ADMINISTRATION PERSPECTIVES ON UNITED NATIONS CLIMATE CHANGE CONFERENCE IN BALI

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND AIR QUALITY

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

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ADMINISTRATION PERSPECTIVES ON UNITED NATIONS CLIMATE CHANGE CONFERENCE IN BALI

THURSDAY, JANUARY 17, 2008

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND AIR QUALITY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:05 a.m., in room 2123 of the Rayburn House Office Building, Hon. Rick Boucher (chairman) presiding.

Members present: Representatives Boucher, Butterfield, Melancon, Barrow, Markey, Doyle, Gonzalez, Inslee, Baldwin, Matheson, Dingell (ex officio), Upton, Hall, Whitfield, Shadegg, Buyer, Walden, Sullivan, Burgess, and Barton (ex officio).

Staff present: Bruce Harris, Sue Sheridan, Laura Vaught, Chris Treanor, Rachel Bleshman, Alex Haurek, Kurt Bilas, David McCarthy, Tom Hassenboehler, Garrett Golding.

OPENING STATEMENT OF HON. RICK BOUCHER, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF VIRGINIA

Mr. BOUCHER. The subcommittee will come to order. I want to begin this morning by welcoming to the position of ranking Republican member of the subcommittee our friend and colleague from Michigan, Mr. Upton. I have long admired Mr. Upton's legislative work whether on energy policy or in his previous position as chairman of the Telecommunication Subcommittee, and most recently ranking member of that subcommittee. And I very much look forward to working closely with him as we undertake the challenges that lie ahead for the subcommittee this year.

I have also been asked by Mr. Wynn to express that the reason for his absence from the subcommittee this morning is that he is attending a funeral in his district and will make every effort to join us later during the hearing.

Today the subcommittee resumes its examination of climate change and the determination of an appropriate legislative response. Last year we conducted extensive hearings which helped to lay a foundation for the development of climate change legislation. We published a position paper announcing our intention to produce a mandatory greenhouse gas control program relying on cap-and-trade as the control methodology.

For the past 6 months our focus was the drafting and passage of the Energy Independence and Security Act of 2007. While that new law makes important contributions to the reduction of greenhouse gas emissions by increasing auto fuel economy, enhancing energy efficiency, and requiring the greater use of renewable fuels it does not address the climate change challenge in a comprehensive manner. Separate economy-wide legislation will be necessary to meet that challenge. It is our intention to produce that separate legislation during the current year.

We will publish additional position papers focusing on various components of the legislation to come. We will conduct additional hearings. We will seek to involve all members of the subcommittee in a bipartisan process as the legislation is developed, as it is considered in the subcommittee, and as it is brought to full committee and subsequently to the House. We will consult with the Administration, with the private sector, and also with environmental advocates, and we will process through subcommittee, full committee, a bill for House consideration later during this year.

The legislative response to climate change will be the subcommittee's major focus, not our entire focus but certainly our major focus during 2008. Appropriately, we begin that work this morning by examining the process by which the nations that are signatories to the U.N. Framework Convention on Climate Change will address global climate change challenges after the expiration of the Kyoto Treaty in the year 2012. A key step in that process was the conference held in Bali in December which created the Bali Action Plan, sometimes referred to as the Bali road map. That plan forms the parameters for negotiations among the parties to the Framework Convention as they decide over the course of the coming year and for a portion of 2009 what agreement will replace the Kyoto Protocol in the post-2012 era.

This morning our sole witness was the key U.S. representative in the Bali conference. He will also lead United States negotiations between now and the time of the Copenhagen conference in 2009 at which it is expected that a final post-2012 agreement will be concluded among the convention parties. We are pleased to have as our witness this morning the Honorable James Connaughton, Chairman of the White House Council on Environmental Quality. He is the principal advisor to the President on among other subjects climate change, and we very much welcome him and are pleased that he could join us today.

We will turn to his testimony following the receipt of opening statements by other members of the subcommittee, and at this time I am pleased to welcome the new ranking member of the subcommittee, and ask for the opening statement of Mr. Upton.

OPENING STATEMENT OF HON. FRED UPTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. UPTON. I thank my Chairman, and I thank him for his very kind words at the start, but I also thank him for the years of relationship that we have had and also serve in the same hallway, and we pass each other and walk to the floor quite often, but I too am very excited about this new role for myself, and obviously working with you and with Chairman Dingell and my great friend, Mr. Bar-

ton. I also want to thank our distinguished witness today, Mr. Connaughton, for being with us. I had the opportunity to travel with him earlier last year along with Chairman Boucher and Ranking Member Hastert on energy and climate change and I look forward to your testimony today.

Much of the focus of this committee over the next year will be on climate change, as the Chairman indicated. The U.N. Framework Convention on Climate Change and the Bali Action Plan are just in fact the beginning of what has shaped up to be a global issue of concern. Emphasis must be placed on the word global. While I feel strongly that addressing climate change is certainly important, I believe that we must address this through a global voluntary framework that focuses on innovations and technology and efficiency rather than a pure government mandate, and at the end of the day we will need to demonstrate that the price paid in both jobs and dollars equates to some tangible environmental benefits to the American people.

In my view, spending trillions of dollars and losing a countless number of jobs to maybe alter temperatures by a tenth of a degree while China and India continue to spew emissions is not the option that we are looking for. By the year 2030 our energy needs are going to grow by more than 50 percent. Let me say that again. By the year 2030 our energy needs are going to grow by more than 50 percent. That is a fact that we are going to have to deal with regardless of climate change. The cost and supply of energy have a direct impact on jobs in our economy. We cannot cap our economic growth and trade it away to China or India. We cannot cap American jobs and trade them to China or India. As far as I am concerned, these are not valid options. Unless we want to put a lid on our economy and burden consumers with a multi-billion dollar cost increase, energy demand must be met with reliable sources of energy that are also clean.

While I support reducing greenhouse gas emissions, thoughtful choices need to be made on how we are going to meet increasing energy demand. I support renewable energy. We do need to expand the use of wind and other means. I support energy efficiency. That was my provision along with Ms. Harman, the Harman-Upton provision to increase lighting efficiency standards saving over 120 million tons of CO_2 per year while simultaneously saving consumers billions in energy costs. I support clean energy. I am a strong advocate for nuclear which has a life cycle emission equal to wind and hydro. However, as we move forward and try to meet our energy demand, we must take a common sense approach that doesn't needlessly pick winners and losers. Congress must not place mandates on the market that will only serve to increase energy costs for hard-working Americans while at the same time sending jobs overseas.

I believe that a voluntary framework is best to insure that our future energy demands are met with clean and affordable power. For example, the so-called RPS that passed the House last year excluded new hydro and nuclear, two of the cleanest, most cost-effective energy sources available. The RPS won't give us energy security. It won't be effective in reducing greenhouse gas emissions. What we really need is a flexible clean portfolio standard that in-

cludes any source of power like nuclear that is both clean and affordable. If the goal is to reduce greenhouse gases, why pick the winners or losers? Let us be realistic. Currently we get approximately 20 percent of our electricity from nuclear. By comparison, France gets nearly 90 percent. Seven percent of our generation comes from hydro. Just to stay even with these two zero emission sources, we would need to build by 2030 over 50 new nuclear plants and almost 2,000 hydro plants, and that is just to stay even if we keep those same ratios.

If we are serious about cutting emissions, our usage of nuclear needs to be much higher than 20 percent. During the climate debate it is easy to toss around numbers without a real understanding of perhaps what they mean. One gigaton of CO_2 equals 273 zero emission, 500 megawatt coal-fired plants or 1,000 carbon sequestration sites, we have only three today, or 136 new nuclear plants at 1 GW each, or 270,000 wind turbines of 1 megawatt each or 125 times the current global solar photovoltaics generation or convert a barren area of almost two times the size of England for bio-mass cultivation, or a barren area larger than Germany and France combined for a CO_2 storage in new forests.

Many nations that attended Bali and many members of this committee advocate cutting greenhouse gases by 50 percent by 2030, approximately 4 gigatons of CO_2. Are we willing or able to build 550 new 1 gigawatt nuclear plants, over a million new wind turbines, or 1,000 new zero emission coal-fired power plants? Current legislation measures seek to pick winners and losers, and will lead to higher costs for consumers, sending our jobs overseas, and disproportionately harming perhaps the poorest in our population. I do support the goal of cutting emissions but let us do it in a way that is least harmful to our economy. I yield back to my chairman.

Mr. BOUCHER. Thank you very much, Mr. Upton. I am now pleased to recognize for his opening statement the Chairman of the full committee, the distinguished gentleman from Michigan, Mr. Dingell.

OPENING STATEMENT OF HON. JOHN D. DINGELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. DINGELL. Mr. Chairman, thank you, and I want to thank you and commend you for holding this hearing. I begin by welcoming my colleagues to this new session of Congress. We have a new ranking member on this subcommittee, my dear friend from Michigan, Mr. Upton, who I know will provide exceptional leadership and competence, and I welcome him with particular enthusiasm. We look forward to working with him as we continue to grapple with difficult energy issues in matters relative to climate change. Today we will embark upon what I believe is the third phase of this committee's work on climate change in this Congress. The first phase was the intensive set of hearings convened by you, Mr. Chairman, last year. It served as the foundation for all members to become familiar with the difficult terrain on this issue.

These hearings were very instructive, and I commend you, Mr. Chairman, for your leadership, and, quite frankly, for your stamina and patience. The second phase was the legislation introduced by

this committee that was ultimately enacted into law as it provided the framework of the legislation that was adopted by the Congress last year. It contained landmark provisions on CAFE, bio-fuels, and energy efficiency. The energy efficiency provisions alone will remove 10 million tons of carbon dioxide from the atmosphere by 2030, the equivalent of taking all cars, trucks off the road, and all planes out of the skies for a period of 5 years. That is a remarkable achievement but it is only the beginning of what must be done. Now we begin the third phase of our work, crafting climate change legislation that will protect our environment without putting the American economy at a disadvantage. This undertaking will require us to work through an enormous amount of information in order to arrive at the best public policy in our nation.

It will also require us to commence the assembling of a piece of legislation and the drafting of a very difficult piece of legislation in a rather constrained time frame. In doing this work, we must be mindful of the need to coordinate U.S. domestic policy with ongoing international negotiations pursuant to the recently adopted Bali Action Plan. We must also do something else which is important, and that is to see to it that the United States does carry out its responsibilities but also to see to it that we are not stuck with the entire bill for addressing the problem of climate change and global warming. This was one of the defects of the Kyoto plan, which left the United States with a significant burden and very few others with any burden of consequence. The end result of that was that it was rejected by the Senate which informed the Administrations then and now by a unanimous vote that there will be no legislation which does not impose burdens on others if the United States undertakes its responsibilities. This is something we are going to have to keep in mind both because of fairness to this country and because of the fact that we have a certain duty to our constituents to see to it that we do not be the only ones who do this thing as we move forward.

We are going to require then bipartisan cooperation, and I hope my friends on both sides of the aisle will come to this task with an open mind and a willingness to be helpful. It is going to require active engagement in the Administration, something which remains to be seen. I would note that we had very small involvement with the Administration in our undertakings last year. I hope that that will significantly improve. Judging from the rather thin testimony presented to this subcommittee by our witness today, I must confess that I am less than optimistic. I hope that the remarks of our witness before the subcommittee will answer our questions and will be more forthcoming. Mr. Chairman, again I commend you for holding this hearing, and for initiating a very important phase of an extremely important undertaking. I yield back the balance of my time.

[The prepared statement of Mr. Dingell follows:]

STATEMENT OF HON. JOHN D. DINGELL

Chairman Boucher, thank you for holding this hearing. I want to begin by welcoming my colleagues to this new session of Congress. We have a new Ranking Member on this Subcommittee, my good friend from Michigan, Mr. Upton, who I

know will provide exceptional leadership. We look forward to working with him as we continue to grapple with energy issues and climate change.

Today we embark on what I believe is the third phase of this Committee's work on climate change in this Congress. The first phase was the intensive set of hearings convened by Chairman Boucher last year that served as a foundation for all Members to become familiar with the difficult terrain of this issue. Those hearings were very instructive and I commend Chairman Boucher for his leadership - and his stamina.

The second phase was the legislation produced by this Committee that was ultimately enacted into law and contained landmark provisions on CAFE, biofuels, and energy efficiency. The energy efficiency provisions alone will remove 10 billion tons of carbon dioxide from the atmosphere by 2030, the equivalent of taking all cars, trucks, and planes off the road and out of the skies for 5 years. That's a remarkable achievement, but it's only the beginning.

Now we begin the third phase of our work: crafting climate change legislation that will protect our environment without putting the American economy at a disadvantage. This undertaking will require us to work through an enormous amount of information in order to arrive at the best public policy for our Nation.In doing this work, we must be mindful of the need to coordinate U.S. domestic policy with ongoing international negotiations pursuant to the recently adopted ″Bali Action Plan.″

This will require bipartisan cooperation and I hope that my friends on the other side will come to this task with an open mind. It will require as well the active engagement of the Administration, which remains to be seen. Judging from the rather thin testimony presented to the Subcommittee by our witness today, however, I am less than optimistic. I hope his remarks before the Subcommittee and answers to our questions will be more forthcoming.

Again, Mr. Chairman, I commend you for holding this hearing today and initiating the next phase of this important undertaking.

Mr. BOUCHER. Thank you very much, Mr. Dingell. The gentleman from Kentucky, Mr. Whitfield, is recognized for 3 minutes.

OPENING STATEMENT OF HON. ED WHITFIELD, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF KENTUCKY

Mr. WHITFIELD. Mr. Chairman, thank you very much. And like others on this subcommittee, we look forward to working with Ranking Member Upton and congratulate him on his new position, and all of us have some important issues in energy facing our country that we look forward to the opportunity to move forward. I want to welcome Chairman Connaughton and look forward to his testimony today and working with him as we move forward. I think today obviously we are going to be focused on the post-Kyoto world and a goal of reaching an agreement by 2009 that most countries in the world can sign and agree to. And I think that obviously as has been stated earlier, this is really going to be a balancing act because we are going to have to determine what responsibilities did the developing countries in the world have as well as the developed countries of the world.

And as we move forward, I believe that we have to recognize that since the U.S. has a 250-year reserve of coal, and that coal has to continue to play an important part in meeting our energy needs. Fred Upton mentioned that our demand for energy is going to increase by 50 percent over the next 10, 15, 20 years, and we are not going to be able to meet those energy demands without using coal. And we know that in China they continue to develop coal-fired plants, and we do have the technology to use clean coal. But I think ultimately we simply have to look at what is the cost of making sure that we reduce these greenhouse gas emissions, what im-

pact or steps that we take are going to have on employment in the United States and how is it going to affect our competitiveness with other economies around the world.

So we have a great opportunity. All of us are looking forward to trying to solve this problem and I look forward to participating in today's hearing as we move forward. Thank you very much.

Mr. BOUCHER. Thank you very much, Mr. Whitfield. The gentleman from Georgia, Mr. Barrow, is recognized for 3 minutes.

Mr. BARROW. I thank the Chairman. In the interest of time, I will waive an opening.

Mr. BOUCHER. The gentleman from Georgia waives his opening statement, and I would note for the benefit of other subcommittee members that in accordance with the rules of the subcommittee and full committee any member who waives an opening statement at this time will then have 3 minutes added to that individual's time for propounding questions to the witness. The gentleman from Pennsylvania, Mr. Doyle, is recognized for 3 minutes.

OPENING STATEMENT OF HON. MIKE DOYLE, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA

Mr. DOYLE. Thank you, Mr. Chairman. I also would like to welcome back all of our colleagues. I hope we have all returned well rested and ready to roll up our sleeves and begin working together to produce a comprehensive legislation to address the dangers of global warming. This monumental challenge is one I believe we can and must meet so that this Congress can deliver a workable solution to the American people this year. As everyone on this dais knows, I am firmly committed to insuring that our nation not only dramatically decrease our global warming gas emissions but leads the world to insure that all other nations do their part to reach our common goal.

One thing is clear, Mr. Chairman. If we do nothing, others will do nothing. It is critical that we put our money where our mouth is so that we can push others to do the same. The meetings in Bali were an important step towards achieving this goal of a world of nations united to combat global warming. Development such as launching negotiations with developing countries instead of simply holding discussions are very important. I was also happy to see that the Bali Action Plan takes into account the challenges these nations face as they strive to do their part, and I think the plan's focus on measurable, reportable, and verifiable mitigation plans based on individual country's needs and resources will go a long way to achieving our shared goal.

However, we are a long way from turning these commendable words and statements into action. We need a firm commitment backed up by concrete action, not words. I have to say in reviewing our witness' testimony that I can't remember another time during my service in Congress when a witness testified for a hearing and his testimony is a mere 1-page document that describes a slide presentation and a statement from the President. I would hope that this Administration doesn't think that this committee is not worth preparing comprehensive testimony for.

We need, Mr. Chairman, concrete action. I stand ready to work with you and any member of this committee that wants to address the real world challenges that global warming presents. This is a global problem. It requires a global solution. I would hope that this Administration will join us in this critical effort as we move forward. With that, Mr. Chairman, I will yield back my time.

Mr. BOUCHER. Thank you very much, Mr. Doyle. The gentleman from Texas, Mr. Burgess, is recognized for 3 minutes.

OPENING STATEMENT OF HON. MICHAEL C. BURGESS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BURGESS. Thank you, Mr. Chairman. I certainly want to welcome our witness, Mr. Connaughton. Thank you for testifying before us today. It is timely that you are here to talk about the role the United States will play in global climate change negotiations over the next couple of years. It is also timely that we are having a hearing about the economic stimulus package that Congress is currently preparing or at least rumored to be preparing, so I am pleased we have held off on voting on that package long enough to consider the impact of our climate change plan on our efforts to stimulate growth in the American economy.

Mr. Connaughton, from what I have heard, your representation of the United States in Bali was commendable, and I want to thank you for meeting the objectives and challenging all countries to participate. Global problems require global solutions, and I hope we can continue to pursue that goal. From your statements at the conference I understand that we want the United States to take a lead in the negotiations. That is as it should be. Your hand-outs from the conference show that since 2001 the United States has invested more money, $37 billion, into global climate change than any other country represented at the conference, including Kyoto-compliant countries. Let us state that again for emphasis. The United States has invested more money than any other country, including Kyoto-compliant countries.

We often hear about the lack of United States support for global climate change initiatives, so I hope you can shed some light on what we have provided so far and how we can engage in the negotiation process over the next 2 years to put together a package that would be workable in the future. Anecdotally, this committee took a field trip to Scandinavia in August, 2006. Many members who are on this subcommittee participated. We talked about energy and telecom issues. And in the country of Norway we met with some of our counterparts in the Norwegian parliament. Norway produces most of its power from hydroelectric, which obviously is carbon neutral, but they had a tough series of years where it didn't rain for 3 years so their production was low. Well, they get a lot of natural gas from the North Sea so instead of liquefying it and putting it on the big orange boat over to Ed Markey's district maybe they could just open up a couple of gas-fired electrical plants so that their constituents didn't freeze to death during their winter. But they can't do that because they are signatories of the Kyoto so they can't burn the natural gas because that will put carbon into the atmosphere.

So in order to meet the demand of their constituents they would buy power from Denmark and provide power to their citizens that way, buy electricity from Denmark. How does Denmark generate their power? They burn coal. It is this sort of circuitous logic that goes on that just defies gravity, and this is one of the challenges that of course you and this committee have to confront is the myths that surround this global concern. In Texas on the way to the airport to fill up before coming here this week gasoline cost $3.10. January is the cheapest gas in Texas because the summer driving period isn't here and we don't have all the expensive ethanol blends that the Clean Air Act demands that we have. So Texans, I suspect, are going to be paying in excess of $4.00 a gallon for gas around Memorial Day. We have the economic stimulus package coming up. Every dollar that we provide, whatever we do, every dollar that we provide is going to be immediately eaten up in increased energy cost at least as it will affect the constituents in my district.

Again, Mr. Chairman, I thank you for holding this hearing. I think it is timely. I think it is important work, and look forward to the testimony of our witness today. I yield back.

[The prepared statement of Mr. Burgess follows:]

STATEMENT OF HON. MICHAEL C. BURGESS

Thank you Mr. Chairman,

I would like to welcome our witness, Mr. Connaughton, and thank him for testifying today.

Mr. Connaughton, it is timely that you are here to talk about the role that the United States will play in global climate change negotiations in the next two years. It is also timely because we have been hearing about an economic stimulus package that this Congress is preparing. I am pleased that we have held off on voting on that package long enough to consider the impact of our climate change plan on our efforts to stimulate growth in the American economy.

Mr. Connaughton, from what I have heard, your representation of the United States in Bali is commendable and I want to thank you for meeting the objectives and challenging all countries to participate. Global problems require global solutions and I hope we can continue to pursue that goal. From your statements at the Bali Conference I understand that we want the United States to take the lead in these negotiations. Your power point handouts from the Conference show that, since 2001, the United States has invested more money ($37B) into global climate change initiatives than any other country represented at the Conference, including Kyoto compliant countries. We often hear about the lack of United States support for global climate change initiatives, so I hope you can shed some light on what we have provided so far and how we can engage in the negotiation process over the next two years to put together a package that will be workable after 2012.

Mr. Chairman, I am concerned that as a nation, we cannot expect to engage in economic growth if we continue to avoid the uncertainty of the cost of climate change compliance. All of our constituents are worried about the rising cost of energy and the uncertainty in our markets. In fact, last week in Texas I stopped and filled up with $3.10 gasoline. As I am sitting here today, I am trying to calculate exactly how much we are going to pay for a gallon of gasoline next spring. It is concerns me greatly to know that we may see gas prices as high as $4.00 per gallon when summer blends are mixed in.

In our continued negotiations with the other participants, I hope we raise the question, "how do we build a global consensus to implement an environmental protection plan that not only does no harm but actually builds our global economy?" I believe that sustaining our planet and avoiding catastrophic global climate change are not separate from a successful global economy model, they are actually mutually dependent.

I hope that through the next phase of negotiations we can build a consensus that helps grow our domestic renewable and alternative energy programs and allows us to create new jobs producing the products and fuel that our planet needs to sustain

growth. I hope we can strengthen our global energy trade and investment in cutting edge technology. Ultimately, I also hope that the developing world is willing to join us in these efforts because, as we have seen, when the cost of compliance is high, developing economies simply sustain growth in exchange for mitigating the effects of climate change.

Mr. Chairman, we cannot avoid indicators that point out that global demand for energy is going to increase regardless of our efforts to cap and control carbon. Global energy demand growth has been projected at 50-60 percent due to improved living standards and population growth in developing countries. ERCOT, the Electric Reliability Council of Texas, has said that unless new generation capacity is built in Texas, we will not have enough electricity to ensure reliability within the next 5-10 years. In addition, the fossil fuel market is a global market and we cannot operate as a protectionist society that is only looking to sustain our growing demand while our economy is struggling--we must also work to seek out new sources of domestic energy to provide the production that fits the growing demand within this global market.

Mr. Connaughton, I hope that the United States can take the lead in these negotiations and make a real global impact. By leading the way, we can create a platform that is not only measurable, reportable, and verifiable but is also transparent, predictable, and spreads compliance evenly across the participants. I hope that we can do this while at the same time boosting our lagging domestic economy by providing the products that sustain growth at home and in the developing world.

With that Mr. Chairman, I yield back.

Mr. BOUCHER. Thank you very much, Mr. Burgess. The gentleman from Texas, Mr. Gonzalez, is recognized for 3 minutes.

Mr. GONZALEZ. Waive opening.

Mr. BOUCHER. The gentleman waives his opening statement. The gentleman from Washington State, Mr. Inslee, if he is here. The gentlelady from Wisconsin, Ms. Baldwin, is recognized for 3 minutes.

OPENING STATEMENT OF HON. TAMMY BALDWIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WISCONSIN

Ms. BALDWIN. Thank you, Mr. Chairman. The attention focused on the issue of climate change has clearly reached a new level. We are no longer questioning whether we should act but rather how and when we will act, and as participants in the U.N. climate change conference arrived in Bali the answers were clear. We must act now with firm, bold, and decisive actions that push the envelope and provide us with a road map for repairing the damage we have done to our planet. I am continuously struck by the efforts to combat climate change in our country whether through environmental advocacy, private sector initiatives or local, state, and regional agreements. These programs demonstrate America's commitment and drive to be stewards of our environment. But I often wonder is the rest of the world aware of most of these efforts. Do they know that there is a movement here in America to reduce greenhouse gas emissions, increase our energy efficiency, and protect our planet for generations to come.

Unfortunately, I believe too often what the international community hears is how our Administration has done everything in its power to stifle the debate on climate change through sidelining science, editing government reports out of EPA or NASA or refusing to back firm goals for reducing emissions. It is clear that not only do we lack a strong national strategy for addressing climate change but also that we are missing the leadership that is com-

mitted to set one in place, and herein lies the problem with the agreement reached in Bali. Our Administration sent representatives poised as our nation's voice to lead the talks in Bali, and rather than uniting around a policy that reflects the views of Americans, one that demonstrates a finite commitment to addressing climate change, the agreement reached shows how our leaders can water down, avoid, and delay our actions to reduce greenhouse gas emissions.

The perception of the United States through the eyes of our international friends has taken a hit. Criticism has been widespread and the calls for true leadership from our country have been loud and clear. As one participant put it during the debate, the international community looks to us for leadership but if we are not going to do so, we must move out of the way. Mr. Chairman, the climate in Bali and the rest of the world may be changing for the better but the forecast here in Washington for the next year appears to be politics as usual. Our Administration had the opportunity to catch the momentum and bring our nation up to speed, and I just hope that by the time the temperature changes it won't be too late for us to take action. Thank you, and I yield back the balance of my time.

Mr. BOUCHER. Thank you very much, Ms. Baldwin. The gentleman from Indiana, Mr. Buyer. The gentleman waives his opening statement. The gentleman from Oklahoma, Mr. Sullivan is recognized. Mr. Sullivan also waives his statement. The gentleman from North Carolina, the Vice-Chairman of the subcommittee, the gentleman from North Carolina, Mr. Butterfield, is recognized for 3 minutes.

OPENING STATEMENT OF HON. G.K. BUTTERFIELD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. BUTTERFIELD. Thank you very much, Mr. Chairman, for convening this important hearing today, and I thank the witness for coming forward today with his very important testimony. I appreciate the witness' willingness to come today to speak to us about the Administration's perspective on the recent U.N. climate change conference in Bali, but I must admit that I am mystified to some extent about how concise or inconcise the written testimony that has been provided to us appears to be. Most of the members of Congress were not able to participate in the conference and so I am looking forward to hearing the testimony today and hopefully we can be provided more details than have been forthcoming.

We have all heard the phrase, Mr. Chairman, about kicking the can down the road. Well, I am worried that if we don't take immediate action on this subject there won't be much of a can to kick anymore or even a road for that matter. Thankfully, parties were able to agree upon a framework while continuing discussions by way of the Ad-Hoc Working Group that will meet at least 4 times this year, and it is my sincere hope that the U.S. will have something more substantive to contribute in April than an innocuous agreement or technology transfer with other nations. And the world in 8 months will witness the Olympics. They will be in China, the country that now holds the distinction of being by some estimation

the world's largest emitter of greenhouse gases. China's capital, which is the City of Beijing, is currently attempting at this late hour to reduce its crippling level of smog and pollution so athletes traveling there will be able to compete without covering their faces.

I am not sure if the Chinese will get things under control by then but the point is that this country, the United States, cannot chastise the Chinese for their chronically bad pollution levels because we are in no better position than they are to throw accusations. Since the beginning of this Administration, it has consistently undermined world bodies that were put in place to facilitate order and compromise on some of the world's most pressing concerns. My point is that these actions continue to undermine our historically strong position to negotiate in good faith with the rest of the world. With 1 more year left of this Administration, I am not sure what the Administration has to gain by continuing this line. Cynicism has become so evident that the delegates moved the goal post a little and decided that negotiations should have agreed upon by December of 2009, not really enough time for whatever the new Administration has in place but enough time to move past the inaction that has crippled us to this point.

I would like to hear more from the witness about 2 principal concerns that I have as a member from a coastal state who will undoubtedly be the first to bear the brunt of whatever adverse effects of climate change this country experiences. Mr. Chairman, I have run out of time. I am going to reserve the remainder of my statement. I will include it in the record, and I will ask the appropriate questions at the appropriate time. Thank you.

[The prepared statement of Mr. Butterfield follows:]

STATEMENT OF HON. G.K. BUTTERFIELD

Good morning Mr. Connaughton, Happy New Year. I appreciate you coming to speak to us about the Administration's perspective on the recent United Nations Climate Change Conference in Bali but I must admit I am mystified about how concise your written testimony you provided this Committee was. It is my hope that you will speak to us in greater detail since most Members of Congress were not able to visit the Conference. I'm not so sure how Happy 2008 will end up being if your boss, the President, decides to maintain the status quo instead of being the Decider as he would have us believe him to be. We've all heard of the phrase, ″kick the can down the road″, well, I'm worried if we don't take immediate action, there won't be much of a can to kick anymore. Or a road for that matter. Thankfully, parties were able to agree upon a framework for continuing discussions via an Ad Hoc working group that will meet at least four times this year and it is my sincere hope that the US will have something more substantive to contribute in April than an innocuous agreement on technology transfer with other nations.

The world in eight months will witness the Olympics in China, the country that now holds the distinction of being, by some scientist's estimation, the world largest emitter of green house gases. China's capital city, Beijing, is currently attempting at this late hour to reduce its crippling level of smog and pollution so athletes traveling there will be able to compete without masks covering their faces! I'm not sure if the Chinese will get things under control by then but the point is that this country, the United States of America, cannot chastise the Chinese for their chronically bad pollution levels because we're in no better position than they are to throw accusations. Since the beginning of this administration, it has consistently undermined world bodies that were put in place to facilitate order and compromise on some of the world's most pressing concerns. My point Mr. Connaughton is that these actions continue to undermine our historically strong position to negotiate in good faith with the rest of the world. With one more year left, I'm not sure what the Administration has to gain by continuing down this line. Cynicism has become so evident that the UNFCCC delegates moved the goal posts a little and decided that negotia-

tions should agreed upon by December of 2009. Not really enough time for whatever new Administration is in place but enough time to move past the inaction that has crippled negotiations up to this point.

I would like to hear more from you about two principle concerns that I have as a Member of Congress from North Carolina, a coastal state that will undoubtedly be the first to bear the brunt of whatever adverse affects of climate change this country experiences. North Carolina has already had more than it's fair share of hurricanes and other acts of God that have left some municipalities like Princeville in my District, still recovering from Hurricane Floyd. It has been almost nine years since September 16th, 1999, when Floyd ravaged huge swaths of eastern North Carolina killing 52 people in its path. North Carolina has been fortunate since then but other Atlantic and Gulf coast states have not been so lucky. I do not mean to suggest that the rash of hurricanes we have recently experienced are somehow directly related to ongoing climate change but I am stating that coastal states and cities, including here in the Chesapeake Bay region with well over 16 million people, should be very concerned about global warming. Despite current restoration efforts, the Chesapeake Bay is still one of the most sensitive ecosystems in the US and there is no plan in place to address potential rising of sea levels or a significant plan to restore the marshes and wetlands in Florida, Louisiana or North Carolina for that matter. My second concern deals with the Administration's plan to help developing nations deal with adaptation to an ever changing world that has already seen significant impacts from global warming. There are a plethora of anecdotal observations as well as empirical data that clearly states that Africa, Asia and the Caribbean will be the first to suffer the ravages of global warming despite being the lowest greenhouse gas contributors. Since the US has been the world's largest emitter of GHG's for the past 100 plus years, we have a unique role to play in helping mitigate the changes and assist with the deployment of affordable environmentally sound technologies and sustainable forest management and degradation procedures to help these countries cope. We are intimately tied to these developing nations given our high level of contribution to this radically changing environment.

Congress and the President recently passed a bold and innovative Energy bill this past December and I look forward to working together to utilize the momentum we've generated to do greater things in 2008. Eight years of inaction have cost us dearly but I pledge my support in creating an atmosphere where we can work together for the good of our children and grandchildren. We must not continue to kick this can down the road, thank you.

Mr. BOUCHER. Thank you very much, Mr. Butterfield. The ranking member of the full committee, the gentleman from Texas, Mr. Barton, is recognized for 5 minutes.

OPENING STATEMENT OF HON. JOE BARTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BARTON. Thank you, Mr. Chairman. It is good to have this subcommittee back in action. It started off with a flurry early in the first session and then along around the summer time it kind of went into hibernation so we are glad to have you back on the front lines here. I want to welcome some people today. I want to first welcome our new ranking member, Mr. Upton. Mr. Upton has been on the committee for quite a number of years. He has made his major contribution as the past subcommittee chairman, ranking member of the Telecommunications Subcommittee, but he has switched over to Energy and Air Quality with the departure of former Speaker, Mr. Hastert. He has got big shoes to fill. Mr. Hastert and Mr. Hall, who is another ranking member of the Science Committee, and way back when one of the former chairman, myself. I started out as the chairman of this subcommittee so I am very, very happy to have nominated Mr. Upton to this position.

I also want to welcome Mr. Connaughton. He and I have had an ongoing relationship and a number of discussions for I don't know

how many years but a fair number. He just got back from Bali. We are going to hear his insights, but I think it is safe to say of all the people in the world Jim Connaughton is one of the most knowledgeable on the issue that you got on the hearing schedule today which is global warming and climate change. We have had a lot of hearings about this issue in the last several years. I am still not convinced that the science and the economics of the issue are settled. I know a lot of people want to move on and look at solutions but I don't think we can have a very good chance to develop an optimal solution if we really don't understand the problem, and a very large number of skeptics still out there about what causes climate change and what mankind can do about it.

I hope some of your hearings this spring touch on that. As I have said before, when we get ready to consider legislation I have 4 issues or goals, I guess, that I want to try to meet. I do want to keep electricity affordable and plentiful in America. I also want to keep our transportation sector viable. It is interesting to know that in the euphoria over passing a CAFE increase at the Detroit auto show this week our manufacturers said that legislation, if implemented, is going to raise the price of an American vehicle approximately $6,000 per car. I want you to tell me how that helps our economy when the price of automobiles goes up $6,000 per vehicle. I want to keep our natural gas prices as affordable as possible because many, many Americans heat their homes with natural gas, cook their meals, and we still have an industry that uses natural gas as a raw material.

And obviously I want to protect American jobs. We can have the most perfect climate change bill in the world, and it is not going to do us a lot of good if we raise the unemployment rate 5 or 10 points to do that. You indicated that you want to introduce a cap-and-trade bill sometime this spring, Mr. Chairman. I hope we can dissuade you from that position. The great experiment in Europe with cap-and-trade so far is an absolute failure. There is no other way to put it. The prices their economies are paying are going up and their emissions are going up too. Now their apologists say that it is just because they don't have it just right, but I predict that no matter how much they tinker with it when you are trying to cap-and-trade something as ubiquitous as CO_2, most of which is not man-made, it is folly. It is an impossible situation.

So hopefully you will also really get into the details of just exactly what a cap-and-trade program would look like here in America. I also want to make a point that a number of other people have made. We are in a global economy now. We are the world's largest economy but if we do some things that are very draconian on our emissions here in the United States, and really all it does is cost us jobs, I am very skeptical that the rest of the world is going to follow suit. There is no nation in the world in the last thousand years that when faced with a choice of poverty or a better standard of living for their population has chosen poverty, and it is absolutely ludicrous in my opinion for us to ask China and India and Brazil and Mexico and all the developing world to adopt some of these very, very stringent controls on CO_2 when if they do that it is an absolute recipe for making sure that their people don't move forward and have a better standard of living.

We made that choice beginning in the late 1800s and all through the 1900s as we electrified America, put in our transportation system, created an economy literally based on the automobile, and the result has been the highest standard of living the world has ever known, so it is silly for us to ask the rest of the world to not move forward as we have moved forward in the last 125 years. So, Mr. Chairman, I am glad to have this subcommittee back in action. I do think climate change is a real issue. I do think to the extent that we can do things that make economic sense and environmental sense we should try to move forward, but I do not believe that we should just jump off the cliff in the name of political correctness. And with that, Mr. Chairman, I very, very respectfully yield back to you.

Mr. BOUCHER. Well, thank you very much, Mr. Barton, and very respectfully let me say that we were really not in hibernation. During the course of the last 6 months we were intensely focused on drafting and passing the 2007 energy security legislation, and as the gentleman knows I differ with his characterization of the European cap-and-trade program but these will all be matters we discuss during the course of this year. The gentleman from Utah, Mr. Matheson, is recognized for 3 minutes. Mr. Matheson waives. The gentleman from Louisiana, Mr. Melancon, do you care to make an opening statement? The gentleman waives. Are there other members seeking to make an opening statement? Apparently not.

Mr. Connaughton, we are delighted to have you with us this morning. I said some introductory words about you. Let me commend you for your successful efforts during the Bali conference. I think all of us were impressed with the skill with which you and your partners representing the United States advanced our position. Congratulations on the agreement which was concluded during that conference, and we look forward to your description of it and a statement of your intentions with regard to your leadership of the U.S. negotiation efforts between now and the Copenhagen conference which will occur in 2009. Without objection, your statement will be made part of the record, and we welcome your oral presentation.

STATEMENT OF JAMES L. CONNAUGHTON, CHAIRMAN, WHITE HOUSE COUNCIL ON ENVIRONMENTAL QUALITY

Mr. CONNAUGHTON. Thank you, Mr. Chairman, and I am very pleased to be here in front of this committee, and particularly this point in time after a very constructive last year in setting the stage for what I think will be a fairly important conversation here in the United States as well as globally on next steps. And we are pleased that you are helping to lead this effort, Mr. Chairman, particularly with Fred Upton at your side as the new ranking member. I think it is a powerful combination. I was also pleased to see Chairman Dingell here. I am sorry he had to leave for the moment. I hope we see him a little bit later. And also to have ranking Chairman Barton as well. It is nice to see the group of 4 focused on this issue in the way that it deserves.

Members of the committee, the Bali Action Plan, which you have now heard about, also known as the Bali road map, was in fact a major achievement adopted by more than 190 countries which is no

small order who are the parties to the United Nations Framework Convention on Climate Change. This document, which reflects my testimony, is a 4-page, highly detailed negotiation guide for how we will develop a comprehensive new post-2012 climate change arrangement, and we want to try to do that by 2009. Our 3 negotiating objectives going in were to launch negotiations, which had not taken place for 10 years, to be sure that we had a comprehensive set of negotiations, including participation by major developing countries as a critical condition well recognized in a bipartisan way here in the United States, and to do so rapidly by 2009 so there is time to prepare for its implementation which would start in 2012. All 3 of those objectives were met.

Also included as part of my testimony were the actual presentations that I and others gave in Bali outlining the steps that the United States is taking and will be taking with respect to our contribution both domestically and internationally, and if you have not taken a look at those I would encourage the members to thumb through those materials. It is 70 pages of quite substantial discussion. The United States is committed to working with other nations to agree on a global outcome, and it is important that that global outcome is both environmentally effective to do the job and economically sustainable, which means it should do the job smart. Only an arrangement that meets both of these objectives can win public support. To be environmentally effective a new approach must be truly global and has to involve measurable, reportable, and verifiable actions by the world's largest producers of greenhouse gas emissions, that is developed and developing countries alike.

The basic truth is this. Without substantial participation by major developing economies greenhouse gas emissions will continue to rise rapidly over the next 50 years even if the U.S. and other developed countries cut their emissions to zero. We are in this together. To be economically sustainable our actions must uphold the hopes of people everywhere for economic growth, energy security, and an improved quality of life. Lowering the cost of emissions is critical to that equation but that will require speeding up the development and the deployment of technologies that will fundamentally improve the way we produce and consume energy. These include the capture and storage of carbon emitted from coal power plants, more affordable nuclear, and gigawatt scale renewable power, bio-fuel, electric, natural gas, hydrogen, and other clean alternatives to petroleum, and of course greater efficiency. In the absence of technology advances and cost reduction advances in these areas reducing global emissions on the scale necessary will be impossible without significantly sacrificing economic growth globally and then the social consequences that come from that sacrifice.

Last May President Bush announced that the U.S. would work closely with other Major Economies to contribute to a new global agreement under the U.N. Framework Convention on Climate Change. I would note that this initiative has now received broad international support as a contributing, as a supportive effort to achieve the Bali road map. This includes the G–8 leaders, the Asia-Pacific Economic Cooperation leaders, so these are the 20 plus leaders of the Asia-Pacific rim, and even U.N. Secretary General

Ban Ki-moon. The U.S. has hosted the first meeting in late September that brought together 17 Major Economies accounting for more than 80 percent of the world's economic output, energy use and greenhouse gas emissions.

Now guided the consensus in Bali the Major Economies plan to meet again at the end of January for a series of meetings that will discuss a work program that can advance the key elements of Bali. In our view, such a work program should include a discussion of a long-term global emission reduction goal, national plans that include mid-term goals backed by nationally appropriate mix of strategies, regulations, incentives, and public-private partnerships. We need all the tools in the tool kit. Cooperative technology and other actions in key sectors, we need to focus especially on fossil power generation, personal transportation, and sustainable forest management because together they represent more than 80 percent of future greenhouse gases.

We need to focus on innovative financing mechanisms importantly coupled with the elimination of tariff and non-tariff barriers for the clean energy goods and services that that would finance, and then an approved emissions accounting system to verify our progress and then ways to help countries adapt to climate change and gain access to technology, and that is important particularly for developing countries. In addition, we think it is going to be important to discuss ways of structuring a post-2012 arrangement in a way that will encourage rather than deter actions by the major developing and developed countries so we need to do it in a way that incorporates positive, not punitive ways to insure accountability. This issue is big. It does cover really all economic activity and so we need a constructive way to create the framework.

We hope that these discussions can produce tangible outcomes that can be endorsed at a Major Economies leaders meeting that the President has called for later this year. This would fulfill the G–8 pledge last year for the Major Economies to make a detailed contribution to the U.N. negotiations. Now I just want to give a couple examples of what we are doing from the U.S. perspective already that are tangibly contributing to this next conversation. So first, and let us look at the international level, last year the U.S. joined with some key developing countries, helped to forge a global legally binding agreement to accelerate the phase-out of hydrofluorocarbons under the Montreal Protocol. These are also potent greenhouse gases. This was an agreement that China and India joined. They were developing countries but they joined in the legally binding agreement that would reduce greenhouse gases by at least 3 billion metric tons which would probably meet or exceed what the Kyoto Protocol might achieve by 2012 so just to give you a sense of the scale of a sector-based agreement.

Here at home this committee knows better than any committee because of the hard work they did last year in just 1 year to provide legislation that President Bush was pleased to sign that mandates substantial mid-term requirements and objectives for vehicle fuel efficiency, for renewable fuels, for appliance efficiency, lighting efficiency, and the efficiency and renewable fuel use of government operations, 5 brand new mid-term mandates with hard objectives. Other countries are looking very closely at what we did this year

to see how that might apply—they might apply similar approaches in their countries. This law is mandatory. This law is binding. And this law will produce some of the large emission cuts in our nation's history.

I was pleased to hear Chairman Dingell's estimate of more than 10 billion metric tons I conservatively estimated at 6 but let us just say it is big. It is very big in terms of the greenhouse gas benefits of that legislation. The U.S. is also working with other countries to establish a new, multi-lateral financing mechanism that is going to help accelerate the use of cleaner, lower carbon technologies and infrastructure. Importantly, this Congress and this committee have created similar tools for use in America so we are accelerating the deployment of these technologies here at home and now we want to come up with financing mechanisms to help sell good clean American technology overseas.

The U.S. and the EU, who are often seen as disparate on this subject have jointly proposed in the World Trade Organization the rapid elimination of the tariff and non-tariff trade barriers that impede investment in clean technologies and services. There is absolutely no reason why we are charging tariffs on each other for these goods and services that are very important to reduce greenhouse gas emissions. Removing such barriers would not only lower the cost of cutting emissions, they would increase our 2-way clean technology trade by up to 14 percent per year. That is a lot of good old-fashioned American know how finding its way into the global market place. And then along with Japan the U.S. will continue its massive investment, nearly $18 billion since 2001, in the technology research development and deployment effort. The U.S. and Japan account for most global spending in this area. We encourage other countries to step up their efforts.

Finally, deforestation, a subject that has been somewhat overlooked, accounts for roughly 20 percent of global emissions. The U.S. is enhancing its efforts to work cooperatively internationally to help other countries find ways to sustainably manage their forests the way we do here in America, and we are providing some good measurement tools to enable that as well. I look forward to a very aggressive year of activity. If we want to reach final agreement in 2009 the work we do this year is critical because moving from the domestic discussion to a Major Economies discussion to a 190-nation discussion requires a lot of work so we look forward to working constructively with this committee on that. Thank you.

[The prepared statement of Mr. Connaughton follows:]

Testimony of
James L. Connaughton
Chairman, White House Council on Environmental Quality

Before the United States House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy and Air Quality

January 17, 2008

Mr. Chairman, thank you for inviting me to testify on the recent United Nations Climate Change Conference which took place last month in Bali, Indonesia. As my testimony, I am submitting the Bali Action Plan as agreed to by all parties attending the United Nations Framework Convention on Climate Change at the 13th Meeting of the Conference of Parties.

Additionally, I have included for the Committee a presentation which I delivered on December 12, 2007, at the U.S. Side Event in Bali, entitled, "Partnerships in Action: Energy Security, Clean Development, and Climate Change". I have also attached additional technical presentations which describe the potential of technologies and some of the actions the U.S. has undertaken to date. These presentations were delivered at the U.S. Side Event by Alexander Karsner, Assistant Secretary of Energy for Energy Efficiency and Renewable Energy; William Hohenstein, Director of USDA's Global Change Program Office; and William Irving, Team Leader of EPA's Greenhouse Gas Inventory.

Lastly, I am submitting the President's remarks at the first Major Economies Meeting on Energy Security and Climate Change, delivered on September 28, 2007, in Washington, DC.

Thank you again for the opportunity to testify, and I look forward to responding to your questions.

Energy and Climate Policy

Hon. James L. Connaughton
Chairman
Council on Environmental Quality

12 December 2007

Key Elements of Major Economies Discussions of a Post-2012 Global Climate & Energy Framework

- Long term global goal for greenhouse gas reduction, consistent with economic growth;
- National plans that set mid-term goals
  - Use mix of binding, market-based, and voluntary measures (mandates, incentives, partnerships)
  - Must be environmentally effective and measurable
- Collaborative technology development and deployment strategies for key sectors
  - Lower carbon fossil power generation, transportation, land use, and near zero carbon energy (e.g., efficiency, nuclear, wind, and solar)
  - International working groups on key sectors to advance international and national efforts
  - Expanded global investment in research and development
- Support for adoption of existing clean technologies and the development of new ones
  - Enhanced financing tools
  - Elimination of tariffs and non-tariff barriers for clean energy goods and services
- Improved measurement and accounting systems that can more effectively track progress
- Robust programs on forestry, adaptation, and technology access for all countries

U.S. National Initiatives Since 2001

$37 Billion Federal Climate Budget

Bi-Partisan Support; More Than Any Other Country

Partnerships

- Nuclear Power 2010
- Improved NRC Process for Nuclear Power
- Climate Vision (15 Industry Sectors)
- Climate Leaders (100+ Company Leaders)
- Smartway Transportation Partnerships
- Energy Star and Natural Gas Star
- Federal Energy Management Programs

Mandates

- Federal Fuel Economy ("CAFE")
  - 15% Increase in Light Trucks Through 2011
- Federal Renewable Fuels ("RFS")
  - 7.5 Billion Gallons By 2012
- Federal Appliance Efficiency
  - 40 Standards (15 From EPAct 2005)
- State Renewable Power ("RPS")
  - 24 States; 80% of Generation
  - Going from 5.6GW, now 14.6GW, to 32GW
- Building Codes- Federal Facilities & States
  - DOE Model Code 30% Improvement

Incentives

- About $10 billion – EPAct 2005
- Clean Coal Investment Tax Credit ($1.6B + leveraging over $10B Private capital
- Loan Guarantees (power and fuels)
- Up to $3400 Tax Credit for Efficient Vehicles
- Up to $4000 in Home Solar Incentives
- Biological Sequestration part of $40+ Billion 2002 Farm Bill Conservation Programs

Technology

- Renewable Power: Advanced Solar and Wind
- Nuclear Power: Generation IV and Fusion
- Coal: Low Carbon Research; Future Gen Zero Emissions Coal & Hydrogen Power Plant; Regional Carbon Capture & Storage Program
- Fuels: Cellulosic Ethanol, Bio-Diesel, Hydrogen
- Vehicles: Plug-in Hybrids, Hydrogen Fuel Cell
- Zero Energy Home Research

Major New Initiatives This Year

State of Union "Twenty in Ten"

- **Alternative Fuels Mandate**
  - Replace 15% projected annual gasoline use in 2017 with renewable and alternative fuels
  - Mandate use of 35B gallons of alternatives
  - Nearly 5 times 2012 target in current law
- **Vehicle Fuel Economy Mandate**
  - Displace 5% of projected annual gasoline use in 2017 with new mandatory rules
  - Produce up to 8.5 billion gallons in fuel savings over the next 10 years
  - New car standards; extend light truck rules
  - Specific targets should be set by experts at the National Highway and Traffic Safety Administration based on feasibility, safety, and benefit/cost assessment

Executive Order

Strengthening Federal Government Environmental, Energy and Transportation Management

- Reduce Oil Consumption in Vehicles – 2%/year
- Increase Use of Renewable Fuels - 10%/year
- Improve energy efficiency – 30%/10 years
- Use More Renewable Power

Farm Bill Conservation

- Portion of $50+B for Biological Sequestration
- $1.6B in New Funding for Energy Innovation
- $2B in Loans for Advanced Biofuel Plants

2008 Budget

- $2.7 B for the Advanced Energy Initiative
- Hydrogen Fuel
- Advanced Batteries for Plug-In Hybrid Vehicles
- Bio-Diesel
- New Ethanol Production Methods

U.S. International Initiatives Since 2001

More Cooperative, Faster, Real Results

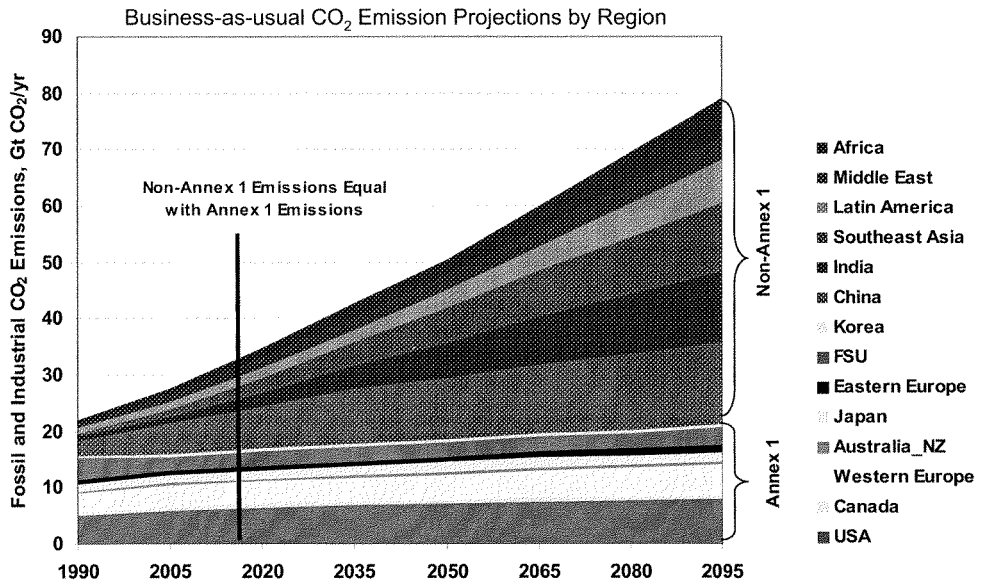
Global Action Programs

- Asia-Pacific Partnership (7 Nations)
  - Accounts for 50% of emissions
  - Nearly 100 actions
- G-8 Dialogue (13-20 Nations)
  - More than 40 programs
- Methane to Markets (20 Nations)
  - 180+ million tons reduced by 2015
- Renewable Energy and Efficiency (17 Nations)
- 12+ Bilateral Agreements on Technology and Lower Emissions
- Tropical Forest Conservation
- Stopping Illegal Logging

Technology Advancement

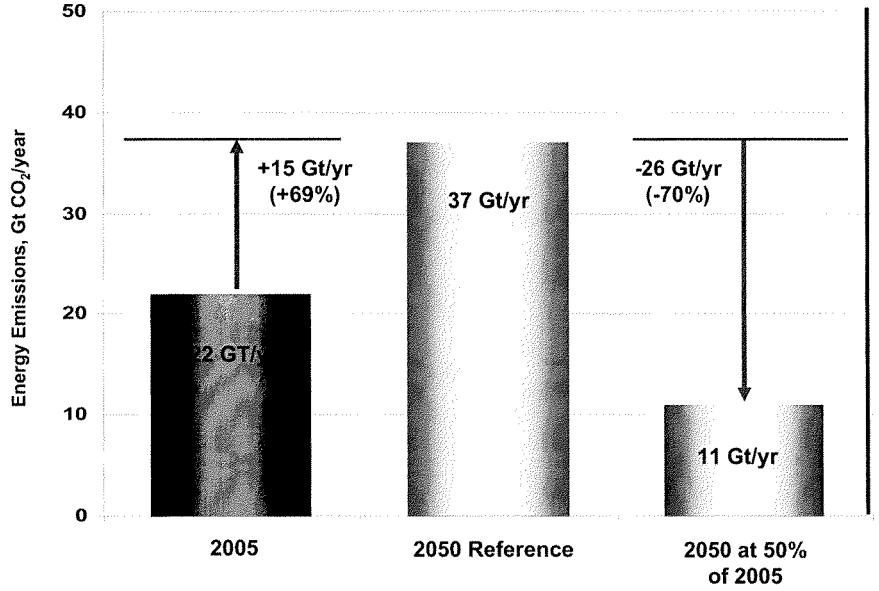
- Carbon Capture and Storage (22 Nations)
- Future Gen Coal (5 Nations)
- Hydrogen (17 Nations)
- Global Nuclear Energy Partnership (19 Nations)
- Gen IV Nuclear (10 Nations)
- Fusion Energy (7 Nations)
- Global Earth Observation (71 Nations)
  - Recommended by National Academy of Sciences

Important Transitions in Emitting Countries Over the Coming Century



Data derived from *Global Energy Technology Strategy, Addressing Climate Change: Phase 2 Findings from an International Public-Private Sponsored Research Program*, Battelle Memorial Institute, 2007.

Major Economies Energy CO_2 Emissions: 2005, 2050 Reference Case, and 2050 at 50% of 2005



Illustrative scenarios based on the CCSP MiniCAM reference scenario. Categories may not match exactly with other aggregations. For example, Europe includes here the following countries from EIA accounting: Belgium, France, Germany, Italy, Netherlands, Poland, Romania, Spain, United Kingdom, and Other Europe. MiniCAM does not include several countries as individual regions: Russia, South Africa, Australia, Mexico, Brazil, and Mexico. Growth rates for the appropriate aggregate regions were used as proxies for growth rates in these individual countries. This is one illustrative scenario: other scenarios would have different emissions growth rates over the century. Results should be taken as illustrative of potential trends rather than as a best guess projection of the future.

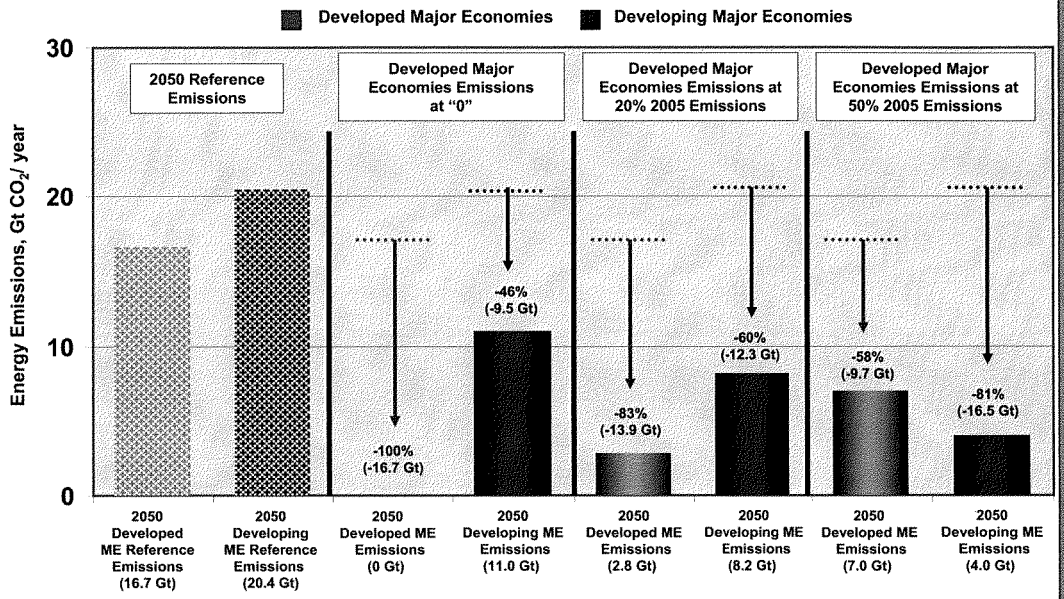
How Big is One Gigaton of CO_2?

Technology	Actions that Provide One Gigaton CO_2/ Year of Mitigation or Offsets
Coal-Fired Power Plants	Build 273 "zero-emission" 500 MW coal-fired power plants* *Equivalent to about 7% of estimated current global installed coal-fired generating capacity of 2 million MW*
Geologic Sequestration	Install 1,000 sequestration sites like Norway's Sleipner project (1 $MtCO_2$/year) *Only 3 sequestration projects of this scale exist today*
Nuclear	Build 136 new nuclear power plants of 1 GW each instead of new coal-fired power plants without CCS *Equivalent to about one third of existing worldwide nuclear capacity of 375 GW*
Efficiency	Deploy 273 million new cars at 40 miles per gallon (mpg) instead of 20 mpg - or at 14 km/L instead of 7 km/L
Wind Energy	Install capacity to produce ≈4 times global wind generation of about 74 GW* *Equivalent to about 270,000 1 MW wind turbines*
Solar Photovoltaics	Install about 750 GW of solar PV, which is 125 times current global installed capacity of 6 GW*
Biofuels	Using existing production technologies, convert a barren area about 2 times the size of the UK (for a total of over 480,000 km^2)
CO_2 Storage in New Forest	Convert a barren area greater than the size of Germany and France together (for a total of over 900,000 km^2)

Gigatons = 10^9 Metric tons (1000 Kilograms)
*Instead of coal-fired power plants
Source: Climate Change Technology Program *Strategic Plan*, September 2006.

Energy CO_2 Emissions Reductions Needed in 2050 for Major Economies to Achieve a Combined 50% Reduction in Emissions Below 2005[1] Under Different Reduction Goals for Developed Major Economies:

Annual Gigaton CO_2 and Percent Reduction from 2050 Reference[2]



[1] 50% of 2005 total Major Economies energy CO_2 emissions equals 11.0 Gt.
[2] Equals reduction from the 2050 reference case for that ME group (*i.e.*, Developed or Developing). Developed MEs include: U.S., Europe, Russia, Japan, Canada, South Korea, and Australia. Developing MEs include: China, India, South Africa, Mexico, Brazil, and Indonesia.

THE WHITE HOUSE

OFFICE OF THE PRESS SECRETARY

FOR IMMEDIATE RELEASE SEPTEMBER 28, 2007

REMARKS BY THE PRESIDENT AT MAJOR ECONOMIES MEETING ON ENERGY SECURITY AND CLIMATE CHANGE

U.S. DEPARTMENT OF STATE

10:09 A.M. EDT

THE PRESIDENT: Good morning. Thank you. Welcome to the State Department. I'm honored to address this historic meeting on energy security and climate change. And I appreciate you all being here.

Energy security and climate change are two of the great challenges of our time. The United States takes these challenges seriously. The world's response will help shape the future of the global economy and the condition of our environment for future generations. The nations in this room have special responsibilities. We represent the world's major economies, we are major users of energy, and we have the resources and knowledge base to develop clean energy technologies.

Our guiding principle is clear: We must lead the world to produce fewer greenhouse gas emissions, and we must do it in a way that does not undermine economic growth or prevent nations from delivering greater prosperity for their people. We know this can be done. Last year America grew our economy while also reducing greenhouse gases. Several other nations have made similar strides.

This progress points us in the right direction, but we've got to do more. So before this year's G8 summit, I announced that the United States will work with other nations to establish a new international approach to energy security and climate change. Today's meeting is an important step in this process. With the work we begin today, we can agree on a new approach that will reduce greenhouse gas emissions, strengthen energy security, encourage economic growth and sustainable development,and advance negotiations under the United Nations Framework Convention on Climate Change. (Applause.)

I thank the State Department for hosting this event. I appreciate members of my Cabinet who have joined us today. I thank Jim Connaughton, who is the Chairman of the Council on Environmental Quality, for being here. I appreciate you being the personal representative of this, and I hope you're doing -- I hope you think he's doing a fine job. (Applause.)

I welcome Minister Rachmat, the Minister of Environment of Indonesia, who is the Chairman of the upcoming U.N. climate meeting in December. I welcome Mr. de Boer, who is the Executive Secretary of the United Nations Framework Convention on Climate Change. I welcome all the ministers and delegates who are here. We really appreciate you coming. I thank the ambassadors for joining this august group. I thank members of the Congress who have taken time to come by: Congressman Ed Markey of Massachusetts and Congressman Bart Gordon of Tennessee. I appreciate you taking time to come by and participate in these meetings.

Every day energy brings countless benefits to our people. Energy powers new hospitals and schools so we can live longer and more productive lives. Energy transforms the way we produce food, so we can feed our growing populations. Energy enables us to travel and communicate across great distances, so we can expand trade and prosperity. Energy sustains the world's most advanced economies, which makes it possible for us to devote resources to fighting hunger and disease and poverty around the globe.

In this new century, the need for energy will only grow. Much of this increased demand will come from the developing world, where nations will need more energy to build critical infrastructure and grow their economies, improve the lives of their people. Overall, the demand for energy is expected to rise by more than 50 percent by 2030.

This growing demand for energy is a sign of a vibrant, global economy. Yet it also possesses -- poses serious challenges, and one of them, of course, is energy security. Right now much of the world's energy comes from oil, and much of the oil comes from unstable regions and rogue states. This dependence leaves the global economy

vulnerable to supply shocks and shortages and manipulation, and to extremists and terrorists who could cause great disruptions of oil shipments.

Another challenge is climate change. Our understanding of climate change has come a long way. A report issued earlier this year by the U.N. Intergovernmental Panel on Climate Change concluded both that global temperatures are rising and that this is caused largely by human activities. When we burn fossil fuels we release greenhouse gases into the atmosphere, and the concentration of greenhouse gases has increased substantially.

For many years those who worried about climate change and those who worried about energy security were on opposite ends of the debate. It was said that we faced a choice between protecting the environment and producing enough energy. Today we know better. These challenges share a common solution: technology. By developing new low-emission technologies, we can meet the growing demand for energy and at the same time reduce air pollution and greenhouse gas emissions. As a result, our nations have an opportunity to leave the debates of the past behind, and reach a consensus on the way forward. And that's our purpose today.

No one country has all the answers, including mine. The best way to tackle this problem is to think creatively and to learn from other's experiences and to come together on a way to achieve the objectives we share. Together, our nations will pave the way for a new international approach on greenhouse gas emissions.

This new approach must involve all the world's largest producers of greenhouse gas emissions, including developed and developing nations. We will set a long-term goal for reducing global greenhouse gas emissions. By setting this goal, we acknowledge there is a problem. And by setting this goal, we commit ourselves to doing something about it.

By next summer, we will convene a meeting of heads of state to finalize the goal and other elements of this approach, including a strong and transparent system for measuring our progress toward meeting the goal we set. This will require concerted effort by all our nations. Only by doing the necessary work this year will it be possible to reach a global consensus at the U.N. in 2009.

Each nation will design its own separate strategies for making progress toward achieving this long-term goal. These strategies will reflect each country's different energy resources, different stages of development, and different economic needs.

There are many policy tools that nations can use, including a variety of market mechanisms, to create incentives for companies and consumers to invest in new low-emission energy sources. We will also form working groups with leaders of different sectors of our economies, which will discuss ways of sharing technology and best practices.

Each nation must decide for itself the right mix of tools and technologies to achieve results that are measurable and environmentally effective. While our strategies may be differentiated, we share a common responsibility to reduce greenhouse gas emissions while keeping our economies growing.

The key to this effort will be the advance of clean energy technologies. Since I became President, the United States government has invested nearly $18 billion to research, develop and promote clean and efficient energy technologies. The private sector here in our country has responded with significant investments, ranging from corporate research and development to venture capital. Our investments in research and technology are bringing the world closer to a remarkable breakthrough -- an age of clean energy where we can power our growing economies and improve the lives of our people and be responsible stewards of the earth the Almighty trusted to our care.

The age of clean energy requires transforming the way we produce electricity. Electric power plants that burn coal are the world's leading cause of greenhouse gas emissions. The world's supply of coal is secure and abundant. And our challenge is take advantage of it while maintaining our commitment to the environment. One promising solution is advanced clean coal technology. The future of this technology will allow us to trap and store carbon emissions and air pollutants produced by burning coal. Since 2001 the United States has invested more than $2.5 billion to research and develop clean coal. And in partnership with other nations and the private sector we're moving closer to a historic achievement -- producing energy from the world's first zero-emissions coal-fired plant.

We also need to take advantage of clean safe nuclear power. Nuclear power is the one existing source of energy that can generate massive amounts of electricity without causing any air pollution or greenhouse gas emissions. Without the world's 439 nuclear power plants, there would be nearly 2 billion additional tons of carbon dioxide in the atmosphere each year. And by expanding the use of nuclear power, we can reduce greenhouse gas emissions even more.

The United States is working to reduce barriers to new nuclear power plants in our country without compromising safety. Just last week, a company applied for approval to build the first new nuclear reactor in my country since the since the 1970s. As we build new reactors here in the United States, we're also working to bring the benefits of nuclear energy to other countries.

My administration established a new initiative called the Global Nuclear Energy Partnership. This partnership will work with nations with advanced civilian nuclear energy programs, such as France and Japan and China and Russia. Together we will help developing nations obtain secure, cost-effective and proliferation-resistant nuclear power, so they can have a reliable source of zero-emissions energy.

We'll also need to expand our use of two other promising sources of zero-emissions energy, and that's wind and solar power. Wind power is becoming cost-effective in many parts of America. We've increased wind energy production by more than 300 percent. We also launched the Solar America Initiative to lower the cost of solar power, so we can make -- help make this technology competitive, as well. Taken together, low-carbon technologies like wind and solar power have the potential to one day provide up to 20 percent of America's electricity.

The age of clean energy also requires transforming the way we fuel our cars and trucks. Almost all our vehicles run on gasoline or diesel fuel. This means we produce greenhouse gas emissions whenever we get behind the wheel. Transportation accounts for about 20 percent of the world's greenhouse gas emissions every year. To reduce these emissions we must reduce our dependence on oil. So America is investing in new, clean alternatives. We're investing millions of dollars to develop the next generation of sustainable biofuels like cellulosic ethanol, which means we'll use everything from wood chips to grasses to agricultural waste to make ethanol.

We're offering tax credits to encourage Americans to drive fuel-efficient hybrid vehicles. We're working to develop next-generation plug-in hybrids that will be able to travel nearly 40 miles without using a drop of gasoline. And your automobile doesn't have to look like a golf cart. (Laughter.)

We're on track to meet our pledge of investing $1.2 billion to develop advanced hydrogen-powered vehicles that emit pure water instead of exhaust fumes. We're also taking steps to make sure these technologies reach the market. We've asked Congress to set a new mandatory -- I repeat, mandatory -- fuel standard that requires 35 billion gallons of renewable and other alternative fuels in 2017, and to reform fuel economy standards for cars the same way we did for light trucks. Together these two steps will help us cut America's consumption of gasoline by 20 percent in 10 years. It's an initiative I've called 20-in-10.

Ushering in the age of clean energy is an historic undertaking. We take it seriously here in the United States. Achieving this vision will require major investment in innovation by all our nations. Today the United States and Japan fund most of the research and development for clean energy technologies. Meeting the objectives we share and the goal we're going to set will require all the nations in this hall to increase their clean energy research and development investments.

We must also work to make these technologies more widely available, especially in the developing world. So today I propose that we join together to create a new international clean technology fund. This fund will be supported by contributions from governments from around the world, and it will help finance clean energy projects in the developing world. I've asked Treasury Secretary Hank Paulson to coordinate this effort, and he plans to begin exploratory discussions with your countries over the next several months.

At the same time, we also must promote global free trade in energy technology. The most immediate and effective action we can take is to eliminate tariff and non-tariff barriers on clean energy goods and services.

As we work to transform the way we produce energy, we must also address another major factor in climate change, which is deforestation. The world's forests help reduce the amount of greenhouse gases in the atmosphere by storing carbon dioxide. But when our forests disappear, the concentration of greenhouse gas levels rise in the atmosphere. Scientists estimate that nearly 20 percent of the world's greenhouse gas admissions [sic] are attributable to deforestation.

We're partnering with other nations to promote forest conservation and management across the world. We welcome new commitments from Australia, Brazil, with China and Indonesia. The United States remains committed to initiatives such as the Congo Basin Forest Partnership and the Asian Forest Partnership. We will continue our efforts through the Tropical Forest Conservation Act, which helps developing nations redirect debt payments toward forest conservation programs. So far my administration has concluded 12 agreements, concluding [sic] up to 50 million acres of forest lands.

America's efforts also include an $87-million initiative to help developing nations stop illegal logging. These efforts will help developing nations save their forests, and combat a major source of greenhouse gas emissions.

The United States is also taking steps to protect forests in our own country. It's one thing to help others; we got to make sure we do a good job here at home -- and we are. Since 2001, we've provided more than $3 billion to restore our forests and protect them against catastrophic fires as part of a Healthy Forest Initiative. In partnership with our farmers and ranchers, we're providing tens of billions of dollars in incentives for conservation. We're promoting sustainable public and private land-management policies. By taking these steps, we've helped increase the amount of carbon storage in our forests, and we've helped safeguard a national treasure for generations to come.

What I'm telling you is, is that we've got a strategy; we've got a comprehensive approach. And we look forward to working with our Congress to make sure that comprehensive approach is effective. And we look forward to working with you as a part of this global effort to do our duty.

And we've done this kind of work before. And we have confidence in the success of our efforts. Twenty years ago nations finalized an agreement called the Montreal Protocol to phase-out substances that were depleting the ozone layer. Since then, we have made great strides to repair the damage. Just last week, developed and developing nations reached consensus on speeding up the recovery of the ozone layer by accelerating the phase-out of these harmful substances. This accelerated phase out will bring larger benefits because they'll dramatically reduce greenhouse gas emissions.

We have seen what happens when we come together to work for a common cause, and we can do it again. And that's what I'm here to urge you. The United States will do our part. We take this issue seriously. And we look forward to bringing a spirit of cooperation and commitment to our efforts to confront the challenges of energy security and climate change. By working together, we will set wise and effective policies. That's what I'm interested in, effective policies. I want to get the job done. We've identified a problem, let's go solve it together.

We will harness the power of technology. There is a way forward that will enable us to grow our economies and protect the environment, and that's called technology. We'll meet our energy needs. We'll be good stewards of this environment. Achieving these goals will require a sustained effort over many decades. This problem isn't going to be solved overnight. Yet years from now our children are going to look back at the choices we make today, at this deciding moment: It will be a moment when we choose to expand prosperity instead of accepting stagnation; it will be a moment when we turn the tide against greenhouse gas emissions instead of allowing the problem to grow; it will be a moment when we rejected the predictions of despair and set a course of a more hopeful future.

The moment is now, and I appreciate you attending this meeting. And we look forward to working with you. May God bless you all. (Applause.)

END 10:29 A.M. EDT

Mr. BOUCHER. Thank you very much, Mr. Connaughton, and we look forward very much to our working in collaboration with you. Do you have any sense of when in 2009 that final meeting in Copenhagen is likely to take place?

Mr. CONNAUGHTON. It will occur in December. Typically it is some time in December.

Mr. BOUCHER. And that date has been set?

Mr. CONNAUGHTON. I don't think they have got a—well, actually the date has been set but I don't know specifically what it is.

Mr. BOUCHER. So you have now almost 2 full years within which to carry forward the negotiations pursuant to the Bali road map?

Mr. CONNAUGHTON. That is correct. The first big meeting occurs again in December in Poland this year, and then the next big one will be in December in Copenhagen.

Mr. BOUCHER. In the fall of last year your office convened on behalf of the President a Major Economies meeting here in Wash-

ington to which you invited I think it was the 12 largest emitting nations in the world, and I think you intend to have further meetings of that group over time. Describe, if you will, the way that that process of major economy nations which the United States is directing will coincide with the Framework Convention meetings under the Bali road map. They are happening at about the same time. Do you view them as being in competition or do you view them as being complimentary one of the other?

Mr. CONNAUGHTON. The intention of the meetings is actually to be strongly in support of the broader discussion that will occur under the U.N. so it goes beyond complimentary. It is targeted at the specific subjects that the large economies really need to grapple with. We are the big emitters, and those who are the big emitters with the biggest technology challenges should be getting together early and fast to see how we can advance this discussion and bring that to the broader U.N. grouping. It is actually about 17 countries depending on how you treat the EU but as it happens those 17 account for most of what needs to be done.

The Bali road map, which is 4 pages long, has many, many elements. I highlighted about 6 core elements the Major Economies will probably focus on, and then there will be a whole series of other conversations in the U.N. process so this is a subset of that.

Mr. BOUCHER. Well, thank you very much. I personally think that you are taking the right step in this Major Economies meeting because to the extent you can have the developed world come to some agreement about how it will govern emissions in terms of their own emissions and also interact with developing countries that should be helpful to the overall Bali process. As you noted in your testimony, the Bali Action Plan contemplates action being taken in order to prevent tropical rain forest deforestation and deforestation in other regions in the developing world, and the plan basically says that it would encourage incentives being provided toward that objective.

Do you have any thoughts today about what kinds of incentives would be appropriate within that context realizing that the Administration does not have a formal position with regard to any specific legislation at this point? Assuming that we come forward with a mandatory control methodology relying perhaps on cap-and-trade, would the allowance of the purchase of credits or offsets for tropical rain forest and deforestation efforts be one such incentive?

Mr. CONNAUGHTON. First, in terms of incentives the United States is actually one of the leading countries already with the Tropical Forest Conservation Act which provided several hundred million dollars of incentives through debt relief for some of the most important tropical forest conservation areas. Let us focus on tropical forests. But those are critical to climate change discussion. We also through USAID do a lot of direct incentive payments for sustainable forest management and a significant amount of money flows through that program. We also are contributing under the President's initiative against illegal logging to one aspect of the deforestation issue and that is illegal harvest of timber and providing enforcement and money to enhance enforcement capacity and that really hurts our guys because our guys sustainably manage, put

the effort in, and then they are out competed in the global market place by those that don't.

One other highlight that is currently underway is the 2 other root causes of deforestation are taking down forests for energy to burn wood like we used to in the 1800s. That is an issue of providing resources for access to more affordable energy services. That is the solution, and we are doing a lot of work with countries on that. The other is taking down forests for agriculture, and the answer to that actually is access to energy to do more productive and modern agricultural activities and to clean water, so we have a lot underway and we want to expand that effort. We have proposed some new financing through the World Bank to a forest partnership fund and of course our NGOs are putting a lot of money into this.

I say all of that, Mr. Chairman, with respect to the offset issue in terms of cap-and-trade. We do not have a formal Administration position on this so I will just give you my reflections, which is it does create some challenges because it is very, very difficult to know that you are getting what you are paying for. And so what we have done in Bali is we have committed to doing a series of pilot projects to see if we can bring integrity to that kind of a financing tool and the international community agrees that we need that pilot testing first before we start making commitments of this type. The second issue that we have concerns with, Mr. Chairman, is if you are going to increase the cost of electricity to someone on a fixed income or if you are going to increase the price at the pump for someone that is using gasoline to get to work, we think that it is politically a little bit more understandable to see that money going into buying technology that is going to solve the problem rather than paying for forest projects overseas, so I would just suggest that if we are going to move toward further pricing of carbon, we should keep our eye on the ball and focus it on the technologies that we need and then use the economy to get those technologies broader in the global marketplace.

Mr. BOUCHER. Thank you. We will have further discussions about that.

Mr. CONNAUGHTON. I know we will.

Mr. BOUCHER. I do have some contrasting views which I will withhold for the moment. My final question to you is this. Will it be helpful to you as you carry forward the U.S. position in negotiations over the coming 2 years if the Congress passes legislation that sets targets and announces what is expected in terms of greenhouse gas reductions across this entire economy. That target setting exercise will be as we have described the product of a broad consultation. Once it passes and is presented to the President hopefully to be signed into law later this year it would be a set of commitments that the United States really could keep, something that would enjoy reasonably broad support across our society, otherwise, we won't be successful in passing the bill at the outset.

And so is that exercise helpful to you? If we are able to put those targets into law, does that strengthen your ability to make firm commitments in terms of what the United States will be able to advance and adhere to in terms of international negotiations?

Mr. CONNAUGHTON. Mr. Chairman, when the history is written, I think one of the challenges of Kyoto was that it put the cart before the horse. International negotiators set domestic policy in an international negotiation. What you have just asked is very consistent with what the President has suggested that what we need is actually a domestically defined set of objectives and then bring that to the international conversation, and that is a core part of the Major Economies process how to frame up what we would like to see in domestic commitments. Now this committee broadly had already made a major contribution in that respect because you did announce 5 new objectives that are backed up by 5 major new programs. That is something most of the other countries have not done yet in the sectors where this Congress is active.

So ultimately international acceptance by the United States is going to turn on a bipartisan and across Pennsylvania Avenue agreements on what we think this outcome should be.

Mr. BOUCHER. Well, thank you very much, Mr. Connaughton. Your views and mine on that issue are completely in accord. Let me just finally compliment you on the role that you are playing and the success that you are achieving in re-involving the United States internationally and playing a leading role in doing that. I think that was very important for us to do and in my view you have done it well. The gentleman from Michigan, Mr. Upton, is recognized for 5 minutes.

Mr. UPTON. Thank you, Mr. Chairman. And again, Mr. Connaughton, thanks very much for your testimony. As we hit on here earlier as part of your testimony the Congress did act in a number of processes that really induced emissions, lighting, fuels, automobiles, et cetera. What kind of reaction did you get from the folks in Bali that in fact we have actually done something that perhaps they have not? I have not traveled extensively around the world hardly at all, and I look and see what we have done. I don't think any nation is as close as we are whether it be Europe or other places around the world as it looks to real changes in the way that we consume energy down the road in terms of legislative language. What type of credit did we get because that was bill was pretty close to fruition. In fact, that is one of the reasons why the congressional representation was so low was because we were literally in the midst of debating that legislation on the House floor but they knew that it was coming. What type of credit did we get for that?

Mr. CONNAUGHTON. In terms of Bali itself the bill was agreed as we were wrapping up so it was swallowed by the last minute skirmishing around the agreement. I would observe though that we made a substantial presentation on what was coming to a very large session of NGOs and other countries, and to a person what happens is when we present a total U.S. effort at the Federal, state, and local level people are amazed because of the misperception in the media. As Congresswoman Baldwin points out, I think, Congresswoman, it is a lack of awareness that is bigger. It is not lack of action. It is a lack of awareness. I would suggest probably many of us don't have a keen sense of what Europe is actually doing or what Japan is actually doing either. We need much more understanding of what we are actually doing because

when we presented the CAFE piece and we presented the fuels piece no country on CAFE or on fuels is as aggressive as we are under alternative fuels. The lighting piece, there are only a couple countries that have looked at lighting the way that we just did, and so now this is inspiring, some focus thinking by their countries.

So again this bipartisan agreement, when the United States comes together bipartisan agreement it has a big effect globally, and I think you will see the repercussions of that this year. I need to also observe those, not just the regulatory side, the work that was done in the '05 energy bill. When we talk about $35 billion of loan guarantees other countries aren't doing that so that makes them think, hey, maybe that is a tool we can look at. When we talk about $2 billion of incentives for the purpose of highly fuel efficient vehicles again other countries are not doing that at the scale we are doing it. So it is not just the regulatory side, it is the incentive side and the technology investment side that is going to have that influence so we need to again continue to put that comprehensive package together.

Mr. UPTON. This week the German steel industry is on record warning of huge job losses if the European Commission went ahead with the current schedule that they have got. In fact, they actually indicate that there could be as many as 50,000 jobs that leave Germany. The Financial Times earlier this week had a quote I think from the new French Prime Minister Sarkozy who said that it could unfairly penalize France and pose a real threat to the European industry if these targets continue to be mandated. When you look at that angle of it all of a sudden Europe is beginning to wake up to see what those changes are going to be not going ahead with some of the changes that we have already done, lighting, automobiles, et cetera, and then you take a peek at what China and India are also not doing, how do you see all these pieces coming together or apart?

Mr. CONNAUGHTON. I think one of the most important issues for this committee to explore this year and for all the members to become pretty savvy in is this concept of what is called leakage, leakage of jobs, leakage of emissions, so there are many strategies we can employ that produce technology and new jobs in America so there are many that work that way so that is good. But if we are not careful in the design of our policy, we can end up driving up electricity prices, driving up gas prices, and moving manufacturing overseas so you not only lose the jobs but the emissions go up overseas so you don't get the environmental outcome either so you just need to be thoughtful in your policy design to be sure not to create that kind of a consequence.

Now one way you do that is get China and India in particular sectors to make similar commitments. I will give you a hard example of that. Through the Asia-Pacific Partnership we got the aluminum sector together, the Chinese and the Indian aluminum sectors, committing to similar objectives with our aluminum guys and the Japanese aluminum guys on very specific time lines for reducing the greenhouse gas emissions. They are equally and jointly shared.

Mr. UPTON. So they are the same.

Mr. CONNAUGHTON. They are the same, so you are not talking about them coming in later, you are not talking about them doing less in the aluminum sector. They are committed to doing the same thing. Now that is where we need to go.

Mr. UPTON. Thank you.

Mr. BOUCHER. Thank you very much, Mr. Upton. The gentleman from Georgia, Mr. Barrow, is recognized for a total of 8 minutes.

Mr. BARROW. Thank you, Mr. Chairman. Thank you, Chairman Connaughton, for being here today. I want to talk carbon sequestration with you for a little bit because it is important to a lot of the big emitters in the area that I have the privilege of representing. But at the outset I can't help but observe we want to digest what it is you have to say. We want to digest what it is you have to offer, but I will note that the digestion process begins with chewing and there is very little to chew on in your written statement. There is a lot to chew on in your extemporaneous opening statement though, and so I would like to offer and invite you in the future to help us get going on this process by giving us more to chew on in your prepared statement than you gave us here opening here today.

Now on the subject of carbon sequestration, I know that there are a lot of technical issues and I know that there are a lot of legal issues. Folks in my part of the country don't want the Floridian aquifer to be turned into one great big old carbonated water deposit. We want to get the carbon out of our water, our ground water, for example. I understand that at Bali there was some talk about trying to bring international science and resources to bear on actually studying the technical and the legal issues involved with the notion or the idea that we can take all this carbon out of the coal that we are going to use and stick that in the ground somewhere and store it safely. I also understand that there was some objection from some of the developing countries to going down this path and as a result the idea was essentially, if I am understanding correctly, that this notion is going to be shelved until the next COP meeting some time toward the end of this year, December of 2008.

My question to you is in two parts. First, is this Administration committed to an international study that brings all the best science and scientists to bear on the issue of the technical and legal issues surrounding carbon sequestration in geological formations or not?

Mr. CONNAUGHTON. Yes.

Mr. BARROW. What can we expect to get done about that in the last year of this Administration's term in office?

Mr. CONNAUGHTON. Let me outline that for you, Congressman. Let me briefly make an aside with respect to my testimony. No offense was intended, please. The Bali Action Plan is 4 full pages. It is the statement of administration policy because we agreed to it, and in fact reading it from end to end is probably the most important thing we could be doing right now and understanding, so please know that was my intention.

Mr. BARROW. Well, in your Power Point presentation I just find two very brief, which is incorporated by reference in your testimony, two brief references to the subject of carbon sequestration and no explanation of what we want and what we plan to do in the last year of this Administration's term.

Mr. CONNAUGHTON. Well, let me map this out. First, it is probably the single most important thing we need to be doing because as we go forward the use of coal to make power will account for more than 50 percent of global emissions and so if we don't find a pathway with respect to this source——

Mr. BARROW. We already know how important it is. What does this Administration hope to do before it leaves office?

Mr. CONNAUGHTON. So, one, we have a full plan that will run over the course of the next 10 years or so of the research, the demonstration, and then the policy so it will help the deployment to do large scale demonstration projects for all the components that carbon capture and storage possible.

Mr. BARROW. A 10-year plan is going to last longer than the next two administrations.

Mr. CONNAUGHTON. Well, actually what we have done, Congressman, is we have requested and gotten mostly from the Congress the budgets necessary to build the world's first zero emission coal-fired plant known as the FutureGen Project. The President's budgets have requested and we have received from the Congress tax credit authority to the tune of $1.8 billion this year and next year——

Mr. BARROW. Back to the subject of my question though which is an international study of the technical and legal issues involved with sequestering carbon in geological formations as a solution as a part of the overall picture.

Mr. CONNAUGHTON. Five years ago, Congressman, the U.S. launched what was called the Carbon Sequestration Leadership Forum, and that forum was set up to specifically engage those issues, and in fact a lot of work has been done in that forum on that broader range of issues, policy type issues and design issues that you discussed. What we have done since then is we are now turning that into our domestic policy that is backed up by both the effort in EPA and the other agencies on the legal side, backed up by the Treasury on the——

Mr. BARROW. What is that policy, and what is it going to accomplish by the end of this year?

Mr. CONNAUGHTON. By the end of this year, we will be underway with project planning and design to actually break ground on the FutureGen project.

Mr. BARROW. Back to the study though—the subject of my questioning is the need for an international study to ascertain what really are the technical issues and the legal issues involved with the whole notion of sticking this stuff in the ground and building a zero emitting plant is a good idea of going around the problem. My question is what are we going to do about the carbon we are taking out of coal that burns to make energy.

Mr. CONNAUGHTON. On the specific issue of the study MIT has produced a state of the art study that the rest of the globe has been working with. The Department of Energy has produced its own road map and plan with respect to this. The Electric Power Research Institute of America has also conducted their own evaluation of this. What we are doing now is bringing that to the international community to see if we can then develop a joint road map that will build on the work that the U.S. has now pulled together.

So on that specific issue it is our intention this year to get agreement among the Major Economies, especially the coal-using countries to a joint effort, but not just a study, Congressman, a joint effort and a joint commitment to put the resources necessary to begin to build the demonstrations that will make this possible and to do it as fast as we can. It goes beyond just a study.

Mr. BARROW. Are you telling me we already understand the technical and legal liability issues well enough to be able to actually try and implement a program of carbon sequestration in geological formations? Do you think we can do that by the end of this year?

Mr. CONNAUGHTON. I am telling you, Congressman, that we have identified a lot of the issues and we have done a lot of evaluation of those issues.

Mr. BARROW. I have identified an issue. We have identified the issue of the technical problems of sticking it under ground and storing it hopefully for a long time and getting into other things we don't want to get into. That is an issue, and what the legal liability issues are if it doesn't work out. I mean is Georgia Power and the Southern Company going to be liable to get the carbon out of water that they put into the ground if they are trying to follow your road map and your plan for storing this stuff underground? Where are we on that track?

Mr. CONNAUGHTON. Specifically on that track with respect to the FutureGen Project, we have already set up the legal regime and that is going to be put in place to make that project happen as a research plan and then the Environmental Protection Agency is working on the regulations, Congressman, to do what you just described more broadly.

Mr. BARROW. What legal regime are you talking about, Mr. Chairman?

Mr. CONNAUGHTON. I am sorry?

Mr. BARROW. What legal regime, what are the steps that have been taken to create a legal regime for dealing with the issues of geologically stored carbon that leaks into other things?

Mr. CONNAUGHTON. There is a team in the executive branch that is working through the regulatory design and needs to be sure to address the liability issues and the regulatory issues associated with those practices.

Mr. BARROW. Seven minutes into my 8-minute period of questioning, my question now is what is that team going to produce for us by the end of this year?

Mr. CONNAUGHTON. They are working on the very specific recommendations for policy that can be effectuated without need for congressional action and policy that may require congressional action to make these projects——

Mr. BARROW. By the end of this year they are going to be able to tell us what they think Congress has to address and what Congress doesn't have to address?

Mr. CONNAUGHTON. A lot of that has been identified already, Congressman, and now we are working on specific recommendations.

Mr. BARROW. Not in this Power Point presentation, which is what I am asking for. Can you tell us that by the end of this month, for example, we will have a full and comprehensive report

on the issues that have been identified by this study group on the subject of carbon sequestration and geological formations?

Mr. CONNAUGHTON. I would be more than happy to provide you with the materials that have been prepared by DOE to date, by EAP to date, by MIT to date, and by the Electric Power Research Institute. I think you will find——

Mr. BARROW. How about the working study of this Administration?

Mr. CONNAUGHTON. I am sorry?

Mr. BARROW. How about the study group of this Administration?

Mr. CONNAUGHTON. We have DOE work, and we have EPA work on this. I am happy to share that with you.

Mr. BARROW. I have your assurance on that by the end of this month?

Mr. CONNAUGHTON. Absolutely.

Mr. BARROW. I am through.

Mr. CONNAUGHTON. I welcome your engagement on it, Congressman.

Mr. BARROW. Thank you, sir.

Mr. CONNAUGHTON. It is critical.

Mr. BOUCHER. Thank you very much, Mr. Barrow. The gentleman from Texas, Mr. Barton, is recognized for 5 minutes.

Mr. BARTON. Thank you, Mr. Chairman. My friend from Georgia's questions just kind of highlight some of the Alice in Wonderland aspects of this debate. The more questions he asks the more CO_2 he created. The more Mr. Connaughton tried to answer the questions, the more he created, the very thing that we are trying to sequester. I guess my first point, Mr. Connaughton, just to kind of set the ground rules, what is the most prevalent greenhouse gas in the world?

Mr. CONNAUGHTON. Total volume, it is CO_2.

Mr. BARTON. I thought water vapor was classified as a greenhouse gas, H_2O. Am I wrong on that?

Mr. CONNAUGHTON. It is a greenhouse gas. It is a forcing agent so you don't think of water vapor as a gas, but, yes, that is the most prevalent. That is the most prevalent forcing agent, yes.

Mr. BARTON. Pure chemical, clinical terminology, water vapor is in fact, I think, over 90 percent of the greenhouse gases in the world, is that correct?

Mr. CONNAUGHTON. I believe you are correct.

Mr. BARTON. Okay. Does the Bush Administration have a proposal to regulate H_2O?

Mr. CONNAUGHTON. No, we do not.

Mr. BARTON. What is the relative volume of water vapor in the atmosphere as compared to CO_2?

Mr. CONNAUGHTON. I don't have those technical answers, Mr. Chairman.

Mr. BARTON. Just give an approximation, kind of a back of the envelope estimate. You know it.

Mr. CONNAUGHTON. Actually I don't have the specific ratios in my head. I would be happy to——

Mr. BARTON. Isn't it like 1 to 1,000, something like that? How far off would I be on that? It is not anywhere close to 1 to 1, is it?

Mr. CONNAUGHTON. It is not. I think the issue, Mr. Chairman, as we look at this is the question of the—we measure these forcing agents in parts per million, and we are talking about additions or subtractions at the margin. I think the question that the scientists are exploring is whether the changes at the margin are of consequence in the overall climate balance. And so that is where the scientists are really focused so when you are talking about there is a lot of natural CO_2 in the atmosphere, there is a lot of natural methane in the atmosphere, a lot of the natural water vapor in the atmosphere, then the question we ask ourselves is even if we had a tiny bit more from humans can that effect the balance.

Mr. BARTON. We are talking about orders of magnitude of thousands or tens of thousands. I mean to me it is a little bit hard to accept from an engineering standpoint, we are talking about regulating man-made CO_2 when the elephant in the room is God-made H_2O vapor. I mean nobody is talking about regulating H_2O vapor, water vapor, because you can't do it and you don't want to do it. Even in the famous U.N. studies in their little table of what causes warming or cooling their big variable, their big forcing agent, I think is the term you used is H_2O, is cloud formation, which they don't accurately know how to model and are just now beginning to understand, and yet again my good friend from Georgia rightfully so because his constituents are worried about the legal liability of carbon sequestration, CO_2 sequestration, that is such a minor part of the overall total global forcing agent that it is—I mean if you did any kind of a rational engineering analysis it wouldn't even be a variable or if it would, it would be such a minor variable that it would be de minimus.

Let me ask another question. The cap-and-trade system in Europe, has it resulted in emissions going down, staying the same or going up?

Mr. CONNAUGHTON. We actually don't have the data from Europe yet for the last 2 years. The U.S. is way out in front of other countries in our ability to get our data out so I couldn't speak specifically to that. We have data through 2005 which shows a trend line in Europe of increasing emissions slightly higher than the U.S. 2005, that is the first year of their emissions training program.

Mr. BARTON. Wouldn't you think if the cap-and-trade program were really successful that their emissions rate would be going down? I mean the trend should be down, not up. Isn't it kind of contradictory that the trend seems to be the opposite of what the proponents hoped it would be?

Mr. CONNAUGHTON. Well, there are 2 features to that. One is their emissions training system only applies to power plants and industrial sources. It doesn't apply to the rest of the economy. Secondly, they brought aboard all the eastern European economies which are heavily fossil fuel dependent but they didn't originally have caps of any kind, and so—or consequential ones, I guess is probably the fair way to say it, and so their current program was quite limited to begin with anyway. There were also some design issues with that program that many people have highlighted in my view not the least of which is how much the European industries are buying compliance by investing in efficiency projects overseas, so that allows emissions to increase in Europe. Theoretically they

decrease in China but we have at least some examples, we don't have good studies on this, but some examples that appears to be creating an incentive in China for entities to increase their emissions in order to be paid to decrease them and we want to avoid that.

Mr. BARTON. My time has expired, and the Chairman has been very gracious. Thank you, Mr. Chairman, and, thank you, Mr. Connaughton, for your service to the country.

Mr. BOUCHER. Thank you very much, Mr. Barton. The gentleman from Pennsylvania, Mr. Doyle, is recognized for 5 minutes.

Mr. DOYLE. Thank you, Mr. Chairman. Well, after just listening to my good friend from Texas speak, and he is my friend, this shows you how tough this debate is going to be. Some people on this panel don't even believe this is a problem and that we should be regulating water vapor so it is a tough challenge. I have a couple questions. I don't think there is anything more important to our national security and our economic security than extricating us from petroleum, and it seems to me that in the process if we can do that and develop alternative energy sources, increase some of our nuclear capacity here, learn how to burn coal cleaner, we can kill two birds with one stone. We can address greenhouse gases, and we can start putting our country on a path to energy independence, which I think is very, very important for our future.

When you look at all the most troubled parts of the world the people leading those countries are sitting under a bunch of petroleum that we still have to have and as a result we get ourselves mixed up in a lot of foreign policy debacles we shouldn't be in. Having said that, when President Kennedy decided we were going to put a man on the moon, and we didn't know how to do that at the time, one of the things he did do was he marshaled the resources of this country, he doubled the Nassau budget several times, and something that was thought to maybe take decades was done in less than 10 years.

One of the most frustrating things for me as a member of this committee and someone who has been in Congress 14 years now is to watch energy secretary after energy secretary, it doesn't matter what the Administration is, through the Clinton Administration, through the Bush Administration, sit before this committee on budget time and tell us how they don't need any more money and watching them take programs that rob Peter to pay Paul, whatever the program de jour is that year, and then that seems to fade aside. Fuel cells was big, and then we get near commercialization and we pull the plug on them and we are funding FutureGen. FutureGen is now the big thing we want to talk about and what comes next. Where is the commitment on this Administration and hopefully future administrations to finally put our money where our mouth is and put the dollars necessary so that instead of these different constituencies, you know, the battle we hear from the alternative energy people is don't put money into clean coal, you are stealing money that could go into renewables.

It is always people see the pie as just constant and that their slice of the pie is going to get smaller if we move into these other fields. We have to do all of this. We have to do all of this. We have to burn coal clean. We have to increase nuclear. We have to bring

alternative energy sources into the market. We have to commercialize these things. Carbon sequestration, we can't wait 10 years for a study. We need to be able to deploy that technology in this country in the next few years. We need to make it a national emergency. It has to get done, and we have to marshal the best and brightest minds in our country and say if we can spend $10 billion a month in that black hole called Iraq, we certainly can start spending some money in the United States of America to extricate this country from this addiction we have to petroleum which is absolutely crushing our kids and grandkids and give them a worse quality of life than we enjoy today if we don't start doing something about it.

I have yet to see an administration on Democrat or Republican that is serious about tackling this problem. Can we expect next year when the Secretary of Energy and when this Administration starts to put their budget together a real commitment in terms of dollars and resources in the Department of Energy and other agencies that shows a true commitment to the American people and the rest of the world that the United States is serious about two things, getting us off petroleum in the near future, and at the same time curbing greenhouse gases, and as an added bonus to that creating new industries in this country where we will start to export that technology to other countries to help them also comply to cut their carbon emissions? What can we expect next year from the Administration in terms of an energy budget request in these other agencies?

Mr. CONNAUGHTON. Well, first, as a general matter with the possible exception of your comments on Iraq, I just need to say I agree and the President strongly agrees with your perspective and the passion you are bringing to this. I would also note I think you may be selling your own committee short, Congressman, the bill you just passed was a major step forward and actually unrivaled if you look around the world in terms of putting in place the pieces to set that in place. Now we came up a little bit short of the broader approach the President called for in the State of the Union last year but we can continue to work on that because I think you have been doing great work in Pennsylvania about looking for all the opportunities for replacing petroleum, not just focusing on a particular one, and so I think that is where we need to take the conversation next. In terms of the——

Mr. DOYLE. Our bill was a baby step, not a big step. It was a baby step. It was a step in the right direction but it is miniscule in terms of what we need to do to make ourselves independent on energy for the future and at the same time cut greenhouse gases. We need to do 100 times more than what we are doing right now for our own good. Forget the rest of the world. For the good of the United States of America, we need to do a lot more than we are doing.

Mr. CONNAUGHTON. And let me agree with you especially in light of what it takes to really cut greenhouse gases and displace petroleum in the way you have described. Secondly and importantly, and this goes back to questions that Congressman Barrow was asking as well, on replacing petroleum we have good tools now from the Congress. We have good budget aspects from the Congress that are

going to enable us to move beyond just studying and begin to start demonstrating. We are already deploying the resources to build 3 of the world's—among the world's first major cellulosic ethanol production plants, and the venture capital folks are coming in behind that and we have to go there because that is low greenhouse gas profile and really sustainable.

We now need to do the same thing on coal and capture and storage of coal, and again move beyond just the research and that is important. Don't get me wrong there. But get the big plants built, get the commercial scale capture experiments done, get the commercial scale sequestration experiments done so we can show the thing works and then in the legal liability regime that people will invest against and we are committed to this.

Mr. DOYLE. The Chairman has been very generous with my time and I appreciate it. I would just say, Chairman, whatever you are thinking of doing multiply it times 10 and cut the time in half. Thank you, Mr. Chairman.

Mr. BOUCHER. Thank you very much, Mr. Doyle. The gentleman from Arizona, Mr. Shadegg, is recognized for 5 minutes.

Mr. SHADEGG. Thank you, Mr. Chairman. You caught me a little bit by surprise. I thought there were others ahead of me. I am fighting a cold, and I apologize for that. Mr. Connaughton, I want to thank you for your service to the country. We bumped into each other in China last summer, and I know you were working on these issues then. In your testimony you mentioned that there are several existing programs that are promoting energy efficiency and environmental quality that have led to reduction in greenhouse gas emissions here already. This committee and this Congress appear to be hell bent on a major policy change, specifically a cap-and-trade system.

I have concerns about a cap-and-trade system. I have concerns that a cap-and-trade system would be so confusing the American people will not understand it. They will not understand why the cost of goods is going up, and they will be frustrated if they learn at a later point in time that the cost of goods and services went up but greenhouse gas emissions did not go down. And Mr. Barton pointed out that at least in Europe as a result of some problems in the implementation of their cap-and-trade system greenhouse gas emissions in fact have not gone down. I am familiar with stories about producers in Europe who are going outside of Europe, moving the production, for example, of cement from France to Algeria outside the European cap-and-trade structure.

I guess I have a broad question for you. I largely agree with my colleague from Pennsylvania about the need to move forward on efficiency, and I am concerned that if we do a radical policy change in the nature of cap-and-trade, we could spend a lot of energy trying to implement that without in fact reducing greenhouse gases and at the same time doing substantial damage to the economy. I do agree that we need to get off of oil. I completely agree with my colleague from Pennsylvania with regard to our dependence on oil from people who hate us, which not only puts us into a difficult economic situation but has us funding our enemies, and I think with the war on terror and the commitment of radical Islam to destroy us that is a serious policy mistake in itself.

My broad question to you is do you think that we need to move as quickly as this committee is talking about towards a cap-and-trade program? If so, are there things you would caution us to do or not do? How do you feel about a carbon tax instead? Is it more transparent? Would it be easier to implement, and are there other things that can promote efficiency or reduce our reliance on foreign law that you would recommend?

Mr. CONNAUGHTON. Thank you, Congressman. You have asked many, many questions so let me see if I can address them.

Mr. SHADEGG. I wanted to get them all in. I have a cold so I don't have to talk again.

Mr. CONNAUGHTON. Let me see if I can address them as a package. As I indicated at the beginning, we have a portfolio of strategies that includes regulations, some of the new ones, which by the way are market based, the CAFE piece and the fuels piece, used as something alike. You know, it is a cap with a flexible trading system involved in it. We have technology mandates like we did for efficiency of appliances. We have good old-fashioned incentives and those are very powerful to opening up markets where the marginal cost is just within reach. And so the challenge for us as we get into this year is taking stock of what we have got where the Congress has already declared goals, and then seeing what more we might need, and we should be looking at the full range of options for that. Some suggest tax, some say incentives. Some say cap-and-trade. Some say technology mandate. Some say let the sectors come up with a compact and commit to it and hold them to it and come back at them if they don't make it.

So there are a variety of approaches, and I have seen them all work. I have seen all of them also designed badly and fail so we are at the point where we need to be that specific and that goes to the heart of your questions. cap-and-trade can be a very powerful tool when focused, used correctly, and depending on the market. We did it on SO_2 because there was 500 power plants, 1 pollutant with a very specific objective in mind with a known technology. It was ready to be deployed. CO_2 is different. When it comes to coal we do not have the technology available to us today where it can be—liability can be established, warranties can be given. You are going to be able to make sure the lights stay on and you are not going to drive up electricity costs for the poor and people on fixed incomes.

The Congress is debating LIHEAP today, and our goal can't be to raise costs of electricity and gasoline on those least able to afford it. So those become critical factors in this discussion and debate, and again this committee has the capacity to be the most thoughtful in addressing those very important questions. And as I indicated there is the leakage issue. The leakage issue that if you drive up, for example, if your policy drives up natural gas prices further that means even less good high-paying American jobs in commodity chemical manufacturing and in fertilizer manufacturing. Right now we have become, I am told, we are now going to import our fertilizer for the first time. What sense does that make? It is an area where we are otherwise competitive but because of high and fluctuating natural gas prices we are now importing. So that is what we want to just focus on, but I am hopeful that the Chairman in

his effort this year will distill out these specific issues and then we can begin and then look at policy designs on the facts and on the economic analysis, and like we did on CAFE and like we did on fuels find some common ground that addresses these issues.

Mr. SHADEGG. I hope we will continue to work with you and get your advice as we go forward. Thank you.

Mr. BOUCHER. Thank you very much, Mr. Shadegg. The gentleman from Texas, Mr. Gonzalez, is recognized for 8 minutes.

Mr. GONZALEZ. Thank you very much, Mr. Chairman. Welcome and thank you for your service. A couple of observations before I get to the particular question, and the first one is, and see if you agree, because I think our concern is to do this and do it in a way that it doesn't in any way jeopardize our economic well-being. But it has to be acknowledged, and I think we have to be honest as elected officials and those that serve in the Administration such as yourself that it is going to cost more, and that means it is going to cost more to each and every citizen, and we need to prepare them for that. And somehow we have to convince them, of course, that it is an investment now that will serve us well in the future.

Now do you agree that we should be up front telling the consumer of America that it is going to cost them more when it comes to energy in the future, and not—we have costs already that are skyrocketing in certain areas but just what we presently have and with the technology that is going to be employed that is going to add cost, do we not need to be honest with the consumer that they are going to have to make their contribution in the way of higher cost?

Mr. CONNAUGHTON. I think there are 3 dimensions to that question, Congressman.

Mr. GONZALEZ. And could you be as brief as possible because that is my observation and I want to get——

Mr. CONNAUGHTON. There are some investments that will pay for themselves over time, and that is the efficiency discussion and we have the tools for that. There are some investments where if we are controlling for air pollution where we can quantify health benefits and also get greenhouse gas reduction from that. You can actually show there is a net benefit so the cost is worth the investment. There is then the uncertainty zone where you are asking for more cost and we just need to be smart about what those costs are and make sure we are tailoring them to deliver something that we think will be good, and so that is my answer to all 3.

Mr. GONZALEZ. And I understand, and all 3 equate to greater cost. It is just how we invest it. I just want to make sure that we are finally asking our constituents which is the hardest thing in the world to make their own specific contribution by way of greater cost, and it is a very difficult thing for an elected official. The next thing is I know that there have been certain individuals that observed when we are dealing with the developing nations that we understand their concerns and the fact that they can look to the United States experience and figure, hey, how did you guys get there, how did your Major Economies get there? You are blocking us off from the same practices in which you engage to attain that wonderful lifestyle that you enjoy today.

I think that is a terrible way of looking at it, and we have to provide developing nations with alternatives to the traditional ways that many economies arrived to where they are today, otherwise, we would say, well, we will let you have 100 years of slavery. Or we can just, as a matter of fact, job waiver, we will give you 50, 60, 70 years of that. Sweatshops, well, we will give you, I don't know, maybe a half century or longer maybe of that. And then of course you can pollute your air and your water and figure a solution later. I think that is a really dangerous thing to do. I think we have to relate to exactly where they are coming from and such, and I think you have pointed out in your testimony, I am not selling it short, and I am not saying that you are not obviously cognizant of that consideration, I am just afraid that many individuals, especially elected officials, are simply saying, well, look how we got there, how can we be asking that of developing countries.

Well, very easily. I think they can learn through our own mistakes. But my central question, and we are going to have enough time, because I am really concerned and I am not real sure if I have the latest information, but I know that we became parties to this Bali road map or whatever it is but we have also been talking about the Major Economies coming together. Do we still have something set up in Hawaii at the end of the month?

Mr. CONNAUGHTON. Yes, we do.

Mr. GONZALEZ. All right. And it looks like there is going to be full participation by the European Union. We don't have any problem with any of these Major Economies participating?

Mr. CONNAUGHTON. No. Actually the leader's representatives, people like me, who are direct reports to their leaders, that is how seriously this is being taken and that is good.

Mr. GONZALEZ. Okay. Now those are obviously the developed economies, the Major Economies, the major emitters, whatever we want to call ourselves. Do we have a counterpart with the developing nations having their own pre-Bali road map meetings?

Mr. CONNAUGHTON. We do not in this particular setting. There is something called the G–77, which is all the developing countries combined but that actually is beginning to show 2 aspects. There are the major developing countries who are big energy users and emitters, and then there is everybody else. And Bali began to show that, which is the China, India, Brazil, South Africa, Mexico, they are in a slightly different place because they are big contributors to greenhouse gases and they are now part of this discussion with us.

Mr. GONZALEZ. And of course what we are doing there in Hawaii and such is not viewed as counterproductive or subverting or something in addition to or a side show, but wouldn't you say that whatever decision is reached in that particular setting is really what we probably would be taking to the meetings that are set up because we are still trying to figure out what our domestic bottom line is, right, and so then we have to get all our major emitters to figure out what their basic bottom line before we really get to the negotiating table with all of the parties.

My only concern is all the stakeholders aren't there, and maybe it is all right to have all these preliminary meetings that precede whatever is going to happen when all stakeholders are there, but

is there any danger that those that are not part of this major emitters, Major Economies meetings since they are not there to engage us because I am so not sure that we are going to get off our bottom line once we establish it in that setting and we go to the major meeting. Now if I am a stakeholder, we are all stakeholders developed and developing, but I am not included in the developing where you guys are establishing your bottom line, I am not so sure I am so crazy when you come to our big meeting and you are telling me this our bottom line, I never had anything to say about your bottom line. Is there any danger in what I have just proposed?

Mr. CONNAUGHTON. That is always a concern. The same is true when any sub-group of this committee begins to try to work something out and brings it to the broader committee, so we are trying to organize this in a way that we did a lot of preparatory work, we did a lot of briefing of everybody on what we are trying to achieve when we were in Bali. There is now greater acceptance that this was a useful tool recognizing that whatever the output of this has to be brought back to everybody, and so the U.N. process will start in April so we will have a couple meetings in advance of that and bring our ideas to that. We will have a couple after that first U.N. meeting and then hopefully the leaders will be able to get their heads together around this so that in plenty of time for polling at the end of this year, there will be 3 or 4 or 5 months where we can have even the broader stakeholder discussion.

Surely, Congressman, you can agree starting on a few of these with the countries that are most responsible is probably a good step, and you can also understand having a room filled with 190 people as an initial opening place for the conversation is a little bit tricky. But that is what we did with Bali. We had 190 nations giving a big outline of what we need to do. Now we can break it into its parts and get the countries that have a role in those parts bringing some real concrete ideas forward. We are trying to be quite constructive.

Mr. GONZALEZ. But even in Bali wouldn't you admit that towards the end there if the United States had made its own adjustments to the outcries and concerns of developing nations more than anyone else we probably wouldn't be where we are today with the road map. My last observation, with 15 seconds, you said something about we should understand even with our subcommittee structure and our committee structure and in the full Congress I trust the Bali road map and what you all are going to do doesn't exactly follow that model because we don't. And again I just want to say thank you for your service and your testimony today.

Mr. BOUCHER. Thank you very much, Mr. Gonzalez. The gentleman from Oregon, Mr. Walden, is recognized for 5 minutes.

Mr. WALDEN. Thank you very much, Mr. Chairman. I want to thank Mr. Connaughton for his work for the country and for the President and appreciate your testimony today. I want to follow up on a couple of points you made just to make sure I heard them correctly that with the $35 billion in loan guarantees the U.S. has put forward we lead the world, is that correct?

Mr. CONNAUGHTON. Yes. That is a substantial backing of the investments necessary to get low carbon technologies.

Mr. WALDEN. And then you said $2 billion in incentives for highly fuel efficient vehicles. That is also leading the world in that area?

Mr. CONNAUGHTON. We are among the leaders. Germany and a couple of other countries are right up there with us but just a few of us.

Mr. WALDEN. And do they have the same clean air requirements in Europe and Germany that we have here? I mean they have been out front with diesel for a long time. Hasn't that had health implications?

Mr. CONNAUGHTON. Actually right now our clean air requirements for diesels is more stringent than Europe's. Because they are so heavily invested in diesel, they have been a little more forgiving on their clean air for the sake of fuel efficiency.

Mr. WALDEN. And has that had a health impact?

Mr. CONNAUGHTON. Yes, it has had a negative health impact. Our diesel-related illnesses and deaths are in the thousands. Theirs are in the tens or hundreds of thousands.

Mr. WALDEN. Deaths as a result of diesel burning vehicles.

Mr. CONNAUGHTON. Or hospitalizations. Yes.

Mr. WALDEN. All right. When you talk about forest issues, I know you raised those, and you have been very aggressive at the international problem, one of the issues I know is out there is the use of palm oil for bio-fuels. Now Mr. Doyle talked about we needed, I think he said a 10 fold increase in whatever it is we are doing now in half the time. Now we just passed a very aggressive increase in bio-fuels. Is that the most aggressive in the world?

Mr. CONNAUGHTON. It is. It is. In fact, Europe has a stated goal that is less aggressive and they are having trouble getting the programs in place to meet it.

Mr. WALDEN. And isn't the EU presently evaluating restricting the source of inputs for their bio-fuels program because they are discovering not all bio-fuels are as environmentally friendly as others, and in fact they are working on regulations as we speak to limit or prohibit the use of palm oil because in many countries aren't they ripping out their forests to produce palm oil?

Mr. CONNAUGHTON. Actually EU is headed down the road to a very aggressive regulation of alternative fuels, and by the way some of that is based on then misplaced facts and information which remains a challenge in terms of on the issue of palm oil there are a few very bad examples that overwhelm the potential ability of palm oil to be done well, and what is happening is I think the EU is taking a classic approach. They are abandoning the entire thing for the sake of a problem that could otherwise be well regulated.

Mr. WALDEN. And is that an area that we need to focus on now that we have this enormous bio-fuels mandate in statute? Do we need to set up some side boards around that? I know in the energy bill one of the things I was frustrated about, and I voted for it, was the fact that if you produce alternative fuels from woody bio-mass they count towards renewable fuels portfolio standard unless, unbelievably unless that woody bio-mass comes off of Federal land. Can you explain the scientific reason why woody bio-mass that comes off Federal land should not be considered a bio-fuel but if it

comes off private lands it does count? Is there any difference in that woody bio-mass?

Mr. CONNAUGHTON. There is no difference. And, Congressman, one of the core concerns that we as the Administration have is the endeavor to try to cherry pick and narrow down on all of these alternatives because the fact is the scale that we have to achieve is so big that we need to find ways to properly regulate but effectively get many alternatives out there based on performance, not based on preference.

Mr. WALDEN. Unfortunately, I have less than a minute left. One of the other real problems in the energy bill and that I hear a lot from my state and people who are very concerned about moving forward with sustainable growth and renewable energy development is the short-term nature of the production tax credit. Now I personally believe we ought to extend it out a minimum of 5 years so that investors can make wise decisions into the future and get in the cues and get the turbines and whatever else they have to get, access to the grid, whatever, takes many years. Can you speak to the Administration's position on a longer term extension of the production tax credit?

Mr. CONNAUGHTON. We will not react to specific legislation so let me just deal with the issue generally which is the short-term nature of the production tax credit is why we are not seeing enough expansion of manufacturing capacity so we end up buying a lot of our products from overseas because of the boom and bust cycle of the production tax credit. And so whether you redesign that policy or develop a different one, we should be focused on our own manufacturing capacity so we can scale up renewables to the gigawatt scale——

Mr. WALDEN. And create the jobs here. So we could do the manufacturing jobs here, produce the various components for renewable energy development in our country ought to be done here.

Mr. CONNAUGHTON. And lower the cost. Right now the price of solar and wind is going up, not down. That is not what we all wanted. We wanted it to go down.

Mr. WALDEN. Thank you, Mr. Chairman, for being generous with the time. Mr. Connaughton, thanks for your hard work and your testimony today.

Mr. BOUCHER. Thank you very much, Mr. Walden. The gentleman from Washington State, Mr. Inslee, is recognized for 5 minutes.

Mr. INSLEE. Thank you. Mr. Connaughton, the last time we were together was at I think the Schwarze Pumpe coal plant which may be Europe's first coal sequestration plant if things go well for them. And we were excited by that because that technology works. It could be of benefit but the only reason it will ever be implemented is if we have some economic incentive for it to be implemented leading us to conclude we need a cap-and-trade system to create an economic incentive for that and a whole host of technologies to be implemented. So I would like to ask you if the President will sign a cap-and-trade piece of legislation passed by this Congress this year.

Mr. CONNAUGHTON. As you know, Congressman, we don't comment on specific pieces of legislation that haven't been proposed yet

but we have been, as you know, willing to be constructively engaged in this conversation. I would observe when it comes to incentives there are positive and negative incentives. We employ both. And when it comes to carbon capture and storage because the technology is not yet available, I think most of the emphasis is going to have to be on the positive incentive side because of the ease with which we can fuel switch in America out of coal to natural gas and other sources, and so that creates its own basket of problems so I just want to be sure as we work on this together that we are thoughtful about that unintended consequence.

Mr. INSLEE. Are you going to encourage the President to address the issue of a cap-and-trade system in the State of the Union speech, and the reason I suggest that would be helpful is that when we went to the moon Kennedy went and urged us to go to the moon. We need presidential leadership on this. Will you be suggesting to the President that he address the parameters of the cap-and-trade system that could help us in this challenge?

Mr. CONNAUGHTON. One, we don't comment on State of the Union, and my advice and counsel to the President is between me and the President. I would observe that we are very focused on the next steps after last year's energy bill. I would observe that we do see a lot of common ground on advancing the carbon capture and storage agenda and doing that appropriately. We see a lot of common ground on making sure we are on the ball on the alternatives to petroleum so I think you will see dedicated action from us on those issues among others. Nuclear is critical too. I know we have a little bit of difference there. But these are all critical. We need action on all these fronts, not just a single front.

Mr. INSLEE. So do you believe that we can design a cap-and-trade system that will inhibit CO_2 emissions and help grow our technological response to this? Do you believe we can do that?

Mr. CONNAUGHTON. I don't know yet.

Mr. INSLEE. And what could we do to help you get over that hurdle to help us develop momentum for a cap-and-trade system because presidential leadership is important in this and presidential inertia could also be a drag on our ability to move this legislation. What can we do to help the Administration clarify its position because I think clarity in telling us that this is within something of the realm that the President could sign would be helpful for us moving forward. What could we do to help you get over that hurdle?

Mr. CONNAUGHTON. Well, I think first it is going to be important that this committee in particular, and I'm glad the Chairman has started so quickly with this set of discussions, is to do a stock taking in what we have got and then tailor what more we need to that. I haven't seen that occur yet. That is going to be very important. One thing of concern we would have is the idea of putting a mandate on top of a mandate and so we want to make sure that we have got a regulatory system working in close harmonization with our incentives, the positive incentives, with also the private sector initiative, and so that is just going to take a little bit of thought, and if we do that we can simplify.

Right now what we see in the Senate are a number of proposals that are highly complicated and highly constituent interest group focused and I think that is not a recipe for success.

Mr. INSLEE. Well, let me ask you this. It is clear, it is absolutely clear, if you disagree tell me but I think it is absolutely clear that for coal sequestration technology ever to be implemented because it will involve some work, some cost, some investment, there will have to be some economic incentive for its deployment. Now that can be a positive incentive or it can be a negative incentive.

Mr. CONNAUGHTON. I agree with that.

Mr. INSLEE. You agree with that.

Mr. CONNAUGHTON. It has to be positive. We need an incentive. How we structure it matters but we need an incentive.

Mr. INSLEE. It is certainly my belief, I think most economists who evaluate it, is that there has to be some disincentive for putting CO_2 in the air to make carbon sequestration through coal technology economically viable. Do you agree with that assessment?

Mr. CONNAUGHTON. No. I think we are mixing 2 different pieces. An incentive, whether it is structured as a positive or negative one generically will drive more investment toward lower CO_2, but when you are looking specifically at the issue of coal and capture and storage because of the opportunity to substitute something else or because the opportunity just to shut down operations and move your manufacturing and demand some place else, you could actually delay the desire to make the investment necessary to prove carbon capture and storage because it is not proven yet. So step 1 is you got to prove the technology, get the liability regime in place, and get the cost within reach, then some of these other deployment strategies, whether it is on the positive or negative side become effective. That is what we did with SO_2. There was a very dedicated period of developing the technology before the system of positive and negative incentives were put in place so we have to sequence it.

And actually the Chairman I think in some of his white papers has done some thoughtful discussion of that, and I think that is where we got some constructive ground, and again happy to engage daily as need be just to make sure we are getting to the bottom line on some of these questions.

Mr. BOUCHER. Thank you very much, Mr. Inslee and Mr. Connaughton. The gentleman from Texas, former chairman of this subcommittee, Mr. Hall, is recognized for 5 minutes.

Mr. HALL. Thank you, Mr. Chairman. I have noted concern on both sides here about different aspects here. I think the gentleman from San Antonio, Mr. Gonzalez, was concerned about the cost, and there is a good follow-up question there, I am concerned about who pays, and I don't know how much discussion took place on that little bitty island down there. There was 185 nations there and 10,000 or 11,000 people, a little place no bigger than Delaware. How much concern there was for who paid or how much talk there was for who paid. It is something they don't want to talk about. And then the gentleman from Washington wanted to know, and it is a good question, of what is the incentive for use of coal.

I don't know. I would ask you that question but I think you would probably agree with me the incentive is that there is a lot

of it and it is in the right place. I understand we have more usable coal than just about anybody. Is that close to being correct?

Mr. CONNAUGHTON. That is correct. The United States and a handful of other countries have lots of reserves of coal.

Mr. HALL. Well, you call that agreement a road map, and I guess it is a road map just to guide them somewhere around 2012. That gives me some concern too, that figure does. At my age, George Burns said he didn't buy green bananas. I don't know if I can wait until 2012 or not, but I do have children and grandchildren so I am interested in that. But I just wondered on a road map the building of the road is extensive. That is a major expense but there are a lot of other expenses to it. There are overpasses. There are grade separations, I think, engineers call them. There are detour signs. There are bridges, and I hope in this road map they got a lot of caution signs. You see a good many of those on roads and new roads. I hope they have some bad bridge ahead signs and a lot of stop signs.

Somebody came along with a lot of no right turn signs in Washington. I don't know about left turns or who goes left or who goes right, but this is a situation that really ought to concern every one of us and our children, and the people we have to go home to to talk to, and we ought to be honest enough to talk to them about the cost and, by gosh, who pays. I want to ask you how different is this framework from the framework that they limped away from at the Kyoto meeting.

Mr. CONNAUGHTON. Well, actually fortunately, Congressman, this framework is a step forward. The intensity of what you heard reported out of Bali before we reached final agreement was really about whether we would fall back to the flawed approach of Kyoto or step forward to constructive engagement especially with the major developing countries, and that was a big battle in Bali. Fortunately, we did come together recognizing that we have to move on this together if it is going to work and that the major developing countries have to take actions too if this is going to work, and now we have to open up our eyes consistent with your caution point. There are many, many difficult issues that we have to confront to take this seriously in particular with the developing countries because of the aspirations to lift their people out of poverty and energy is essential to that.

Mr. HALL. How far down the road who pays to get to the point to where—and I am not among those who say that there is nothing to it. I think it is good common sense and logic to pursue it and to seek the technology and try to take care of the fossil fuels that has taken care of us for so many years or find technology to make a cleaner place for the people that will be here after we are all gone, but I think we need to talk about the cost and we need to have some way of paying that cost, and we may have some level of place to decide whether or not we are pouring that cost into something that won't ever come back to us, ever come to us. We are not assured that it is going to.

So that is the reason we study and the reason you are being kind enough, and the President sent one of his finest men down there to work out something with these folks and you are trying to do it. I recognize that but we need to—I guess I may ask you what

do you see as a role for the Major Economies meeting in the Asia-Pacific Partnership and the U.N. process. Do you want to address that just briefly because I have a lot more things I really want to say.

Mr. CONNAUGHTON. Just the Major Economies we hope to focus on 5 or 6 elements of this much bigger Bali road map that relate to those of us who use a lot of energy and a lot of greenhouse gases. Can we agree to a long-term goal, can we find some key sectors like fossil power generation, alternatives to petroleum, forestry, a few others, where we can do joint work, set joint objectives and actually commit ourselves to achieve those objectives, and then come up with some broader and more innovative ways of financing goods and services and removing the trade barriers to those goods and services so countries will actually use the technology we have got. Right now we put up obstacles to that, and that is just nutty, and we can stop that this year if the leaders agreed on it.

Instead, parochial interests get in the way so there are some very specific things we can achieve there, and then you asked about the Asia-Pacific Partnership, and I appreciate that because we started that 3 years ago, and it is actually working. We have India and China in key sectors making specific commitments and holding themselves accountable to meeting those commitments. We negotiated it in 6 months. This private sector is working well with the government people. You don't hear about it because nobody is complaining. Now I think the Congress didn't help this year that we have got some restrictions on the funding for that when it is going to deliver a 2-way trade in clean energy, goods and services in key sectors, so we hope to work with this committee and maybe you can help us persuade the appropriators that this very low cost taxpayer funded activity is going to yield massive dividends in getting cooperative action with the countries that we got to find that cooperative action.

Mr. BOUCHER. Thank you very much, Mr. Hall and Mr. Connaughton.

Mr. HALL. I wasn't really through, Mr. Chairman.

Mr. BOUCHER. Well, Mr. Hall, the time unfortunately has expired. The gentlelady from Wisconsin is recognized for 5 minutes.

Ms. BALDWIN. Thank you, Mr. Chairman. Thank you also, Mr. Chairman. My questions I think follow in an interesting way although I ask them from a different perspective. You were talking about some of the crux of the battles that were being fought and negotiations that were occurring in Bali, and many had an interest in seeing more specific targets and specific goals rather than a more generalized road map, and especially in light of the urgency that many people view this situation globally and here in the United States. And with the sort of foundation for a lot of the discussions being the U.N.'s intergovernmental panel on climate change, and their cited recommendations that we need to cut emissions by reaching specific targets of 25 percent to 40 percent for developed nations by 2020 and the credibility of that report with over 600 participating scientists around the world.

So the European Union obviously came to Bali. Other government delegations came to Bali wanting to officially recognize these findings, and yet the United States opposed having that specific

scientific data a part of the agreement coming out of Bali and in fact you have to dig really hard. There is a footnote, and that footnote references the IPCC document in order to even find the reference that I just made of those strong and urgent recommendations. I am wondering if the Administration's decision to really obscure these IPCC findings and specific targets and goals if that decision was based on other scientific data or whether it was a nonscientific negotiating position, and then I want to probe a little further of when do we get to the specifics and the targets whether it is through the Honolulu discussions or the ones in December of 2008, but please first tell me if this was a scientific driven negotiating position or other considerations.

Mr. CONNAUGHTON. Very briefly on that, the work group 3 report which is on mitigation strategies in the overall science summary effort and these reports summarize the state of the science. The report that we were dealing with has 177 different scenarios, the different scientific economists produced around the world, and so there is a band width of scenarios for how we can stabilize emissions and meet our goals. And so what happened is some participants wanted to pick one of the scenarios at the only path that we could pursue and our objection, and by this way this isn't just the U.S., it was many, many companies, not just U.S.

Ms. BALDWIN. I understand that. I understand that.

Mr. CONNAUGHTON. Was that actually we were given a wide range of scenarios and I think those would be good for this community to explore. The U.S. has produced its own set of scenarios which were included in those and so it all turns on your curve for slowing, stopping, and then coming down what that curb looks like depending on your policy choices. If we could do 100 percent nuclear by 2030, hey, we are in great shape, but is that really feasible. And then you have other scenarios where how could you get renewable up to 20 percent, and what does that mean, and so you have to see what your policy path is before you can pick that curve.

What was happening is the EU was trying to pre-judge that discussion and nobody came to Bali prepared to debate picking the one most extreme scenario when there is actually a range that are within the range of responsibility, and so that is really where we wanted to take the conversation.

Ms. BALDWIN. Well, I read their bargaining position as a little—just recognizing the urgent need to reduce emissions between 25 and 40 percent for developed nations by 2020 doesn't commit to one of those 176 particular paths. It is basically one of the headlines from that particular report, but let us move on. You are about to convene, I think it is next month you said in Honolulu?

Mr. CONNAUGHTON. The end of this month, 2 weeks.

Ms. BALDWIN. Two weeks. The largest emitters will gather there—what are the specific goals for that conference? Will we see any targets, specific targets, specific goals for emissions reductions emerging from that particular conference?

Mr. CONNAUGHTON. You will not see specifics out of this first meeting of several meetings leading to a leaders gathering later this year so the time to look for the outputs of this will be at the time of the leaders gathering.

Ms. BALDWIN. And when and where is that?

Mr. CONNAUGHTON. We are working on that right now but as soon as we know, we will let you know. But I do want to let you know it is being debated and discussed though. We do want to see if we can get consensus on a long-term goal for reducing emissions. We do want to at least put in place the architecture for some sector agreements and some key benchmarks for real performance in key sectors, and we do want to see each nation come forward with a series of mid-term goals. Now I think the developed countries will be more likely to have that in place by the end of this year. I think for some of the developing countries it is just harder for them. They don't have a domestic process to produce mid-term goals yet, and we want to see how we can encourage that.

Ms. BALDWIN. Well, in terms of sector benchmarks, give me an example of what you would like to see, whether it is the leaders meeting in Honolulu, but we are looking, we are desperate for some specific targets and specific goals rather than generalized.

Mr. CONNAUGHTON. Let me give you an example of a big sector relatively low on the priority list but it is a big sector, aluminum. Through the Asia-Pacific Partnership, we have international agreement now to cut fluorocarbons, which is 1,000 times more potent than CO_2, by 80 percent from aluminum manufacturing globally. They are going to reduce their emissions by a third by 2010, and then a 10 percent reduction in average smelting energy usage so these have very specific benchmarks for the global industry and then the programs——

Ms. BALDWIN. How many sectors do you think you might be able to tackle in the near frame?

Mr. CONNAUGHTON. This will be the question. I mean that is the question. I am hopeful we will at least get 6 top tier ones, which is fossil power, alternative fuels, forestry, nuclear efficiency, and renewables, and then maybe a couple of industry specific sectors. The big ones are steel, cement, aluminum. Maybe I am leaving one off. And so if you take that basket, Congresswoman, you are capturing a lot of global activity and emissions. And then if you can create different—look at your technology pathways we can create a more tailored set of commitments. We think that is an approach that will be more attractive to India and China. Why? Because they have done it with us this way. When you talk about going after their entire economy they sort of put up the walls, and they are even more adamant against the broader discussion in Bali than other countries.

So we think this approach can draw forward the sectors because then you have done the math, and then it is technological feasibility, it is your investment cycles. It is just easier to figure out when you are breaking it into its smaller parts.

Mr. BOUCHER. Thank you very much, Mr. Connaughton and Ms. Baldwin. The gentleman from Massachusetts, Mr. Markey, has joined us and is recognized for 5 minutes.

Mr. MARKEY. Thank you, Mr. Chairman, very much. Welcome, Mr. Connaughton. I think that 2008 is the year for us to take bold action to deal with this urgent problem of global warming. I think we should build on the energy bill's success and this year pass a mandatory cap-and-trade bill that reduces greenhouse gases by 80 percent by 2050, and we should do that here domestically. Inter-

nationally, I think we have to move from aspirational goals which can turn into procrastinational goals and reach an agreement internationally using the best science in order to insure that there are global targets that are going to be met by countries around the world led by the United States.

My first question to you, Mr. Connaughton, is do CO_2 emissions pose a danger to public health and welfare?

Mr. CONNAUGHTON. CO_2 emissions contribute to the warming of the atmosphere and there is a lot of studies about the positive and negative consequences of that and I would not want to get into particular conclusions because when you read the IPCC reports you have manifold conclusions so I just defer to the scientists on that.

Mr. MARKEY. So you haven't reached a conclusion yet as to whether or not CO_2 is a danger to the public health and welfare?

Mr. CONNAUGHTON. With the exception of very high localized concentrations in terms of its present effects on health and the environment we are seeing observed effects when it comes to sea ice melt. You can then attribute to the extent that sea ice is on land that contributes to sea level rise and right now it is accelerating the rise.

Mr. MARKEY. Is that a danger to the public health and welfare?

Mr. CONNAUGHTON. There are a lot of studies doing forward projections as to whether and the extent to which that could be, and again there is a wide body of literature on that.

Mr. MARKEY. So your Administration has spent billions of dollars trying to get an answer to that question?

Mr. CONNAUGHTON. That is correct.

Mr. MARKEY. And it is touted to be aiming towards the conclusion, and it just seems to me since the other industrialized countries in the world have all reached a conclusion that CO_2 is a danger to public health and welfare, that it would help if this Administration reached that conclusion because that would then make it easier for us to reach the decisions as to what we should do about it. When can we expect a decision from the Bush Administration on the question of whether or not CO_2 is a danger to the public health and welfare?

Mr. CONNAUGHTON. You are speaking specifically, I think, to the Clean Air Act determination that was remanded by the Supreme Court to the EPA. That is in the hands of the EPA administrator. He is in the process of developing both our rules to implement the recent energy bill and taking a look at the process by which he will be making that determination one way or the other. I don't actually know his calendar.

Mr. MARKEY. The EPA was tasked in the Supreme Court decision in April of 2007 to make that decision and it is a decision that is made separate from the energy bill. It is a specific question because obviously once the EPA makes that decision, once the Bush Administration makes that decision it not only triggers action on cars but also on stationary sources, on factories, on utilities, so it is important to know when the Bush Administration will be making that decision. And the longer we wait on that decision is the longer it then takes to begin to put into place the solutions to that set of problems that are identified. Can you give us any idea as to when those decisions will be made?

Mr. CONNAUGHTON. Specifically on the endangerment finding, I can't yet because we are now going back—that was one of the issues that came up in the context of the development of the regulatory package we were working on, not as an alternative to congressional passage of the bill last year and so we didn't—the President was dedicated to getting these policies through and we were delighted that Congress was able to act so quickly, and so now as a result we have to take on board what we just got from the energy bill and then put that in the context of what we were working on with the original rulemaking.

Mr. MARKEY. I do understand that.

Mr. CONNAUGHTON. So it has proven to be an interesting place for lawyers and scientists to engage, and I wish I could tell you specifically but I really don't know when that will be made.

Mr. MARKEY. It is a separate question though. And finally the Treasury Department recently announced its intention to establish a multi-million dollar multi-lateral fund for transfer of clean technology to developing countries. Why given that initiative did the United States simultaneously oppose strengthening international technology transfer mechanisms in the U.N. negotiations in Bali?

Mr. CONNAUGHTON. Those are 2 different issues. The fund that we are working on we hope to provide you details on soon is our thinking. We have to get other countries to subscribe to—reach agreement on that is aimed at getting the best of today's technologies out into the marketplace on a much, much greater scale. The technology transfer discussion, those are 2 interesting words which in the U.N. context bring with them many different interpretations, one of which on the part of some developing countries, is that U.S. technology innovators should give up their intellectual property and their right to make any profit off of their innovation, and of course most of us understand the dramatic negative consequences if we were to agree to that as a matter of international commitment.

It is our view that innovators are entitled to a reasonable return on their innovation, and what we want to do then is facilitate the cost-effective purchase of that while protecting those rights.

Mr. MARKEY. We are discussing a specific fund at Bali and it just seems to me that was a great opportunity for the United States to be a leader. The Treasury Department had made a statement and I just think it was a real opportunity for the United States.

Mr. CONNAUGHTON. Those are 2 different issues. We weren't talking about—those are 2 different issues. There is a lot of support and interest in the major fund that we are going to be creating hopefully with your support because it will only work if we have congressional support. The tech transfer issue was more one of a matter of policy and principle, not a matter of funds, and so I want to be clear that those are 2 different discussions.

Mr. MARKEY. Thank you, Mr. Connaughton, and thank you, Mr. Chairman.

Mr. BOUCHER. Thank you very much, Mr. Markey. And, Mr. Connaughton, thanks to you also for a very enlightening 2½-hour conversation. We will look forward to your return to this subcommittee in the future as we consult further on the work that lies ahead for us and for you on climate change during the course of

this year. That being said, there being no further business to come before us at this time, the subcommittee is adjourned.

[Whereupon, at 12:25 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

US Department of Energy

U.S. Clean Technology Development

Presented by Hon. Alexander "Andy" Karsner
United States Assistant Secretary of Energy

UN Climate Change Conference 2007
Bali, Indonesia
December 3 - 14

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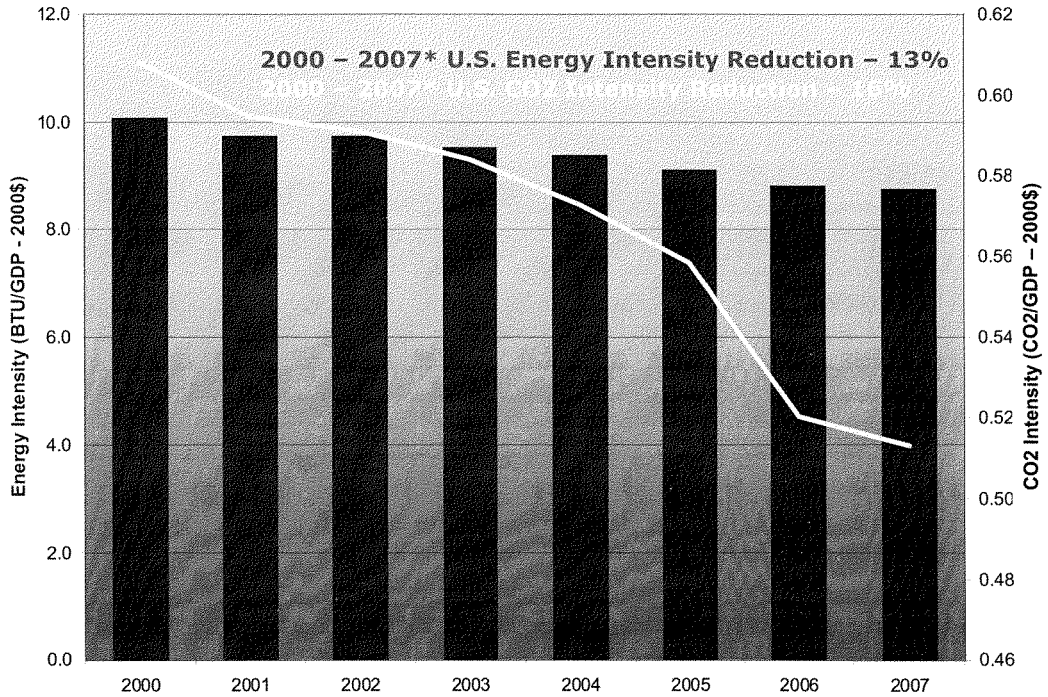
U.S. Energy and CO2 Intensity



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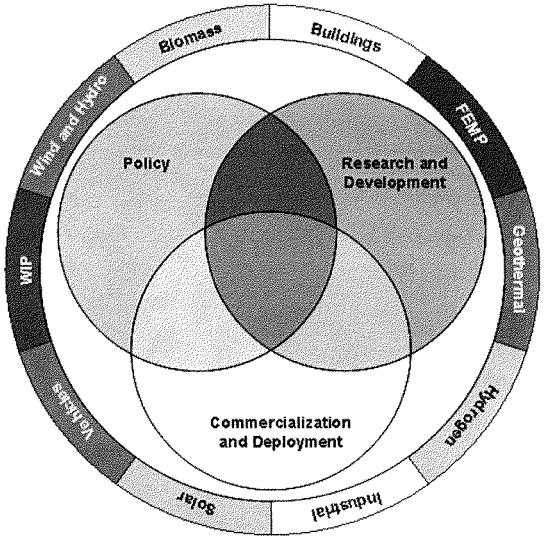

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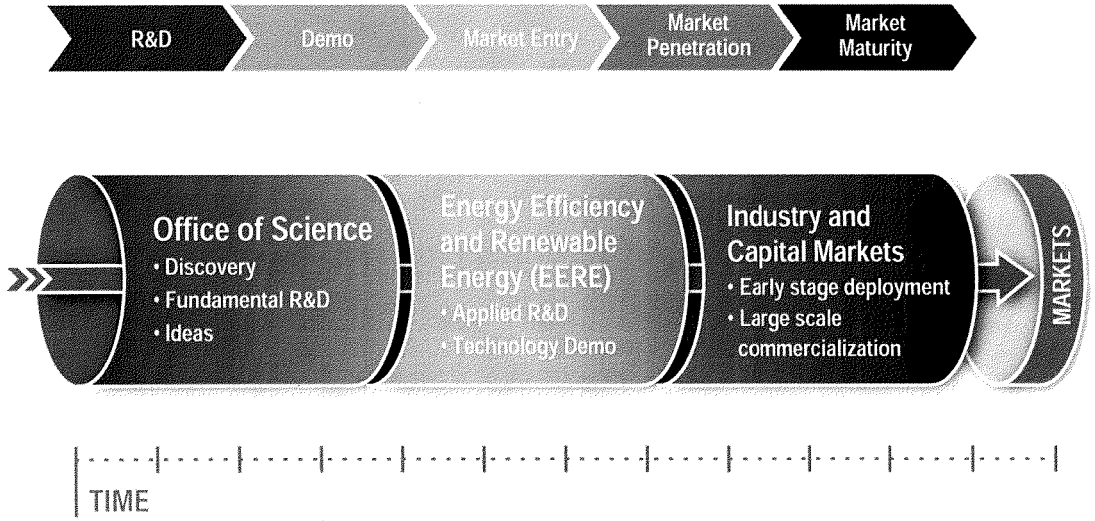
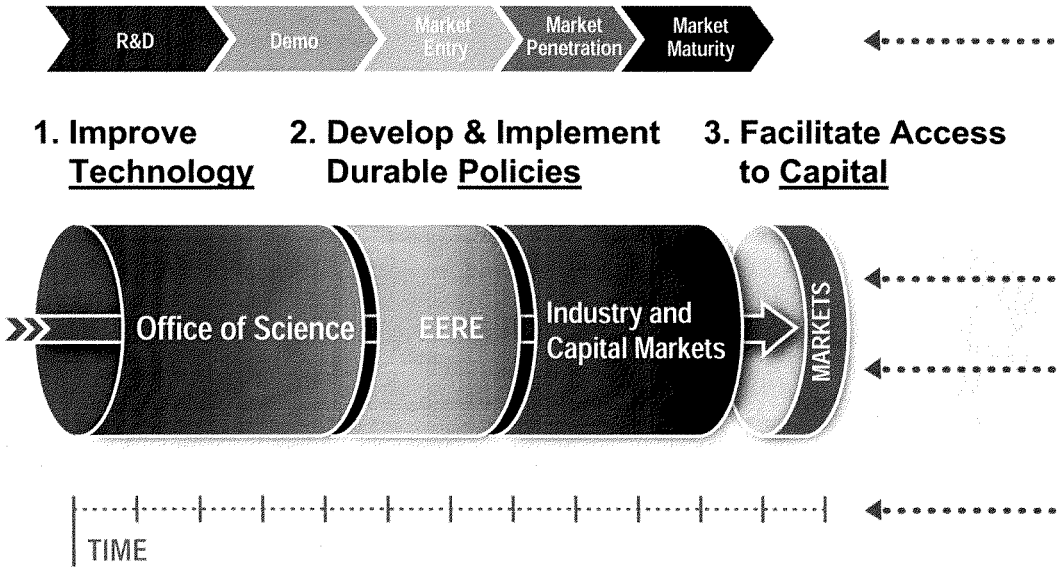
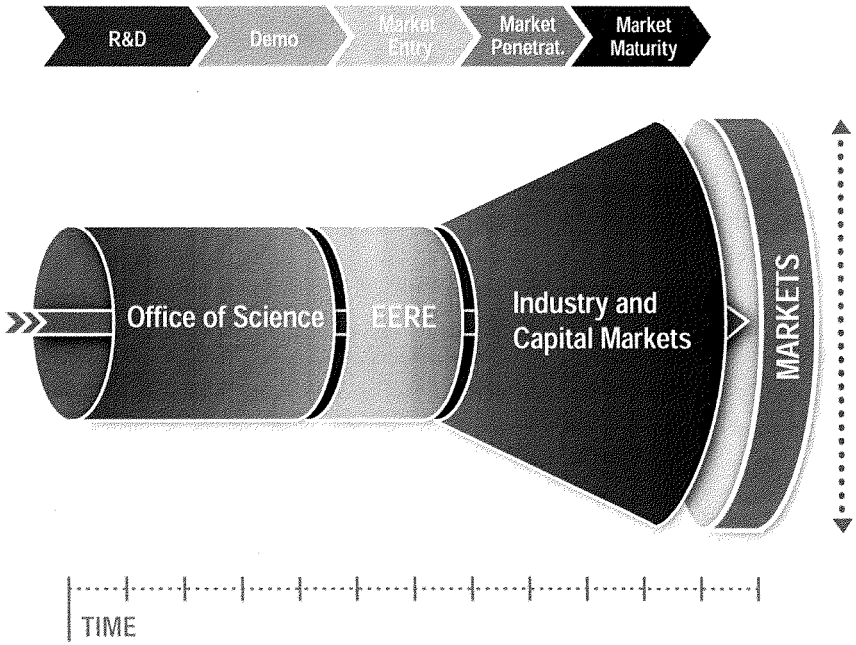
Technology Pipeline: Conventional View



Mission: Alter the Pipeline by Accelerating Technology Uptake



Accelerate and Scale Technologies



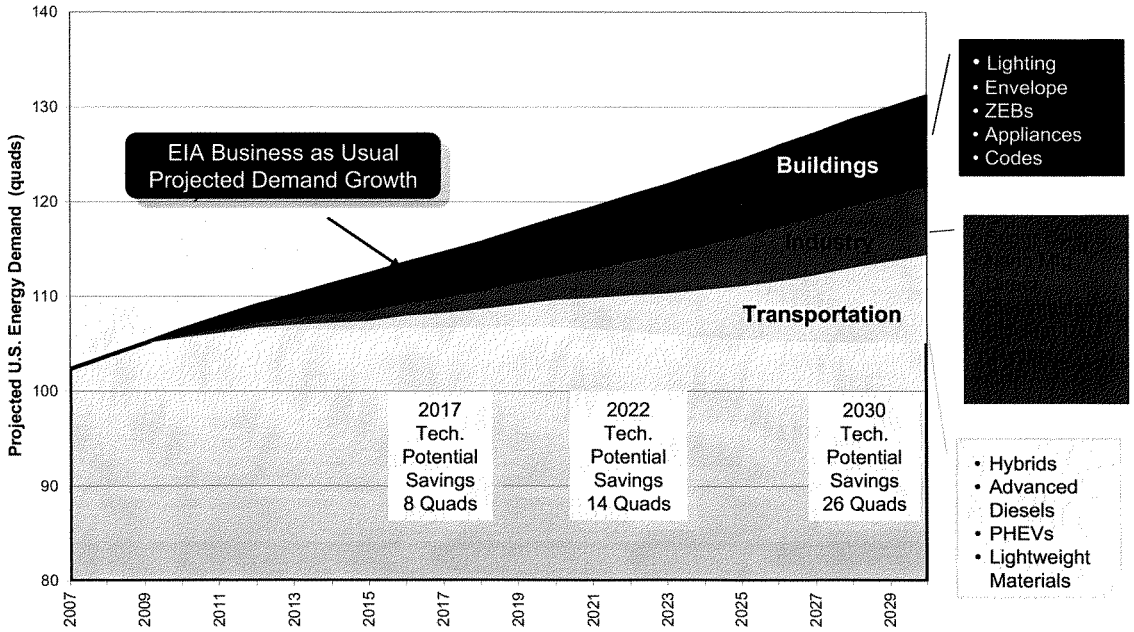
Outline

- Efficiency
- Transportation
- Gigawatt Scale Renewables
- Commercialization and Deployment
- Partnerships

Prioritization for Energy Efficiency

- **Technology**
  - Continue fundamental and applied R&D for enabling technologies to reduce the energy consumption and transform carbon footprint of the built environment (homes, offices, and manufacturing)
- **Regulation, Codes, Standards**
  - Accelerate, modernize and elevate appliance standards with greater consensus rulemakings
  - Promote superior model building codes with executable plan of coordinated implementation by the States
  - Provide utilities with returns on energy efficiency comparable or superior to investments in generation; provide industry with pathway for best practices
- **Voluntary and Market based Deployment**
  - Establishment of the National Action Plan for Energy Efficiency
  - Expand and Modernize Energy Star program concurrent w technology
  - Expand advocacy for energy efficient lighting (e.g., CFLs, LEDs)
  - Target civic infrastructure (e.g., Energy Smart schools, hospitals, libraries, municipal facilities) to be energy efficient, secure sites for distributed generation
- **Education and Outreach**
  - Multi-generational Education, targeted population, superior communications and behavioral modification

Energy Efficiency Has the Technical Potential to Level Energy Demand Growth



Source: DOE Scenario Projections

Outline

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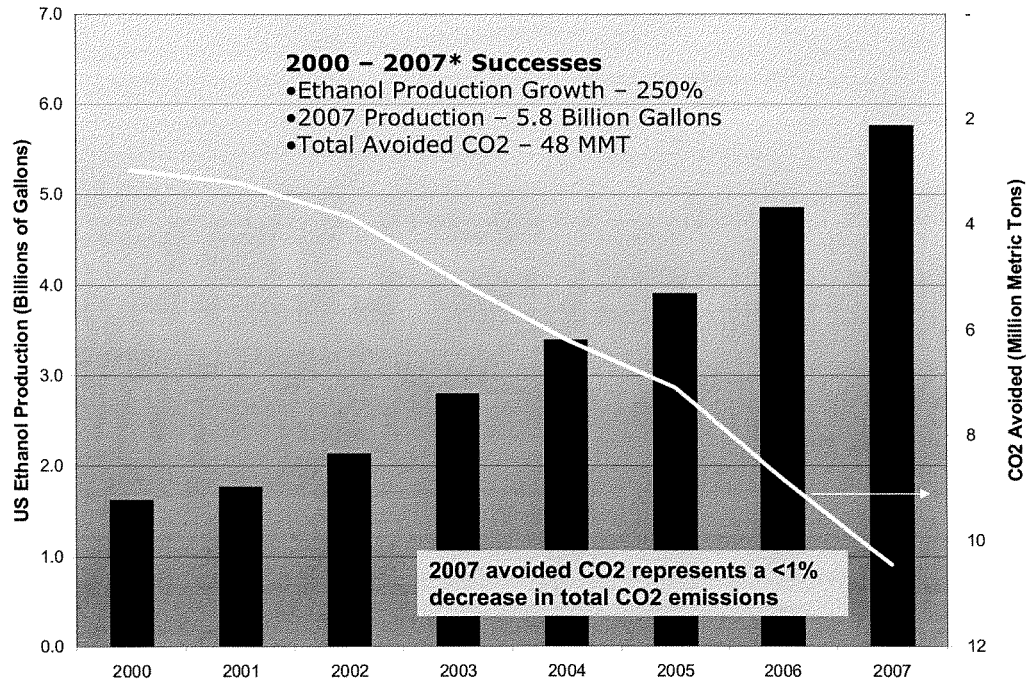
U.S. Ethanol Production and Avoided CO2

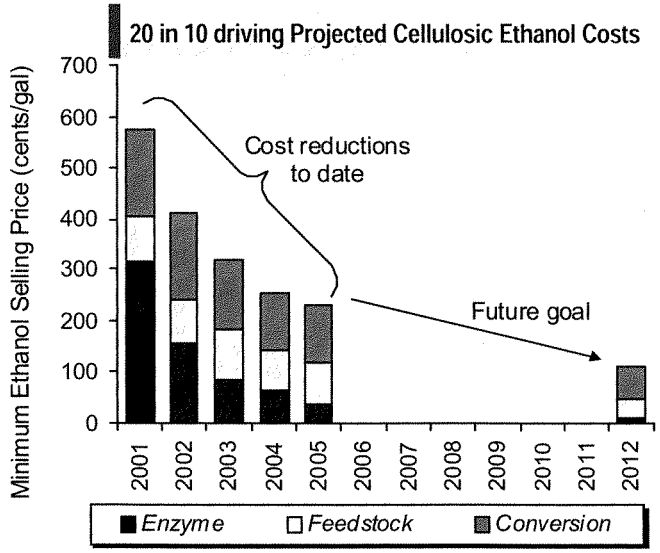


*All 2007 numbers are projections.

Sources: EIA and Renewable Fuels Assoc.

Biofuels Technical and Economic Potential

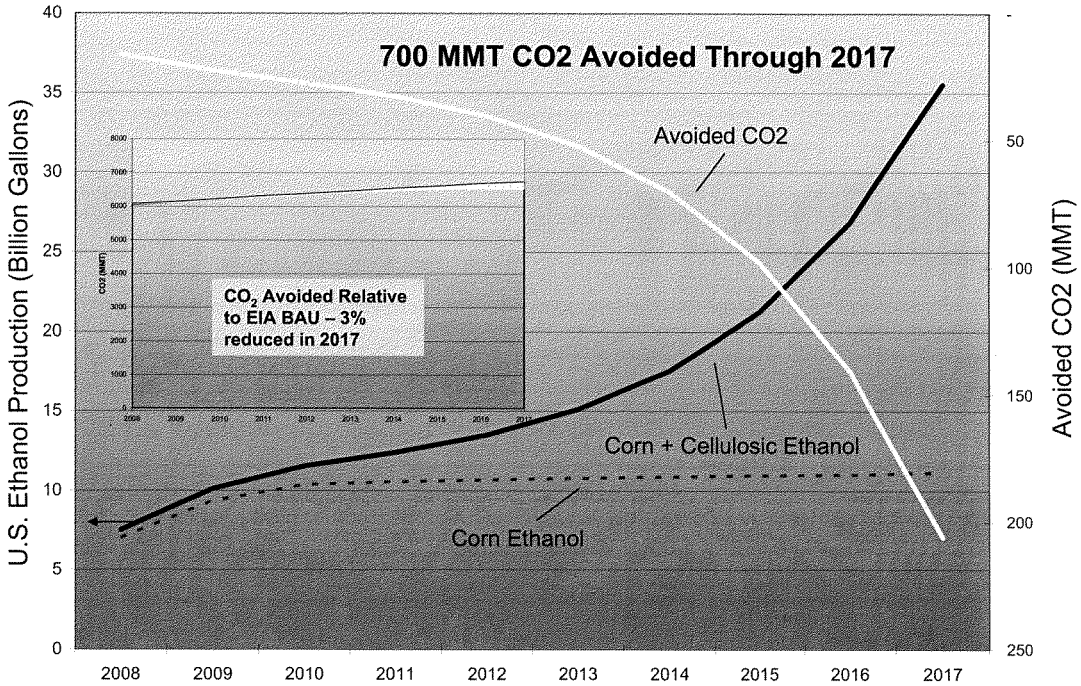
Cellulosic ethanol anticipated cost competitiveness and sustainability attributes are key to biofuels growth potential



Federal research has achieved major reductions in the cost of cellulosic ethanol

Source: Research Advances: NREL Leads the way: Celulosic Ethanol. March, 2007. Figures are for biochemical conversion

20-in-10 Ethanol Ramp and CO2 Impact



Sources: CO2 BAU – EIA; Corn Ethanol Production – EIA; Cellulosic Ethanol Production and CO2 Avoided – USDOE - EERE

Outline

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Scaling Renewable Electricity

What Scaling RE means:

- **Catalyze access to capital and markets at an unprecedented scale**
- **Integrating technologies for utility grade zero-emission power generation**

Results:

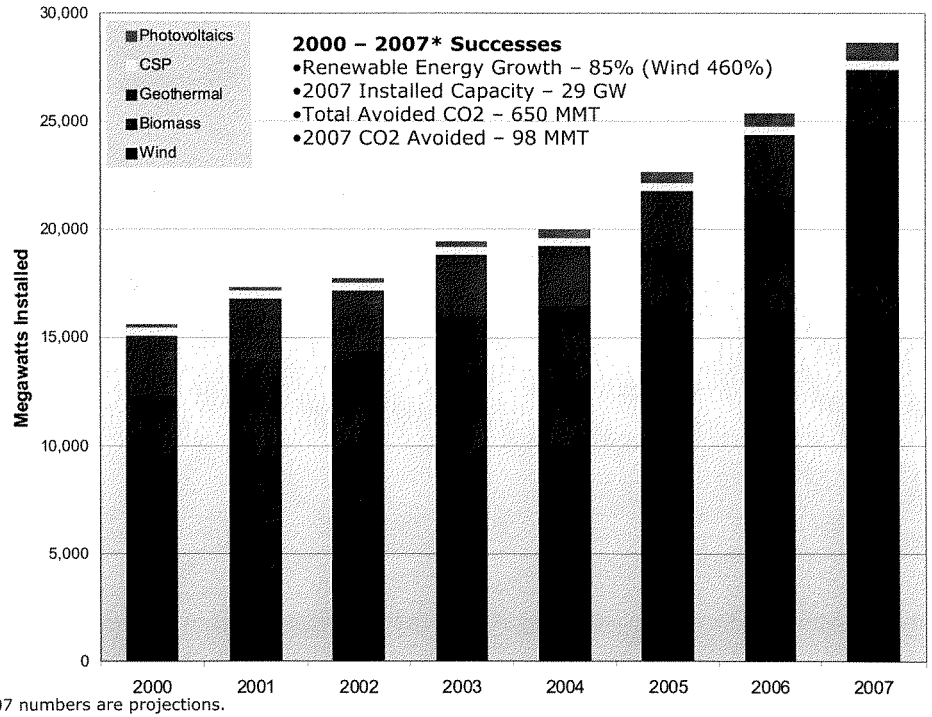
- **Substantially and continually diversify and rebalance the U.S. generation portfolio**
- **RE contributes to a larger and disproportionate percentage of new capacity additions**
- **Executing the Advanced Energy Initiative for Wind Generation at 20%**

U.S. RE Capacity Rapidly Expanding

Percent of Annual New Capacity			
	2004	2005	2006
Renewables	2%	11%	22%
Natural Gas	72%	85%	72%
Coal	2%	2%	5%
Petroleum	1%	1%	1%
Dual Fired	22%	0%	0%
Other*	0%	1%	0%

Source: EIA

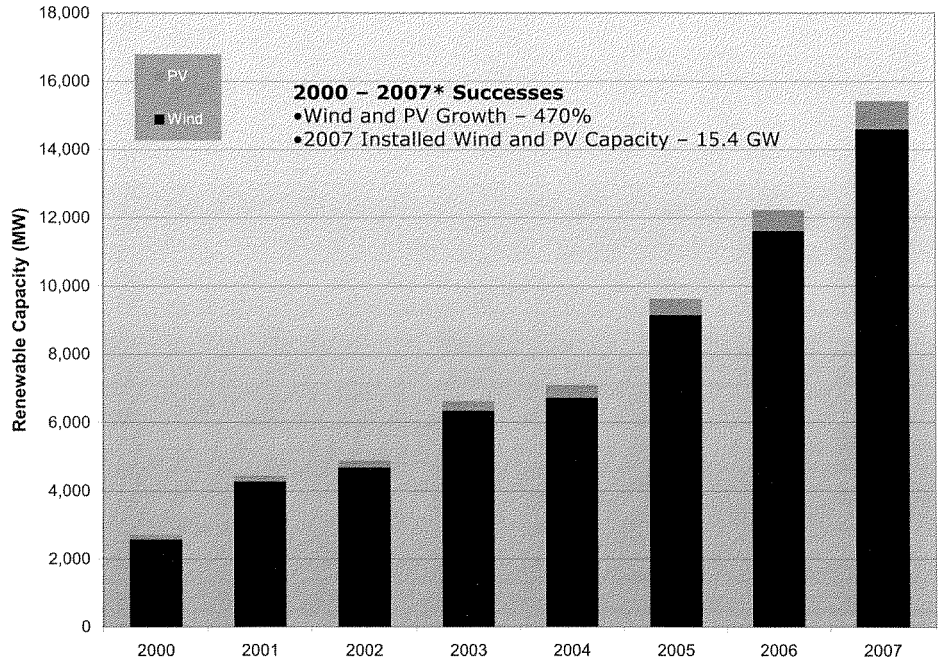
U.S. Renewable Electricity Capacity



|| 2007 numbers are projections.

Source: EIA

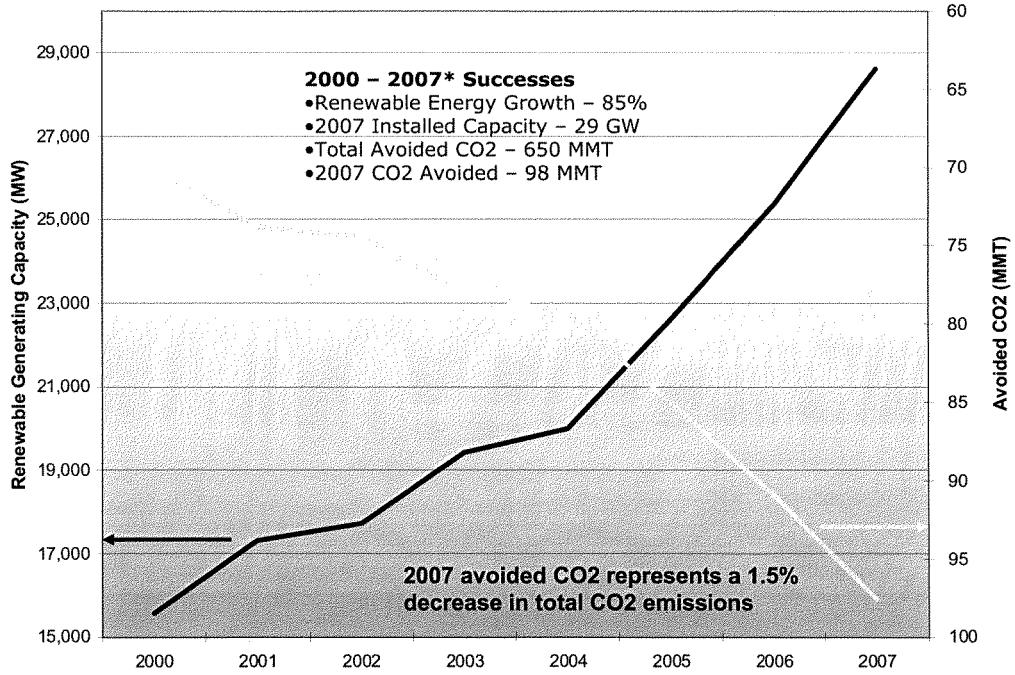
U.S. Wind and PV Capacity



*All 2007 numbers are projections.

Sources: RE capacity numbers – EIA and EERE. CO2 calculations – EERE.

U.S. Renewable Generation Capacity and Resulting CO_2 Avoided



*All 2007 numbers are projections.

Sources: EIA

Outline

- Efficiency
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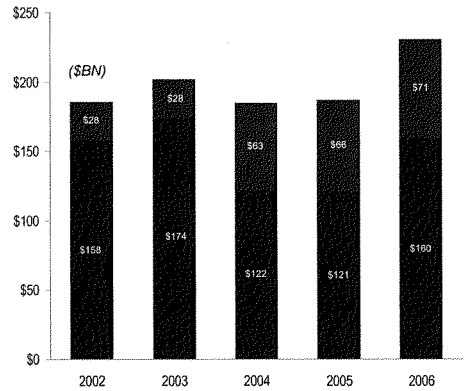
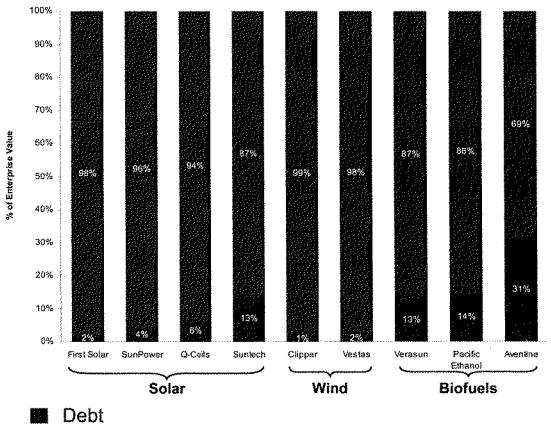
Historically utilities have used a significant amount of debt to finance large-scale infrastructure investments

Historical Global Power and Utility Capital Raises



Enterprise Value Composition of Key Renewable Energy Companies



Source: Thompson Financial.

Source: ThinkEquity Thomson Banker, First Call and Company filings as of, June 25, 2006.

A disproportionate share of the clean energy capital structure is coming from equity investments

Commercialization and Deployment

Technology Commercialization

- Technology Commercialization & Deployment Fund
- Entrepreneur in Residence program
- EERE Venture Capital Technology Showcase
- Innovation Study

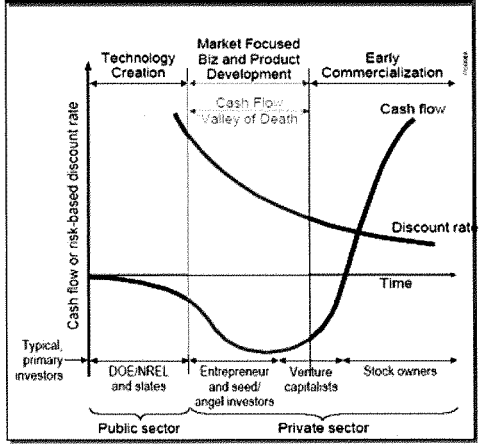
Capital Formation

- DOE Loan Guarantee Program
- Optimizing the nexus between public sector and capital markets
- Alleviating the "first-mover disadvantage" through grants, loan guarantees and streamlined permitting
- Renewable Energy Certificates (REC) Standardization

Deployment

- DOE TEAM Initiative
- Federal Energy Management Program Reform
- National Parks Deployment Partnership
- Freedom Prize

Commercialization Valley of Death



The EERE Commercialization and Deployment Team focuses on accelerating the deployment the most promising energy technologies into the commercial marketplace

U.S. State and Local Governments Have Jurisdiction Over Many Clean Energy Policies

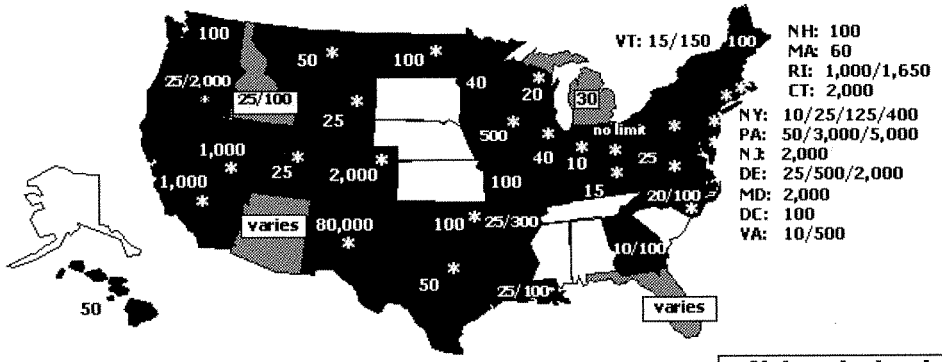
- The Federal Government (particularly through DOE State Energy Program) coordinates with extensive State jurisdiction over:
  - Commercial and Residential Building Codes
  - Electricity Portfolio Standards
  - Utility/Electricity Regulation, Pricing, and Interconnection
  - Transmission Siting and Permitting
  - California Exemption for Vehicle Emission Standards
  - Fuel Standards and Specifications
- State policies can create opportunities (e.g., portfolio standards, building codes, transmission, etc.)

State Polices for Net Metering Allow Consumers to Sell Solar Generated Electricity Back to the Grid

DSIRE: www.dsireusa.org

December 2007

Net Metering



NH: 100
MA: 60
RI: 1,000/1,650
CT: 2,000
NY: 10/25/125/400
PA: 50/3,000/5,000
NJ: 2,000
DE: 25/500/2,000
MD: 2,000
DC: 100
VA: 10/500

Net metering is available in 42 states + D.C.

- State-wide net metering for all utility types
- State-wide net metering for certain utility types (e.g., investor-owned utilities only)
- Net metering offered by one or more individual utilities

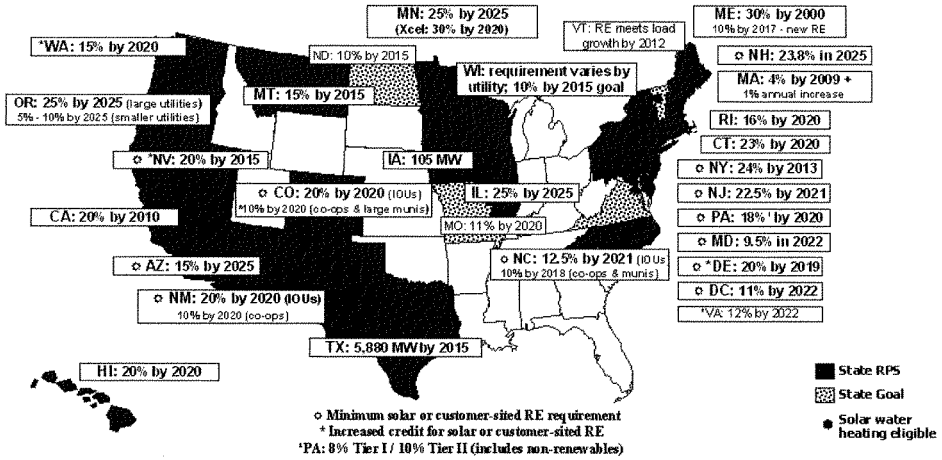
(Numbers indicate individual system size limit in kilowatts. Some states' limits vary by customer type and/or technology as shown)

State Portfolio Standards Create Opportunities for Renewable Project Development

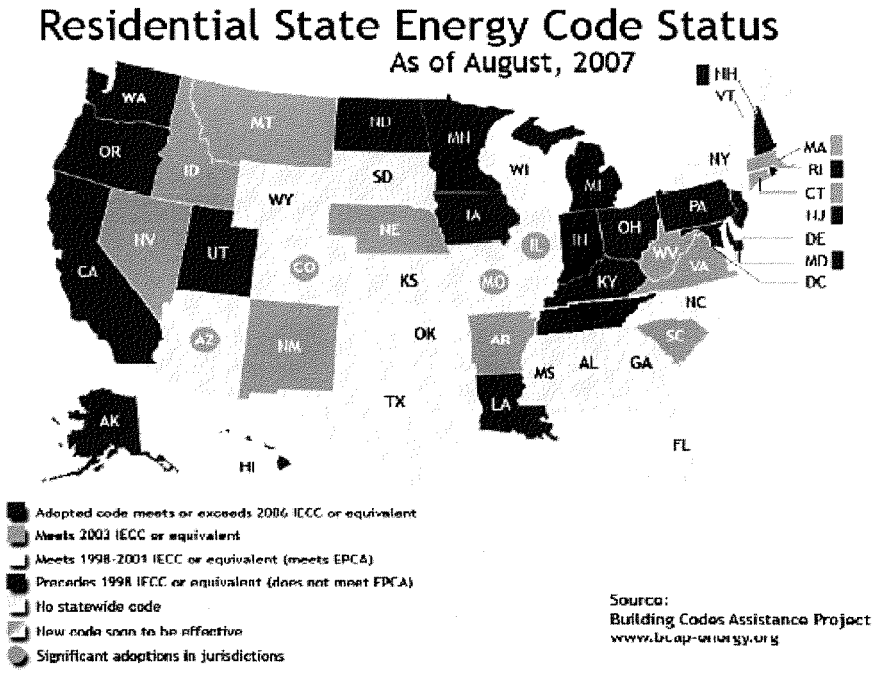
DSIRE: www.dsireusa.org

September 2007

Renewables Portfolio Standards



Many States Have Outdated Building Codes



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Innovative International Technology Partnerships

Carbon Sequestration Leadership Forum: **22 members; focused on CO_2 capture & storage.**

International Partnership for the Hydrogen Economy: **17 members; organizes, coordinates, and leverages hydrogen RD&D programs.**

Generation IV International Forum: **10 members; devoted to R&D on next generation of nuclear systems.**

ITER: **7 members; project to develop fusion as a commercial energy source.**

Methane to Markets: **20 members; recovery and use of methane from landfills, mines, oil & gas systems, and agriculture.**

Asia-Pacific Partnership on Clean Development & Climate: **7 members; focuses on accelerating deployment of technologies to address energy security, air pollution, and climate change.**

Global Nuclear Energy Partnership: **19 members; seeks consensus on enabling expanded use of nuclear energy using a nuclear fuel cycle that enhances energy security, while promoting non-proliferation.**

U.S. DOE Country Collaborations

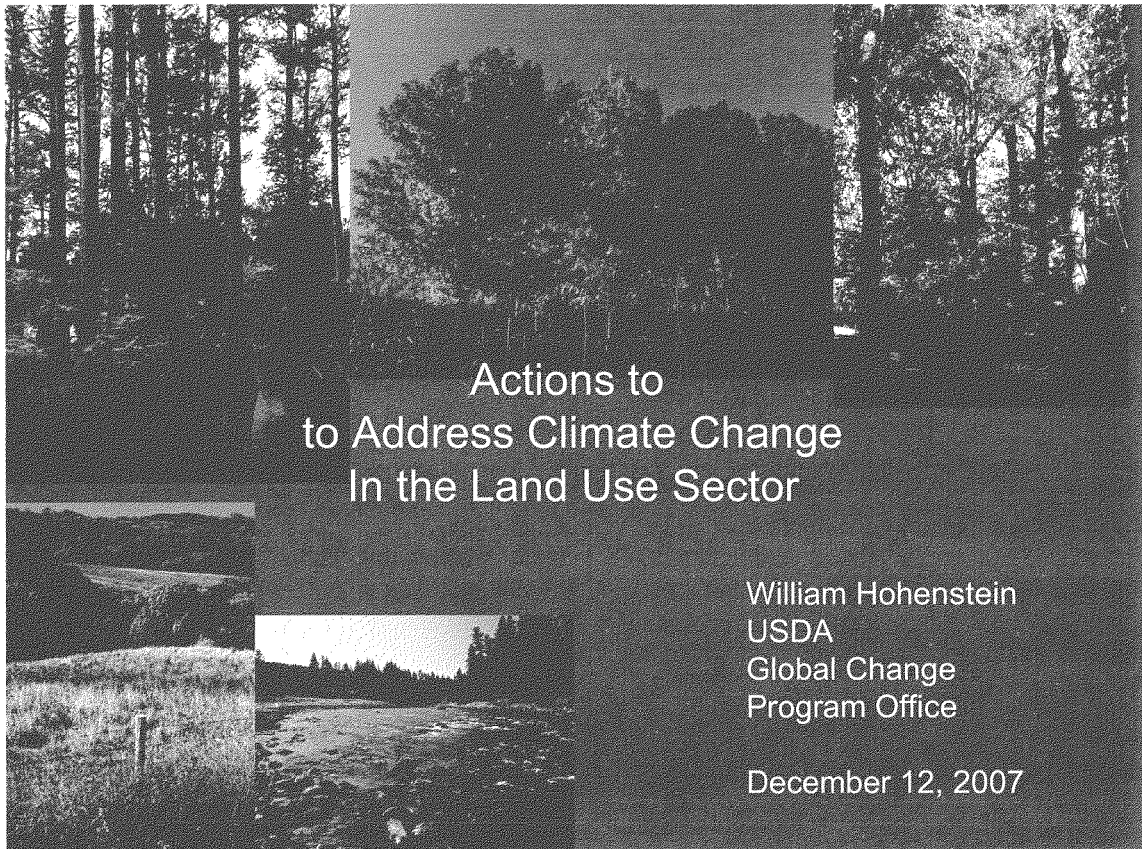
U.S. Energy Department International Collaborations				
China	**India**	**Japan**	**Brazil**	**EU**
General EE	General EE	General EE	General EE	Industrial EE
Industrial EE	Industrial EE	Industrial EE	EnergyStar	Buildings
Buildings	Buildings	Buildings	Biomass	EnergyStar
Vehicles	Vehicles	EnergyStar	Hydrogen	Solar
Biomass	Biomass	Vehicles	Nuclear	Hydrogen
Geothermal	Solar	Geothermal	CO2 Sequestration	Nuclear
Wind	Hydrogen	Wind		Fusion Energy
Solar	Nuclear	Solar		CO2 Seques.
Hydrogen	Fusion Energy	Hydrogen		
Nuclear	FutureGen	Nuclear		
Fusion Energy	CO2 Sequestration	Fusion Energy		
FutureGEN		FutureGEN		
CO2 Seques.		CO2 Sequestration		

All Science Is Global… America is dedicated to collaborating and relentlessly advancing clean energy research and development

Please contact us at

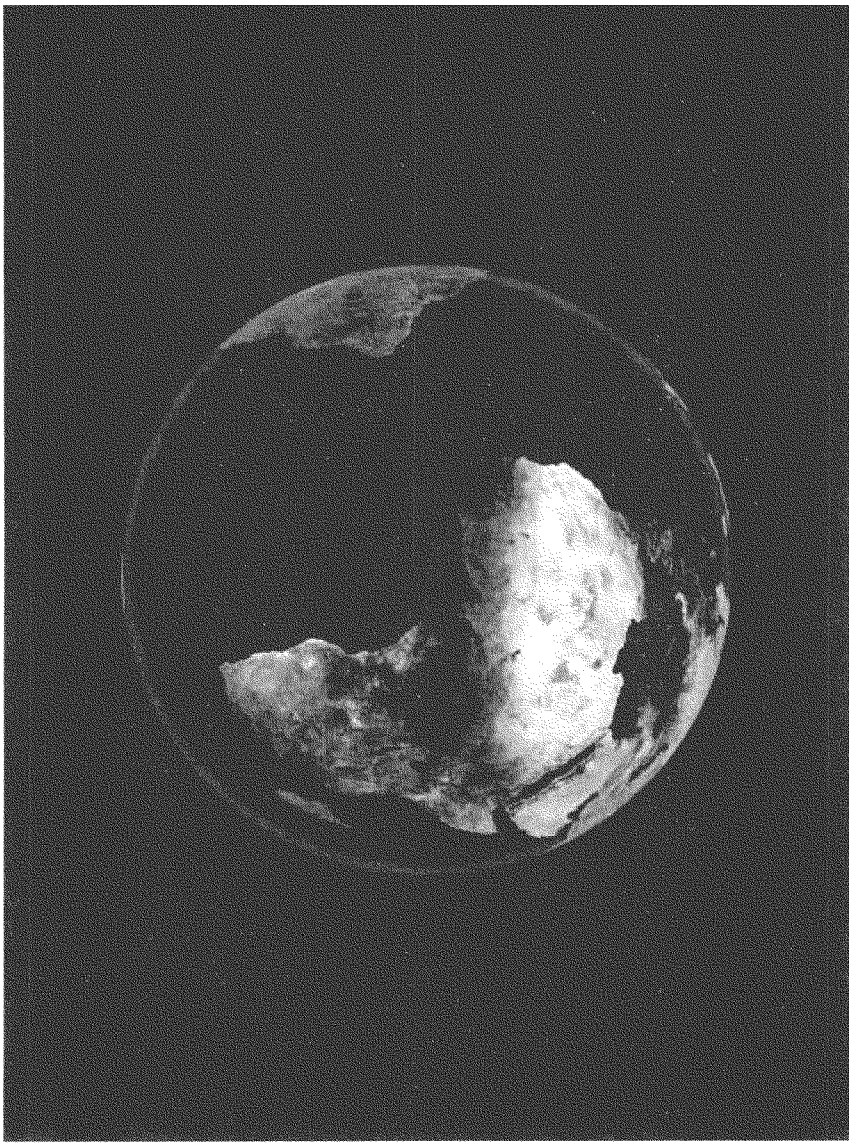
www.eere.energy.gov

for opportunities to work together on clean energy and CO_2 reductions


Actions to
to Address Climate Change
In the Land Use Sector
William Hohenstein
USDA
Global Change
Program Office
December 12, 2007

Why do we care about land use and climate change?

- Climate change affects land uses.
- Forests and crops exist in an atmosphere that is increasing in concentration of CO_2.
- Forests and agricultural lands are important sources of greenhouse gases and carbon sinks
- The land use sector offer potentially significant low-cost opportunities to address climate change



Thematic areas within the US Approach to Land Use and Climate

- Cooperative conservation
  - Partnerships with farmers and landowners to address conservation and environmental concerns
- Adaptive management
  - Learning by doing
- Integrate conservation and environmental decisions
  - Focus on actions with multiple benefits
- Utilize market-incentives to prioritize resource allocation
  - Bidding systems
  - Markets for environmental services (wetland banks, water quality improvements)
- Develop clear metrics for assessing benefits

Private land conservation programs

- USDA administers $4.7 billion each year to support conservation on private lands
- USDA has made carbon sequestration and GHG reductions priority resource concerns
- We awards points for actions that increase carbon sequestration in evaluating proposals
- We and the Fish and Wildlife Service are targeting tree planting though the bottomland hardwood initiative
- In FY 2006, 50.6Tg CO_2 were sequestered on land enrolled in the Conservation Reserve Program – our largest land conservation program
- The Environmental Quality Incentives Program is expected to reduce 26 Tg CO_2e in 2012 from changes in soil management and 8.4 Tg CO_2e from anaerobic digesters

Public land activities

Mitigation

- Reduce environmental "footprint" of agency operations
- Pursue voluntary partnerships
- Manage federal for carbon (as part of multiple benefits approach)

Adaptation

- Address climate change in management and land-use planning

Bioenergy and Bioproducts

- Encourage sustainable use of waste biomass and other woody materials
- Managing fuel loads – Healthy Forest Initiative

Improved science and tools

- Develop and deploy technology and science to improve management on public and private lands

Quantifying Results -- USDA Developed metrics to calculate land owner's GHG footprints

Inventory methods for all agricultural GHG sources – including:

- Enteric fermentation
- Manure management
- Nitrogen fertilizer applications
- field residue burning
- rice production
- lime applications

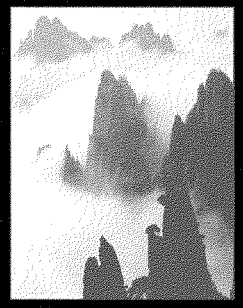
Methods for estimating increases in carbon sequestration

- Default carbon yield tables by region, species, management intensity, productivity class
- Models
  - COLE Model
  - Forest Vegetation Simulator
- Measurement and sampling protocols

International Activities

- Land-based mitigation and adaptation activities, including sustainable forest management (SFM), offer significant development benefits.
- US partnerships and assistance aims to:
  - Build country capacity
  - Improve community livelihoods
  - Strengthen governance
  - Sustain global benefits
  - Promote political frameworks for action

Examples of International Activities



- **Partnerships support enabling conditions for landscape restoration, improved forest governance, and market transparency**
  - Sustainable Forest Products Global Alliance (SFPGA)
  - Global Forest Landscape Restoration (GFLR) Partnership
- **Improved Political frameworks that encourage action**
  - Forest Law Enforcement and Governance (FLEG) processes
  - President's Initiative Against Illegal Logging (PIAIL)

Examples of International Projects

- **Technical support for land-use and forest carbon inventories**
  - EPA in Central America & SE Asia
  - Support for "Criteria and Indicators" processes for SFM
  - USAID and NASA's SERVIR program
- **Encourage Regional Cooperation to enable SFM**
  - Congo Basin Forest Partnership
  - Regional Asia Forests and Trade program

Examples of International Projects

- **Support Capacity Building through bilateral assistance**
  - •Cooperation for improved forest governance, including technologies for monitoring the forest sector in Indonesia
  - •Cooperation with Mexico on wildfire mitigation and suppression, community based forest management, and forest inventories
  - •Cooperation with Russia on wildfires, and sustainable biomass utilization
  - •Cooperation with China on research related to Climate Change, forest carbon inventories and management of invasive species.
  - •Liberian forest sector reform

Conclusions

- Land-based mitigation can play a major role in a response to climate change
- Forest and land use activities can directly benefit economic growth while providing climate and other environmental benefits
- Forests and agriculture are vulnerable to climate change and US is developing adaptation responses
- US programs are at the forefront of:
  - Encouraging actions on private lands
  - Developing cost-effective GHG estimation techniques
  - Creating the enabling conditions for sustainable land-use activities
  - Building developing country capacity
  - Improving our understanding of the effects of climate change and mitigation strategies

Decision -/CP.13

Bali Action Plan

The Conference of the Parties,

Resolving to urgently enhance implementation of the Convention in order to achieve its ultimate objective in full accordance with its principles and commitments,

Reaffirming that economic and social development and poverty eradication are global priorities,

Responding to the findings of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change that warming of the climate system is unequivocal, and that delay in reducing emissions significantly constrains opportunities to achieve lower stabilization levels and increases the risk of more severe climate change impacts,

Recognizing that deep cuts in global emissions will be required to achieve the ultimate objective of the Convention and emphasizing the urgency[1] to address climate change as indicated in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,

1. *Decides* to launch a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012, in order to reach an agreed outcome and adopt a decision at its fifteenth session, by addressing, inter alia:

(a) A shared vision for long-term cooperative action, including a long-term global goal for emission reductions, to achieve the ultimate objective of the Convention, in accordance with the provisions and principles of the Convention, in particular the principle of common but differentiated responsibilities and respective capabilities, and taking into account social and economic conditions and other relevant factors;

(b) Enhanced national/international action on mitigation of climate change, including, inter alia, consideration of:

(i) Measurable, reportable and verifiable nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives, by all developed country Parties, while ensuring the comparability of efforts among them, taking into account differences in their national circumstances;

(ii) Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner;

(iii) Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and

[1] Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Technical Summary, pages 39 and 90, and Chapter 13, page 776.

the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries;

(iv) Cooperative sectoral approaches and sector-specific actions, in order to enhance implementation of Article 4, paragraph 1(c), of the Convention;

(v) Various approaches, including opportunities for using markets, to enhance the cost-effectiveness of, and to promote, mitigation actions, bearing in mind different circumstances of developed and developing countries;

(vi) Economic and social consequences of response measures;

(vii) Ways to strengthen the catalytic role of the Convention in encouraging multilateral bodies, the public and private sectors and civil society, building on synergies among activities and processes, as a means to support mitigation in a coherent and integrated manner;

(c) Enhanced action on adaptation, including, inter alia, consideration of:

(i) International cooperation to support urgent implementation of adaptation actions, including through vulnerability assessments, prioritization of actions, financial needs assessments, capacity-building and response strategies, integration of adaptation actions into sectoral and national planning, specific projects and programmes, means to incentivize the implementation of adaptation actions, and other ways to enable climate-resilient development and reduce vulnerability of all Parties, taking into account the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change, especially the least developed countries and small island developing States, and further taking into account the needs of countries in Africa affected by drought, desertification and floods;

(ii) Risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance;

(iii) Disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change;

(iv) Economic diversification to build resilience;

(v) Ways to strengthen the catalytic role of the Convention in encouraging multilateral bodies, the public and private sectors and civil society, building on synergies among activities and processes, as a means to support adaptation in a coherent and integrated manner;

(d) Enhanced action on technology development and transfer to support action on mitigation and adaptation, including, inter alia, consideration of:

(i) Effective mechanisms and enhanced means for the removal of obstacles to, and provision of financial and other incentives for, scaling up of the development and transfer of technology to developing country Parties in order to promote access to affordable environmentally sound technologies;

(ii) Ways to accelerate deployment, diffusion and transfer of affordable environmentally sound technologies;

(iii) Cooperation on research and development of current, new and innovative technology, including win-win solutions;

(iv) The effectiveness of mechanisms and tools for technology cooperation in specific sectors;

(e) Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation, including, inter alia, consideration of:

(i) Improved access to adequate, predictable and sustainable financial resources and financial and technical support, and the provision of new and additional resources, including official and concessional funding for developing country Parties;

(ii) Positive incentives for developing country Parties for the enhanced implementation of national mitigation strategies and adaptation action;

(iii) Innovative means of funding to assist developing country Parties that are particularly vulnerable to the adverse impacts of climate change in meeting the cost of adaptation;

(iv) Means to incentivize the implementation of adaptation actions on the basis of sustainable development policies;

(v) Mobilization of public- and private-sector funding and investment, including facilitation of carbon-friendly investment choices;

(vi) Financial and technical support for capacity-building in the assessment of the costs of adaptation in developing countries, in particular the most vulnerable ones, to aid in determining their financial needs;

2. *Decides* that the process shall be conducted under a subsidiary body under the Convention, hereby established and known as the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, that shall complete its work in 2009 and present the outcome of its work to the Conference of the Parties for adoption at its fifteenth session;

3. *Agrees* that the process shall begin without delay, that the sessions of the group will be scheduled as often as is feasible and necessary to complete the work of the group, where possible in conjunction with sessions of other bodies established under the Convention, and that its sessions may be complemented by workshops and other activities, as required;

4. *Decides* that the first session of the group shall be held as soon as is feasible and not later than April 2008;

5. *Decides* that the Chair and Vice-Chair of the group, with one being from a Party included in Annex I to the Convention (Annex I Party) and the other being from a Party not included in Annex I to the Convention (non-Annex I Party), shall alternate annually between an Annex I Party and a non-Annex I Party;

6. *Takes note* of the proposed schedule of meetings contained in the annex;

7. *Instructs* the group to develop its work programme at its first session in a coherent and integrated manner;

8. *Invites* Parties to submit to the secretariat, by 22 February 2008, their views regarding the work programme, taking into account the elements referred to in paragraph 1 above, to be compiled by the secretariat for consideration by the group at its first meeting;

9. *Requests* the group to report to the Conference of the Parties at its fourteenth session on progress made;

10. *Agrees* to take stock of the progress made, at its fourteenth session, on the basis of the report by the group;

11. *Agrees* that the process shall be informed by, inter alia, the best available scientific information, experience in implementation of the Convention and its Kyoto Protocol, and processes thereunder, outputs from other relevant intergovernmental processes and insights from the business and research communities and civil society;

12. *Notes* that the organization of work of the group will require a significant amount of additional resources to provide for the participation of delegates from Parties eligible to be funded and to provide conference services and substantive support;

13. *Strongly urges* Parties in a position to do so, in order to facilitate the work of the group, to provide contributions to the Trust Fund for Participation in the UNFCCC Process and the Trust Fund for Supplementary Activities for the purposes referred to in paragraph 12 above and to provide other forms of in kind support such as hosting a session of the group.

ANNEX

Indicative timetable for meetings of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention in 2008

Session	Dates
Session 1	March/April 2008
Session 2	June 2008, in conjunction with the twenty-eighth sessions of the subsidiary bodies
Session 3	August/September 2008
Session 4	December 2008, in conjunction with the fourteenth session of the Conference of the Parties

- - - - -

Methane to Markets

Partnership Overview and USG Accomplishments

Methane to Markets

Overview

- Background
- Accomplishments Update
- Partnership Expo Beijing
- Looking Forward

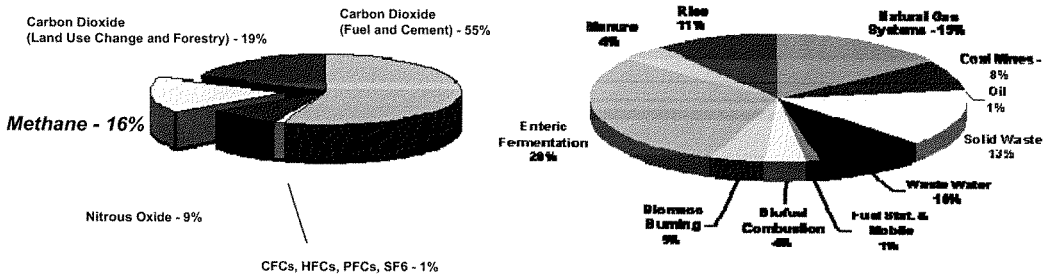
Methane to Markets

Why focus on Methane?

- A potent greenhouse gas (GHG) with 100-year global warming potential of 21; atmospheric lifetime of ~12 years
- The 2nd most important GHG accounting for ~18% of total climate forcing
- A primary constituent of natural gas and a valuable, clean-burning energy source

Global GHG Emissions in 2000

40,702 million tonnes carbon dioxide equivalent ($MtCO_2e$)



Methane to Markets

Overview: Objectives and Benefits of the M2M Partnership

OBJECTIVES

- Advance the recovery and use of methane while:
  - Enhancing economic growth
  - Promoting energy security
  - Improving local air quality and public health.

BENEFITS

- Stabilization/Decline in Methane Concentrations will result in:
  - Sustainability
  - Energy security
  - Health and safety
  - Profitability

Methane to Markets

Methane to Markets Partnership

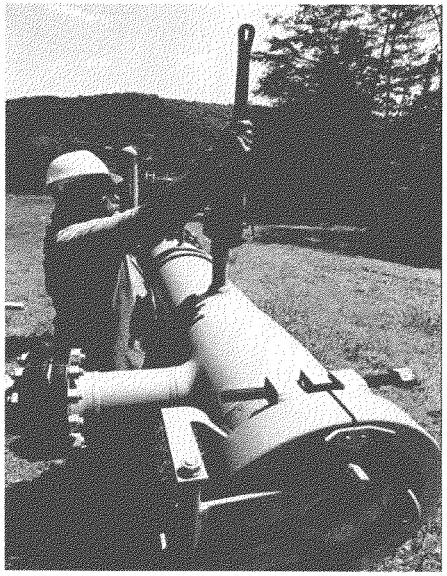
- Encourages development of ***cost-effective*** methane recovery and use opportunities in
  - coal mines
  - landfills
  - oil and gas systems and
  - agriculture (manure waste management)
- Private companies, multilateral development banks and other relevant organizations participate by joining the ***Project Network – over 650 organizations now participating***
- 21 Partner Governments

Argentina
Australia
Brazil
Canada
Colombia
China
European Comm.
Ecuador
Germany
India
Italy
Japan
Korea
Mexico
Nigeria
Poland
Russia
Ukraine
United Kingdon
United States
Vietnam

Methane to Markets

Methane to Markets: Accomplishments to Date

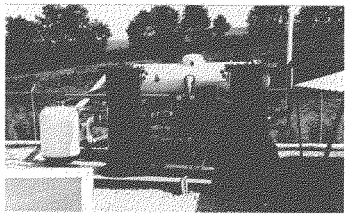
- Opened an international dialogue on methane recovery and use opportunities
- Developed sector action plans and have held multiple meetings of each sector subcommittee
- Initiated multiple projects and other activities in more than 12 Partner countries.
- The work of all the subcommittees and project network culminated in bringing forward more than 90 projects at the 2008 Beijing Expo!



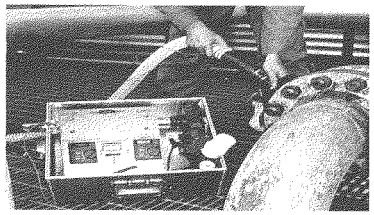
Methane to Markets

Methane to Markets Focuses on Sectors with Near-Term Project Opportunities

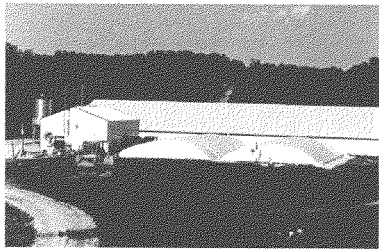
Coal Mines



Oil and Gas Systems



Landfills

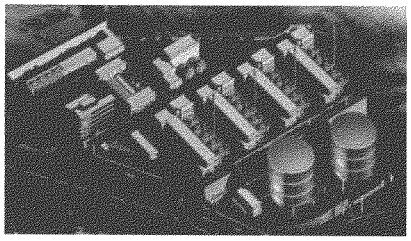


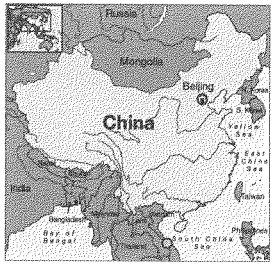
Agricultural Waste

Methane to Markets

Coal Sector Work

- 17 countries are on the Subcommittee, led by chairs from China, India and the United States
- Developed and Launched International Coal Mine Methane Database
- Developed Coal Mine Methane Global Overview document with in-depth info on more than 30 countries
- World's largest CMM project at Sihe Mine, Jincheng Mining Group in China

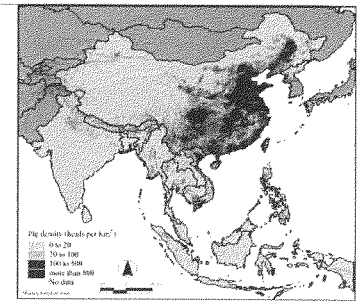




Methane to Markets

Agriculture Sector

- 15 countries are on the Subcommittee, led by chairs from Argentina and the United Kingdom
- A key area of focus for our newest Subcommittee is in increasing awareness of Anaerobic Digestion opportunities within Partner countries.
- One exciting project here is a World Bank initiated $21 million 5-year *Pig Waste Management* project in Asia



Methane to Markets

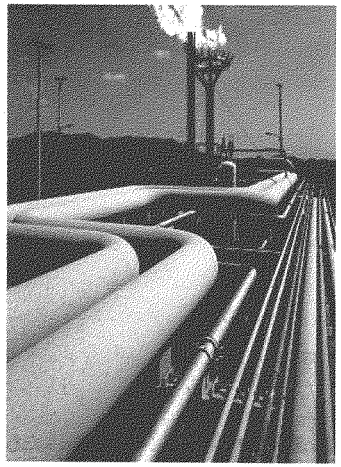
Landfill Sector

- 18 countries are on the Subcommittee, led by chairs from Argentina, Ecuador, and Italy
- Developed and Launched International Landfill Database
- Developed a comprehensive international landfill gas resource guide
- Mexico's SEMARNAT, EPA and USAID worked together to complete LFG pre-feasibility studies and pump tests at landfills owned by the cities of Ensenada and Nuevo Laredo.
  - The tests indicate that the sites are good candidates for an energy project.

Methane to Markets

Oil and Gas Sector

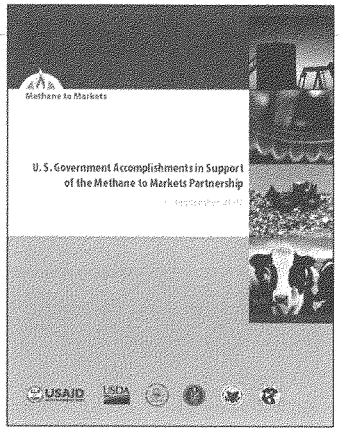
- 17 countries are on the Subcommittee, led by chairs from Canada, Mexico and Russia Active
- Developing new Nodal Analysis Tool that should help track and develop new projects
- In Mexico – Pemex has led by example
  - Pemex has spent more than $1.3 million on methane reduction efforts through 2006
  - Estimated annual emission reductions of just over 120,000 MTCO2E.



Methane to Markets

US Commitment

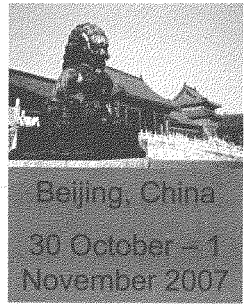
- Pledged $53 million over five years at Partnership launch in 2004. To date:
  - Provided $18.3 million to support a wide range of projects and activities
  - Leveraged over $261 million in public and private sector contributions
  - *M2M grant solicitation from EPA will be out shortly - up to $7 million*
- Providing significant support to the Partnership through the ASG and technical support in all 4 sectors
  - Project activities in Argentina, Brazil, China, Colombia, Ecuador, India, Korea, Mexico, Nigeria, Russia, and Ukraine.



- Through 2007, supporting projects that, if fully implemented, will result in estimated annual emission reductions of approximately 9 million metric tons of carbon dioxide equivalent (MMTCO2E)
- USG Accomplishment Report available at: <www.epa.gov/methanetomarkets/accompreport.htm>

Methane to Markets

Partnership Expo: A Forum for Projects, Technology, Financing, and Policy



- Over 750 attendees from 34 countries
- High level participation
  - Minister Xie Zhenhua, Vice Chairman of NDRC opened the meeting
  - Ambassador Randt, spoke on behalf of the U.S.
  - Vice President of ADB, Bindu Lohani gave keynote speech
- International Methane Marketplace
  - 91 projects showcased
  - 39 private sector companies showcased technologies and services
  - 13 country booths
- 17 of 21 Governments participated in the M2M Steering Committee Meeting (Oct 31)

See www.methanetomarket.org/expo for more information on projects and proceedings

Methane to Markets

Conclusions

- Methane to Markets Partnership is growing and remains a key mechanism for reducing global methane emissions
- There is great opportunity to continue to expand and evolve the Partnership in the future
- The recently held Expo represents what can be accomplished with the Partnership and we look to additional accomplishments in the next years.

Methane to Markets

For More Information

- Web site
  - www.methanetomarkets.org
- Administrative Support Group
  - asg@methanetomarkets.org
  - Tel: +1.202.343.9683
  - Fax: +1.202.343.2202
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  - Birgfeld.Erin@epa.gov Ferland.Henry@epa.gov
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ONE HUNDRED TENTH CONGRESS

U.S. House of Representatives
Committee on Energy and Commerce
Washington, DC 20515–6115

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February 29, 2008

The Honorable James L. Connaughton
Chairman
Council on Environmental Quality
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear Chairman Connaughton:

Thank you for appearing before the Subcommittee on Energy and Air Quality on Thursday, January 17, 2008, at the hearing entitled "Administration Perspectives on United Nations Climate Change Conference in Bali." We appreciate the time and effort you gave as a witness before the subcommittee.

Under the Rules of the Committee on Energy and Commerce, the hearing record remains open to permit Members to submit additional questions to the witnesses. Attached is a question directed to you from Congressman John Barrow. In preparing your answers to this question, please address your response to the congressman and include the text of the question along with your response.

To facilitate the printing of the hearing record, your responses to these questions should be received no later than the close of business on March 14, 2008. Your written responses should be delivered to 2322-B Rayburn House Office Building and faxed to (202) 225-2899 to the attention of Rachel Bleshman. An electronic version of your response should also be sent by e-mail to Ms. Bleshman at rachel.bleshman@mail.house.gov. Please send your response in a single Word or WordPerfect formatted document.

Thank you for your prompt attention to this request. If you need additional information or have other questions, please contact Rachel Bleshman at (202) 225-2927.

Sincerely,

JOHN D. DINGELL
CHAIRMAN

Attachment

cc: The Honorable Joe Barton, Ranking Member
Committee on Energy and Commerce

The Honorable Rick Boucher, Chairman
Subcommittee on Energy and Air Quality

The Honorable Fred Upton, Ranking Member
Subcommittee on Energy and Air Quality

The Honorable John Barrow
Subcommittee on Energy and Air Quality

The Honorable John Barrow

1. Please provide a comprehensive overview of the Administration's efforts, across Departments of research, applied and basic, regarding carbon sequestration.

Q. Please provide a comprehensive overview of the Administration's efforts, across Departments of research, applied and basic, regarding carbon sequestration.

A.
The Bush Administration with the support of Congress leads the world in committing financial resources to drive clean energy technologies and carbon sequestration techniques to fruition. The President's 2009 Budget builds upon the recommendations of both MIT and EPRI and seeks $648 million for clean coal technology development – the largest investment in more than 25 years. When combined with private-sector contributions, the clean coal investment will approach nearly $1 billion. The President's 2009 Budget is just the most recent addition to the already existing $1.65 billion in tax credits and at least $8 billion in loan guarantee authority appropriated and now available for advanced coal projects, industrial gasification activities at retrofitted and new facilities that incorporate carbon capture and sequestration, and advanced coal gasification facilities.

The Administration is focused on three areas: Research and Development; demonstration and deployment of new technologies; and collaborating with international partners. The Administration is working across multiple departments and agencies to advance these goals, including the Department of Energy (DOE), the United States Department of Agriculture (USDA), the Environmental Protection Agency (EPA), and the Department of the Interior (DOI).

Research & Development:

The Department of Energy, the Department of the Interior, the Department of Agriculture, and the Environmental Protection Agency each manage Federal applied and basic research activities relating to carbon sequestration.

The Department of Energy leads the research, development and deployment of carbon capture and storage, or sequestration technologies. Through its Carbon Sequestration Program that is managed within the Office of Fossil Energy and implemented by the National Energy Technology Laboratory (NETL), sequestration technologies are being researched to overcome barriers to its widespread deployment and to become an effective and economical option for reducing CO_2 emissions. For FY 2009, $149 M is requested for the program, an increase of $31 M from FY 2008.

The Carbon Sequestration Program leverages applied research with field demonstrations to assess the technical and economic viability of sequestration. The Program has two main elements: Core R&D and field tests. Core R&D involves laboratory and pilot-scale research aimed at developing new technologies and new systems for greenhouse gas (GHG) mitigation. The Core R&D effort encompasses five focus areas: CO_2 capture, carbon storage; monitoring, mitigation, and verification (MMV); non-CO_2 GHG control; and breakthrough concepts.

DOE's Office of Science, Geosciences Research Program supports research aimed at developing an understanding of fundamental Earth processes that can be used as a foundation for efficient, effective, and environmentally sound use of energy resources, and provide an improved scientific basis for advanced energy and environmental technologies. This program researches geochemistry of mineral-fluid interactions, geophysical signatures of fluid bearing reservoirs, basics of rocks, mineral and fluids and other basic research that can be utilized in sequestration technologies.

At the Department of the Interior, the recently enacted Energy Independence and Security Act of 2007 (P.L. 110-140) contains new responsibilities for U. S. Geological Survey (USGS) and other DOI bureaus relating to, among other things, the development of carbon sequestration capacity assessments. Section 711 of that Act requires the USGS, within the next year, to develop a methodology for national assessment of geological carbon dioxide sequestration capacity and, within two years of publication of that methodology, to conduct such an assessment.

Section 712 of that Act requires, within the same time frame, that the Secretary of the Interior develop a methodology for a national assessment of carbon sequestration and methane and nitrous oxide emissions from terrestrial, coastal and freshwater aquatic ecosystems, and conduct such an assessment. The mandated methodologies must be developed through processes that include extensive interagency consultation, review, and public feedback. Sections 713 and 714 require DOI to inventory the quantity of carbon dioxide stored within Federal mineral leases and recommend a framework for managing geological carbon sequestration activities on Federal lands.

The methodologies developed during the next year will rely on existing USGS and DOI capabilities, but will also point toward long-term needs. The effort will build on the USGS tradition of independent and objective resource assessment, and on the unique interdisciplinary expertise of the USGS and DOI, to aid in addressing the Nation's growing need for comprehensive assessment of carbon sequestration resources.

Regarding the methodology for biological sequestration, a core team has been assembled, composed primarily of Departmental and USGS staff, to draft the proposed methodology, which will be carried out in consultation with a number of other agencies. The Department received funding in FY 2008 to complete the development of the proposed methodology. Additional funding would be required to complete the final methodology and would compete with other budgetary priorities.

In FY 2008, the USGS received funding for global change activities of which $1 million will be used to start a new activity for development of a methodology, coordinated with a number of agencies, to conduct a national assessment of carbon dioxide storage capacity in oil and gas reservoirs and saline formations. Upon completion of the review, the methodology will be published and available for public use. The legislation is authorized for $30,000,000 for five years.

For many years, USGS scientists have contributed to the growing body of knowledge concerning climate change, the carbon cycle, and carbon sequestration. Building on its mission of support for natural resource management, the USGS provides information to support carbon management by: 1) applying the expertise of many technical disciplines necessary to understand how to limit CO_2 emissions and maximize carbon storage; 2) integrating information about the multiple resources that will be affected by carbon management decisions; 3) communicating scientific information across many jurisdictional and organizational boundaries concerned with carbon management. Through these activities the USGS provides information needed to assess and anticipate the potential implementation and environmental consequences of the full portfolio of strategies for controlling atmospheric CO_2.

The Department of Agriculture's (USDA) basic and applied research on carbon sequestration focuses on improving understanding of terrestrial carbon cycling and developing options for maintaining and enhancing terrestrial carbon stocks and reducing related greenhouse gas emissions. Five USDA agencies have roles in addressing terrestrial carbon sequestration: ARS, Forest Service CSREES, NRCS, and ERS. Activities of the Department are coordinated through the Global Change Program Office, within the Office of the Chief Economist.

Forest Service research is concentrated on three areas. First, mitigation research aims to increase the fossil-fuel carbon removed from the atmosphere by forests and by offsets to fossil fuels provided by forest products. Second, adaptation research aims to reduce emissions of forest carbon from major disturbances by developing and evaluating methods to increase ecosystem resilience to current and future climate stresses on forests and rangelands, also thereby maintaining ecosystem health and services (e.g., timber, water supplies, biodiversity). Third, creation of decision-support systems—including monitoring, reporting, and synthesis of information—supports land managers and policymakers in adopting these new research results for optimum management of forests and rangelands under a changing environment. The Forest Service is providing technical assistance to DOE and to regional and state climate action programs to help insure that rules for the forestry sector carbon accounting are technically sound and practical for non-Federal forest owners. The Forest Service is also engaged in a number of demonstration projects to support the development of private markets for ecosystem services, such as carbon storage. Through the Forest Inventory and Analysis program, Forest Service is tracking carbon stocks. Forest carbon stocks and net annual carbon sequestration estimates are provided to the Environmental Protection Agency each year for inclusion in the U.S. National Greenhouse Gas Inventory.

Current CSREES-funded global change and climate projects focus on determining the effects of global change and climate on land-based systems and the global carbon cycle and on identifying agricultural and forestry activities that can help reduce greenhouse gas concentrations. Competitive and non-competitive research identifies, describes, and quantifies processes involved in the cycling of organic and inorganic carbon in soil.

ERS research is evaluating potential roles of agriculture in proposed national carbon markets. This analysis focuses on driving factors of farmers' willingness to supply offsets through carbon sequestration, as well as considering interactions with USDA Conservation Programs and factors that could inhibit farmer participation in these markets, such as high transactions costs and uncertainty.

EPA is developing the Vulnerability Evaluation Framework (VEF); an analytical framework to systematically identify those conditions that could increase the potential for adverse impacts from geologic sequestration. While geologic sequestration is believed to be a safe and effective tool for climate change mitigation in many settings, it is important to fully understand potential impacts to human health and the environment that could result from geologic sequestration activities, as we routinely do with many similar activities. The VEF is a high-level screening approach that will provide policy-makers, stakeholders, industry, and the public with a transparent framework to evaluate vulnerabilities associated with geologic sequestration systems.

Demonstration and Deployment – *Doing More, Better and Faster*:

Research and Development activities must eventually lead to success in the field, and the Administration is focused on doing more, better and faster than previously envisioned.

In January 2008, DOE restructured the FutureGen program from a single demonstration project to a project with multiple commercial demonstrations of cutting-edge carbon capture and storage (CCS) technology at clean coal power plants. Under this strategy, DOE will join industry in its efforts to build new IGCC plants and to retrofit existing plants by providing funding for the addition of CCS technology to multiple plants that will be operational by as soon as 2015. This approach builds on technological research and development advancements in IGCC and CCS technology achieved over the past five years and is expected to at least double the amount of carbon dioxide sequestered compared to the concept announced in 2003.

DOE's Carbon Sequestration Program's field test element is designed to demonstrate the viability of sequestration technologies at a scale large enough to overcome real and perceived infrastructure challenges. Technologies will be tested in the field to identify and eliminate technical and economic barriers to commercialization.

DOE coordinates sequestration activities through the Regional Carbon Sequestration Partnership (RCSP), which is a network of seven partnerships designed to help develop the technology, infrastructure, and regulations to implement large-scale CO2 sequestration in different regions and geologic formations within the United States. The small-scale field testing phase, focused on the validation and longevity of CO_2 storage, and the large-scale field test phase, focused on sequestration projects that aim to prove the commercial scale viability of sequestration, are currently underway. DOE has selected five large scale injections on the order of five hundred thousand to one million tons of CO_2 per year are planned as part of the field test phase. DOE, through a collaboration between the Office of Fossil Energy and the Office of Science, is

developing a peer-reviewed plan to be completed this spring that will identify the scientific and engineering test parameters to guide design and selection of large-scale tests, and to determine the need for additional tests.

Biological sequestration efforts are supported through numerous USDA and Interior programs that support sequestration as a secondary or indirect benefit. These efforts include the Administration's Healthy Forests Initiative and the Conservation Security, the Conservation Reserve, the Environmental Quality Incentive, and the Wetlands Reserve programs.

USDA programs include the Greenhouse gas Reduction through Agricultural Carbon Enhancement network (GRACEnet) which is administered by the Agricultural Research Service. GRACEnet is conducted at 30 locations across the United States and is designed to provide guidelines of best management practices to farmers, businesses and regulators on greenhouse gas mitigation options. GRACEnet measures greenhouse gas emissions from different tillage and cropping systems, and formulates guidelines for agricultural greenhouse gas emission control and carbon sequestration. Data and measurement protocols from the GRACEnet initiative are publically accessible on USDA.gov. ARS is also developing models for greenhouse gas emissions that can serve as the basis for decision support systems and inventory tools.

Management practices employed on Interior managed lands could have a significant effect on the strength of the sink on U.S. lands. Traditionally, although Interior land management agencies have not focused explicitly on carbon sequestration, they routinely engage in a variety of activities that support carbon sequestration. These include reforestation and re-vegetation, as well as habitat restoration. Other land management activities, such as fire management and timber harvesting also play a valuable role in this regard. In the past few years, some agencies, notably Fish and Wildlife Service, the Office of Surface Management, and a few tribes, have begun to emphasize the collateral sequestration benefits of such activities and focus on these as part of their core mission.

Policy and Coordination:

Interagency coordination is central to all Administration sequestration programs. DOE and EPA have conducted quarterly interagency meetings since 2004 and have also been engaged in several activities related to the exchange of information through conferences and project review meetings. DOE's Sequestration Program collaborates with other government agencies such as the USDA in terrestrial sequestration and extensively with EPA in geologic sequestration. The relationship between EPA and DOE includes collaboration on areas of research related to risk assessment simulation of risks associated with CO2 injection. Additionally, DOE serves on EPA's Panel for the Rule Making for Geological Sequestration.

The DOE has also worked with the US Geological Survey through many of the applied R&D projects. Regional USGS offices have been involved in technical research related to geologic characterization and field project implementation such as the Frio Brine

project in Texas. DOE is also working to share the methodology and lessons learned from the national capacity assessment completed by the Regional Partnerships and summarized in the 2006 release of the DOE's first version of the Carbon Sequestration Atlas of the United States and Canada.

DOE's Office of Fossil Energy and Office of Science have been coordinating in the area of Sequestration given their complimentary roles. Together the two Offices have worked toward development of a Science Protocol for conducting Sequestration. These guidelines include standard practices for site selection and characterization, monitoring, reservoir management and development, risk mitigation, and closure. Technology transfer between the two offices and their respective research investigators and contractors has been ongoing – two recent events include the Office of Fossil Energy's Regional Partnership meeting in Dec 2007 in Pittsburgh, PA and an upcoming Office of Science Geosciences Review in Mar 2008 in Gaithersburg, MD. The purpose of these workshops will be to share technical information, enhance further collaboration, and to work toward producing the Science Protocol for carbon sequestration field projects.

EPA is developing proposed regulations for the underground injection of carbon dioxide for geologic sequestration (GS). The existing underground injection control program provides a regulatory framework for geologic sequestration of carbon dioxide under the Safe Drinking Water Act. EPA anticipates proposing regulations in July 2008. A final rule for permitting the injection of carbon dioxide is anticipated in late 2010/early 2011.

EPA is working closely with the Department of Energy (DOE), state co-regulators and other stakeholders on all GS activities to leverage resources, clarify key questions and data gaps, and ensure that work is complementary and not duplicative. As EPA develops its proposed rule, DOE and state co-regulators are serving on the Agency's regulatory workgroup and providing input into the rulemaking process. EPA is tracking DOE research activities which will provide information and data over the next several years. EPA will use the data collected from this research to support decisions in the final rule.

International Efforts:

The DOE supports international collaborative efforts through multilateral partnerships such as the Carbon Sequestration Leadership Forum (CSLF), which is now in its fifth year of its ten year charter, and through bilateral arrangements. The CSLF is comprised of 22 countries that emit 75% of the world's anthropogenic CO_2. The CSLF primarily addresses the policy and legal framework, capacity building, public awareness and acceptability, stakeholder involvement, and international collaboration for efforts related to the capture and storage of CO_2. Current projects include injection into a saline reservoir in Texas, a Coal-bed methane recovery project in Alberta, Canada, and other projects located in member countries around the world. DOE is actively working with Brazil (Brazilian Coal Association and Pontifical Catholic University of Rio Grand do Sol), Canada, China's Ministry of Science and Technology and South Korea's Institute of Energy Research. Also, the 2005 G-8 meeting in Gleneagles recognized the value of the

CSLF and initiated joint G-8/CSLF/International Energy Agency technical information exchanges. The G-8 also recognized the importance of collaborative action to advance carbon sequestration technologies at their 2007 Heiligendamm, Germany meeting.

The Administration is actively promoting carbon sequestration internationally through efforts such as the Asia Pacific Partnership on Clean Development and Climate and through discussions at international summits such as the US/EU Summit and the APEC Summit, as evidenced through the summit statements.

○