U.S. DEPARTMENT OF ENERGY

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THE NATIONAL COAL COUNCIL

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FULL COUNCIL MEETING

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THURSDAY,
MAY 22, 2008

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The full council meeting convened at 9:00 a.m. in the Doubletree Hotel, 1515 Rhode Island Avenue, N.W., Washington, D.C., Georgia Nelson, NCC Chair, presiding.

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ROBERT A. BECK, Executive Vice President, COO
PAMELA A. MARTIN, Executive Assistant
RICHARD A. HALL, CPA
ADRIENNE WINES, CPA

PRESENTERS:

JEFFREY KUPFER, Acting Deputy Secretary, Department of Energy
THEODORE K. BARNA, PhD, Integrated Concepts and Research Corporation
WILLIAM FANG, EEI Deputy General Counsel
JAMES CONNAUGHTON, Chairman, Council on Environmental Quality

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P-R-O-C-E-E-D-I-N-G-S

(8:58 a.m.)

CHAIR NELSON: Good morning, ladies and gentlemen. My name is Georgia Nelson. I'm Chair of the National Coal Council. The regular meeting of the National Coal Council is hereby called to order.

At our meeting this morning, we are very fortunate to have a number of special guests. We're pleased to welcome this morning the Acting Deputy Secretary of Energy, The Honorable Jeffrey Kupfer. Also, we have the following speakers on today's agenda: Dr. Ted Barna, ICRC Solutions; Bill Fang, Edison Electric Institute; The Honorable James Connaughton, Chairman of the White House Council on Environmental Quality.

I am also pleased to recognize Mr. Jim Slutz, DOE's Office of Fossil Energy, as the Federal Designated Representative. Welcome, Jim.

In addition to the speakers, we

must also conduct the regular business of the Council, so we have a very full agenda this morning.

This meeting is being held in accordance with the Federal Advisory Committee Act, and the regulations that govern that Act. Our meeting is open to the public.

I would like to welcome guests from the public who have joined us today. An opportunity will be provided for guests to make comments at the end of the meeting.

Full and complete minutes of the meeting are being made, as well as a verbatim transcript. Therefore, it is very important that you use the microphone when you wish to speak, and that you begin by stating your name and affiliation.

Council members have been provided a copy of the agenda for today's meeting. I would appreciate having a motion for the adoption of the agenda.

PARTICIPANT: So moved.

CHAIR NELSON: May I have a second, please.

PARTICIPANT: Second.

CHAIR NELSON: All in favor?

(Chorus of ayes.)

Thank you.

The Secretary has appointed new members to the Council. I would like to ask, if any of the new members are here, they please stand, so that we can recognize them. Alex Fassbender, Thermo Energy Corporation; Kenneth Frailey, Headwaters Energy Services, Inc.; John Grounds, Uriah Bement Coal, Incorporated. Welcome.

(Applause.)

And congratulations.

Now it is indeed my honor to introduce Deputy Secretary Jeff Kupfer. On April 2, 2008, President Bush nominated Jeffrey Kupfer as Deputy Secretary of Energy. As the Department's Chief Operating Officer, he assists Secretary Bodman with policy and

programmatic oversight over the 115,000-employee, $24 billion agency.

Please join me in welcoming The Honorable Jeffrey Kupfer.

(Applause.)

MR. KUPFER: Good morning, everyone. Thank you, Georgia. I'm grateful for the opportunity to be here this morning.

Before I get into the actual remarks, I also want to take a second just to recognize some of my colleagues who are here today. And there may be others who I don't see, but I know Jim Slutz is here, Vic Der, Bob Kane, Sara Magruder, all of whom do a great job for the Department. It's good to be with all of them today.

Just a few weeks ago, I gave a speech on a similar topic -- coal -- at the Exchange Monitor's Seventh Annual Conference on Carbon Caption Sequestration in Pittsburgh, which also happens to be my hometown. So I figured I'd be treated reasonably well.

Anyway, moments before I took the podium, some protesters disguised as balloon delivery men and women managed to get in and let go a big bunch of balloons, printed with some not-very-favorable words about coal, right above the stage where I was about to speak.

Because the conference was running late, their not-so-subtle message, which was clearly targeted at me and the Department, was inadvertently delivered to the poor fellow who was -- who had preceded me on the program.

(Laughter.)

So let's just say I was glad that the timing -- that the program was running a little bit behind, and, as you all know, timing is everything. But I may also think twice about ordering balloons for my kid's next birthday party.

(Laughter.)

The very important point that I think these protesters missed is something

that you all know very well, which is that we rely on coal to meet our vast energy needs. Put another way: I don't think anything our country uses 1.1 billion tons of in a given year is going to go away any time soon.

So clearly the better and the, frankly, inescapable answer is to find ways to use this abundant resource more cleanly and efficiently. And you all know this. In fact, it's the topic of the study that you have just completed, "The Urgency of Sustainable Coal."

As I was sitting here, I was leafing through my pamphlet, and I saw that it's a very thick and comprehensive report, which will undoubtedly have a lot of worthwhile pieces in it for the Department to consider. And over the last five years, the Council has submitted a series of reports to the Secretary outlining how the U.S. can use coal to solve some of our nation's most pressing energy needs.

We at the Department appreciate the

thoughtful insights you have provided, and we look forward to studying this particular report. The premise, of course, is that while coal plays a critical role in meeting both our domestic and global energy needs, the burning of this tremendous resource for electricity generation results in the release of emissions, including CO2, which contributes to climate change.

And the topic is, appropriately I believe, generating a lot of discussion among policymakers and politicians alike. All three remaining Presidential candidates are talking about cap and trade bills. The Senate is slated to take up climate change legislation at the beginning of June.

And Congress is doing what they do especially well: calling hearings. The Secretary is testifying this morning, in fact, about what will and won't work to increase our energy security and reduce greenhouse gas emissions. That's in front of Congressman

Markey's committee over on the House side.

And Howard Groenspecht is the Deputy over at the Energy Information Administration, testified yesterday about an analysis the EIA recently completed of the Lieberman-Warner proposal.

EIA looked at a number of scenarios when evaluating that proposal, including a case that assumed the availability of advanced technology in 2030 -- advanced technology including nuclear and carbon capture and sequestration -- as well as a case that assumed limited availability of that technology.

The analysis showed that without an aggressive push forward on these advance technologies the legislation could result in a cumulative negative impact on our economy of between $530 billion to $1.5 trillion in current-year dollars, and a potential loss of up to a million jobs.

And according to that EIA analysis,

if the nuclear and carbon capture and sequestration technologies are not deployed, electricity prices could increase up to 65 percent by 2030, and gasoline prices could go up as much as an additional dollar per gallon, and that's in today's dollars.

Even if the emissions targets of the bill were fully met by the U.S., without the rest of the world's commitment to address climate change, our actions by themselves would barely make a dent. One need look no further than China, which is building a new coal powerplant at an astounding rate of one per week, to understand the magnitude of the issue at hand and the compelling imperative to act.

The President, of course, recognizes this. On a global scale, we are identifying solutions through the major economies meeting process, which I know Jim Connaughton will address in greater depth a little later in your program.

And Jim has some very interesting slides which he'll be presenting, or I assume he'll be presenting, which would show, really, what the magnitude of the task is in front of the world and the scale of what we need to do, and also tries to show what happens if the U.S. takes some action but the rest of the world doesn't. So it's -- they are very interesting slides.

On a domestic level, the President announced just a few weeks ago a new national goal to stop the growth in U.S. greenhouse gas emissions by 2025. That's a necessary endeavor, but the question still remains: how do we do it?

One answer is clear. The development, commercialization, and the use of new, lower-emission technologies for fossil fuels must continue to advance. Since 2001, this administration and Congress have invested more than $2.5 billion in clean coal research and development.

The President's FY2009 budget requests $648 million for the Department's advanced coal research, development, and demonstration program, which is the largest amount requested for our coal program in more than 25 years. And with private sector matching funds over a billion dollars should be invested in advancing clean coal technology next year.

But money isn't the only solution. As we all know, advanced coal technologies have major regulatory hurdles that must be overcome before they can be widely deployed. That is why we at the Department are working closely with EPA to increase regulatory certainty with regard to the siting and operation of carbon capture and storage projects.

What I'd really like to talk about today is what we are doing to advance the technologies themselves, and I'd like to highlight four things: regional partnerships,

FutureGen, a loan guarantee program, and international collaboration.

First, the Department's regional carbon sequestration partnerships. As you know, in 2003, the Department launched regional carbon sequestration partnerships to facilitate the development of the infrastructure and knowledge base needed to place carbon sequestration technologies on the path to commercialization.

During the first phase of the program, seven partnerships consisting of organizations from government, industry, academia, and extending across the United States and Canada, conducted an assessment of the CO2 storage capacity in this country.

Demonstrating the tremendous potential of CCS technologies, these partnerships preliminarily identified underground geologic formations across the U.S. with the potential to sequester and store more than 600 billion metric tons of CO2, the

equivalent of more than 200 years of emissions from energy sources in the U.S.

In the program's second phase, the partnerships implemented a portfolio of small-scale geologic and terrestrial sequestration projects. The purpose of these tests was to validate that different geological formations have the injectivity, containment, and storage effectiveness needed for long-term sequestration.

The third phase of the program, the deployment phase, was initiated last fall, and that's what we're currently working on. Six of the seven partnerships have now been announced, with the seventh expected this summer.

These partnerships are working on large volume testing -- that is, one million or more tons of CO2 -- intended to demonstrate the feasibility of CO2 capture, transportation, injection, and storage, at a scale comparable to future commercial

deployments.

We believe these projects hold tremendous promise, and experts around the world agree we're on the right track. For instance, the IEA greenhouse gas R&D program recently conducted a technical review of this deployment phase of the partnership program.

This expert panel found it to be an excellent program -- their words -- that should achieve significant results for carbon capture and sequestration in the U.S., Canada, and internationally. The panel recommended that the program and all of the projects reviewed should be implemented immediately.

Second, FutureGen -- the Department is also committed to demonstrating cutting edge carbon capture and storage technology at multiple commercial-scale coal plants through this project. As you know, earlier this year we announced a restructured approach for the project.

The focus remains the same as the

original approach announced in 2003 -- to maximize our national investment in clean coal research through demonstration of cutting edge system integration. The difference is that under the restructured program our plan aims not just to support a single large-scale R&D testing laboratory, but rather to provide funding for commercial demonstration of integrated advanced CCS technologies.

To move this restructured FutureGen program forward and ensure commercial operations are possible by 2015, the Department has launched an aggressive schedule for its implementation. Several weeks ago we announced a draft funding opportunity announcement to allow prospective applicants an opportunity to provide additional input before we release the final solicitation this summer.

The comment period for this FOA closed yesterday, and we will now be carefully evaluating the input that we receive.

Third, loan guarantees -- this program plays a significant role in spurring clean coal innovation. Later this summer, the Department intends to issue a solicitation for up to $8 billion in loan guarantees for advanced fossil energy projects. This would mark the third round of solicitations for our loan guarantee program, which, as you know, encourages the development of new, clean energy technologies.

As part of an earlier round of solicitations, pre-applications were submitted, and 16 projects, including three advanced fossil energy projects, were selected to submit full applications. We're in the process of now receiving and evaluating those applications.

Projects supported by loan guarantees will help fulfill the President's goal of reducing our reliance on foreign oil by diversifying our nation's energy mix and increasing energy efficiency.

Fourth, international collaboration -- while the U.S. must play, and certainly is playing, a leading role in the advancement of carbon capture and storage technologies, other countries are also taking action.

To maximize the benefits of our individual efforts, we are sharing data and lessons learned through the Carbon Sequestration Leadership Form, formed in 2003, which held its regular annual meeting last month in Capetown, South Africa -- and Jim attended on behalf of the Department and has played a leading role in that forum.

I also recently attended the International Energy Forum in Rome, where CCS technologies were being discussed both at the ministerial itself and also informally on the sidelines of the meeting. There is no doubt that advancing these technologies is a topic of global interest.

Through our regional carbon sequestration partnerships, our restructured

FutureGen project, our loan guarantee program, and our global collaboration efforts, as well as our ongoing work under the Clean Coal Power Initiative and our clean coal R&D program, the Department of Energy's commitment to fulfilling the promise of clean coal technology is clear.

There is no doubt that our challenge to meet rapidly-increasing energy demand in an environmentally responsible way is formidable. But with your continued support, we can build on the successes we have achieved, and ensure that coal will be an environmentally safe and plentiful source of energy for the United States and the world well into the future.

And when we reach that goal, we won't have to worry as much about any protesters.

(Laughter.)

Thank you very much.

(Applause.)

CHAIR NELSON: If there are any members who have a question, you are welcome to ask. Over here.

MR. BECK: Please identify yourself for the purposes of the record in the Court Reporter's eye.

MR. ALI: Sy Ali with Clean Energy Consulting. Mr. Secretary, when do you expect the CCPI Round 3 to take place?

MR. KUPFER: We are -- in terms of a specific date, I don't -- I don't have that for you. But we are actively looking at when we will go out with that solicitation. I don't know if Jim has a more definitive answer.

MR. SLUTZ: We are -- there are some issues, you know, to work through in the procurement process, but it will be -- what we're targeting is to get it out this fiscal year, which is before September.

MR. BECK: Other questions or comments for the Deputy Secretary?

(No response.)

Great. Okay.

MR. KUPFER: Thank you very much.

MR. BECK: Thank you very much, Jeff.

(Applause.)

CHAIR NELSON: Okay. I'd like to move on to Council business and the presentation, discussion, and action on the new draft study that the Council has been working on. Many of you have put in countless hours and lots of effort in this regard.

The study has been in progress since last October. The title of the study is "The Urgency of Sustainable Coal," and to lead that discussion is the Council's Coal Policy Committee Chairman Fred Palmer.

I believe Fred will be assisted by several of the lead authors, and this -- as you know, the production and publication of these studies is the most important effort and product of this Council. So we thought we

would take some significant time this morning to discuss this study.

Fred?

MR. PALMER: Thank you, Madam Chair. It's an honor for me to be in front of you today to present to you for consideration the proposed study.

Before I start, there is someone in the room I think we should acknowledge. Tom Kraemer is with us today, and Tom was the past Chair of the National Coal Council and it was on Tom's watch that I actually became the Chair of the Coal Policy Committee. And I presume Tom had something to do with it. And, Tom, they haven't been able to get rid of me yet. So please stand, and a round of applause for Tom.

(Applause.)

This is not showing up on my screen. Is there some other function that we need to push here? You can just tell me from back there. I'm afraid to push it, because

I'll blow it up. Thank you.

Before I start, I would like to acknowledge people that contributed to this study. The study lead authors were Mike Durham, Janine Midgen-Ostrander, Janos Beer, Sy Ali, Dick Bajura, Frank Burke, Roger Bezdek, and Fred Eames. I also want to give special thanks to Frank Clemente for the hard work that he has done, just in the last three weeks, in making sure that we have a professional product that we are submitting to the Secretary.

Also, I would like the record to note that there were approximately 50 people that contributed to this report, and the report was put together over a period of months. A lot of hard work and effort went into it, and when I am finished with this brief overview of the report, I will ask the Chair for appropriate action to take the -- submit the report to the Secretary.

Also, before I start, I want to

thank the Secretary. I want to thank Jeff, who is not yet confirmed, for his leadership in getting us to this point today, and Secretary Bodman for the leadership that he has shown in these very contentious energy issues that preoccupy Washington, D.C. from time to time, including right now.

And I have every confidence that we will be able to work together going forward to do the right thing for the American people in the energy arena. I would include in that category Jeff being confirmed by the United States Senate, and certainly I think all of us that have friends in the Senate should work to that end. So I want to applaud Jeff's comments here this morning and leadership that DOE is showing with respect to energy issues.

We have with us today Bob Beck, our Executive Director; Georgia Nelson, our Chair; Mike Mueller, our Vice Chair; all of whom played important roles in bringing us to this point with respect to this study. And I want

to thank them and applaud them for their leadership.

To remind everybody of our mission of the National Coal Council, we are here to provide Secretary of Energy basically with advice and policy guidance, which is a little bit presumptuous, but certainly advice, which we are not too reluctant to advance from time to time.

The members are appointed by the Secretary. The membership includes a very broad spectrum of interest and experience, including coal producers and users, transportation providers, barge rail and truck, academic, equipment manufacturers, state governments, consumer groups, consultants, which are fairly ubiquitous in Washington, D.C., and elsewhere -- I say that with respect -- and Native American tribes. So we are proud to be a part of this very large and effective group -- the National Coal Council.

I think the record has shown over the past several years that the NCC has come forward with recommendations of some balanced policies for energy, economic, and environmental security. A series of the reports -- the series of reports that we have provided sets forth a systematic technological and regulatory path to cleanly and efficiently realize the full potential of our domestic coal resources.

This study, "The Urgency of Sustainable Coal," is responsive to the Secretary's letter request of last year focusing on clean coal technologies to further U.S. environmental goals while advancing the broader use of coal.

The report extends recommendations in earlier reports for carbon management technologies, legal and regulatory issues, and, specifically, a framework for carbon capture and storage; hybrid electric vehicles, which is a new subject; coal gasification,

which is not; coal-to-liquid and coal-to-gas technologies, which are not, but you will find in here a chapter on underground coal gasification, which is new, and an addition to the -- particularly the February or the March 2006 study that we will discuss very briefly.

As I indicated, the report features input from dozens of members with eight significant findings and 11 major policy recommendations. So we are in a controversial business that is in the news every day from -- for one reason or another. And you read various things about coal, including statements in the financial press about coal being a dirty fuel, that people would wish would just go away, in the words of one very astute analyst the other day, forgetting that coal is not only not going to go away, we are going to use more of it for the reason you are looking at -- that we have it, and people need it, because people need energy as they need air and water and food, to live their lives,

to grow our economy, to have a higher quality of life for current Americans and future Americans, for our children and their children, and that is a fact.

It is why we are all in the room today, and there are some of us that are perverse enough to actually like being in the business. And I am one of them, and I am proud to have made my career in coal. And I look forward to advancing the cause of coal as we go forward.

And the recent energy events over the last two years, since we issued our March 2006 report, shows that while there are -- may not be many in Washington, D.C. that understand energy, the members of the National Coal Council are not in that group, because since that time -- and that report had a fair note of urgency in it -- oil prices have managed to hit $135 a barrel, at least at one point this morning, up from $56 when we issued that report, $85 just at the beginning of this

year.

You will see on page 1 of The Washington Post Business Section this morning a head-scratching article on why oil prices are where they are, concluding everything but the obvious, and that's there is more demand than there is supply. LNG prices in the $12 to $18 an mcf range are led by rising demand from Asia and Europe, and you can expect U.S. prices to go there, because LNG is going to be our price-setter for natural gas in the United States. And LNG is going to be priced off oil, because LNG, in many parts of the world, is a substitute for oil.

And oil production, as we discussed back in 2006, has stagnated, and the world top 10 producers -- places like China, Norway, Mexico, Russia, and the U.S. -- face depletion. The Middle East remains an enigma, but because of the lack of clarity in terms of where they in fact are on their ability to produce oil, and specifically Saudi Arabia,

but nobody has come forward to rebut Matt Simmons, who has been saying that we are peak oil since oil was at $30, $40, $50, $60, $70, $80, $90, and $100 plus a barrel, and everybody in the world disagreed with him, and yet it keeps going up.

I saw a note the other day about a bet that I didn't realize that Mr. Simmons had made with a financial journalist about oil in the year 2010. And Matt is on the side of the bet that says oil will average $200 a barrel in 2010. And when he entered into that bet with this financial journalist, oil was at $50 a barrel or $60, in 2006.

So I think the financial journalist may think he is still going to win the bet, but he has to have a thought in his mind as to whether that, in fact, is right.

Energy production costs have risen everywhere due to equipment and labor costs, and a lack of easy energy, and of course the increased ethanol production has coincided

with increased world corn and food prices. Is there a cause and effect? The ethanol producers say no, and the corn producers say no. Others say yes, I don't know, I do know that expensive and scarce food is as bad an idea as scarce and expensive energy.

And here is a fact that does not get discussed here or anywhere else, as we argue about new coal plants in the United States, as we argue in Kansas, for example, on whether we ought to put in 3,000 megawatts of supercritical pulverized coal.

Around the world, there is 660 gigawatts of coal-fueled power either planned or in development, stated another way 660,000 megawatts, that will lead to increased coal burn of 2.3 billion tons a year, within the next five to 10 years and maybe shorter time than that. Stu Dalton and I were in China last week visiting Inner Mongolia coal mines and powerplants, and at an IEA Coal Industry Advisory Board meeting. Some of you got e-

mails from me at 3:00 in the morning, but that was because I was on China time.

And an unnamed equipment manufacturer who was with us at that meeting, that does a lot of business in China, says that China this year is at 2.6 billion tons of coal demand, and they have them down for 3.5 billion tons of coal production and demand in 2010, or just over two years from now.

So, anyway, a lot of coal is going to be used everywhere else but in the United States, and I think in the United States, too. And it's not just China and Asia, by the way. The European Union is putting in new coal, even as they lecture us about the lack of energy and carbon policies.

Access to low-cost electricity from coal is the solution for energy property, and that's why the world has turned to coal, because of scarcity in oil and natural gas and because the world has coal. And every single one of the U.N.'s millennium development goals

requires access to electricity as a necessary prerequisite, according to Global Energy Network, and that is a fact.

In the report you will find the following, and that's the 10 fundamentals that the report is based on. Global demand for energy is unprecedented. Seventy-five percent of new energy demand will come from the Middle East, China, India, and Asia.

The Middle East has 600 million people. The Middle East economy is growing at least as fast as anywhere in the world, including China, and they are large consumers now of their own product, which is another reason why oil is where it is.

Fossil fuels provides 85 percent of the world energy, and IEA and EIA both expect that same level in 2030 -- optimistic energy production forecasts, which may finally go by the Board, but nonetheless have dimmed an understanding of world supply challenges.

And even if we are not at peak oil,

when you have billions of people all of a sudden demanding a product that everyone relies on, and production can still go up, it can't go up as fast as the increasing demand, and that's why the evidence suggests that oil and natural gas production cannot keep pace with demand.

Coal is undeniably a cornerstone future fuel based on supply, availability, versatility, and, of course, carbon capture. Again, here's a reference to the 660 gigawatts of new coal planned or under construction around the world.

Coal-to-liquid fuels and coal-to-gas can alleviate emerging production shortfalls, and even though particularly coal-to-liquid is a controversial technology it is one we absolutely have to have for aviation and particularly for the military. I think there are six -- six airlines have gone bankrupt in the last two years since we issued that March 2006 report. It's something we

need to develop.

And, of course, all of this has to be done, and we understand this, embrace it, accept it, and discuss it, in the context of clean coal technologies, which is carbon capture and sequestration as a game-changer to open up the full range of coal's potential.

The United States of course needs additional coal-based generation, and it needs it now, even in advance of carbon capture and sequestration being available for deployment in the form of ultra-supercritical pulverized coal units. And while the pace of the buildout has slowed down, that -- we nonetheless need to go forward.

I was with the Chinese -- the Ambassador to the United States from China about three weeks ago, and I told him that the U.S., like China, is a developing nation. And he laughed, but it's true. And I think if -- on reflection he would agree with that, because we -- our population is increasing,

and we are headed to 365 million by 2030. I've seen estimates at the high end of -- high range of 500 million people by 2050. So more people needs more -- need more energy even as we use energy in a wiser, more efficient way.

GDP of course will grow commensurate with that. Technology innovations, however, are expected to place significant burden on the electricity infrastructure. We need electricity to grow the economy, as we always have. Electricity being what it is, people are going to use more. So we will need 230 gigawatts of new U.S. generation by 2030, 43 percent of which will come from coal according to EIA.

Reliability is an issue. Reliability is an issue. And in the next two to five years, we may see some very substantial negative consequences associated with inadequate reliability around the country, particularly in fast parts -- fast-growing parts of the country.

The NERC numbers on reliability are not given the attention that they deserve in Congress when climate change policies are debated. People who have called for a moratorium on the build of new coal plants in advance of carbon capture and sequestration deployment ignore the reliability issues that we have.

If we don't put this generation in -- and by the way, the NERC new capacity generation has pulverized coal in it. If we don't put it in, electricity will be scarce and expensive. Period, finished, end of story. We will have gone into it with eyes wide open, because the metrics are clear, the message is clear, the path we are on is clear, until and unless we deploy this generation.

And if we cap coal, LNG becomes the default fuel and puts U.S. electricity generation at risk. I have friends and colleagues in the oil and gas industry that believe that we are -- and that I am

personally -- anti-LNG. I am not. LNG is the default fuel because of the way the system is set up and what is going on around the world. That is a business fact.

The powerplants are there, the pipes are there, the ports are there, the regasification facilities are there. The fuel will come in on the boats if we are willing to pay. That means we're going to pay a lot. And if we don't grow the coal base, more of that is going to come in. It's going to come in at a very high price, and electricity prices are going to be keyed off, in the United States, the price of oil in foreign markets, whether that's $150 or $160 or $170 or $200 a barrel.

And those prices go from not $11 an mcf, which is where gas is today, which is very, very expensive, but from $17 to $18 an mcf all the way up to $28 to $30 an mcf, which means electricity in the United States, the marginal cost, will be in the high teens or in

the low twenties or mid-twenties, if we go this LNG path.

That's not hostility LNG. We need it. It is a business fact if we cap coal, the default fuel becomes LNG.

Chapter 1 -- the realities of energy in the United States. Coal is our -- is America's greatest energy resource. Clean coal technologies work, but take time to develop. More electricity needed for growing U.S. population. We need new supplies of oil and natural gas from domestic resources. We need new coal-based generation.

Global supply of oil and natural gas is inadequate to meet world oil demand. Global energy demand is unprecedented. Scale of energy demand is beyond our experience. New players are entering in the game, as I discussed, and the world is turning to coal, as I discussed.

Chapter 2 -- carbon management and technology options. We set forth in the

report -- or the report sets forth a multi-step process to near zero emissions. That includes building new, efficient, supercritical, and IGCC coal plants today. The supercritical coal plants are 15 percent more efficient with lower CO2 emissions.

The next step is to demonstrate IGCC and carbon capture and sequestration technologies, as Jeff discussed here today, that DOE is working so hard on. We do have a disagreement on FutureGen. That's fine. You're allowed to disagree when you're friends.

DOE is a friend, and is supporting carbon capture and sequestration technology deployment and development, and we applaud them for that. And then, the next step is to retrofit the existing coal-based generation with carbon capture and sequestration.

The Europeans understand this. The Europeans are building ultra-supercritical pulverized coal. As I stand here today, they

are doing that. The Europeans talk about developing carbon capture and storage technologies that they will require deployment after 2020. It's in their plan; they understand it.

That's not in our plan, apparently. Apparently, we say we're not going to have any new coal plants until and unless CCS is deployed. That may be never, because you would get into a completely total litigious environment on CCS. So we need to follow this path, and the report sets that forward.

Carbon management technology options -- the draft points to advanced emission control technologies have improved criteria emissions by 90 percent, or reduced them by 90 percent over 30 years. It talks about retrofit technologies as offering potential for reducing CO2 emissions from existing plant.

It talks about improvement in supply side efficiency for near- and long-term

CO2 reductions and advanced coal powerplant technologies with CO2 capture and storage as being crucial for lowering emissions and global CO2 levels through the deployment of new plants.

The recommendations are to advance a portfolio of technology options for electric power industry, remove regulatory hurdles, and streamline new source review, create congressional funding for large demonstrations in multiple regions using multiple technologies, and build technology transfer through trade associations and federal agencies to emerging nations such as India and China.

Just a side bar here -- when Stu and I were -- again, when we were in China, Shenwa -- we saw a CTL plant being developed by Shenwa, which I'll talk about when we get there. But also, the GreenGen project is going forward, which Peabody is a partner to. And GreenGen is going to be up and running in

two years. That's their version of FutureGen. And within three to five years after that, I think Victor will be capturing and sequestering CO2.

So the thought occurred to me that, you know, we've got this number 4 bullet here. We're going to transfer technology to them. Maybe they will be transferring it to us. And so we will be licensing GreenGen technologies for the U.S., and from my standpoint, you know, that's fine with me.

But in any event, that's -- those are our recommendations.

Chapter 3 talks about the legal and regulatory dimensions of carbon capture and storage. And we do have centuries of storage for CO2; there is no question about it. And I think the -- we have to prove this out and show what -- I personally believe that the problems associated with CCS are overstated.

We know how to do it; we know it's there. I don't think the liability issue

should be that big a deal. It's not like when some CO2 seeps out of the ground it's a toxic that's going to -- that's going to do bad things. Obviously, you want it to be in a mode where you don't have leakage, and that's what we're proving out. But we know how to do it; we need to get on with doing it.

The legal and regulatory dimensions of carbon capture and storage are one of the things that hold us up. But I think, you know, FutureGen at Matoon has been advanced to a stage where it really is ready to go. I mean, you have a fully vetted site that -- under NEPA that was looked at in about 18 different ways, and you could go out there tomorrow and put in a sump project and start storing CO2 in the Illinois Basin deep saline.

Of course, CCS must be demonstrated at large coal-fueled powerplants, and we do need a legal regime to encourage development and speed project approval. And those are not -- those are easy things to say. They are

hard things to do in terms of getting policies in place, but we need to work at it. And so our policy recommendations in Chapter 3 support development with clear legal and regulatory framework to support development, define the risks, and assign under single liability regime.

Chapter 4 -- this is new, plug-in hybrid vehicles and coal-fueled powerplants with carbon capture and storage. How cool is that? So you wouldn't have a lot of CO2 emissions in that environment, would you? You would eliminate the CO2 emissions from the vehicles.

And, of course, with a FutureGen type, or a GreenGen type powerplant, you'd have 90 percent carbon capture and storage. Sounds like near zero emissions to me, and you can be in a carbon-free environment going forward.

So -- and that I think is the Tesla. I admit to liking cars, and I like

fast cars. And this car apparently is pretty fast. I talked to somebody that rode in it, and they said it was cool. But someone else said it has 80 batteries in it, so it may not be real efficient, but -- from a battery standpoint. I don't know.

But I do know that we have the ability to go to plug-in hybrids, and I do know we have the ability for coal-fueled powerplants with CCS. And I do know in that environment CO2 is off the table as a long-term concern.

So plug-in vehicles using liquid fuel in a more -- and electric motor for power, producing 60 percent less greenhouse gases compared to conventional vehicles, replacing 60 percent of light- and medium-duty vehicles would reduce gas consumption nearly four million barrels per day by 2050 -- some very positive things there.

Electricity for fleet of plug-ins could be met by existing generating capacity

during initial introduction. A 600-megawatt powerplant could generate enough electricity to supply two million plug-ins. It would be a good business to be in, making the plug-ins for Detroit.

Since the introduction in 1999 through 2006, 650,000 hybrid electric vehicles have been sold in the United States, including one to Greg Boyce, the CEO of Peabody Energy, who drives a hybrid. I'm not going to tell you what the horsepower is on the hybrid, but it is a hybrid.

(Laughter.)

Timing for deployment creates demand for new coal-fueled powerplants needed in the 2020/2030 timeframe. The recommendations in this space advance R&D on coal-based electricity generation and CCS technologies to ensure the electricity needed. Reduced costs and improved performance, durability, and safety of batteries through greater research for the cars, use incentives

to deploy advanced coal-based electricity technologies coordinated with plug-in hybrids and electric power trains.

Liquids from coal -- coal-to-liquids. We have to do this. Now, we're going to have an industry in the United States; we are. I know they're going to have an industry in China, because we stood on a block overlooking a complex being put in by Shenwa, near Shendong, Inner Mongolia, China.

There was a 200-megawatt powerplant, an air separator, a shell gasifier, a coal refinery, and the tanks for the products. So when I saw the tanks for the products I said, "I think they're serious, because you wouldn't really put the tanks for the products in if you didn't think you were going to have a product."

So I asked, "When are they turning it on?" and the answer is, "September of this year." And it's going to be 55,000 barrels per day of product ultimately. The first

train will be 17,500 or something like that, going to three trains at that location. They are looking at carbon capture and storage, but they don't have it in their game plan yet.

The all-in cost of that project, the three trains combined, will be under $3 billion. They put their break-even at $40 a barrel. That number is going to be 60 percent or so higher in the United States, because of higher labor costs, longer permitting time, etcetera. And also, they did have historic steel prices in there, because the thing has been in for two years. But nonetheless, they're doing it, and their long-term strategic plan is for 20 of those units. So they're going to do it.

So, Victor, along with licensing GreenGen, we're going to license CTL from Shenwa. And I've seen the future of energy, and it's in Inner Mongolia.

You have been -- we have been through these things before, and I'm not going

to belabor the point on the availability of oil. But anyway, coal-to-liquids has a 60-year world history. CTL with CCS emissions are comparable to life cycle gasoline and diesel, and I think one of the Nettle studies actually said that they are superior.

There is no doubt that you'd get an ultra clean diesel fuel, which we desperately need, with 99 percent less sulfur, and there is no doubt that the United States Air Force needs coal-to-liquids, as does the civilian aviation industry. There is no doubt of that.

Greg Boyce has also made the comment that the only thing in the world capable of defeating the United States Air Force is lack of fuel. So we need that fuel, if for no other reason.

The policy recommendations on coal-to-liquids are the same found in the March 2006 study. I am not going to reiterate those here because of the -- in the interest of

time. They are set forward there.

Federal funding of long-term military CTL contracts and support Department of Defense total energy development program. Actually, we're making some progress on that.

And the interest in CTL around the country remains very strong. We are going to have an industry. It is going to take more time here than in China, but it's going to come.

Underground coal gasification is new. We did not have this in the March 2006 study. It was around then. We just -- you know, we didn't have it. When I talked to some of the mining engineers I hang around with, I said, you know, why don't we think in those terms? The answer then was that there is just sort of this inherent idea around that it's a bad idea to start a fire underground in a coal seam, which is a reasonable way to think I think.

But as you look at it and study it,

and you can see that there are places where underground coal gasification works quite well, there is no doubt it's a very elegant and simple and economic solution, if you can find those places.

And there is no doubt it means a greater resource recovery, because of the -- if you can find the geologies in places where you otherwise would not be mining coal because of the economics associated with it.

Twenty-first century economic and environmental demands require an expanded role for commercial UGS development. This is Chapter 6. Process converts coal into syngas through same chemical reactions that occur in surface gas fires.

UGC can create electropower, chemical feedstock, liquid fuels, hydrogen, and synthetic gas. Technology for developing countries undergoing rapid economic expansion, including China and India, is there, and allows beneficial use of otherwise uneconomic

coal reserves.

The recommendations -- create substantial federal research program with institutions, universities, and industry. Conduct field demonstrations to assess pilots and advance development. Implement three- to five-year research program to provide technical background to encourage investment, create standards for siting and operation of UCG facilities, investigate how in situ gasification can reduce the cost of syngas production and CCS, and engage the Department of Energy to develop briefings materials and public outreach programs.

Chapter 7 -- turning coal into pipeline quality natural gas -- again, a subject that we did cover in the March 2006 study. I remain of the belief that this is the low-hanging fruit for the United States in energy. Coal -- to substitute natural gas with carbon capture and sequestration, because the facilities are sitting on the ground, the

250,000 megawatts of combined cycle natural gas units built in the last now seven to eight years, people keep putting them in.

Every time someone puts in another natural gas plant, I say, "There's an expanded market for SNG."

(Laughter.)

With CCS, of course, and I believe that.

(Laughter.)

Four trillion cubic feet of gas annually, by 2025, the same as we identified in the 2006 study. USA Today did a story yesterday on natural gas that talked about LNG and pointed out the problems with LNG, and then had a conclusion at the end of it not to worry, that the unconventional gas plays like Barnett Shale in the Dallas/Fort Worth area, which was the focus of the story, would give us $6 to $7 an mcf natural gas within two to three years. Right.

So we don't have enough domestic

production capacity to fuel the U.S. economy. Will we get past -- above the 2000 -- or, I'm sorry, the 1971 peak in natural gas production in the United States? Maybe we do. Maybe we get marginally above it. But Canadian gas we're not going to have is going down, and the -- again, to make up that gap, it's going to be LNGs. And, of course, 80 percent of the gas reserves are located in places like Russia and Iran.

One other point here. Natural gas produced from coal with CCS has a smaller carbon footprint than LNG. Period, finish. That is not hostile to LNG. That is a business fact. It's a truth. So when we talk about bringing in LNG into the United States, out of concerns about carbon and using coal, we ignore this fact.

SNG -- coal to SNG, with carbon capture and sequestration, is the superior answer to anything that natural gas can offer, because it is going to be LNG on the margin.

Turning coal into pipeline quality natural gas -- there are multiple technologies, and we talk about those different technologies in the study. This is GreatPoint Energy. We also identified GE, Siemens, Conoco-Phillips, and Peabody has a relationship with Conoco-Phillips in Kentucky to produce SNG. All of these are very exciting technologies. All of them will be deployed in some context at some point at scale in my view.

Policy recommendations -- remove barriers associated with development of coal-to-gas projects for permitting, financing risk, and carbon storage; develop tax credits and federal loan guarantee incentives; make additional funding available to accept commercialization.

Madam Chair, that is the conclusion of our overview of this report. Again, I want to thank all the people that worked so hard on this report, and to express my appreciation

for the honor extended me to be allowed to present this document to the full Council.

I would move adoption of the Council -- of the report, and I'm sure you will want to have time for discussion.

CHAIR NELSON: Do we have a second?

PARTICIPANT: Second.

CHAIR NELSON: Discussion? Questions? Yes. Would you wait for the microphone?

MR. PALMER: Hold on.

MS. MIGDEN-OSTRANDER: I'm Janine Migden-Ostrander. I wanted to indicate that as a result of the meeting -- policy meeting in May, there were two other recommendations that were added on the underground coal gasification, which unfortunately didn't make it into this copy but are going to be added.

And very quickly those recommendations include a detailed engineering analysis of each step of the entire process, along with a detailed economic analysis of the

costs of the various steps. That was one recommendation. The second recommendation was to try to quantify the amount of unminable coal and its ability to contribute to the energy needs of this country. So --

MR. PALMER: Thank you. We will --

MS. MIGDEN-OSTRANDER: -- be aware of that.

MR. PALMER: -- absolutely do that.

Over here.

MS. JOHNSON: Hi. Regina Johnson from Platts. I was curious to -- what you think you can do now in the meantime while you're waiting for the new technology to come on board or for the public to get around accepting coal-fired powerplants in some way.

Prices for coal are going higher, but you can't seem to get the plants building, and permitting is being attacked at every corner. So what do you do in the meantime?

MR. PALMER: Excellent point. I think when we did the 2006 study their price

differential was gas was four times more expensive than coal, and today it's five times more expensive than coal. So the differential is greater.

Natural gas today is more expensive than coal is than it was in 2006, even though the price for both have gone up and the price pressures on natural gas, because of the international situation and the linkage to oil, means that the potential for natural gas to explode in price from what has been a rapid ramp is huge and something that you could see this summer, where people are paying 60, 70, 80 percent more on the margin for electricity than they are right now, depending on what happens in these energy markets.

The second part of the question with respect to coal permitting -- permitting for new coal plants -- it is absolutely true that people have pulled back from some coal plants. It is not true that people have pulled back from all coal plants, and there

remain some 70 to 80 million tons a year of additional coal burn that is being installed today in ultra-supercritical coal plants.

I think the -- as a national imperative, to deploy increased electricity generation to alleviate the reliability and price problems that are facing the American people, and that they don't have a full understanding of what could happen, that we need clear signals from the United States Government that people will be allowed to go forward with coal plants, even as they are in Europe, a part of the world where they have signed on to Kyoto, to get the people to pull back from these coal plants to go forward with the coal plants.

In the absence of that, I think we are going to have to work our way through a difficult electricity environment going forward, even as we put in these additional coal plants.

There is one all the way in the

back. Bob, there's -- all the way in the back. Okay. Then Janice -- Janos, excuse me. Okay.

DR. BEER: Janos Beer, MIT. I'd like to make a comment about, what do we do in the -- before the advent of carbon capture and sequestration? Carbon capture and sequestration, which is clearly the enabling key technology, as you mentioned, sir, of using coal, will be probably fully commercial -- that is, without any subsidy -- around 2020, perhaps before hopefully.

But, in the meantime, there is -- the only practical and good practical way of using coal is increasing the efficiency. And there are important new technologies which can do that. You mentioned in the -- in your presentation that to go to supercritical steam plant you can save 15 percent or 14 percent of -- mitigate by 14 percent of the CO2 emission.

If we are looking a little bit ahead of what is in the pipeline from the

point of view of R&D, there is a European project which is going up to 700 degrees C superheat, 1,300 degrees Fahrenheit, and this one will go up to something like 18 or 20 percent efficiency change, and, therefore, a saving of CO2 emission.

And further than that, there is a United States development, which is 760 degrees C superheat, and this will go up to 33 percent carbon reduction, CO2 reduction. So, therefore, I think in the meantime our most important task would be to build high-efficiency plants, as high as economics would permit.

I would like to mention also that building high-efficiency plants is very important not only for the period before CCS becomes commercial but even afterwards, because it will certainly reduce the penalty, the energy penalty, of the application of CCS.

So I think that this is a very hopeful way of using more coal in the period

and satisfying the electricity needs in the period before CCS becomes commercial, and even afterwards.

MR. PALMER: Thank you, Janos. Great point.

MR. BECK: There was another question in the back.

MS. LING: Hi. I'm Katherine Ling with GreenWire. I was wondering if you could comment a little bit more about -- you said you disagreed with DOE on the FutureGen project. And I was -- or the new restructured FutureGen project. I was just wondering if you could elaborate a little bit more, and sort of with the new restructured program I guess what you're hoping for or if you want -- are working to maybe save the original one.

MR. PALMER: Well, let me just say very briefly in response to that, as a complete answer, that we are for the restructured program, and we are for FutureGen at Matoon.

(Laughter.)

CHAIR NELSON: Are there any other questions?

MR. BECK: Hang on.

MR. REUTER: Fred Reuter, St. Xavier High School. One of the comments about, what do we do at present? It seems to me that a good deal of problem is simply people don't understand coal and its potentialities.

If it were possible for us to somehow get on front line, or a Nova production, begin educating those people who are interested primarily in the future of the United States on an understanding level, this then could be brought to people through education, and so on. Just an idea.

MR. PALMER: I think that's a spectacular suggestion, and I -- you know, I have been doing this long enough to actually stand here today and tell you that I co-chaired a study of the National Coal Council

in 1993 called Coals Image with a man named Jack Mahaffey, who was the Chair of Shell Mining, and we addressed that very thing. And it's something we continually struggle with, and it's -- your idea is something we ought to pursue.

I think my time is up here. One comment -- last comment over here to the question of -- I think from Platts on the coal pricing and natural gas pricing. When prices go up this summer, it will be natural gas and not coal.

The natural gas units are -- have a small capital component, and -- this is in their overall cost -- have a small capital component, large fuel. That has always been the attraction of natural gas is you could put them in quickly, and there wasn't a lot of capital associated with it. The primary cost is fuel.

With the coal plants, it is large capital, small part is fuel. Now, both -- in

fuel, for sure the price of a coal plant, when the cost of coal goes up, it goes up. But in percentage terms, the -- it is -- the society is exposed to the marginal price of natural gas, not the marginal price of coal.

And people, you know, are going to confuse those things I know, but it is a fact that the exposure we have is to the price of natural gas, and more specifically foreign natural gas, in the form of liquified natural gas. And we're all about to get an economics in energy lesson in the United States, unfortunately.

Thank you very much.

CHAIR NELSON: Thank you.

(Applause.)

We have a motion and a second. All in favor?

(Chorus of ayes.)

Thank you. We'll present the report to the Secretary.

We have two items of Council

business, and then we'll take a short break. I'd like to call on Rich Eimer, Chairman of the Finance Committee, to give a quick report. Rich?

MR. EIMER: Thank you, Madam Chair. As the Council's Finance Committee Chairman, I would like to report that the firm of Chaconas and Wilson completed the 2007 audit on April 29, 2008. The audit was conducted at the Council's offices.

The audit concluded that the Council conducted its financial business using recognized, acceptable, and appropriate financial practices, and approved the Council's accounting procedures. The audit was accepted by both the Finance Committee and the Executive Committee at their joint meeting yesterday. If any member would like a copy of the report, they can request it from Council staff.

I would also like to make one more comment. The Executive and Finance Committees

continue to explore ideas to put this Council on a solid financial footing. Your dues, special contributions, reception support, are all very much appreciated, and your understanding will also be appreciated and solicited as we go forward in addressing this issue in the future.

This concludes my report. Thank you, Madam Chair.

CHAIR NELSON: Thanks, Rich. Thank you, Rich.

And I have been reminded that I neglected to ask if there was anyone opposed to the motion.

(Laughter.)

Is there anyone opposed?

(No response.)

If not, thank you very much.

And with that, Larry Grimes, the NCC Secretary, has a quick report. Larry?

MR. GRIMES: I won't give my normal welcome to new members talk today. But since

we do have a few members, I would welcome any questions you have about our procedures, our structure, the way we work.

About every other year I give a little more elaborate discussion of how we're organized. And it is important for you to understand that, because you're going to hear reference to two organizations -- the National Coal Council, which is what this body is, and the National Coal Council, Inc., which is our housekeeping organization, and that's where we deal with our financial matters and make this thing work.

In any event, I am always available for questions, and I would welcome them. Thank you.

CHAIR NELSON: Thank you, Larry.

Okay. We are running fairly tight this morning, but I know it's time to take a break. So if we could take a short 10 minutes max break, that would be great. Very short.

(Whereupon, the proceedings in the foregoing

matter went off the record at 10:06 a.m. and went back on the record at 10:13 a.m.)

CHAIR NELSON: Could I ask everyone to please take their seats? We're ready to reconvene. Thank you.

Bob, can we shut the doors in the back? Thank you very much.

In the interest of time, I would refer you to your report that is in front of you. It does include all of our speakers today and their bios. So I will briefly introduce Dr. Ted Barna, who has a wide range of experience. I would recommend that you read his bio.

He previously worked in the Office of the Secretary of Defense, Advanced Systems and Concepts, also as an Assistant Deputy Undersecretary of Defense. He spearheaded the development of unconventional fuel resources for DOD, termed the assured fuels program. Many, many other accomplishments.

Join me in welcoming Dr. Ted Barna.

(Applause.)

DR. BARNA: Well, good morning, and thank you for allowing me to address you. Let me just start out by saying I did in fact work in the Department of Defense for seven years. I started life as an Air Force pilot, and when I retired from the Air Force I said, "Well, what do I want to do with my life? How about if I'm a school teacher?"

So I went back and became a school teacher, and went back to school myself, ended up with a degree in molecular biology, molecular developmental biology, which of course really suits me well for --

CHAIR NELSON: I'm sorry, Ted.

DR. BARNA: -- talking about fuels.

CHAIR NELSON: We need a microphone for the Court Reporter.

PARTICIPANT: I can give you one you can walk around with.

DR. BARNA: If you would, that

would be good. Okay.

I knew two things when I retired from the Air Force -- I was never going to live in a big city, and I was certainly never going to have anything to do with the military again. So I ended up in the Pentagon and living in Springfield and the joys of I-95.

I'll get to the major point I want to talk about here in a moment. Let's see here. I don't want to belabor these points. I listened to the report you just had, and they covered them all real -- very, very well. We use a lot of oil. We import most of it. The demand is going to go up. It's going to go up in terms of transportation fuels especially. Biofuels and alternative fuels, while good, are going to cover just a portion of this.

And I think it's important to remember that even as we stress, as we go to a new economy, the new economy is going to be built using the energy from the old economy.

The bad news is, of course, that our energy policy seems to be no. We don't want to drill offshore in Alaska. We don't want to develop shale.

They just voted on that in the Senate panel, once again stopped any development of over a trillion barrels of oil out in the western parts of the United States. We spend well over a billion dollars a day sending money to foreign wealth funds that then turn around and invest in us using cheap dollars.

And I don't see -- very few alternative fuel projects in the future. The good news is, of course -- and I'm preaching to the choir here I know -- we are a very energy rich country. We've got well over a trillion barrels of oil recoverable in shale, probably pretty close to that in coal, lots of tar sands, lots of trees.

We can use these in full compliance with EPA and environmental regulations, and

they can be developed for the benefit of our nations, our states, our unions, our schools, our environment. Whenever you get down to the local level and you talk to people -- you know, in Uinta County, they understand this is jobs. These are schools, these are things that can help us out.

Okay. Now back in 2003, based on a plus-up that came through Oklahoma, we were involved in looking at alternative fuels at that time. It was a way to see if the military could use synthetic fuels in their aircraft and in their ground equipment.

At the time, I wasn't even quite sure what synthetic fuels were. But I quickly learned that fuels can be made from things like coal, oil, shale, from renewables like -- especially like trees, cellulosic fuels. And it grew into a study by the Department of Defense, and this study we called the Assured Fuels Study. It started in about 2004.

At the time, the cost of oil was

about $20 a barrel, $25 a barrel. The Honorable Mr. Michael Wynne, who is now Secretary of the Air Force, was the one who really understood that even though at the time oil was cheap, that they were running into problems. And he had just written about a billion dollar check just to cover the increase that happened the next year on that.

Besides the fact that it is energy assurance, we also were looking at developing better fuels. The fuels that you get -- and I'm slanting this to coal-to-liquids, and I'll -- but there are others. But the fuels you get using Fischer-Trops processes are really good fuels as far as internal combustion goes. They have no, or almost no, sulfur. They burn at slightly lower temperatures and slightly less compression. So you produce even little -- less NOx.

More complete combustion gives you less carbon dioxide, and particulate matter is reduced immensely. And the specific fuels I'm

talking about are diesel fuel and jet fuel.

Now, the military calls their jet fuel JP8, except for the Navy, which has to be different because they are the Navy, and they call theirs JP5, which is slightly less explosive and needed on carriers. But they are used interchangeably.

If an Air Force airplane that uses JP8 were to land at a Navy base and they put JP5 in there, it wouldn't even make any difference in what they did.

Okay. And they're more environmentally friendly. In the military, there's a lot of -- a lot of exceptions on some of the rules, and we all believe that these will eventually go away. So we decided, well, let's have this program. And we looked at -- we looked at the immense wealth that we had.

We looked at the technology, which is nothing new, although the combining of the technologies in the United States is new. We

said, "Where could we fit in?" Well, where the military could really fit in here was to test these fuels, because there would be some market resistance based on the fact that you can't go out and buy Fischer-Trops diesel today. And if you could, please would be a little reluctant, because they're not quite sure what it is and how it works.

And we said that based on -- then, the price of fuel started -- oil started ramping up, and, you know, it hit $50 a barrel and everybody went, oh Lord, you know, what are we going to do? Remember the good old days? $50 a barrel? But we figured, at least I did, that it was just going to take off, it was just going to explode.

This was something that on its face was so obvious that it was going to go, and it didn't go. It didn't go anywhere. Now, that's not to say that the military is not doing some things, and I will discuss those, especially Mr. Michael Wynne and the U.S. Air

Force under his leadership. But in general, it has not started, and certainly not the way we assumed.

So I want to look at why I think -- why I think that this didn't happen. This is, of course, not the view of the Department of Defense, and actually I work for a company named ICRC, and it's also part of a larger corporation called VSE. It's not part of theirs either, but I'm going to make some recommendations and review the actions and what we did.

Okay. Why haven't we done it by now? What caused it to come off the rails from my perspective? The first thing is policy. We've got a great policy: maximize demand, minimize supply, and buy the rest from the people who hate us.

(Laughter.)

I wish I could have thought that myself. Mr. Peter Schwartz said that.

There is no national policy right

now that supports the development of alternative fuels, and I want to talk about biofuels and ethanol in a minute. But I'm talking about coal/shale development, and tar sands.

And not only that, but the policy that we do have seems to change every two years. We had a Policy Act of 2005 that was I thought pretty darn good, and then we have a Policy Act of -- now of 2007, which is totally different. So you go to talk to industry people, they don't know -- and they're talking about large investments of money into things, and all of a sudden you're saying, "Well, what is the policy?" Well, we don't have one.

The emergency policy addresses only biofuels, and there is no executive branch direction for alternative fuel development. Although the Policy Act of 2005 was very positive, although it was mentioned in speeches and in State of the Union addresses, something I learned as a brand-new guy in

Washington, there was no line item in the budget.

Well, guess what? You don't have a line item in the budget, you don't have a program. You don't have a program when you go to put things forward, they die quickly.

The second thing from my viewpoint is the debate. We have allowed the debate to become a debate over the environment, not over what I see to be an emerging energy train wreck. We have convinced the nation that coal is dirty, shale is a catastrophe, and tar sands have ruined Canada.

Biofuels are put forth as the answer, without looking at the energetics of the whole equation, without looking at the true cost. Environmental impacts of -- well, I'll just say the environmental impacts and the economic support that is needed to make these happen.

The next thing I think was a real detriment was finance. When we started this,

they were looking at a 50,000 barrel a day plant costing somewhere around $2-, maybe $3 billion. Well, right now we are talking $150,000 per barrel of daily production.

I noticed on the report at the port -- on the plant in Shenwa, I think he said about 50,000 barrels, and it was going to run in the $3 billion price range. I think anything built here right now -- the $150,000 per barrel daily production is probably the high end. But the way things are going, maybe this year -- this speech next year it will be the low end.

Gasoline would be a little easier to produce, but -- so what we've got to look at is perhaps maybe smaller modular plants as a start, and building up to -- more to the $30- to $50,000 three-train sort of plant.

Another thing that hurts is -- and I alluded to it a minute ago -- FT technology, although it has been used forever, has not been built here in the United States, so there

is a little reluctance there. And the products are not used in the United States. There's a little product uncertainty, which also all together increases the cost of money.

Environmental opposition -- some environmental groups just hate coal. I mean, they hate it. You go to their websites and it starts off, "We hate coal." Coal emits way too much carbon dioxide. It ravages the land. It uses too much water. And then, when they do comment on coal-to-liquids, they'll say, "Well, it just costs too much." so old technology costs way too much.

They point to a couple of -- the uncertainty of sequestration, even though in EOR it has been used a lot, and I'm really very interested in seeing EOR, enhanced oil recovery -- I'm sure I'm preaching to the choir here -- where you just pump oil down in oil wells. Right now, we're taking all of the CO2 out of the ground, piping it down in the Permian Basin, and also along the Gulf Coast,

and then sticking it back in the ground.

Why not just leave what's there there and use any produced to do it? We've got a patchwork of federal laws. It's real easy to stop things, and in my opinion -- and this is my opinion -- anything that addresses all of these, as far as building a coal-to-liquids plant, is still going to be opposed.

NIMBY -- if you go back to the -- especially out west in the shale, where you had a lot of buildup during the '70s, and everybody said, "What a great idea," people spent a lot of money on infrastructure, and then Black Monday, everybody went home and left the people holding the bag.

So we've got to be -- anything that works has to address local issues and has to address the mistakes that we made in the past.

The Energy Act of 2007, especially Section 526, where the military is concerned, they can really help out with buying, with testing, with flying these fuels, and they

specifically put in a Section 526 that says you can't do anything that is -- makes more carbon dioxide than petroleum right now, and, as far as they were concerned, coal-to-liquids, shale, so forth, all made more.

Carbon capture was discounted, because it was not proven, and they sent a letter to the Secretary of Defense saying, "What are you going to do about it?" As an aside, a lot of the Department of Defense fuels comes from Canada, and Canada -- and the oil made from tar sands. And so there was sort of a flap over whether NAFTA applied or not, and they decided that the Canadian oil didn't apply, just U.S.

Finally, the last thing was lack of carbon laws. When you look -- talk to any of the developers, any -- the thing that worries them the most is that they think that they could live with, they are more than happy to talk about sequestration, carbon capture. Whatever you want to do, they want to do it,

but they've got to know the rules of the game, and right now they don't know the rules of the game.

I mean, something as simple as cap and trade, or is it going to be a tax, or if you stick it in the ground do you have any liability issues, is there any amortization that can go on over time.

What happens to the sequestered carbon dioxide in five years? Probably nothing. Fifty years? I don't know. Five hundred years -- well, I'm not really worried about it.

But banks are reluctant to give people money, and we're talking a lot of money, when they're not even quite sure what the laws are going to be five years from now. And so that's what they really look at.

So here is my recommendations, which is sort of all -- we need a national policy that addresses all forms of energy. One of the things that I noticed as a new guy

in town here is we seem to have organizations that -- oil, the natural gas, the coal -- all good organizations, but we don't speak with one voice, and that's what we need that.

We need something that addresses all forms of energy, and this includes biofuels. It includes wind, solar, tidal, nuclear, coal, shale, tar sands, and renewables. There's nothing wrong with that. Renewable energy is really kicking off in Europe, you know, and they're looking at cellulosic.

And I got my doctorate in South Carolina, and if you were down there very long you'll see there's a lot of lumber trucks on the road. I mean, that's what they do down there; they grow trees. They don't have any coal, or very little, but they sure know how to grow trees.

And money has to be made available through the executive branch for alternative fuel development. This has to be part of the

budget.

Debate has to be shifted to an energy debate. Now, I'm not -- I'm a molecular biologist. I'm a biologist. I'm for developing things in a sound, logical, rational manner. But the thing that is going to -- the train wreck that is coming at us, from my perspective, is energy. And we have to focus on that.

If we want an example, look at what Brazil did. They formed Petrobras. They went out, they found oil, and they used 20 percent as -- from ethanol, 80 percent comes from the good old-fashioned pumping it out of the ground.

And they expect to be oil independent here pretty soon. Now, we're not going to make oil independence. That, I think, is not reasonable, not in any time -- or energy independent, but we could certainly lessen the dependence than we have now.

We could encourage, as I said,

smaller modular plants, and this is a recommendation to the Department of Energy and to the Secretary of Energy. It lowers the CAPEX, it allows for modular expansion, and initial construction are really great projects for demonstrating carbon capture and sequestration.

The government can do two things. I'm not much for government subsidies, but it can do some things that will help along. It can buy off -- you know, the military could buy off the oil -- I mean, excuse me, the jet fuel. By the way, the military primarily uses jet fuel. About 80 percent of the energy the military uses is transportation fuel, and the biggest single project -- product is jet fuel, and the next is diesel, diesel fleet marine for the Navy.

It can buy these off. They're good fuels. It can use loan guarantees and continue funding the testing by Department of Energy and the Department of Defense. And I

think this debate can be shifted to rather than keeping this $500 billion a year or more into the United States, demonstrate that these things can be done in an environmentally sensitive and friendly manner.

If you go visit coal mines -- I've been -- and I'm thinking of the Coal Council here, but, you know, you're up in North Dakota, and you go to an open pit mine, and they say, "Well, over there is where the mine used to be." And it's restored and topographically you don't even know it was ever there.

Using clean coal to make electrical power makes a lot of sense. I think that the TVA would be a great place for this to start. And I think that rather than in opposition, I think that somehow or other active participation by environmental groups is not only required but necessary.

And we've got to take into account all of the stuff that we did, and say we're

not going to do that anymore. We need to get out in the local communities and do it. And, by the way, when you look at developers, the biggest area where they find a welcoming environment is at the local community, state and local. They understand it. They get it.

Okay. So since I left the Department of Defense, the Department of Defense did two things. One is it formed the Defense Science Board and did another study, and what it did was it looked at deployed fuel and it said Fischer-Trops was not a real good fuel for deploying forces. In other words, you have to bring your Fischer-Trops factory along with you.

In honesty, back when I started this, we looked at putting a Fischer-Trops plant on a ship, and it ended up to be bigger than an aircraft carrier. It probably wasn't. It probably was overengineered, but it would make Fischer-Trops fuels in the C-state five.

So, I don't know, I couldn't make

Fischer-Trops anything in C-state five, but that's -- this plan could anyhow.

Anyway, I just don't think it was a very good report. I think that the need is still there. The DOD Energy Task Force is looking at -- although 80 percent of their use is in these fuels, their focus is really on the 20 percent. And the Air Force and the military is doing a lot in terms of using hydrogen, building solar rays.

The number one consumer of green energy in America is the U.S. Air Force. So, I mean, they're on board on that, but the problem is that 80 percent is fuel that you put into jet engines or tanks or ships or whatever.

The U.S. Air Force has continued very valiantly, in the face of a lot of opposition, to continue their testing. At Wright-Patterson they are doing the aircraft testing. You periodically read that they have just flown another airplane; they flew a B1

supersonic the other day.

They said they would like to preferentially buy Fischer-Trops fuels if they were made available, but we don't have anybody making them here, so that's not going to happen. The sort of ironic thing is although they were the initial catalyst for all of this, where they may use Fischer-Trops fuels is not in the United States.

They may be certifying all of their aircraft and then buying the fuels from plants in Qatar or plants in South Africa or plants in China or Indonesia, the Shell plant there. So, and they are trying to overcome Section 526, which isn't that good. And the Army and the Navy are not doing a lot.

So we need better policy. We need to reform the debate. We need to do what we can to reform these financial obstacles. We have to deal with the environmental issues in an honest and straightforward manner. We've got to emphasize the advantages of state and

local. We need to continue supporting the Department of Energy and the Department of Defense in their efforts to get these online.

So thank you all very much.

CHAIR NELSON: Thank you.

(Applause.)

We have time for one question. Does someone have a question? We need a microphone. There we go. Sy?

MR. ALI: Sy Ali with Clean Energy Consulting. You mentioned of coal-to-liquid conversion. We have talked with Wright-Patt regarding the fuel that can be produced, and they talk about needing mil specs and having a test at an engine. At there any programs within the Air Force that would support that activity?

DR. BARNA: The question is: is the Air Force supporting activities so that the fuels meet mil specs? And then, the answer is two part. First is, if you take a Fischer-Trops fuel and you mix it 50/50 with

existing fuels, it falls right in the middle of the known -- of the specification for jet fuel. So you overcome it.

At the same time, they are testing it for the two main problems with the jet fuels, and one is lubricity, because no sulfur, you have a lubricity problem, which probably can be overcome with additives. And the other is seal swell issues that do not affect new engines but could affect older things, especially older ground equipment.

Remember, to get the fuel in the airplane, you've got to put it in a truck and you've got to put it into storage and pump it in there, and so forth, and those things could leak. But yet they are very much -- Wright-Patt is very much engaged in the engine part of that, and the Advanced Petroleum Office at Warner-Robbins is engaged in the ground equipment.

CHAIR NELSON: Thank you. Thank you very much.

Join me in thanking Dr. Barna.

(Applause.)

Next, I'd like to welcome William Fang, who is the Deputy General Counsel of the Edison Electric Institute. He directs the global climate change issue for EEI. Welcome.

MR. FANG: Good morning. Bob Beck asked me to talk about -- give you an overview of congressional climate legislation. I think most of you are probably aware of some of the leading legislation up on the Hill, but I'll try to give you my perspective and talk a little bit about economic impacts with respect to one of the bills.

I think it's pretty clear from the standpoint of the electric utility industry and coal industries that any of these comprehensive climate bills are going to have some severe economic impacts, at least net severe economic impacts.

I divided the legislative -- the bills and legislative proposals into three

categories: the comprehensive legislation, which would affect the entire economy, and then a couple of others which are intriguing and could move what I call the "mind the gap" legislation.

Everyone knows, I think, that even if climate legislation passes in the next year or two there is going to be a period of time to implement -- to have to implement regulations, and so we are going to have some period before it becomes effective.

It could be several years, and in the meantime we have coal-based technologies, carbon capture and sequestration, other technologies which really need more -- they need a lot more funding, they need a jumpstart, and so that's what I call the mind the gap legislation. We are going to have this gap, and others of course have noted this, and we need to fill that gap as soon as we can, regardless of whether comprehensive climate legislation is enacted any time soon.

And then, there's a category of targeted or narrower legislation, which -- some of which could move this year. It's unclear. Some of the legislation in this category blends with the second category, but we'll get into that.

Okay. These are the leading bills on the Senate side. I'll spend most of my time on Lieberman-Warner, which is I think probably the most severe bill in terms of impacts. It would eventually call for a 70 percent reduction in greenhouse gas emissions by 2050.

Lieberman-McCain I put up here simply because we've got a Presidential candidate, his bill, which has twice been voted down, which could still be in play, would call for about a 60 percent reduction in greenhouse gas reductions by 2050. So it's also a pretty serious piece of legislation.

And then, we have Bingaman-Specter, which for a while seemed to attract some

support, certainly among some in my industry and labor, and perhaps the coal industry, too. But I don't think it's really going to be in play. Some of its concepts might be in play, the safety valve for example. It, too, by 2050 would require a pretty serious reduction in greenhouse gas emissions.

Let me spend a little time on Lieberman-Warner and the economic impacts of that before we move on to the House side. And I think the reason why we have such severe economic impacts is because the targets and timetables are so strict, particularly in the near term or in the medium term out to 2050.

That's going to have huge impacts on utilities, on transport, buildings, and homes, and so forth. Eventually, if you're talking about a 70 percent reduction in emissions by 2050, you're talking about effectively decarbonizing the U.S. economy, and that just has some incredible implications.

The GDP loss by 2050 would be as much as $2 trillion annually. The cumulative GDP loss is more than $6 trillion. So just those figures alone should be enough to make people sit up and take notice. In fact, the targets and timetables are so severe, particularly in the near term, that banking really doesn't help.

Banking doesn't help until you get out into the outyears, and even then it might only -- you know, it might only cause about an $80 billion decrease in costs. And when you're talking about as much as $2 trillion annually, or a cumulative $6 trillion loss, $80 billion doesn't really mean a whole lot.

So, theoretically, banking could help. I don't think borrowing helps at all, but effectively it's -- there's not much help.

The impact on household income, the loss in 2050 is about $2,200, which is I think for most families a pretty big hit. In terms of the energy sectors, while coal takes it on

the chin probably the most, I think there is some question, particularly in the short to near term, short to medium term, whether coal can survive.

If it can survive by 2030, and you have advanced coal technologies and carbon capture and storage online, you can have a resurgence of coal, but only coupled with carbon capture and storage. And that's not going to occur until, one would think, about 2025 or beyond.

The big beneficiary in the near term is natural gas, of course. Utilities would engage in massive fuel-switching to natural gas. Natural gas would enjoy a prominence until maybe 2030, but at some point, I mean, the carbon content in natural gas is half as much -- a little more than half as much as coal.

So eventually, if coal comes back with carbon capture and storage, natural gas is not going to be used forever as a baseload

fuel. So it would eventually decline, and, again, the entire economy has to decarbonize, and natural gas would be no exception to that.

In my industry, people have talked about the role of energy efficiency and renewables. We would look at energy efficiency first. Again, in the short to near -- short to medium term by 2030, there's only so much that energy efficiency and renewables can do.

Nuclear is the other big baseload generation source besides coal and natural gas. But nukes can only enjoy a renaissance if a lot of regulatory hurdles are cleared, the Yucca Mountain situation is resolved. We're not going to have new nuclear plants until about 2016 to 2018, and we're talking about three or four or five plants.

So for a substantial amount of nuclear energy to come on board, that -- I don't think you will see that happen until 2020, 2025. So we do have this -- we would

have a huge problem under Lieberman-Warner, some of these other severe bills, up to about 2025, 2030.

And I should, finally, at least make a note about job losses. Some have said, of course, we're going to have some new green jobs created, and that's certainly true, but the net job loss is going to run into the millions. The energy-intensive industries, the manufacturing sector, are going to take it on the chin. A lot of jobs will move overseas.

I think particularly as the price of natural gas gets high, and supplies are constrained, you'll see the chemical -- petrochemical and fertilizer industries fold up or move overseas. So some jobs -- a lot of jobs will certainly disappear. Some of them, again, will come in through new green industries, and there will be some retraining. But all together I don't think it's a very happy prospect.

On the House side, we have three white papers that have been issued by the Energy and Commerce Committee. They will probably issue a few more. They have held a couple of hearings, and subcommittees held some hearings, and they will likely schedule a few more.

I think the big question is whether they will -- whether they will issue a bill this year. And Dingell and Boucher would like to promulgate a bill, but there are a lot of issues with that.

Part of it hinges on the Senate action, and I will jump ahead just to this last bullet for a moment. You know, most of the betting right now is that Lieberman-Warner comes up on the floor in the first week of June. It may be debated for a few days, maybe for a couple of weeks at most, but while it will move to proceed, it will not likely -- would not likely survive cloture.

So that means that if there is not

a Senate bill, that takes a lot of the pressure off the House. On the other hand, I think Dingell and Boucher are looking at this issue in terms of jurisdiction. If they don't get a bill out this year, that is a problem I think for the next Congress. So I think they genuinely want to get some kind of bill out this year. So, again, whether that will cross -- whether they will actually do that is unclear.

There are some other possibilities for bills on the House. Representative Whitfield has talked about getting a bill out, and he has mentioned a couple of members that might be involved in that. But we haven't seen anything yet, so it's a little early for that.

So turning, again, to what -- where all the action is at the moment, the substitute manager's amendment was just dropped in yesterday on S. 2191. There was a summary available earlier this week, and I

looked at that. I haven't had a chance to look at the substitute. It's 157 pages.

There are some changes, but the targets and timetables have not changed as far as we can tell. So that means that, you know, basically the structure of the bill is intact. There are some things that are helpful to coal.

In the version that came out of committee -- by the way, there was no committee report that we're aware of, so the majority leader had invoked some special rule for this substitute manager's amendment to get to the floor in the absence of a committee report, which is kind of unusual. But, you know, we won't have any legislative history to speak of for S. 2191.

But getting back to the manager's amendment and the bill as reported out of -- the bill that came out of committee, it did have some provisions for coal. There were CCS bonus allowances, carbon capture and storage

bonus allowances. There were something like eight or nine funds, and one of the most interesting of those is the technology deployment fund.

Now, that fund would not just -- would not depend on allowances. It's separately funded from auctions, and so forth. That fund would not just be for advanced coal technologies through CCS, but would be for the whole range of advanced technologies and other technologies. But, certainly, coal technologies and CCS would be a beneficiary under that.

So I think -- and we'll have to take a closer look at this -- in the manager's amendment, there were some changes. I think the intent was to try to take the bonus allowances, which are backloaded, and move a lot of them up front, which is where we really need them. Obviously, we are going to need CCS, the RD&D, sooner rather than later. So that would be a good change, if in fact the

CCS bonus allowances are now more frontloaded, or at least not so much backloaded.

As that bill gets to the floor, there will be other amendments of course. The Republicans will have a lot of amendments. Some of them will be tabled, some will be withdrawn. There is some talk about Voinovich's -- one of the leading Senators with his own kind of bill, and that has been out in the press and been circulated.

Senator Bond is working on legislation apparently, or amendments, and then there's perhaps a group led by Senator Dorgan that are working on some kinds of amendments. What those are is unclear. I would suspect they have something to do with coal and CCS.

I think in terms of the Republican amendments, those are basically message bills or message amendments. They are not expecting to pass those. You know, the indication from folks like Boxer are that if there are any

weakening amendments that are -- that threaten S. 2191, that they will pull the bill from the floor, and probably the bill will be pulled from the floor anyway.

So I think some of the things to watch for is to see if any kind of a nuclear title would be accepted. You have people like Senator Isakson who are working on a nuclear title, and there will be some interest in that, or there may be some kind of nuclear amendment offered that's more show than substance. That's a possibility.

I seriously doubt whether any of these kinds of other amendments from the minority side are going to get across and be accepted.

Okay. That's the state of play on the comprehensive legislation.

Okay. Here we go. In this legislation that is needed in the short term, CURC has the leading proposal for a near-term CO2 reduction program with various components.

I'm not going to walk through this in any detail. I suspect some people from CURC are in the audience, and they could explain this far better than I. But it's a technology-based program to increase existing plant efficiency, presumably.

You have to, you know, avoid the NSR problem or any NSR issues there. Certainly, they -- you want to push advanced coal technology units and CCS, which we have discussed. And, again, in the context of CCS, a predictable regulatory kind of framework -- all of which is needed to advance these along.

Restructured FutureGen -- your guess is as good as mine where FutureGen is going to end up. It sounds like it's going to be something that the next administration will have to decide. We'll see what -- I know there is some legislative activity there in the appropriation side to try to -- some who want to, you know, maintain the program before DOE announced the changes.

I don't know what the chances are of those kinds of proposals getting across the finish line. But in any event, it's probably something that the next administration will have to definitively address.

And then, we have some other legislative efforts in near term. There is one that the National Rural Electric Cooperative Association has pushed. I don't know if anybody from the co-ops is in the room, but, again, they are in the best position to talk about that. They have gotten a bipartisan interest in this.

On the Senate side you have Conrad and Hatch, and then Pomeroy and Lewis on the House side. So that one has some chance, since it's bipartisan, of moving. But I haven't seen the bill yet, so we'll have to see what happens there. But there is some activity in this area.

And then, finally, and then this category, again, blurs with the previous

category. These are proposals that I would call downpayment legislation. They would not preempt comprehensive climate legislation, but they are I think some -- some good attempts to get something positive enacted before comprehensive climate legislation actually gets across the line.

So the leading proposal was originally floated last year by the Mine Workers, later joined by National Mining. And in that forum it first appeared as a sales tax on coal. Then, it evolved into some kind of an electricity fee, a millage fee, which the last time I was it it was about four-tenths of a mill on cal, two-tenths of a mill on gas, and three-tenths of a mill on oil.

And it would -- all together blended would be about five-tenths of a mill or half a mill, would raise about a billion dollars a year, and would be in effect for about 10 years.

So that's the proposal. Now, what

has happened to it is not entirely clear, but it looks as though Representative Boucher has taken it on and, you know, it's difficult to predict what will happen if Boucher and other coal state representatives like Rahall and Murtha change it, modify it, and so forth.

But the question mark is not in terms of whether there will be a bill. I think there will be a bill introduced. The question is, you know, who is going to be part of that? And the key really here is going to be what Pelosi is going to be -- what Pelosi will do with that, and that's why Murtha is the key representative.

So that -- if Murtha and Pelosi work out something, then perhaps that bill could move, and that could be dropped in soon from what we understand.

And so if you -- you know, if you're going to lobby on this, Boucher is the one to lobby on, I believe. And then, there may be some other members in play on that.

On the Senate side, we do hear that CCS will also be addressed, but it's unclear, you know, what's going to happen on that. I haven't seen any language on that at the moment. These are the -- this is what I've seen so far. It's mostly from the labor side and from Representative Boucher.

Okay. That's my summary of what's currently in play, and I'm happy to -- if you have time, to take any questions or comments.

(Applause.)

CHAIR NELSON: Are there any questions?

MR. BECK: We do have time for some questions.

CHAIR NELSON: We do?

MR. BECK: Chairman Connaughton just called and said he'll be here no later than 11:15, and it's about 11:00, so --

CHAIR NELSON: Good.

MR. BECK: -- we do have time for some questions. Rich?

MR. FELDMAN: Rich Eimer, Dynegy. Bill, what do you see after February?

(Laughter.)

MR. FANG: Part of that depends on who the next President is. But they have all professed strong interest in cap and trade bills with a pretty strong nature. I didn't even talk about a carbon tax. You know, Representative Dingell had put a carbon tax proposal out as the strawman earlier this year, but it never got to the point of being a discussion draft or a bill.

And I think while we need to be flexible to think about what might happen if a carbon tax is surfaced, I think most of the -- politically most of the play is in the cap and trade area.

There could be some hybrids, too. I mean, the Bingaman-Specter bill with the safety valve, some view the safety valve as an equivalent to a carbon tax. And so you could view that as a hybrid cap and trade and safety

valve -- cap and trade and carbon tax kind of proposal.

I think it's going to be real tough. Presumably, the next President will have his or her own bill, and it will be a tough bill, and Lieberman-Warner might be -- it might go beyond that. So I think we'll have our work cut out for us. But Lieberman-Warner is extremely important, because it sets the stage. It's going to be the starting point probably for what happens in the next Congress.

Presumably, I mean, most observers are betting there will be more Democrats in both houses. So that's going to make it tougher, too. I don't know what else to tell you. I don't see any real -- any ways to escape comprehensive climate legislation in the next few years.

The other problem maybe a little more down the line is what happens in the international negotiations. That could be a

real problem. Some have suggested, in fact, that we should take domestic legislation, even if it is pretty bad, because the international -- whatever comes across in the next international treaty could be worse.

I don't know if that's a good strategy. I mean, there is some interaction between what happens internationally and what happens domestically. But I think you do have to -- I think we do have to be vigilant about what happens internationally, and I personally believe that most industry groups have not paid sufficient attention to the international negotiations. They do have an effect on what happens domestically, and I would encourage folks to be much more active in this.

MR. BECK: Question?

MR. BOWKER: Bill Bowker, Kentucky Office of Energy Policy, being reorganized now again into the Cabinet for Energy and Environment. But I'm not sure you can answer this question shortly. Maybe you can direct

us to something.

You used some figures for the possible impact of Warner-Lieberman. The EPA did a study, EIA did a study. Both sides claimed victory, you know, showed -- showed that it won't hurt the economy, showed that it will hurt the economy. Can you summarize for us what you see in those studies? Or is there someplace we can go to get an understanding of those?

MR. FANG: Sure. It's a very good question and observation. Really, the major macroeconomic models -- the output depends on what the assumptions are. And if you look -- I'll just use EIA. I'll pick on EIA as an example, because that's the one that has most recently come out.

They have a core case, and they ran a number of cases. I can't remember how many, maybe as many as nine or so. But their core case they have -- by 2030, they have 268 gigawatts of nuclear coming in. And they

realize it's not realistic, but they did not constrain their model. So, you know, you tell me whether that makes any sense or not. I mean, we -- a lot of us don't think that makes any sense.

We only have about 100 gigawatts of nuclear now. To think that there might be 268 or 278 gigawatts, whatever the exact number is, in this country by 2030 is just ridiculous. I mean, it makes no sense. So, of course, with those kinds of assumptions, you have much lower costs.

If you have huge assumptions on renewables and nuclear, or if you have a model that assumes that half of your reductions can be achieved through energy efficiency, of course you are going to have low costs. I mean, that's just a natural outcome of how you run the model.

So I think as you look at -- as you look at the different studies, you need to examine -- those are the main variables to

look at -- also offsets, domestic and international. So I would say offsets, nuclear renewables, and energy efficiency. I may be leaving out something important, but those are going to make a major difference.

And we have put together -- we have put together some comparative charts or matrices on how these studies stack up. And if anybody would like a copy of that, let me know and we'll send it to you.

MR. WORKMAN: Greg Workman with Dominion. Bill, I was wondering what your thoughts would be on the national -- or, excuse me, the state and the regional programs that -- you know, our estimate is there is somewhere between 15 to 25 states are going to be impacted by either state or regional programs by -- by the end of the year, certainly the first part of next year. So I wonder what your thoughts are as to how that is going to incorporate into a national program when that kicks off.

MR. FANG: That's a tough question, a lot of different aspects to what states and regions are doing. And you're right, with -- you've got Reggie in the northeast with 10 states, the western climate initiative has I think at least six states or more, and then there's this Midwest Governor's Accord, which has a number of states. I don't even remember how many.

I think one of the issues is going to be how they relate to federal legislation, and whether they would be preempted in some part. If you look at Lieberman-Warner, it has a provision that would allow state programs, to the extent that they exceed the federal program in stringency. So that would be partial preemption.

Something like Reggie could go away under that kind of provision, because Reggie is nowhere near as stringent as Lieberman-Warner. But in the meantime, you have all of these states that have passed laws, and now

they're starting to pass regulations, and Reggie -- you know, they're going to conduct their first auction in September, another one in December I believe, and by the time federal legislation is effective you will have had a program that's -- will have existed for a few years that will have been -- these auctions conducted, and most importantly revenues.

You have states who have raised a lot of revenues and are starting to use it for various purposes. So how is that going to -- what happens to those under a federal program? I think that's a big unknown.

On the other hand, you have California, which -- whose AB32 is -- still goes beyond where Lieberman-Warner or any of the bills are probably, maybe with some exceptions. There might be some very extreme bills that go beyond California, but let's assume, for purposes of discussion, that California is more extreme.

Well, all of that is still going to

remain in play. I think the big question in California is: how are they going to work their program within the confines of the western climate initiative? You've got five other states, and none -- they're not on the same page in terms of cap and trade or what kind of mandatory programs would be imposed. So that's a very messy situation.

I'm not sure how else to say that. You've got about 26 or 27 state RPSs, so that's another factor. So you're going to have issues about whether those are in any national program. Let's say, if a national RPS, whether they're grandfathered, taken into account in some way, they are all so different that -- and that has been the big argument is to allow state RPSs and not worry about our federal RPS.

I think there are some areas that traditionally the states have regulated, and federal legislation probably won't touch those. Those would be things like land use,

mass transit, urban mass transit, some areas like that.

But when it comes to cap and trade or some big economy-wide or state-wide kind of mandatory regulation, yes, that does need to be worked on, and it really makes more sense for federal preemption -- for federal legislation to preempt what the states are doing.

But the preemption is such a hot issue or hot button issue, particularly for the California, Florida legislators, within the confines of the federal legislation, I don't think that issue will be worked out until the very last minute. It's just too controversial and too hot.

I mean, I -- logically, it's something that should be addressed head on, but emotionally it's something that most legislators don't want to touch it until very late. And we know there's -- there are members of Congress that favor preemption,

but, again, it's a tough issue that won't be worked out until late, I don't think, unfortunately.

CHAIR NELSON: There's a question here.

MR. FANG: Sure.

MR. BAJURA: Dick Bajura, West Virginia University. Do you see a future legislation coming about where the Federal Government might be responsible for the carbon dioxide that's stored underground?

MR. FANG: Well, it's a good general question. I think for carbon capture and storage to actually be implemented in the long term, there does need to be this -- a regulatory framework, and it's going to get messy because the states have a role and an interest, and the feds have a role and an interest.

I think, ideally, whether it's the Federal Government or state government, for long term, we like to call it long-term

ownership and control. But, okay, you can call it a risk-based issue or a liability issue if you want. But however you look at it, in the long term there does need to be Federal Government or state government control or ownership, because post-closure -- I mean, these CCS facilities, let's say they operate for 40 or 50 years.

At some point they're going to close or they're going to get filled up, and corporations don't live forever. I mean, an NAP or a Southern or Dominion is -- this may not be in that corporate -- stay in that corporate form forever. So -- and since forever is a long time, somebody has got to take that over.

And I think that makes sense. Texas passed a law to take over -- I think it was an indemnification kind of principle, as it was trying -- you know, it wanted the FutureGen site to be located in Texas, and that was one of the things -- one of the

attractive things that it offered, so that -- you know, take liability off the table.

So it's something that should be addressed. In the meantime, you've got -- EPA has a rulemaking, which is going to be initiated in July, under the Safe Drinking Water Act and Underground Injection and Control Program.

That's kind of a partial response right now, but there needs to be a lot more done on -- in terms of regulatory framework, both at the state and federal levels.

CHAIR NELSON: Thank you very much.

(Applause.)

We expect Chairman Connaughton in a minute or two. So if I -- I'd ask you to just remain in your seat, if you could. We need to hold up a paper for 10 seconds. Okay.

MR. BECK: While he's doing that, it's about 10 after 11:00, so we'll probably just take maybe a five-minute break right at our spot or -- no, I mean, just stay in place

and wait.

CHAIR NELSON: I wanted to say a couple of things.

MR. BECK: Oh, okay. That's fine. That's fine. Okay.

CHAIR NELSON: You're all free to converse while we're doing the white paper testing.

MR. BECK: I've got a bag back here, David, if you'd rather put that over your head.

CHAIR NELSON: For purposes of the Court Reporter, we'll be on a very temporary recess, okay?

(Whereupon, at 11:13 a.m., the proceedings in the foregoing matter went off the record briefly.)

CHAIR NELSON: Okay. We are back on the record. If I could have your attention, please.

We are -- just waiting for things to settle down here. I think we have

completed the white paper test, and we are now delighted to welcome the Chairman of the Council on Environmental Quality, James Connaughton.

He serves as the Senior Environmental and Natural Resources Advisor to the President, as well as Director of the White House Office of Environmental Policy, which oversees the development of environmental policy, coordinates interagency implementation of environmental programs -- boy, that's a big task -- and mediates key policy disagreements among federal agencies, state, tribal, and local governments, and private citizens.

It is indeed an honor to have him with us today, The Honorable James Connaughton.

MR. CONNAUGHTON: Thank you so much.

(Applause.)

You have two guys who were the AV

guys in high school here.

(Laughter.)

And this isn't going to work anyway because the battery is low. Okay. So you're going to get the oral presentation, not the visual presentation.

Good morning, everybody.

(Laughter.)

Yes. So I'm the White House guy. I work at Energy Policy, Environment Policy, Natural Resource Policy. And it also means that I intersect and provide my words of wisdom as we consider economic policy and agricultural policy and other things.

So I am delighted to be in front of this group, because what I do really is sustainable development in its purest form -- you how marry environment with economic with quality of life issues.

I want to talk to you a little bit about climate change and energy security, sort of where we are internationally and where

we're heading domestically. I'll give you a situation analysis and give you some of my thoughts going forward, and hopefully leave ample time for questions. How much time are we -- okay, good. Ample time for questions.

So, first, let me -- we all know about rising energy prices. The much-criticized National Energy Plan of 2001, you know, the Vice Presidential plan that was the product of a big stakeholder process, I could point you back to that document, and I can point you to a lot of what was described there of what we need to do. And we can directly attribute a lot of what we're seeing today to the unfinished business of energy policy in America.

So what we are dealing with right now -- I mean, it's not new. It's not unforeseen; clearly described, clearly anticipated, the solutions clearly articulated. We had an energy bill in '05 that got us part way there. We had an energy

bill in '07 that got us further there.

The unfinished business was still the heart of the business, and so I want to talk about that in a little bit, too, but that's sort of -- I want to leave that as a sort of opening framework.

On climate change, people want to make the issue of climate change difficult. But climate change is actually a very, very simple issue. It comes down to, quite simply, 50 percent of the climate change equation is how we use coal.

Twenty percent of the climate change equation is personal transportation -- not airplanes, not ships, not trains, not long haul trucks. It's people driving around in cars, personal mobility, and all of the benefits that come from having personal ability. Twenty percent of the equation is forestry and land use, and ten percent is everything else, now and going forward.

So that's climate change, and so

much of the discussion is about everything else when the heart of it is coal is an essential foundation to the global capacity to lift people out of poverty. At least it has been so far. It's affordable, it's reliable, it's abundant, and it has proven with the test of time for a century that it can help power economic growth in very important ways.

No matter what climate policy is debated -- domestically or internationally -- coal will be used, and coal must be used. And so we have to find ways to use it smarter, use it cleaner, use it more efficiently.

At the same time, with energy demand growing, we want to see -- you know, we want to continue resiliency in our power generation system. The same way we have been enjoying resiliency with nuclear and renewables and natural gas and other sources, we want to be sure we have that resiliency, but we still have this anchor in those nations that can and will rely on coal.

And so we can't go about the climate issue without just confronting that head on and seriously, and a lot of the discussion around this is not serious.

On personal transportation, it is trying to infuse into our personal transportation system the same kind of resiliency we enjoy in the power generation system. Right now, for vehicles, really, it's the sole source supplier, and the suppliers -- this often comes from sources that do not necessarily have our best interests at heart.

So it's important to think in the transportation space of how to build out greater resiliency through greater choices that are interoperable in the same way that our electricity infrastructure system is interoperable.

When we do that, we can then look for opportunities to help the transportation side of the equation with the electricity side of the equation in more effective ways. And

ultimately there is going to be a complete convergence between our transportation systems and our electricity systems.

We know that to be the case, right? Nobody suggests otherwise. So, really, it's just a question of how serious we are about getting on with it, which is largely an infrastructure issue and a technology development issue.

On forestry land use, as it happens, forestry and land use involves forests and agricultural activity. That is not just important in terms of timber products and food products, but it is increasingly a piece of the power generation and the transportation equation.

And so we tend to think of these issues in silos, and yet the future, the next 100 years, is about now the integration then of the forestry and land use set of issues into the personal transportation and the power generation equation.

All right? And that's 90 percent of the challenge. In the climate world, however, the people working on this issue at high levels of seriousness are largely the environment ministers and the climate change specialists. The people actively engaged in forestry, actively dealing with electricity at the policy level, the people actively dealing with transportation systems, and with global commerce, have been on the sidelines of the public policy debate.

They are contributors, but largely the sidelines. They don't show up to meetings. They don't negotiate tax. They aren't developing documents, or at least these policies. They are sort of responders to what has been largely perceived as an environmental issue when, as I think I have just indicated, climate change is not an environmental issue at all.

The environmental issue was dealt with when we understood that this is a serious

challenge that must be faced. And so once we decided that, and it's sort of we with environment on our business cards, kind of had to step aside and say, "All right. Let's get the economics guys in, let's get the finance people, let's get the transportation people and the energy people in, and they should be designing the solutions."

Now, we are at the point today in the international climate discussion, and we are finally at the point in the domestic discussion where those players are beginning to show up. But we haven't given them an agenda for action that is at the scale that's really necessary.

And as I think you just heard from Jeff Kupfer earlier today, you know, if you don't have an agenda that a Deputy Secretary or a Secretary of Energy can meaningfully deliver on, you know, they don't go to meetings. And negotiating international treaty tax, and even what we're about to see

in the big debate in Congress, or we'll see how big it is, next week in the Senate. Those debates are sort of very far afield from the essentials of what it's going to take to deliver the solutions, so let me talk about that a little bit.

As you look at projections in the world today, 70 percent of future emissions growth is going to come from the developing world, and primarily a small number of large emerging economies -- China, India, South Africa, Brazil. You know, most of the growth will come from a handful of large, emerging economies.

In the developed world, our emissions under a business-as-unusual scenario are going to flatten out. And if you take sort of some of the recent domestic legislation here, and what Europe is doing, there is no question within a reasonable period of time in the developed world our missions are actually going to come down in

absolute terms, probably within 10 to 20 years, in the developed world.

And so as we look out on this issue, the rise of emissions in the developing world is going to overtake the decline in emissions in the developed world, and will still be on a trajectory of upward temperature trends.

So as we think about our solutions, we have to think about solutions that can run in parallel that work not just for us here in the developed world but work in sequence, in real time sequence, in the developing world, who are, again, continually relying on abundant coal and natural gas in particular.

As we look at the rise of emissions -- the rise of emissions -- emissions today are about 27 gigatons of CO2 is emitted each year. Under reasonable projections, that is going to rise up to over 50 gigatons. Notionally, on the international stage, we are talking about, what does it take to cut that

amount of emissions in half? Some have suggested doing it in half by 2050. This is an active point of debate.

But let's just think of, you know, cutting the projected growth of emissions in half on our current energy mix and pathways with existing technologies. We're going to need about, you know, more than 30 gigatons of reductions. I've got the precise number on my chart, but let's just use 30 as the strawman example.

Thirty gigatons of reductions to displace the current portfolio, the way we'd otherwise see it build out. So what does 30 gigatons mean? How do I get 30 gigatons of reductions from the energy system?

Well, one gigaton -- so what is one gigaton? One gigaton is 268 zero-emission coal-fired powerplants -- is one of the 30-plus I need. I think I actually need 38. so that's one.

Now, we don't have a single plant

that does that. What's the time scale by which we have the first plant that can cut emissions in half? Ask yourself that, and then ask yourself, if I need 38 gigatons of emissions reductions between now and, let's say, 2050, 2060, how do I build out globally that infrastructure and capacity and investment and everything to get to, let's say, a thousand coal-fired powerplants that have 50 percent CO2 emission reduction? Carbon capture and storage or other techniques.

All right? And if I do a thousand, that gets me, you know, maybe two gigatons of the 38 that I need. One gigaton is taking 270 million vehicles and raising them from 20 miles per gallon to 40 miles per gallon. We're about to do that partly in America. With the new energy bill that passed in '07, we'll get 270 million vehicles to go from, you know, roughly 27 miles per gallon, or actually really 23 miles per gallon across the fleet,

and we'll get them up to 35 miles per gallon. That was a legislated mandate.

So we'll get a piece of a gigaton in the U.S. Now, you have to replicate that all over the world. Maybe between now and 2050 I can get one or two gigatons out of that through new fuel economy improvements.

I've got to get more electricity into those vehicles. I've got to get more biofuels in those vehicles if I want to change that profile. Okay? So how do we get there?

Biofuels -- so one gigaton is taking an area twice the size of the United Kingdom, that is barren, so a barren, non-producing area twice the size of the United Kingdom, and converting it to biofuels production that can be displayed -- deployed in second generation biofuels, is one gigaton.

One gigaton is 136 nuclear powerplants. There are 400-some-odd in the world today; 104 in America. So let's imagine, are we prepared as a globe in the

next 40 years, if we're serious about climate change, are we prepared to quintuple the number of nuclear powerplants? Are we prepared to do that? I think my answer right now is clearly not today.

There is one manufacturing facility -- steel manufacturing facility in Japan that is the sole facility that makes the containment vessels for nuclear powerplants, and their orders are booked through 2019. Okay?

So even if you wanted to build several dozen more nuclear powerplants in America between now and 2020, somebody has got to decide they are going to invest in the new -- brand-new multi-billion dollar steel facility, get it permitted, get it sited someplace, and begin to book the orders between now and 2020 to actually produce.

And so it's a big inelastic jump, right? So you have one plant cranking out the current rate of nuclear builds. And who is

going to make that next huge investment? This is bigger than building a shipyard, you know. So who is going to make the leap on the faith that the political process is going to allow us to double, you know, triple, or quintuple our buildout rate of nuclear powerplants?

And by the way, at the same time, where are the Ph.D. graduates coming out of the universities? Where are the trained journeymen to actually do the construction at the high standards that that is going to require? And then, let's ask the same question in a world in which we're going to have carbon capture and storage: where are the workers with the training, meeting the skill sets necessary, meeting the liability regimes necessary? How does that begin to unfold?

So I give you this to give you a sense. The scale of the enterprise vastly exceeds the rhetorical skirmishing around this issue of climate change. And the political

effort is largely dedicated into the -- sort of the price of carbon debate, which does nothing actually to address these fundamental infrastructure challenges.

I'll give you one more example -- large-scale renewables. Wind, very promising, commercially competitive today in many parts of America. One gigaton -- today there are 700 -- it's about the equivalent of 74,000 one-megawatt wind turbines in the world today -- 74,000. One gigaton is 270,000 of them. All right? So imagine four gigatons. I need a million of them.

We can't site -- you know, communities will tolerate one or two or three or a dozen of these things, but we're talking about several thousand on a several square mile area. We're talking about massive windfarms. Okay? And then, the transmission lines to link them up to the load centers that are far away.

Are we prepared as a nation, before

I even ask the question, are we prepared in the world, to undertake the infrastructure change that will make that possible? And the answer today is, no, we are not prepared to do that.

So I could put the price of carbon at $10,000 a ton, but no price can be paid if I don't have a transmission line to get the stuff from where we can make it to where it's going to be used. Okay? So, then, the price just goes up and up and up because I've got roadblock.

So I just want to underline, as we think about this and we think about the price of carbon and technology, there is -- you know, there is this piece of lack of political will and lack of political seriousness around breaking open the bottlenecks that make this future lower carbon world possible.

Let me add one more thing. We just enacted reliability mandates, right? We have reliability law now. The changeout of

existing electricity generation required to make this transformation -- well, it's got to be done in a way that it complies with the law on reliability, and it's got to be done in a way that allows us not to take the huge economic hit in terms of premature retirement of capital stock.

So all of this is a foundation. So I want to just give you a sense of the scale of the challenge we have. Let me suggest that we can be optimistic if we're serious, if we're realistic, and if we allow -- sort of take into account economics the way it should rationally be taken into account. So let me sort of give you a sense of that.

We're about to hear in the congressional debate next week, or in two weeks' time, the desire for a broad, one-size, economy-wide target for the U.S. economy with a broad, one-size mandate under cap and trade. And this is cap and trade in name only. So I have to be careful about using the word.

I am a huge fan of cap and trade. I'm just not a huge fan of policy proposals that aren't that. And so but you have this huge mandate that is about to come, and everyone is going, finally, we are going to have a debate on climate legislation. Right? That's what everybody is saying, and it's economy-wide.

Now, let's consider what is about to happen. The economy-wide legislation that is about to be debated actually isn't economy wide. It puts almost all of the burden on the electricity generation sector. So somebody has to pay for the bill.

So it's actually not economy wide. It is a sector-based bill, primarily on the electricity generation sector and a little bit on the transportation sector. Okay? Nobody else is subject to regulation under this bill. Everybody else is subject to receiving money under the bill from the electricity consumer. Okay?

It's kind of like Las Vegas. Everybody goes in thinking they're a winner, not recognizing that everybody just paid to get a portion of what they paid back. You know, paid big time to get a portion of what they paid back.

That's really what this is about, okay? And so as we look at this, consider that. But consider, more interestingly, the fact that the Congress, the federal Congress, has already enacted almost all of the legislation we need, along with the states. And let me walk you through this.

We had climate legislation in the 2005 energy bill. That is what set forth all of the -- the massive ramp-up in authorizations and appropriations for technology advancement and deployment. We have the new tax crediting authority. It gave us the loan guarantee authority. So the '05 bill gave us the incentive side of the carbon pricing equation.

As I stand here today -- today, $50 billion is available for the deployment of lower carbon, low air pollution -- you know, greater energy security technologies. Today, in this annual -- in this year, $50 billion is available, about $5 billion plus, actually almost $6-1/2 billion in direct subsidies through tax credits and other things, and $42.5 billion in loan guarantees. Okay? That is up from $1.7 billion when I started my job in 2001. No other country comes close.

Now, remember, this is carbon pricing. Right? You can either put a cost, or you can do an incentive. They're the opposite sides of the same coin. And we are pricing carbon through this incentive, through your congressionally-mandated incentive.

Some of these -- you know, some of our subsidies add up to $90 a ton worth of incentives, not $10 or $15 or $20. It's $90 a ton. So we are pricing carbon; we are just doing it in an affirmative way. So that's

good. I mean, that's -- it means, also, we only spend the money when we get the result. That's the good thing.

But now we also have a fuel economy mandate that is going to cost X billion dollars. It's in the tens of billions of dollars. We are going to have -- we have a renewable fuel mandate that now the world is telling us is too aggressive, and our view is it's not aggressive enough. But we have a fuel mandate in the law.

By the way, both of those use a cap and trade system. We're just not capping carbon. We're capping the fuel efficiency credits, and you have alternative fuel credits. It's a market-based regulatory system, so it does have those efficiencies in it. It's just not CO2 explicitly. As it happens, both of them are CO2 implicitly. They're carbon-weighted programs in terms of who gets more credit. In fuel economy, you get more credit if you're more fuel efficient.

That's a one-to-one carbon reduction.

On renewable fuel, there is categorization of the different fuel stocks. You know, it's more clunky. But the lower carbon fuel stocks get more credit than the higher carbon fuel stocks.

We now have the world's most aggressive mandate on lighting efficiency -- a 70 percent improvement of lighting efficiency I think by 2018. I mean, that's incredibly aggressive. No more incandescents by -- you know, essentially by 2018.

We have a whole new slate of appliance efficiency standards, and we're not just talking about appliances like your washing machine, we're talking about large systems for industrial enterprises that are included in this. And they will be out on part with the rest of the world.

We have -- the Federal Government has been ordered, because the President already did by executive order -- and the

Congress ordered us to do this -- adopted the executive order. The Federal Government is going to improve its energy efficiency by 30 percent by 2015.

To put that in perspective, we accomplished the same level of efficiency in the last 20 years, so we'll accomplish in less than 10 years what the government did in the last 20 years. Big deal, and the government is going to be a 20 percent purchaser of renewable fuel. Okay? Which is five percent more five years faster than the private sector. Okay? This is a big shift, all mandatory.

You read the newspapers, right? The U.S. Government, and especially President Bush, only voluntary approaches to climate change. Fifty billion in incentives, five of the largest mandates, and most aggressive mandates of any nation on earth, in law with a bipartisan support, led by -- you know, you have Nancy Pelosi and George Bush on the same

piece of legislation.

At the state level, the states have authority, as you know, for renewable power. A majority of our power generation is now subject to those mandates. Each one of them is a market-based regulatory system. They have slightly different crediting criteria.

But it will mandate up to -- it looks like it's going to be in the 8 to 10 percent range of mandated renewable power in America when you add it all up. Took a federalist approach, it's working. The states are designing their systems relevant to their own local circumstances.

We're going to get 8 to 10 percent through a mandate with a federal goal of trying to get to 20. But you can't get to 20 unless you get the breakthrough in this infrastructure and technology that I just talked about. So these mandates were very carefully designed in terms of feasibility.

They will cost the consumer more,

but you had a local legislative judgment as to how much you were willing to spend. So each state was able to decide for itself how much more they are willing to spend to advance renewable power. We think that's good; that's democracy. Okay? That's a good outcome.

We are working with the states to adopt new building efficiency standards, seeking a 30 percent improvement in new buildings and building retrofits. Now, you have to design them differently for different regions of the country. The DOE has done that, and we are now pushing on the states, encouraging them to adopt them as law.

Now, I ask you, when I give you all of those mandates, and when I give you all of those incentives, what's left to be debated in what's supposed to be an economy-wide cap and trade bill?

I would submit not much, and so we are about to have a debate over how to put a mandate -- a market-based mandate on top of an

existing suite of market-based/sector-based mandates. And then, you'll see in the Warner-Lieberman legislation it would then redefine all of what the legislatures have all just agreed to within the space of the last two years.

Okay. That is what is going on in real terms. And so hopefully, you know, there will be some rationalization. I mean, hopefully, you know, legislators remember what they did. It's hard for them sometimes. But then we'll catch up, you know, and they'll realize -- wait a minute.

We have -- actually, America has democratically filled the space on every essential piece of mandatory climate policy, and we filled the space on every essential piece of incentive policy. And so we ask ourselves -- if we want to do more, how much more should we do and at what cost? Okay?

And I would submit to you we are doing now -- we are at a rate of buildout that

is at the outer edge of what we can possibly achieve. And that's great. Okay? Now we have to go after these bottlenecks. That's really where the action is, and people are not paying enough attention or seriousness to that.

Okay. So just a few more things now to put this into the international context. Actually, no, let me say one more thing domestically. Price of carbon -- price of carbon -- I gave you two pieces, the price that is embedded in these existing mandates, and the price that is clearly embedded in our incentives.

Well, there's one that we haven't talked about, and that is the current price of fossil fuel in America today. Prices for fossil fuel in America today are higher than the worst-case projections for if we had implemented the Kyoto Protocol. When you look at the -- you know, look at 1998, all of that economic analysis. We are way above where we

would have been if we had implemented the Kyoto Protocol.

A couple of things didn't happen. One is it didn't break the economy. Okay? So, you know, we can understand that our economies can absorb a lot more than we thought. But the other thing that didn't happen is our emissions are not seven percent below 1990 levels.

And the theory was, by raising prices, by raising the price of gasoline by one dollar, which is what I think they were talking about, in 1998, that we would drive emissions down, right? We'd drive them way down. And by raising the price of electricity by whatever it was -- I think it was 20 percent or 30 percent -- collectively, that would drive us to seven percent below 1990 levels.

Well, guess what? It didn't. So there is something more going on here than just price.

Now, I think if President Bush had proposed in 2001 to raise gasoline prices by $3 a gallon, he would have been heralded around the world as the champion of climate change policy. Right? And yet here we are with -- you know, with a price increase of $3 a gallon, and yet now we want to pile on. You know, there is also a weird thing in this debate. How do we -- if a dollar was enough in 1998, why isn't $3 enough now? In terms of the pricing signal.

That's why I want to come back. There is more going on here. It's the inelasticity of these systems that we have to go after, and that's where the technology advancement agenda is essential to our future. And so we really need to focus our eye on that.

All right. Finally, on international -- we are trying to get a new, more constructive conversation going. We are seeking to do four things -- a few things this

summer, but four in particular. We are trying to see if we can get a globally shared vision on a long-term goal for absolute emission reductions.

We think it's important that there's a collective sense of the continued urgency of this issue, a sense of a level of effort that we want to orient ourselves toward, as a guide post for trying to get some real decisions about some of these challenges.

You know, not setting unrealistic goals and then waiting for them to happen, but getting a real political discussion about what it actually takes to achieve these opportunities, including carbon capture and storage and more efficient use of our fossil systems. So that's a long-term goal.

We are trying to get all of the major economies -- there's 17 of us, you could add a few more if you wanted. There are 17 of us responsible for 90 percent of energy use, and that includes China and India, South

Africa, Brazil, Mexico.

All of these economies must be prepared to have their national strategy reflected as internationally binding commitments. We need that coming together of ambition and of shared accountability. But we can do it in a much more constructive and much less punitive way than has been discussed in the past, and this is really what our view is.

If we can get everybody on board and participating in a shared strategy, recognizing key differences in each country's own demographics and energy mix and technical capability, we can have a much more constructive conversation about these solutions, and hopefully do it together. Right? If we had common standards in the biofuels area, you know, more consistency in our infrastructure buildout, we could get the intermodality that makes us much more efficiency.

But that's rolling up your sleeves.

The people negotiating these issues in the U.N. are not talking about that. They're not doing sort of the bottom-up work of how you get common standards, how you get -- you know, get the modalities, the intermobility. That's the kind of conversations we're trying to now start for the first time in the climate process.

And then, third, to support that, we want work in key sectors. I mentioned the biggies. You could throw in aluminum, steel, and cement, and chemicals. But after about eight sectors, you're pretty much covering most activity that is responsible for emissions. And if we can get those sectors really working toward more common strategies and common good, then we want to facilitate that. We don't want to mandate that. We want to facilitate that, because that's how markets work.

You know, I'm more efficient than you are, and so, you know, you want to find

out how to do that. You know, a big piece of that is just getting people together to sort that out.

And then, finally, one of the earliest and easiest things we can do -- and this is going to matter to all of you in this room -- curiously, notwithstanding the recited urgency of the climate change issue, all the nations of the world happen to impose sometimes quite steep tariffs on the sales of technologies and services that actually make a solution possible.

So while this is one of the most critical issues, you know, that we are dealing with on a global scale, why is it that if I'm selling a clean energy system to another country the government should be collecting 26 percent of that transaction?

What happens is the government doesn't collect 26 percent of that transaction. The sale never occurs, because it exceeds the profit margin. And so we

actually have a massive constraint on the sale of existing technologies and services just because of tariffs -- tariffs and other non-tariff barriers to the -- again, and so that's also a sign of seriousness.

Are we serious? If we were serious about climate change, we'd have zero tariffs and we'd have it tomorrow. I mean, that's the easiest way you can help the price of carbon -- by making the price of the technologies to lower it much less expensive. So that's what we're working on, too.

And then, we hope to create a massive new clean energy technology fund to really goose this along, so we can get zero-out tariffs. If we can provide tens of billions of dollars of new, you know, low-cost financing, we can also help get the current stuff we've got out there into the world.

So that's my whole spiel. You know, I wanted to be sure you had the whole picture. I can take a few questions, but I

obviously don't want to eat into the rest of your agenda.

So thank you. Thank you.

(Applause.)

And by the way, if there's media here, please, I talk to you all the time, and I'm happy to talk to you after the meeting. But I'd prefer to hear from the members of the Council.

MR. BECK: Let's start with Mr. Altmeyer.

MR. ALTMEYER: Thank you, Jim. Appreciate the overview. Could you elaborate a little on the international clean energy fund? The President had asked Secretary Paulson to take the lead. There really hasn't been much in the news media with respect to how that has evolved or developed.

MR. CONNAUGHTON: Yes. What we announced is we want to create a new clean energy technology fund. The current discussion is it would be sort of administered

by The World Bank, but just so you -- that's just where it's housed. It would be a fund led by donors with key input from the recipient countries, and we're trying to generate about $10 billion, at least as a starter.

The U.S. -- the President has committed $2 billion, and that's usually what our proportion is for these kinds of funds. And the idea is that this would be dedicated to high-quality projects that are scalable. So this would be -- this would be sort of jumpstart funding to get key technologies into new markets.

An example that I give is methane capture and recovery technology. We would provide concessional financing leveraged with development bank financing, leverage with private sector financing, to get technology that we use routinely in America into a place like India.

And the idea is once you get a

couple of projects going with this fund, the private market is just going to take over, because it is a highly profitable investment. It just needs that jumpstart.

And so we were looking for high quality projects that are scalable would be one of the concepts. I mean, there's lots of different concepts that are floating around.

And the point is leverage. When we say $10 billion, you're talking about the -- really, the sort of guarantee side of some of these, you know, slightly riskier investments going into some countries where it's a little more challenging, and then that would give the -- you know, Wall Street and others -- you know, as you know, the venture capital guys and Wall Street are creating these huge energy funds now, and this would be a way to tether that to some sort of government -- you know, government-facilitated transactional outcomes, because it's -- you know, again, the markets just are not as free in some of these

countries.

But as you can imagine, we can't provide concessional financing. It wouldn't make sense to buy down the cost of financing only to see the cost of it go back up again through tariffs. And the other thing, we just have to, you know, recognize it's -- you know, the U.S. would have great difficulty having the taxpayer, if you will, sort of bear some of the cost -- you know, the cost of the lower financing, only to see that go into a government treasury. I mean, that's not achieving the goals.

So we want to be sure that 100 percent of the money is going to 100 percent of an energy project. And so these are the kinds of issues we're discussing.

Lots of interest, so I think -- you know, in the G8 there is growing interest. We are still working on getting everyone together. But outside of the G8, there are a number of non-G8 countries who have already

said, "We would like to be part of this."

And, importantly, for the first time in my experience, we have some key potential beneficiary countries. Mexico, for example, has suggested that they want to be both a donor and a recipient, and that would be a wonderful shift and sort of confidence-raiser globally, because, as you know, many countries of -- especially the large, emerging economies, they have needs, but they also have resources.

MR. ALTMEYER: Is there an objective to have an announcement, or to have an agreement by the G8 in July?

MR. CONNAUGHTON: The President said in his speech that we're going to try to get agreement with -- from the G8 on this, as well as others. I don't want to prejudge the G8. I mean, this is -- you know, this is a complicated thing to produce, and we're trying to get it together as quickly as we can.

MR. FISCHER: Mr. Chairman, John

Fischer, Air Control Science. I have a question about carbon tax, and what do you think the chances are of there being a carbon tax in the next administration? What might be the cost per ton and positive and negative implications?

MR. CONNAUGHTON: A carbon tax by name seems highly improbable. And even as -- a carbon tax, in the setting of these inelasticities I'm talking about, would actually be not effective. It would just simply be a payment for your pollution rather than a mechanism that would do very much to drive down pollution.

As I indicated, we already have the mandates scaled to, you know, reasonable investment cycles and technology deployment cycles. We already have those mandates. So carbon tax wouldn't do anything to change those mandates. It would probably make them more expensive, period.

So I think it's just -- you know,

when you finally get to the wonkie weeds of it, I think it's improbable. But politically, I think it's improbable.

However, I do want to note, you know, the bill that is going to be debated next week is not a cap and trade bill. It's a tax and spend bill. So -- because it doesn't work like a cap and trade is supposed to work. A cap and trade is you put the cap on, and then the trading occurs in the private sector and the government never touches the money.

This bill would collect all of the money ultimately, and then you'd have a massive redistribution mechanism that would go not only through the Congress but also through this carbon credit trading board. So this is kind of like the mother of all taxes and the mother of all earmarks.

And that's just not the way -- that's not the way to do it right. It's supposed to be a free, unregulated market, to seek the greatest efficiency. And, instead,

this would be -- you know, this would be the most incredible level of market oversight and market sort of political manipulation that one could possibly conceive for these programs.

And so, you know, well-intentioned, but just terribly badly designed. And so I think we'll find that out next week, especially the time with -- again, with energy prices so high, it's just beyond me that we would seek to further increase energy prices without the promise of any significant change in the technology deployment cycles.

All it will do is transfer -- as I indicated, transfer wealth from the electricity consumer, many of them who are -- you know, don't have a lot of wherewithal -- to other entities. That's just -- it's a wealth transfer, okay, without a significant contribution to emission reduction. And that's a problem all by itself.

So, again, I think the prospects are low this year, but I have to say we have

these budget bills that have to pass. Those are climate legislation, and that will pass. Tens of billions of dollars. It's a big deal. The farm bill will pass one way or the other. The current farm bill is terrible. But on the conservation side, there are programs on biological sequestration.

So, by the way, your government is directly subsidizing our farmers to do biological sequestration. We don't need electricity consumers to do that. The general taxpayer is doing that, so we are spreading the opportunity of biological sequestration across all of us. We don't need a premium for the electricity generator to do that.

That's just a fundamental difference of opinion, because either way you are moving money around. And we just thought we'd do it through a much higher accountable mechanism that actually delivers the outcomes we're looking for.

Yes. One more?

MS. MIGDEN-OSTRANDER: Janine Migden-Ostrander, the Ohio Consumer's Council. Could you expand a bit on your point about the 26 percent on the tariffs? Is that being imposed by the United States, other countries? Could you explain that a little more?

MR. CONNAUGHTON: Yes.

MS. MIGDEN-OSTRANDER: Thank you.

MR. CONNAUGHTON: We have a list of about 150 environmental goods and services. About 40 of them are clearly sort of climate-friendly, if you will. In China and India and a number of Asian countries, the current tariffs are about 26 percent.

The ability to go higher on some of these products exists. They could go even higher than 26 percent, but right now it's -- you know, there are some as high as 26 percent, and all the way down to as low as two percent. America, with our trading partners in Europe, we have relatively low tariffs vis-a-vis each other -- two percent, four percent,

five percent.

And then, we use that as a countervailing way to China and India, who have much larger tariffs. So under the WTO rules, we -- if we go to zero, we have to provide zero to everybody, if we did it all by ourselves, but nobody else would have to reduce. And so we end up with these countervailing tariffs, which is just nonsense.

And what happens, though, in America we set the tariffs. And because we have a non-negotiable system, those are the tariffs. In China and India, what happens is it becomes a negotiable item of every transaction. So while it's 26 percent, if you have your smart China people working the transaction, you might be able to get it down to 15 percent.

But the government is still collecting a piece of the deal, and, imagine, we're not talking about big, state-of-the-art

technologies. We're talking about technologies that we used -- we've been using since World War II in some instances. These have, you know, commodity-type profit margins.

So the tariff anywhere, you know, above a certain number just makes the transaction not worthwhile, and so it's highly variable. But if we could get agreement even on a list of 40 of these categories, we're talking about -- you know, The World Bank has estimated we could increase global trade by up to 14 percent, with just -- with no effort and without even having to do anything hard. Just have the leaders, you know, write that they want zero tariffs.

But, so we did it for information technology. That's the other thing. This is not a new idea. The world came together and said, "Let's zero out tariffs on key information technology systems." Boom, look at India, one of the world's greatest purveyors of the services surrounding IT.

Well, it's because it's not subject to any tariffs.

We could do that with clean energy systems, too. Why not? It's easy. It requires political will.

Thank you very much.

CHAIR NELSON: Thank you.

(Applause.)

Next, I'd like to call up Bob Beck, who is going to give the report of the Nominating Committee on behalf of Steve Leer.

MR. BECK: Thank you, Madam Chairman. I am here today on behalf of Steve Leer, who is a former Chairman of the National Coal Council and chairs the Nominating Committee for the Council.

He is assisted by two other former Chairmen -- Cliff Miercort and Joe Craft -- and they volunteered for those -- for that assignment as the Nominating Committee back in January of this year and have been working on a slate of officers for your consideration and

action today as we move into the new term of the Council.

So for the next two years, what Steve and the Nominating Committee propose is that Mike Mueller run as the Chair of the Council, and Rich Eimer as the Vice Chair. Those are the only two elected offices that the Council has. Following action, then, other officer positions are appointments by the Chairman.

So, Madam Chairwoman, I am proposing on behalf of Steve that the Council move and take action on that slate of nominees.

CHAIR NELSON: We have a motion. Do we have a second?

PARTICIPANT: Second.

CHAIR NELSON: Any questions or comments?

PARTICIPANT: Can I ask if anyone else would care to --

MR. BECK: Oh. Okay. We do have a

motion and a second, but if -- the nominations are still open. If there is anyone else who would like to volunteer to run, they certainly are free to do so.

CHAIR NELSON: Not seeing a stampede --

(Laughter.)

All those in favor?

(Chorus of ayes.)

Opposed?

(No response.)

Thank you.

(Applause.)

MR. BECK: That concludes the report of the Nominating Committee. And I guess Mike takes over.

CHAIR NELSON: Yes, he does.

MR. MUELLER: Thank you, Bob. Thank you, Georgia.

I look forward to serving this Council for the next two years as Chairman, and I would also like to thank Georgia for her

last two years of leadership and ask you to join me in thanking Georgia.

(Applause.)

She did a great job.

This meeting is duly authorized and publicized and is open to the public. The public can submit comments to the Department of Energy, or if any individual wishes to speak they may do so at this meeting. Those who wish to speak may do so at this time. Does any member of the public wish to speak?

(No response.)

Let me announce that we have scheduled the next full Council meeting for the week of November 10 -- November 10, 2008, with the exact date and location to be determined.

And with that, if there is no other business to come before the Council, we stand adjourned.

Thank you.

(Whereupon, at 11:59 a.m., the

proceedings were adjourned.)