

TRANSCRIPT:

The Changing Business Climate: Is It Time for a National Carbon Policy?

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Hosts:

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Malin Jennings, Senior Vice President, Fleishman-Hillard

Moderator: Elizabeth Shogren, National Public Radio

Panelists:

Senator Tom Carper (D-DE)

Senator Lindsey Graham (R-SC)

James E. Rogers, Chairman and CEO, Cinergy

Robert E. Busch, President, PSEG Services Corporation

John Peschke, Professional Staff Member, Senate Energy and Natural Resources Committee

Bob Simon, Minority Staff Director, Senate Energy and Natural Resources Committee

Transcript

Malin Jennings: Good morning. We're really glad that you are all here. My name is Malin Jennings. I'm a senior vice president at Fleishman-Hillard, and I wanted to first of all thank you for coming out. I know that you are very busy, and I appreciate you taking time to focus on the subject today. I also wanted to thank the people from SEI who have spent an incredible amount of time and elbow grease putting this together, as well as our participants today.

This is a very important subject for Fleishman-Hillard because we've become the first public relations firm in the United States to develop a climate change practice. We recognize that climate change is becoming a part of everyday business life in the United States, and wanted to help businesses reflect that through their communications. It's also important to me personally – I go to the Arctic every year to work documenting the

impact of climate change on the Inuit, and so I can see firsthand just how dramatic that change is – at least in the northern Polar area.

With that, I would like to introduce Neil Numark, who is the President of Numark Associates and Chairman of the Sustainable Energy Institute.

Neil Numark: Thank you, Malin. Welcome to this SEI/Fleishman-Hillard Leadership Dialogue on US climate change policy. We have a very distinguished panel here this morning that we will introduce in just a moment.

First, to set the stage: How serious is global warming, and what can we do about it? NASA's Goddard Institute recently announced that the global surface temperature in 2005 was the highest in recorded history, after the very warm years of 2002-2004. The impacts of this warming include melting glaciers, melting sea ice, rising sea levels, increased flooding, potential droughts, famine, and mass migration. As Prime Minister Blair recently stated, the impacts of global warming are far-reaching and its destructive power irreversible.

What do we know about the cause? Last year the national science academies of all the G-8 countries plus China, India and Brazil declared that most of the warming in recent decades can likely be attributed to human activities, and that increasing greenhouse gases are causing the temperature rise. Most reasonable people conclude that this body of scientific opinion is good enough. Mankind is contributing to this problem in a big way. So it should also be in our power to reverse it.

U.S. emissions – 25% of the world total – continue to rise, up 2% in 2004. Our current emissions goal – an 18% cut in the *intensity* of greenhouse-gas emissions by 2012, that is, emissions per unit of gross domestic product – is estimated to still allow a 12% increase in actual emissions.

Europe, Japan, Canada and others have now mandated that emissions within their borders be cut by 2012. Their industries have to improve energy efficiencies and deploy clean energy technologies. They are also finding opportunities to cut greenhouse emissions in developing countries, plucking the lowest-hanging fruit of cheap emissions reductions and leaving the U.S. out of that market.

In the U.S., actions are occurring at the state level, creating a complicated patchwork of rules. The nation has thus far avoided the difficult step of mandating a program to reduce greenhouse emissions, to do our share. But the U.S. Senate declared last year that there should be a national program of mandatory limits. Are we ready to take on the challenge of establishing a national carbon policy? And are we ready to contribute our leadership to reaching an international agreement on greenhouse gas reductions after 2012?

To lead our discussion this morning, we are very fortunate to have Elizabeth Shogren from National Public Radio. A veteran newspaper reporter, Elizabeth came to NPR one

year ago to cover environmental issues on the National Desk, after 14 years as a reporter on a variety of beats at the Los Angeles Times.

From Moscow, beginning in 1988 as a freelance reporter and then with the Times, Elizabeth covered the fall of the Berlin Wall, the peaceful revolution in Prague, the breakup of the Soviet Union and the rise of democracy in Russia, a series of events that should give hope to us concerned about global warming that once-unimaginable policy shifts can indeed occur.

From '93 to 2000 Elizabeth worked in the paper's Washington bureau covering the White House, Congress and presidential campaigns, while continuing foreign reporting assignments covering Russian elections, the war in Bosnia and the Kosovo crisis.

In her last 4 years at the Los Angeles Times, Elizabeth reported on environmental issues.

Elizabeth, let me now turn the microphone over to you.

Elizabeth Shogren: Good morning everyone. I was very relieved to wake up this morning and have a chilly walk with my dog, because I knew that we could all just rest easy, cancel this session and have more coffee because after that record warm January we're back to normal.

I'd like to start very quickly introducing everyone on the panel. To my left, we have Senator Lindsey Graham from South Carolina. To my right, Senator Tom Carper of Delaware. Starting on the far right there's John Peschke from the majority staff of the Senate Energy Committee and Robert Busch, President of PSEG. And on the left, James Rogers, the chairman and CEO from Cinergy. And Bob Simon from the minority staff of the Energy Committee. The topic of the day is climate change and what does the country do about it. More specifically, what does the government do about it? And because it's so early I thought we'd start in a kind of unconventional way by asking each of the panelists to quickly respond in a one-word answer to a very basic question. Which is, should the federal government impose mandatory limits on greenhouse gas emissions? And we could start with Senator Carper.

Senator Tom Carper: Maybe. No: Yes.

Shogren: Mr. Busch?

Robert Busch: Yes, carefully.

Carper: That was two words.

John Peschke: I can only speak for the Senate, on behalf of my boss and that is that the Senate may do something at some point in the future.

Shogren: OK. Slightly more than one word. Senator?

Senator Lindsey Graham: Open minded.

Shogren: And that's more than one word.

James Rogers: Open-minded also, since I'll soon be moving to the Carolinas and I understand good politics.

Bob Simon: Yes, but we've got to do it right.

Shogren: OK. That was pretty good actually. So now comes the hard part. If the country does embark on some kind of change in regulating carbon dioxide and other greenhouse gas emissions, should it be focused on one sector? There's been a lot of talk about, particularly, the power utilities, or should it be economy wide?

Carper: We've got to get started. And what a number of us have proposed, Lamar Alexander, Lincoln Chafee, Judd Gregg and I have proposed, is something to start us up, to get going. We don't want it to cost an arm and a leg for consumers. We don't want to put our economy in a death spiral or anything like that. We want to provide some incentives and some compelling reasons for us to get on the right track.

I'll use a real quick analogy and then I'll stop. And this is not an original analogy, but I think it's a good one with respect to carbon. I suspect all of us drive cars from time to time. And the analogy that I like to use with carbon -- especially when you're thinking about Kyoto -- is that Kyoto is like you're driving a car down the highway at 60 miles an hour and you put the car in reverse. And what we've proposed is legislation that says, using the car analogy, first, slow the car down. Stop the car. Then put the car in reverse. And what we propose to do is slow the growth of CO₂ emissions, stop the growth of CO₂ emissions and reduce CO₂ emissions. And to do it primarily, at least initially, through the utility sector.

Shogren: And why the utility sector? Why start there?

Carper: I think there's a change that's taken place within the sector itself. A realization, a desire for certainty, a realization that this is a real problem. It's not going away. It's getting worse. And if you look at the lineup that's in the Congress today and the House and the Senate, and the folks who are in the White House, this is a chance for the industry to get some certainty, to stop having to worry about this patchwork quilt of states that now are imposing their own regulations. And too, to be able to deal with a single federal standard. And to have a market trading system created, that's verifiable, that will actually work. And to be able to provide carbon reductions for about \$1 to \$2 a ton.

Shogren: Senator Graham your turn. You say you're open-minded to the issue of mandatory caps or mandatory limits. What's your idea? Who should have these mandatory limits if they should be set?

Graham: I'd rather answer the other question.

Shogren: OK, go ahead.

Graham: I like the other one better. The bottom line is I think we need to do three things at once, which is hard for us in Washington. Two things is a stretch, three may be impossible. But if you leave the transportation sector out I think you've really missed the point because I think that Senator Bingaman had a chart that a lot of our CO₂ problems, also fuel usage, come from the transportation sector. So we've got a great healthy debate about hybrids. The President had it in his State of the Union. And the whole focus is to get away from dependence on Mideast oil, a national security component.

I think the winning combination for this debate about climate change is to bring on the hybrid folks who are worried about national security. Get them involved and let them know the benefits to the climate if you did it, as well as national security. Take the re-energizing of the nuclear industry and make that part of this debate because without clean sources of fuel you really never get to where you want to go. So I'm a big proponent of recycling spent fuel and making the fuel cycle more efficient and increasing our nuclear footprint, as well as having emission controls on the utility industry. I think if you did all three things at once you'd have a more comprehensive solution. And you would have different political groups coming together to get this thing over the finish line. You just can't do it in isolation.

Shogren: Anyone else have a burning desire to answer that particular question?

Rogers: I would make the observation that we need a plan that brings all parts of the economy into any program that we have to reduce carbon. The way to think about it is that 35 to 40 percent of the emission of carbon comes from the transportation sector, 35 to 40 percent comes from the utility industry. And maybe one, the utility industry, can start first. But the plan ought to be a fairly clear plan in which all segments of our economy are brought to play because over time that will reduce the cost and put us in a better position as a country. And I think our target focus should be around post-Kyoto. Because there is no answer there, and the United States has a unique opportunity to lead post-Kyoto, but we have to go to work now to be able to be in that position.

Shogren: This question is for Mr. Rogers and Mr. Busch. The question comes from a statement that one of your colleagues made recently, Jeff Sterba, from New Mexico, Public Service of New Mexico. He said, "If this Congress is not the one to work with, then what one is?" Do you agree with that? Does it behoove the utility industry to get behind a push for some kind of capped emissions now while there's a Republican in the White House, and Republicans controlling the House and Senate, rather than waiting until who knows what happens in a few years?

Busch: Well utility companies, in general, don't worry about which Congress it is. What they worry about is what the laws of the land provide us in terms of an operating environment and how we responsibly manage our whole industry with respect to the environment. But apart from whether it's good or bad, as far as the current Congress is concerned, I think it is time to do something. And I think, going back a little bit to your

first question, although we would certainly believe that an industry-wide approach ultimately is not enough, it is a wonderful first start. Senator Carper's legislation, we have supported consistently. We are part of a group of utilities in the United States that represent over 20 percent of all the generation capacity in the country. So I think it's time to get going. And that's why we think Senator Carper's leadership has been very valuable in terms of moving the debate forward. Is that necessarily everything we need to do? No, but it's time to begin.

Shogren: Is there something that you can do as part of the utility sector to, I don't know, get Congress off its duff and moving? Is there something you can do, something more?

Busch: Yeah, I think, that's a very good question. I think what we can do is, fellows like Jim and I can bring our industry together to a unified position, to be able to say this is what we think is the right direction right now. And quite honestly we've been working on that pretty hard.

Shogren: Would you like to add something?

Rogers: I just want to make the observation that every major piece of environmental legislation that's ever passed in this country has been overwhelmingly supported in the Senate and the House. And another way to say that is it's been strong bipartisan support. I think we make a huge issue thinking of this as either a Republican issue or a Democrat issue. This is an American issue. And we need to bring people together to resolve this sooner rather than later. And I think that at the end of the day, regardless of the side of the aisle, at least this is my aspiration and hope, is that anybody that's elected in this country is going to look at the impact on the economy, look at the impact on the environment and balance those interests in a way that makes sense for the long-term. And that's my hope and aspiration, whether it's now or later.

Shogren: It seems that there have been, for some years, some roadblocks in Congress to moving forward on this. There hasn't been any bill marked up. There hasn't been any vote approving legislation that would do this. Would either Senator Carper or Senator Graham like to talk a little bit about what are the realities in the Senate that might prevent something like this from happening now?

Carper: Mr. Busch, this Mr. Busch, had it right. A lot of times it's hard for us in Congress to come to agreement on difficult contentious issues unless there's some consensus within the industry. And in this case this is an industry that said it's strong enough, and the environmental movement is very strong as well, but this is an industry that's strong enough, I think, to block progress. We all have, every one of us, whether we're from South Carolina, Delaware or any other state, we all have the utility industry in our state. They're usually pretty prominent players. And to the extent that they are saying to us "don't do anything," or "we're divided," it really makes it difficult for us to get started down the right path.

We're forgetting one party here, and the party is a person, it's the President. And this is an issue that cries out for presidential leadership. And when George Bush ran for president in 2000 he called for multi-pollutant legislation that included SOX, NOX, mercury and CO₂. Changed his mind when he got into office. I was over there, my wife and I were over last night and actually had dinner, something we don't often do with this administration. And I got a chance to talk a little bit with the President at the end of dinner on a couple of things, including this issue. He was surprised to learn that, I think genuinely surprised to learn, that there's interest within the industry to actually accept something like mandatory caps that can be done in a way that doesn't harm consumers, doesn't kill the economy. In a way that actually harnesses market forces. And not only does the Congress need to hear the messages that we're hearing from our two utility leaders, but the administration needs to hear that as well.

One other thing, we were talking last night a little bit, and one of the guests at dinner last night was -- and Lindsey's been there probably a lot more than I have of late -- but one of our dinner guests was King Abdullah from Jordan. And we talked a fair amount about the Middle East. And at one point in time we were talking about Iraq and what the President was hearing from our military leaders over there. And he said, "Sometimes I worry that they tell me what they think I want to hear." And I think within his own domestic arm, within the White House, sometimes they tell him what they think he wants to hear. And he just needs to hear it from folks like the people who are sitting at this table. Not just from me, not just from Lindsey, but from the industry itself.

Graham: The politics of global warming: young people, young voters overwhelmingly believe that there is a global warming phenomenon going on. So I've replaced Senator Thurmond. He was elected in '54. I was born in '55. So I've got a long view of politics. I believe it's just a matter of time. To the industry, you're running out of time. There's a growing consensus here, particularly among young people, that something's going on with our environment.

There are two votes that are important. It's 99 to nothing against Kyoto. That's pretty important. If you leave China and India out, you're going to have a hard time getting us to cripple our own industries when the world is not involved. But the countervailing point is, if America doesn't lead, who will? So I definitely believe in that. But the 53 votes for the Bingaman resolution, I believe it was, was a huge sea change in Senate politics. Even though it was a nonbinding resolution, it was a statement politically that the phenomenon we're talking about is real. So Tom's legislation, whatever, there is a movement in the Senate that is undeniable. And a movement in the country that is undeniable that we're beginning to come to grips with a phenomenon that's real. And political solutions will soon follow the polling.

Shogren: Mr. Peschke, you've been working across the aisle on some kind of way to address this. Can you talk about your efforts and how they've either been breaking through logjams or creating new ones?

Peschke: What we have done, what Senators Bingaman and Domenici have done, is attempted to engage on how one would construct a mandatory, market-based regulatory mechanism that's embodied in the Sense of the Senate resolution that Senator Graham referred to. That is not an easy task, and that white paper actually doesn't suggest how it might be done. It simply poses a series of very, very difficult questions, and we expect that at some point in the next week or so we will announce that we are going to have a climate conference that the Committee sponsors where we will invite people to submit answers to those questions. And then we will invite people to participate in a series of panel discussions to help the Senators understand how people feel about mandatory market-based regulatory mechanisms, how those things might be constructed, and based on that, we are kind of off to the races in determining how to fashion a piece of legislation which I suspect that Bob and I are going to have to try and write. That is our task, and Senators Bingaman and Domenici are very, very determined to see if they can not reach some sort of consensus on how such a mechanism may be constructed. That's sort of the mission the Senate has given us.

Shogren: Mr. Simon, can you talk a little bit about how you see it from your perspective?

Simon: Well, I think my colleague, John Peschke, has laid out sort of the basic parameters of what we're about. We have been thinking very seriously about the practicalities and the complexities of putting together an actual legislative proposal that would be both effective in addressing the problem and also effective in mobilizing a bipartisan majority in the Senate. The same bipartisan majority that supported the resolution this past summer. In the process of grappling with those complexities, we sort of zeroed in on the questions that we specifically asked in this white paper that Senators Domenici and Bingaman put out late last week. And some of them go to some of the issues that we have already touched on here. What's the scope of this thing? Are we just trying to look at one sector? Are we trying to look economy-wide? You can make strong arguments either way.

I think it's already been mentioned here that it's a reality that no one sector of the economy is the overwhelming predominant source of greenhouse gases. Which puts greenhouse gases in a different situation than sulfur dioxide. Where you look at sulfur dioxide emissions across the economy, you can narrow it down pretty much to one sector of the economy. So the question is, if you are trying to construct a system that's balanced, that's fair, that's effective... if you're trying to construct a system that maximizes our opportunities to get the most bang in terms of greenhouse gas reductions for any compliance costs that we impose on the economy, do you want to look across a variety of sectors for the lowest economic fruit and construct a system to do that? Or, the contrary position would be, look, some sectors are easier to get your hands around than others on this, and so maybe we should just focus on the easiest-to-address sectors first and leave others to later, recognizing that that might in turn create the problem that you get started and you sort of hone in on one sector of the economy and you then discover that you can never politically advance the ball beyond that sector to any other sector.

So these are not easy questions. There is not an immediate, open-and-shut, obvious answer that hits you in the face. And I think the reason that we have constructed the white paper the way that we did – and put it out – is to stimulate the kind of discussion that we need that will lead ultimately to both a consensus outside the Senate and inside the Senate as to what the most effective, fair, and appropriate way to address the problem is.

Shogren: Thank you. Senator Graham, have your own personal views changed in the last couple of years about the urgency of climate change and the need to respond to it?

Graham: Yeah, Senator McCain is certainly one of the leaders in the country on this issue and he's a good friend. And I've gone all over the world with him, to mostly cold places looking at climate change. I've always wondered about that. But the thing I like most about the Senate is you can make a D in science and still be part of the global climate change movement. And what's scary is, I feel about as qualified as the next guy on this stuff, but when you go around and you listen to the native people, something is going on. That was the most compelling case to me. And just the idea that China and India's economies are just on the verge, you know, they don't really have many cars in China. One day they will. And what's the harm if I'm wrong? Now I don't want to cripple business, but the upside is huge and the downside is small. But listening to the native people in the northern regions of the world, I am convinced that something is going on out there that is man-made and contributing to global climate change. And I'd like to get ahead of it.

Shogren: So what keeps you on the fence about mandatory controls?

Graham: China and India, and being able to keep people in Florida and South Carolina. If you don't understand that then I think we don't understand the global economy. You're competing against labor at 46 cents an hour. And environmental regulations in this country have done a lot of good, worker safety legislation has done a lot of good, but they don't have much of it in China and India. So we've got to lead and we've got to have ways to address climate change that the world will accept. We've got to export technology about clean coal. We've got to have a big nuclear footprint, except in Iran. And that's what keeps me on the fence. I know we're going to lead, but we're having global changes to our economy at the same time we're having global changes to our climate. And if we're not sensitive to those global changes, we could push some industries over the edge unnecessarily.

Shogren: Is there anyone on the panel who would like to make the argument for sticking with voluntary measures? [No response.] OK, that's interesting. That was very interesting. There are people, however, on this panel who are working on voluntary measures. Am I right? Your utilities are working on those? For instance, at least this is from your web site, PSEG pledged to reduce emissions 15 percent below 1990 baseline by the end of 2008. How is that going?

Busch: PSEG is a member of the EPA's Climate Leaders program. And we pledged, in 2002 when we joined that, to reduce our greenhouse gas emissions by 18 percent -- close to 15 -- below 2000 levels by 2008. We've made it. We're basically there. So we have had pretty good success with that. I do want to make it clear though, we did it in a way that has consequences. It's great to wave the flag and say, wow, were we good. But we did it by building highly efficient combined cycle gas powered power plants. And those are now burning natural gas at about \$10 a million BTU, which means they don't run very often anymore. And we do have a considerable issue now with the price of natural gas in the United States. The other thing though that we have been doing is we've been upgrading, and we're going to continue to do that, our nuclear plants to have higher capacity. That has zero emissions. And I hope we can get to that later, because ultimately we have got to solve the majority of this problem with nuclear power.

Shogren: Would anyone agree with that statement or disagree?

Graham: About nuclear power?

Shogren: You would have to solve the majority of this with nuclear power.

Graham: I couldn't agree more. How many people have been to France? About 80 percent of their economy is powered by the nuclear industry. Surely we can be as bold as the French.

Rogers: Senator, the French though built all their power plants on the German border and there might have been a different reason.

Graham: Good point. This is a big issue in South Carolina. We have the Savannah River Site alone, rich nuclear history, 55 percent of the power in South Carolina comes from the nuclear industry. I think we've illogically taken this industry off the table for political reasons. I think it's now time to look at the fuel cycle anew. To look at the next generation of nuclear power plants and try to spread nuclear power in a reasonable fashion throughout the world, because it is a clean source of power. Relatively, I think, very safe compared to fossil fuels and the damage it presents. To leave the nuclear option off the table in terms of power generation, to me, is irrational and we can no longer afford to do that.

Shogren: Mr. Rogers?

Rogers: I support Senator Graham and the belief that nuclear clearly needs to be an option. But one of the lessons that we've learned over time: there are no silver bullets. We need to be focused on energy efficiency and helping people use energy more efficiently. We also need to look at coal and clean coal technology. Today over 50 percent of electricity in this country comes from the burning of coal. We're not going to walk away from that tomorrow. And one of our great challenges is to be able to use one of our great resources to generate electricity in the future. Technologies are evolving so that we'll be able to. The other thing is that, and this is a very important point in terms of

working on this issue, we're at a point today where gas prices, oil prices, coal prices are at record levels. They might well plateau at this level, but in any event they're going to be very volatile.

Secondly, we're in the very beginning of another building cycle in our industry. And when we build power plants, these are 30 and 40 year investments. And we're now making decisions, because we'll need new plants online in 2010 to 2015. We're looking at building: do we build a pulverized coal plant? Do we build a coal gasification plant? Do we build a nuclear plant? And we've all learned the folly, and Bob, this is not directed to you, but the folly of trying to depend on natural gas as the silver bullet. And if you look back over the last decade, 90 percent of the generation in this country that was built relied on gas. That's one of the reasons gas prices are where they are today, other reasons of course include supply. The most important point is that we need to deal with these issues today because the impact on the consumer already is great from the increases in coal, gas and oil. And as a consequence of that we start to look at the CO₂ issue in this context of rising prices. And decisions are being made today to build new plants that are going to lock in the burning of coal without the ability to reduce emissions of CO₂. And that's why it's so critical.

Shogren: You brought up one of my favorite topics, which is the gasification plants.

Rogers: Right.

Shogren: I understand the utility industry is on the verge of making big decisions about dozens of new coal plants. But people seem hesitant still about gasification, at least if you look industry wide. What's going to change that, because wouldn't that make a big difference for this topic we're talking about today, climate change?

Rogers: I agree with you. I think it would make a dramatic difference if we could develop coal gasification technologies. Our company had the good fortune of participating in one of the two demonstration projects that were built in the early 90s. It helped us get smarter about how to operate with syngas, that comes from coal gasification. We learned how to be able to go from natural gas to syngas and still operate reliably our facilities. We're in the process now of working with GE to build a new coal gasification, a commercialization of one, in Indiana. But at the same time a lot of other companies in the country are looking at pulverized coal. It's a lot easier to -- and I'm going to testify before our state commission -- it's a lot easier to say "build pulverized coal," because that's a cheap alternative if you believe there'll never be carbon taxes or mandatory controls of carbon. So not knowing that answer biases your decision to do things that are going to increase the output of carbon in the future.

Shogren: Senator Carper, do you have an answer for this?

Carper: I'm an old Navy guy, and going back to nuclear here, and I've known guys and gals who lived on nuclear power plants, on aircraft carriers and submarines and other ships. We have caucuses, Lindsey and the Republicans in the Senate have retreats from

time to time, we do too. I remember our first retreat I went to, it was a brand new Senate in 2001. And the forum was energy, it was a daylong conference, and we never talked about nuclear the whole time. The whole time. And I had, like the weekend before, taken a bunch of Boy Scouts, my sons are Boy Scouts, and we'd taken the troop from Wilmington down to the Norfolk Naval Station, for a full week. We crawled all over ships and submarines and aircraft carriers. And one of the aircraft carriers we got on was the Teddy Roosevelt. And I remember the skipper of the aircraft carrier was talking to my scouts and our adults. He very proudly said, "My carrier is 1000 feet long, boys. My carrier is 35 stories high, boys. And when my carrier goes to sea with the air wing aboard, boys, we have 5000 sailors and 75 aircraft." Their eyes got pretty big. And then he added this: he said, "And boys, my aircraft carrier stops to refuel once every 25 years."

I told that story to my colleagues in the caucus. Chuck Schumer turned to me immediately and said, "I have a new nickname for you." I said what's that? He said, "Radioactive." It's interesting: last year in the State of the Union address, the President was talking about energy and he talked about nuclear. And one of my colleagues sitting next to me, who was not at all a friend of nuclear energy, a very harsh critic of nuclear energy over the years, leaned over to me, Elizabeth, and he said, "You know, I think the time has come to revisit nuclear energy."

It's not the only solution, but it's part of what we need to do. We've only had nuclear power plants for about 50 years. And the idea that we somehow are going to have to be able to store stuff in Yucca Mountain for 100,000 years or 10,000 years... We'll have the technology in less than 50 years, I suspect, to be able to take the radioactive wastes that we have now and do something positive with them and constructive with them.

The other thing is conservation. I don't know if anybody's thinking about buying an air conditioner this year, but if you buy an air conditioner, a new one this year, you get something with a SEER standard of 13. What does that mean? Well the difference between a 10, a SEER 10 and a SEER 13, is 150 power plants that will not have to be built in this country over the next 15 years. So it's nuclear, it's coal -- clean coal, it's wind, it's solar. We've got a company, GE, that literally has built a business model for the 21st century on just those kinds of things, sustainable renewable energy, clean energy. And they're going to make money doing it.

Shogren: I think it's time to open it up to you and see if anybody here has questions. I don't know if anybody's written any down but I'd be happy to take questions if anyone would like to raise their hand. And if you could just say who you are before you have a question.... In the back.

Questioner 1: I'm Phil Collins. I'm wondering if you were considering incentives for ground source heat pumps using pipes through the ground to heat and cool homes instead of heating fuel or natural gas, and uses less electricity than air conditioners.

Shogren: Thank you. Anybody have a comment on that? Thank you very much.

Peschke: That proposal, I believe, has been offered several times but the tax writers have refused to put it in anything. I think that's the case. We did not, I'm sure, put that in the energy bill this time. And I think Senator Dorgan has sponsored that in the past, if I'm not mistaken.

Carper: Interestingly -- Is your name Phil Collins? That's a great name -- There's a house down in Crawford, Texas that's about 5,000 square feet that actually has just that kind of system.

Questioner 2: [inaudible]

Carper: I'm probably not going to answer your question as directly as I should...I was up at the Detroit Auto show last month. I was there last about three years ago. And the difference between what I saw and heard there and what I saw and heard this time was pretty dramatic. American cars, the quality of cars and our ability to compete, I think, is improving, although not quickly enough. But three years ago it was SUVs and it was gas guzzlers... it was this horsepower and so forth... This time we heard a whole lot about different things. One of the big things we heard about was flexible fueling.

Down in Brazil, they shouldn't be this much smarter than us, but about a third of the vehicles now in Brazil run off of a variety of fuels. They run off of ethanol... a lot of it comes from sugar cane but a lot of it comes from soybean, comes from corn, comes from grasses and so forth. There's a Department of Energy research grant -- about an \$18 million grant that was awarded to DuPont and a couple of other folks in a partnership just a few years ago. They really hope it's going to bear great fruit. And what they are working on is a technology that takes the whole corn stalk, the whole plant, and uses that to create ethanol. They believe they may be able to do it in a way that competes directly with gasoline, the price of gasoline, and does so in ways that are actually better, much better for the environment.

Graham: Can I... I just wanted to hear what he had to say first. I mean... There are two car industries in this country, not one. There's one with legacy costs that are about to go under, the Big Three. And then you get the BMWs and Toyotas and folks like that who are doing very, very well. That goes back to what he was saying before. What kind of power plant are you going to build in the future? Who is going to be the winner of the debate -- in terms of nuclear versus whatever options there are to produce power? Same for cars. The sooner the Congress would act to give standards and guidance to how you would develop a hydrogen economy if you wanted to go that way, what you could do with other forms of hybrids -- like he says in Brazil, they almost use no foreign oil anymore because they can do it within their country -- I think this is where the Congress can be helpful. I don't want to pick a winner. But I would like to create the legal infrastructure and the tax infrastructure to make sure that the next generation of automobiles are less dependent on fossil fuel. If you're about to go broke, you can't be wrong on this issue, you can't develop two tracks. So Detroit doesn't have the resources in my opinion to do both. We're going to have to give them guidance to pick one over the other.

Shogren: Mr. Rogers?

Rogers: I think there's going to be a significant push to implement new energy efficiency projects in the future. If you look at companies across the country in the utility business, we are facing rising prices of fuels, we're starting the beginning of another building cycle, the costs of consumers are going to go up rather dramatically over the next five years based on every trend line that I have seen...and in that context, energy efficiency makes sense and makes economic sense. So I think one of the things... There's already an initiative where both EPA and DOE have gone together to try to put together best practices across this country with respect to energy efficiency efforts. The last time we had a major push on energy efficiency initiatives was in the late eighties / early nineties. We haven't done much since then, and I think now is the time for us to reenergize our effort to utilize technology and to find ways to use energy more efficiently in the face of not only environmental requirements but also these rising costs.

Shogren: The gentleman in the second row.

Questioner 3: Hi. My name is Stuart Price. Public education in my view is one of the most important aspects of this debate. For instance, the National Academy of Sciences has a popular science museum which addresses climate change and the reasons for it and what the future holds for us. Can you comment on that sort of high-level public outreach or do you know of other ways that we can effectively reach out to the public to inform and educate about this issue?

Carper: Some of you have been to the beaches of Delaware – Rehoboth, Dewey, Bethany, and those places. We're working on a project in Rehoboth Beach, as you're coming down State Route 1, just before you turn on to Rehoboth Avenue. There will be an Energy Exploratorium that people can visit when they come to the beaches of Delaware. We don't have sales taxes, and people, if it is raining, go shopping or to the movies or read or whatever. But one of the things we wanted to do is provide an option, an outlet for folks to do things with their time and their money other than going shopping when the weather is rainy. So we're going to have this Energy Exploratorium. And it will be not designed solely for children, but especially for children. And one aspect of it will focus on, I think, global warming and climate change.

We're also in the process in northern Delaware, up on the Christiana River -- if you've ever come through Delaware on the train, the trains stop right on the Christiana River where we have a major riverfront development -- we're going to be building in the next year or so a children's science museum. One aspect of the children's science museum will be just this sort of thing. And one of the ways to make these projects work -- for those who get involved in these types of things, it's hard to come up with the money to pay for the operations -- one of the things we're going to do is tie both of these projects in with the state science standards, academic standards in science. And we're going to encourage our schools -- for those of you who have kids, particularly younger kids -- do a lot of trips, school trips... and try to find something that is educational, that ties in with

our standards. We're going to offer it in northern Delaware and southern Delaware scientific experiences, science-related experiences for our children that will help their education, not only to do well in school but I think to help us prepare for the rest of this century.

Graham: I think younger people are ahead of politicians on this. I really do believe that. I don't know how that has happened but I find that wherever I go. At 8:00, I went to a meeting of evangelical Christians supporting solutions to climate change. We got Jesus for climate change, maybe we'll get Jewish people for climate.... I don't know. To put this coalition together, to me, would be a grand coalition of the nuclear industry – people who believe that we need a more robust nuclear industry -- people who believe we need more efficient cars, the hybrid efficiency world like he was talking about along with people who believe in climate change, and create a grand coalition that not only educates but has more hitting power in Congress. And the national security aspects of being dependent on fossil fuels needs to be in the mix. There is a potential for a coalition that crosses party lines and ideological lines that could really bring a solution to bear, and I'm more interested in forming that coalition than an education seminar right now. I think if you got the coalition, the politics will fall into place.

Shogren: And Senator, how do you form that coalition? What are you going to do or what will other people do to make that happen?

Graham: Well, Tom is a good start. Tom and I make a start. What he said about the nuclear industry is absolutely exciting to me. It is not the end-all – you've got a waste stream problem. But he's right. Fifty years from now, we can recycle and take 90% of the fuel rod material and put it back into the fuel cycle. Fifty years from now, we'll have a way to dramatically decrease the footprint of what you have to store and it will be less radioactive. There's a lot of technology going on out there. So he's willing to come to the middle on nuclear.

Well what I've got to do, as a Republican, is I've got to come to the middle on the idea of pushing our industries to do more. Voluntary is good, but generally speaking, voluntary is not nearly as successful as pushing people. So if you can get some Republicans sort of following Senator McCain to challenge industry to come to grips with some of the hard choices, and you get people like Tom coming to the middle on nuclear, then that's a start because the one thing we have in common, I think, is we both care about the environment but we do not want as a nation 50 years from now to be as dependent on fossil fuels as we are today. That's very unhealthy for the environment and it's very unhealthy national security-wise.

Carper: We can't ignore the President in this issue. In the end, if we pass legislation, the President is either going to sign or veto it. We don't have the votes to override a veto; we don't have 67 votes in the Senate. I think you need to do something like what a couple of us proposed in our centrist bill. This President has to decide what kind of legacy he wants to leave with respect to the environment. And this Administration has done some positive things with respect to reducing diesel emissions in the future. They

ought to get recognized for that. But his environmental legacy is far from complete and if he wants to have one, this is the opportunity to go back and revisit his pledge that he made up in Saginaw, Michigan in September of 2000, to say that I'm going to go back to that and keep that promise. If he does that, he'll have, I think, somebody who'd be willing to partner with him, including a number of people on my side, and obviously on Lindsey's side.

The other thing I say is that if the President doesn't decide he wants to go there and take that road, in the end, we're not going to get much done. In the next couple of years, we'll litigate, we're not going to legislate. We'll just litigate, we'll waste money, we'll waste time. But what will happen is, when someone else runs for President, several somebody elses running for President, including John McCain, and I suspect Hillary on our side and some others, when someone runs for President, this will be a centerpiece issue in the 2008 campaign and out of the elections in 2008 somebody, whether it's John or Hillary or somebody else is elected, I think somebody is going to be elected with part of a mandate that says, and they'll make this pledge in Saginaw, Michigan, they'll make it all over the country, they're going to provide leadership on this issue, and we'll get started later rather than sooner. I wish we could start sooner rather than later.

Questioner 4: Neil Numark from SEI. One word I don't think I heard this morning is CAFE. What's with that? Is CAFE now passé? I mean, isn't that a way to have mandatory greenhouse gas cuts?

Graham: Well, you've got an industry that's struggling. Some parts of our automobile industry are really struggling. And if you put standards that change the manufacturing components... I mean, what does it cost to retool, how much does it add to the overall solution? Is it a Band-Aid? You know, I just don't see the support in the Democratic and Republican caucuses right now to go down that road, mainly because of the economics of the automobile industry. We need to look beyond that. We've got a chronic problem with climate change; we've got a chronic problem with fossil fuel dependency. And we've got businesses who can only adjust once; they're not going to adjust ten times. Because if they adjust ten times, they are going to go out of business. So we need in Congress to give the infrastructure to make a grand adjustment, a major shift over time in a way that you can stay globally competitive. That is my goal, rather than just one small idea after the next.

Carper: I would just add... if I could. We voted on CAFE. I voted for higher CAFE requirements and we didn't get even close to half the votes. So I don't know that the votes are there, especially with Ford and GM struggling as they are. There are three things the government can do federally, that we can do, ought to do, and I think the government is doing... One, is to help with basic investment for R&D, whether it's for fuel cells, whether it's for hybrids...and that sort of thing. We're doing that. Second is to use the government's purchasing power on the civilian side and on the defense side to purchase, as new vehicles and new technology comes to the front, that we should buy the vehicles and help to commercialize the technology. And we're doing that.

The third piece is the tax policy, and John and Bob -- as the leaders of our staff of our Energy Committee -- were very much involved with this. If you look at the Energy Bill which passed last year, there's a tax incentive for people to buy energy efficient, highly energy-efficient hybrid-powered vehicles, and highly energy-efficient clean burn and lean burn diesel vehicles. I think under previous laws, it was like a \$1,000 tax credit if you bought a hybrid; it was basically one size fits all. Now, it's a variable tax credit. I think it starts at \$250 and it goes up to about \$3,000 or \$3,500 for hybrids; similar thing for diesels. Tom LaSorda is going to be here tonight in DC from DaimlerChrysler. They have a diesel hybrid that gets like 70 miles to the gallon. It's a concept car. They ought to build it. We have the tax policy in place. If they build it, we will buy it.

Finally, they unveiled a new technology at the Detroit Auto Show last month. They call it Blue TEC and you'll hear a lot more about it in years to come. What it is -- it is going to be a product on the road available to us... they can actually build it, that will meet the Tier 2 requirements, the EPA Tier 2 requirements for particulates. It will be a 50-state car; it will be real good. And the Ford folks unveiled a really neat-looking sports car called the Reflex, a gull-wing sports car called the Reflex, big write-up in the New York Times about a month ago about it. But the Reflex is a diesel hybrid. And I think that the combination of clean burn / lean burn diesel with a hybrid is where we need to go. Bill Ford talks a lot about innovation, and that's innovation. If they build something like that, they will sell a bunch of them.

Shogren: In the front row.

Questioner 5: Amy Bloom. As you all I'm sure are aware, a number of states have taken the lead on global warming issues. Several of these states are regulating carbon emissions from power plants with cap and trade programs. California, New Mexico, Arizona and other states have done climate change action plans.... And California has set up an ambitious global warming target. Under the Clean Air Act, states like that, particularly California, their programs were grandfathered in under the Clean Air Act. How do you all think national legislation dealing with carbon, should deal with state and regional programs?

Busch: Well, the program you're talking about is commonly called RGGI -- the Regional Greenhouse Gas Initiative, originally nine states in the Northeast but two sort of abstained so I think we're down to seven at this point. And of course, it's not law yet. This is an Initiative that may or may not become law. But importantly, it tries to address the issue we've been talking about. Unfortunately, it tries to address it in a pretty obvious way -- to force national legislation. That's what this is really all about. You can't solve greenhouse gases in the globe by regulating a few power plants in New Jersey. What you can do is get people really stirred up and put a lot of pressure on the businesses in the Northeast so that they try to get a more reasonable approach for the entire country. I don't think these are necessarily going to be all that helpful in the long run, and I think the answer is that they should be superseded by national policy. But it's pretty obvious what the environmental folks are trying to do. I guess if you were in their shoes, you sort of don't blame them. They're frustrated, they want to see action, and they're able to do

something on a state level that they can't do on a national level. But the answer to this problem is not 50 different approaches to greenhouse gases in the United States. That makes no sense at all.

Shogren: Anyone else?

Simon: Well, I would agree with some of what has just been said. Although I have a hard time envisioning George Pataki as some wild-eyed environmental radical.

But I do think that the point is this. Climate change is a problem of national and international scope. Congress is better at legislating things on a national scope than anything else. And the political pressure to address this problem is building around the country. And I do think that the perils that we have of the current way that we're approaching this -- which is purely on a voluntary basis -- are very apparent. Because when you don't have national leadership to address it, leadership will spring up at other levels of government -- mayors, at the city level, at the state level. And it's a great problem -- I think with all of the problems which have been pointed out of making the industrial transition that we will need to make to address a carbon-constrained world, it is hard to see how you can make that transition in a seamless or in the lowest cost manner possible to the economy if it is happening sort of randomly and chaotically across the system. But that's what we'll get if there is no national leadership brought to this thing. And I think that a number of the comments that my colleagues here have made on the panel this morning go to this issue: that we need a rational planning horizon for industry. As Jim has said, the utility industry, they make bets with 50-year lifetimes. And at this point, they're in an awful dilemma because they have to go to boards of directors and they have to justify to their shareholders a decision to go with a newer technology rather than an existing technology. Whether that newer technology is clean coal, whether it's renewables, whether it's something on the nuclear front, one thing is true of all of those new technologies -- they cost more than what is off the shelf today. And if you don't have a rational price signal that people can count on, then it is very difficult, I think, to expect people in industry to voluntarily sign up for large increments of additional capital cost.

So we desperately need to have, not only for the utility industry but for all industries that are part of the carbon intensity in our economy, we need to have a rational economic planning horizon. We don't have one now -- that's a task for the national government to come up with. And I sort of agree with what Senator Carper said. It's sort of hard to imagine whoever gets elected in 2008, taking office in 2009, is going to want to have the same sort of approach to it that we have now. So the question is how do we get our arms around this in a way that is bipartisan, that's rational, and that makes forward motion on the problem.

Shogren: Great. I think that we have exceeded our time, so if there is anyone on the panel who has any last comments they would like to make, I would like to throw this back to you. Senator?

Carper: I would just like to close with three things. Well, four things. One... Thank you very much for hosting. Let's give her a nice round. She's done a nice job. Thank you. To SEI for hosting and for putting this all together. And for those who have served on the panel. I've had the pleasure of knowing some of you pretty well. It's great to be here with you. Thank you.

Just three things I would like to close with. The time to act, the time to at least get started, is now. The politics of climate change is shifting. And finally, there's a proposal out there. It's a bipartisan proposal, the numbers have been worked on for a couple of years, and we're about to update it and reintroduce it, probably in the next month or so. But we believe that that proposal is a gateway to future action. Not the end-all, but a good way to get started. And we need to get started.

Shogren: Anyone else?

Rogers: I would just make the observation that as I listen to our discussions and the many different points that we made, I would urge y'all to think about this issue in the context of what I would call "Cathedral Thinking." If you look at the great cathedrals of Europe, all of them were built over sometimes many generations. It required resources, it took vision, many of the people who designed them didn't finish them. In a sense, as Senator Carper says we need to get going now, we do, but we also need to make sure that we build a cathedral that has a foundation that includes all parts of our economy in working to include the rest of the world, because it won't be a Cathedral worthy of completing, and achieving the purpose that we hope for, unless we include all segments of our industry in this. The other thing is that it takes a lot of different materials and lots of different crafts to really build a good Cathedral, and that says we use coal gasification, we use nuclear, we use renewables, we use energy efficiency. And so my hope is... [break in tape] ...next several decades. And so it is a huge mistake to put off to another day just because they think the political environment's better, because the reality is our Congress, our country, is going to have to be engaged in this issue for many decades to solve it.

Shogren: Senator Graham?

Graham: Well, politically, you are not going to have an overwhelming Senate one way or the other for years to come. I just think it's going to be close, so if you're looking for a major shift in Senate politics, I don't think it's going to happen. One word of caution. Do not divorce the climate change issue from the global economy changes. Because they're both real. And the burdens that we place on business in terms of climate change issues have to be evaluated through global economic changes. But here's the win/win: What keeps us ahead of the world? Innovation. So I do believe that as we innovate to bring about solutions to global climate change, and new technology that can be exported, it can create jobs. So I would like to see a marriage of the innovation that would come from global climate change in fuel efficiency and new technology, put that on the table, and use it as a platform to create a new foothold in the global economy. We can win both ways here if we're smart about it. Or we could lose one way.

Shogren: Mr. Busch, would you wrap it up for us, please?

Busch: I'd be happy to. I have one of those coming-out admissions. I'm an engineer. And as an engineer and as a citizen these days, I think what more and more of us are really tired of are people constantly screeching at each other from either side, either extreme. All of us normal people are just trying to get to the future in a reasonable way and we've got some reasonable ways now to deal with this problem. Whether you completely agree with global climate change or not, the science is getting to the point where we can't take the chance that you're wrong and it's not a problem. And so, it is time to do something. Senator Carper's legislation, we've consistently said is a great start. It's not necessarily everything that needs to be done – certainly, Domenici and Bingaman are coming along with a broader approach. All of those things deserve a lot of attention, and our industry in general –I can't speak for every person, every company – but our industry in general is ready to support this kind of legislation.

Shogren: Thank you, and thank you to all of the panelists, and thank all of you for coming.