. Henneke, Clean Air Action Corporation, said within the next 2 weeks, the interim report will be submitted to the subcommittee, and will subsequently be forwarded to the full committee with comment. The subcommittee will not revise the interim report; they will only make comments.

Anna Wood, US EPA, said that during the next 2 weeks, she and Ben Hengst, US EPA, would develop a Q&A sheet and communication fact sheet, which would accompany the interim report to the subcommittee.

Mr. Henneke asked the Work Group what they would like to get done before their next meeting on August 7<sup>th</sup>.

Judi Greenwald, Pew Center, said she would like to listen to a presentation on the coal to liquid issue. Mr. Henneke agreed. He also thinks they need someone from the financial community to speak.

Mark MacLeod, Environmental Defense, said if they invite senators from the Energy and Natural Resources (ENR) committee, he thinks they should also invite the senators from the Environment and Public Works (EPW) committee.

Ms. Wood said in the May meeting, the Work Group expressed interest in several areas including: a financial panel expert discussion, insurance instruments, energy efficiency measures, construction materials and resource constraints, and engineering procurement constraints. She asked if these were still on their list for consideration. The Work Group confirmed that they were.

Patrice Simms, Natural Resource Defense Council, asked that the following items be added to Ms. Wood's list: (1) environmental impacts and health effects of conventional pollutants from coal technologies; and (2) lifecycle impacts and assessment.

Dave Foerter, Institute of Clean Air Companies (ICAC), said he thinks the Work Group needs a baseline on what incentives are available now and for what options and technologies. Mr. Henneke agreed.

Steve Jenkins, CH2M Hill, asked if asking EPA to update the environmental footprints report was still on the list of items the Work Group hoped to accomplish. Mr. Henneke asked if it would be helpful if the Work Group had a chance to skim the report. Ms. Wood said there was a link to the report on the CAAAC website.

David Berg, Department of Energy (DOE), asked what the Work Group could expect to get back from CAAAC. Mr. Henneke said the interim report will be well received. They will probably receive comments that CAAAC is interested in a particular topic or that the interim report is missing something that should be taken into account; however, the Work Group may already be addressing these areas.

Al Linero, Florida Department of Environmental Protection, said that some of the key people involved in the TECO Energy IGCC project, Greg Nelson and Hugh Smith, moved to New Mexico and are now key in the Public Service Company of Mexico. Mr. Nelson and Mr. Smith are knowledgeable and may be good financial speakers.

Ms. Wood asked how the Work Group would take the report to the next level so in 6 months they are at substantial consensus on a variety of issues. She asked how the Work Group would dig deeper into each of these recommendation areas.

Mr. Foerter said they were dealing with two difficult issues: level of performance and timing. The Work Group can get more specific about these and throw in options even if they must go through a painful process.

Barbara Bankoff, Siemens, Power Generation, said she thinks the subcommittee and CAAAC may ask the Work Group to fill gaps. She also said that should would like to talk more about Public Utility Company's (PUCs) in the next six months.

For future agendas, Ms. Wood said it sounded like the Work Group wanted to hear about New Mexico and its energy policy and a coal to liquids presentation.

Bruce Rising, Siemens Power Generation, said he thought he could get a speaker on life cycle impact and assessment.

Greg Schaefer, Arch Coal, Inc., asked Mr. Henneke for a copy of the edited document. He would look at it to see if it satisfied his concern. He will either sign on to the document or abstain and write a personal letter saying he agrees with the document except for a particular section. Mr. Henneke said this would still fall within substantial consensus.

Mr. Henneke thanked the Work Group and the meeting was adjourned.

**Advanced Coal Technology Work Group Meeting  
Double Tree Hotel (Crystal City)  
300 Army Navy Drive, Arlington, VA 22202  
June 5, 2007**

**List of Attendees**

<b>Name</b>	<b>Affiliation</b>
Robert Hilton	ALSTOM
John McManus	American Electric Power (AEP)
Greg Schaefer	Arch Coal, Inc.
John Campbell	Caterpillar
Rick Bolton	Center for Toxicology and Environmental Health
Steve Jenkins	CH2M Hill
Ben Henneke	Clean Air Action Corporation
Ann Weeks	Clean Air Task Force
David Berg	Department of Energy (DOE)
Tony DeLucia	East Tennessee State University
Mark MacLeod	Environmental Defense
Michael Ling	EPA/OAQPS
Alvaro Linero	Florida Department of Environmental Protection
David Foerter	Institute of Clean Air Companies (ICAC)
Nikki Buffa	Latham & Watkins
Bob Wyman (on phone)	Latham and Watkins
Bob Gruenig	National Tribal Environmental Council (NTEC)
Patrice Simms	Natural Resources Defense Council
Mark Fessmire	New Mexico Oil Company
Bill Auberle	Northern Arizona University
Judi Greenwald	Pew Center
Daniel Cunningham	PSEG
Jeff Hopkins	Rio Tinto Energy
Danielle Prendergast	Sempra Energy
Bruce Rising	Siemens Power Generation
Barbara Bankoff	Siemens Power Generation
Anna Marie Wood	US EPA
Bob Wayland	US EPA
Bill Stevens	US EPA
Ben Hengst	US EPA
Dean Metcalf	Xcel Energy