AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 110–1093

Vice President Al Gore's Perspective on Global Warming

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

MARCH 21, 2007

Printed for the use of the Committee on Environment and Public Works

Available via the World Wide Web: http://www.access.gpo.gov/congress.senate

U.S. GOVERNMENT PRINTING OFFICE

55–923 PDF WASHINGTON : 2011

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ONE HUNDRED TENTH CONGRESS
FIRST SESSION

BARBARA BOXER, California, *Chairman*

MAX BAUCUS, Montana
JOSEPH I. LIEBERMAN, Connecticut
THOMAS R. CARPER, Delaware
HILLARY RODHAM CLINTON, New York
FRANK R. LAUTENBERG, New Jersey
BENJAMIN L. CARDIN, Maryland
BERNARD SANDERS, Vermont
AMY KLOBUCHAR, Minnesota
SHELDON WHITEHOUSE, Rhode Island

JAMES M. INHOFE, Oklahoma
JOHN W. WARNER, Virginia
GEORGE V. VOINOVICH, Ohio
JOHNNY ISAKSON, Georgia
DAVID VITTER, Louisiana
LARRY E. CRAIG, Idaho
LAMAR ALEXANDER, Tennessee
CRAIG THOMAS, Wyoming
CHRISTOPHER S. BOND, Missouri

BETTINA POIRIER, *Majority Staff Director and Chief Counsel*
ANDREW WHEELER, *Minority Staff Director*

C O N T E N T S

Page

MARCH 21, 2007

OPENING STATEMENTS

Alexander, Hon. Lamar, U.S. Senator from the State of Tennessee 2
Mikulski, Hon. Barbara, U.S. Senator from the State of Maryland 3
Boxer, Hon. Barbara, U.S. Senator from the State of California 4
Inhofe, Hon. James M., U.S. Senator from the State of Oklahoma 5
Baucus, Hon. Max, U.S. Senator from the State of Montana 54

WITNESSES

Gore, Hon. Al, Former Vice President of the United States and Former Senator from the State of Tennessee 8
Prepared statement 15
Responses to additional questions from Senator Inhofe 16

ADDITIONAL MATERIAL

Articles:
Offsetting Your Carbon Footprint Takes Decades, The Sunday Times 21
29 Million American Families Can't Afford to Pay Their Heating Bills, AARP 56
An Interview With Accidental Movie Star Al Gore, Main Dish 57
A Call to Cool the Hype, The New York Times 58
Charts:
An Inconvenient Truth, Long on Problems Short on Solutions 61
Daily Min Temperature 62

VICE PRESIDENT AL GORE'S PERSPECTIVE ON GLOBAL WARMING

WEDNESDAY, MARCH 21, 2007

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 2:34 p.m. in room 106, Dirksen Senate Office Building, the Hon. Barbara Boxer (chairman of the committee) presiding.

Present: Senators Boxer, Alexander, Baucus, Bond, Cardin, Carper, Clinton, Craig, Inhofe, Isakson, Klobuchar, Lautenberg, Lieberman, Mikulski, Sanders, Thomas, Warner, Whitehouse.

Senator BOXER. The hearing will come to order. Welcome to this very special hearing today.

I just wanted to lay out we are going to proceed. We are going to have two introductions of the Vice President from two people I think are very important to him. The first one will be a member of our Committee, Senator Alexander, who is going to welcome the Vice President, and then the second person is going to be one of the Senator's closest friends from the days that he was in the Senate, Senator Mikulski. We are very pleased that she has joined us here today.

Senator Inhofe wants to talk about the rules. I think that we are going to do that now. Let me lay out how we are going to proceed. The way we are going to proceed is following these introductions, I am going to have an opening statement for 4 minutes. Senator Inhofe is going to have an opening statement for 4 minutes. And then we are going to hear from the Vice President for up to 30 minutes.

When he has concluded, there are going to be 12 minutes for Senator Inhofe and 12 minutes for myself to ask questions. At that point, we will call on Senators. In the case of the Democrats, we are going to recognize you in the order of arrival. In the case of the Republicans, they have asked that it be by seniority. So those are the rules. Does anyone have any objection to those rules or wish to change those rules?

Senator INHOFE. Let me add to them, if I may, Madam Chairman.

First of all, I want you to know, Mr. Vice President, you have a great friend up here running this show. She has made all kinds of exceptions for you and we have not objected to them. One was not getting the statement in 48 hours before the Committee hearing, but that is fine. I don't have a problem with that. The other is the

witness time and so forth, but I think everyone is in agreement that is not a problem.

I do have three requests, Madam Chairman. First of all, when I make a unanimous consent request for something to be in the record, I would like to have it be in the record immediately following my questions. Secondly, in the event the answer to a question that I have takes too long, Senator Gore, what I will do is reclaim my time, and that is within the authority of the members up here. And the third is, you have a tendency sometimes to ad lib and get more comments in, I want the same ad lib time that you have, and I don't think you would have any objection to that.

[Laughter.]

Senator BOXER. Absolutely not.

Senator INHOFE. Good.

Senator BOXER. Senator, I am going to put in the record at this time, the one, two, three, four, five occasions when your witnesses did not have statements before us, and we said fine, as long as they do their best.

Senator INHOFE. And I said fine. That is fine.

Senator BOXER. So I just want to make sure it goes in the record because this happens all the time, and we have never had it mentioned as a problem before. I think the Vice President has a reason as to why, and I think he will address that issue.

Senator INHOFE. Let me respond to that.

Senator BOXER. I have the time at this point.

Senator INHOFE. That isn't quite accurate. We have always had it in by the day before, the night before. Sometimes not 48 hours.

Senator BOXER. I would like to start the hearing, and I am not going to tolerate interruptions. I am going to be very respectful to all of our Committee, but we need to get through this, and we have a lot of work to do.

So I am going to turn this over for a 2-minute introduction to Senator Alexander.

STATEMENT OF HON. LAMAR ALEXANDER, U.S. SENATOR FROM THE STATE OF TENNESSEE

Senator ALAXANDER. Welcome back to the Senate, Al.

It is my privilege to introduce and welcome back to the Senate one of Tennessee's foremost citizens, our former Vice President Al Gore and his wife, Tipper. Tipper, we are glad you are here as well.

Al is not only a former member of the Senate, he is a former President of the Senate, and of interest to me, he is a former occupant of the Senate seat in which I now serve. Al, I did a little research about those who served in this seat. They included Andrew Jackson, Cordell Hull, Estes Kefauver, Howard Baker, and more recently, Fred Thompson and Al Gore, both of whom we have been reading more about lately. There seems to be something about sitting in this Senate seat that stirs up presidential ambitions.

In Tennessee, we sometimes say about an especially determined horse that he gets the bit in his teeth and you can't turn him. Al Gore has had the bit in his teeth about climate change since he was a college student. Thirty years ago, he helped organize the first hearings in Congress about climate change.

I believe that climate change is a real problem. I believe that human activity is a significant contributor to climate change. I believe that it is time for us to work in a bipartisan way to take steps to fix the problem.

I believe these hearings and your testimony will help us do that. We are glad you are here. Welcome back to the Senate.

Thank you, Madam Chairman.

Senator BOXER. Thank you very much, Senator.

Senator Mikulski, will you please come up to the podium. Your chair is being brought to you. We give you 3 minutes to add your welcome.

STATEMENT OF HON. BARBARA MIKULSKI, U.S. SENATOR FROM THE STATE OF MARYLAND

Senator MILKULSKI. Thank you very much, Madam Chair and my colleagues. It is wonderful to be sitting next to Al Gore once again in the United States Senate.

Thank you for the honor of letting me come here because I came into the Congress of the United States with Al Gore in 1976. It was a star-spangled banner year and a star-spangled banner class, and Al was there leading the flag and waving the flag for environmental change even back there.

Sitting next to him for 8 years on the Energy and Commerce Committee, I watched Al Gore lead the charge on some of the most important environmental legislation of our time: the amendments on the Clean Air Act; really, the Superfund site that cleaned up the mess; and safe drinking water.

Al then went on to come to the U.S. Senate where he chaired the Subcommittee on Science and Tech and Space on the Commerce Committee. He was the first Senator to sponsor the World Environmental Policy Act. Why was that important? Well, guess what? It authorized policies to mitigate global warming and reduce carbon dioxide emissions. It also picked up on a new idea promoted by Sally Ride, called: We ought to study our own planet as if it were a distant star.

Of Al Gore's work, then Senator Gore, came the whole idea at NASA for Mission to Planet Earth. He was the authorizer, I was the appropriator, and we worked together to do that.

But as Vice President then, he went on to continue to be an advocate for the issues related to climate crisis, but always based on science. What Al Gore is known for is let's pursue sound science, ungagged and unfettered, with intellectual rigor. And Al Gore helped create a global awareness of the consequences of global warming.

So for him, it has been a life-long advocacy and a life-long passion. We need to listen to him as ever before. What he has to tell us might be inconvenient, but it will always be the truth.

Al Gore.

[Applause.]

Senator BOXER. Thank you so much, Senator Mikulski. I am glad that you had a chance to visit with Senator Gore. I don't know whether to say Vice President Gore, Senator Gore, Al, Tipper. We are just happy that you could join us today.

I do want to recognize Mrs. Gore here. We are thrilled that you could be here as well, Tipper.

I am pleased to officially welcome Vice President Gore to the Environment and Public Works Committee.

STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Mr. Vice President, we are honored and we are privileged to have you with us today to discuss one of the most important challenges facing humankind, global warming. You know, there are some moments in human history when individuals have the ability to make a difference. Sometimes it is a series of actions by one person or a group of people. Sometimes it is a single act of defiance. I think about Rosa Parks. Sometimes it is the simple, simple telling of a great truth, however inconvenient. And that act can spark enormous change with long-lasting effects.

Professor Roger Ravelle, who began making the first measurements of CO_2 in the atmosphere, was your spark, Mr. Vice President. We learned that from your movie. From that, you became a spark that has ignited the global warming debate in America. I don't think there is any question about that.

Personally, I believe your work has made all the difference for the future of our planet and for our children and our grandchildren, because when the history of this issue is written, your name will be at the forefront. I only hope the story has a good ending. That, my friends, is up to us.

The recent report by the IPCC, written by hundreds of scientists from around the world and peer-reviewed by many more, including NOAA scientist Susan Solomon, confirms conclusively that the Earth is warming due to human activity. Some will say this report was not written by scientists. Yes, it was. Their names are listed on the front of the report. These scientists briefed our very Committee.

The IPCC report tells us that warming is unequivocal; that CO_2 levels are higher than at any time in the past 650,000 years; and there is a 90 percent certainty that most of the warming is due to human activity.

It also tells us that since 1961, the average temperature of the ocean has increased. That is 1961, that the ocean is absorbing 80 percent of the heat added to the climate system and the ocean is becoming increasingly acidic from absorbing carbon dioxide.

But some persist in disbelief and disregard of the facts. They say, for instance, that the sun is causing global warming, but the President of the National Academy of Sciences testified before us and said changes in the sun can't explain the warming we have seen over the past 25 years.

Some say there is no linkage between hurricanes and global warming, but the IPCC report makes it clear there is. Some say Greenland and Antarctica are not melting, but the IPCC says, "Losses from the ice sheets of Greenland and Antarctica have very likely contributed to sea level rise between 1993 and 2003."

Some say that limits on greenhouse gases are unworkable and the U.S. has reduced emissions more than the European Union. The truth is that since 1990, U.S. emissions have risen by 15.8 per-

cent and EU emissions have declined by 0.8 percent. These are the inconvenient truths that many would like to avoid.

Vice President Gore, you have not waited. You have acted for us. You have acted more than anyone else. You have shown us the true dangers that global warming poses for the future of our planet. But you have done much more than that, because you looked at solutions and you give us hope and you give us reason to be optimistic.

The time for action is now. The next decade will likely tell the tale of whether we as a species have been able to act decisively to protect our planet. We have a choice, and we can move in the right directions. We can become energy efficient and reduce our dependence on foreign sources of energy. We can develop new technologies that can create jobs and we can export those technologies to China and India.

I think most of all, we can work together, as Senator Alexander said, Republicans and Democrats. And in this Committee, we have done so much in the past.

I am going to take an additional 40 seconds, which I will give to my colleague.

This Committee, after the Cuyahoga River caught fire in Ohio in 1969, this Committee responded with the Clean Air Act in 1972. This Committee acted when the air was so dirty you could see it. We responded in 1970 with the Clean Air Act. And when contaminated tap water was causing widespread waterborne disease, this Committee passed the Safe Drinking Water Act in 1974.

So colleagues, I think we are up to the challenge. With the people that we have on this Committee on both sides of the aisle, we can do this.

Mr. Vice President, after we hear from the Ranking Member, I really look forward to hearing from you.

Senator Inhofe.

Senator INHOFE. Thank you, Senator Boxer.

Senator BOXER. Five minutes for you.

Senator INHOFE. Thank you.

STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. In spite of what you might think to the contrary, I am really glad to have you here, Senator Gore. We are very close up here. People don't believe that, but we are.

Let me just say this, though. One thing about this hearing is we know your perspective. You know my perspective, and so I am going to go ahead and make a couple of comments, stay within my timeline, and look forward to your testimony. Then I do have some questions, then I look forward to that dialogue.

My perspective has been that some of the statements that you have made have inaccuracies and have been misleading. A lot of the peer-reviewed scientists who have written in Nature magazine, Geophysical Research letters, and Science are radically at odds with your claims.

Now, there is not time in 5 minutes to go into all of them. I will just mention two at the outset that might stimulate some response.

First, you claim a strong new emerging consensus linking global warming to an increase in hurricane intensity and duration, as the Chairman mentioned. Last year, the World Meteorological Organization very clearly rejected this assertion and other scientists agree.

Secondly, you said that, and this is a good one here—this scares everybody—you said that the East Antarctica might melt and this could raise sea levels by 20 feet, so we are all going to die. However, according to many scientists, the Antarctica is gaining ice mass, not losing it. In 2005, a study published in Science by a team of researchers led by Dr. Curt Davis found that the overall ice mass in the Antarctica was actually increasing.

The public is catching on. Even the New York Times, and I am sure you read this, last week had an article, Mr. Vice President, that said that you have been so extreme in some of your expressions that you are losing some of your own people.

Now, given that, it is no wonder that you have turned down some of the opportunities people have asked for for debates. Now, there is a reason for this. This happened only last week. There was a debate, and when it is balanced—and let me make sure we understand. When I talk about skeptics, I am talking about scientists who believe that the science is not settled. When I talk about alarmists, I am saying they are the ones who think that it is settled. Okay?

When the debate is balanced, the skeptics win; the alarmists lose. In New York last week, a major debate took place to examine whether, and this is the goal, global warming is a crisis. Prior to the debate, the hand-wringers, the alarmists, your guys in the audience outnumbered those who didn't think it was a crisis by two to one. After the debate, it completely reversed.

Now, that shift mirrors a larger one taking place in the scientific community. Claude Allegra is a French geophysicist on both the French and the United States Academy of Sciences. He and Nir Shaviv from Israel, he is an astrophysicist, meteorologist Reid Bryson——these are all people who were on your side, who were marching down 10 years ago right there hand in hand with you. They have all reversed their position now. These were the national leaders reversing their positions.

Now, lastly the cost. The cost of global warming is huge. We had a hearing, Mr. Vice President, in this Committee where we had many of the companies who came in and were embracing the idea that manmade gases are causing climate change, only to find out that without exception, each one of the five companies that was here testifying, they stood to gain not millions, but in a couple of cases billions of dollars if we should put a cap and trade policy or reductions on CO_2.

And of course, the amount of money it would cost is just really astronomical. I can remember in 1993, Mr. Vice President, when I was on the Senate floor when we had this huge tax increase called the Clinton-Gore tax increase of 1993, a $32 billion tax increase. I was opposed to it, but you guys won and I lost.

The estimates now on whether it is Kyoto or any of the other schemes to reduce CO_2 is estimated to be in excess of $300 billion.

Now, your estimate from your Administration, it was actually $338 billion. That is 10 times the tax increase of 1993.

Now, here is the problem with it. Not only is that a tax increase, but it is disproportionately on the poor, the people on fixed incomes, the elderly, the individuals who as a percentage of their monthly budget spend five times more on energy than the average household.

So I consider this the largest tax increase in history, 10 times greater than the Clinton-Gore tax increase of 1993. The poor have to pay for it. The science isn't there. It is something that we just can't do to America, Mr. Vice President, and we are not going to do it.

Thank you, Madam Chairman.

[The prepared statement of Senator Inhofe follows:]

STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Thank you for holding this hearing, Madame Chairman, and to you also, Mr. Vice President, for agreeing to come before our Committee to testify about your perspectives. Your views are already known to many Americans, but today will allow us to engage in a dialogue which should be interesting.

It is my perspective that your global warming alarmist pronouncements are now and have always been filled with inaccuracies and misleading statements. Many of the peer-reviewed studies published in such journals as Nature, Geophysical Research Letters, and Science are radically at odds with your claims. I do not have time to delve into each flaw with your movie, but I do want to touch on just 2.

First, you have claimed that there is a "strong, new emerging consensus" linking global warming to an increase in hurricane intensity and duration. Yet last year, the World Meteorological Organization very clearly rejected this assertion, and other scientists agree.

Secondly, you said that East Antarctica might melt and this could raise sea levels by 20 feet, so we're all going to die. However, according to many scientists, Antarctica is gaining ice mass, not losing it. In a 2005 study published in Science a team of researchers led by Dr. Curt Davis found an overall gain in ice mass in Antarctica over a ten-year period.

And the public is catching on. Even the New York Times last week published an article about scientists, many of them your supporters, who say you have overstated your case on global warming—in fact, they warn that you may be hurting the so-called cause with your "alarmism."

Given that, it is no wonder you have turned down the chance to debate the President of the Czech Republic, Vaclav Klaus. And now I understand a debate challenge has been issued by Lord Monckton of Benchley.

Now there is a reason for this.

When the debate is balanced, skeptics win, alarmists lose. In New York last week, for instance, a major debate took place to examine whether global warming is a crisis. Prior to the debate, the hand-wringers, the alarmists, in the audience outnumbered those who didn't think it was a crisis 2 to 1. After the debate, the alarmists were outnumbered—a major turnaround in beliefs in a single night.

That shift mirrors a larger one taking place in the scientific community. Claude Allegre, a French geophysicist—Nir Shaviv, an Israeli astrophysicist—and meteorologist Reid Bryson have converted from alarmists to believing that climate variability is largely natural. In short, the ranks of converted scientists are skyrocketing.

Lastly, the cost: Global warming is now big business. Thousands of individuals and even some Fortune 100 companies stand to make tens of billions of dollars.

I was on the floor opposing the '93 Clinton-Gore tax increase of $32 billion, but the cost of Kyoto and other CO_2 reduction schemes are estimated to be over $300 billion, ten times the cost of your '93 tax increase. And who's paying for it? Those on fixed incomes and the poor, who as a percent of their monthly budget spend five times more on energy than the average household.

Largest tax increase in history—10 times Clinton-Gore of '93 and the poor pay for it and the science isn't there. We just can't do that to America, Mr. Vice President and we're not gonna.

Thank you.

Senator BOXER. Thank you, Senator Inhofe.

Mr. Vice President, you have 30 minutes to use in whichever way you would like.

STATEMENT OF THE HON. AL GORE, FORMER VICE PRESIDENT OF THE UNITED STATES AND FORMER SENATOR FROM THE STATE OF TENNESSEE

Mr. GORE. Thank you very much, Madam Chair. Thank you so much for your generous invitation to come and be here today.

Senator Inhofe, thank you for your words of welcome. I look forward to questions and an exchange of views here.

To my fellow Tennessean, Lamar Alexander, Senator Alexander, Lamar, thank you so much for your kind words and your warm welcome. I want to note for the Committee what I am sure most of you know. Senator Alexander as Governor of our State was associated with keen attention to environmental protection in a way that was quite sensitive to economic development, and is part of a tradition that includes Senator Baker and others from the time when the issue of protecting the environment was genuinely a bipartisan issue. Some of us believe that it is not now and should be. I understand there are differences in the way that would be phrased here today, but I want to acknowledge the record of one of my Senators, Lamar Alexander.

Senator Mikulski and I served together in the House of Representatives, as she noted, and in this chamber. And there were multiple pieces of legislation that our two names on them. It was always a pleasure and an energizing experience to work with Senator Mikulski. I am honored that you would come and do this here today. Thank you so much.

To the other members of the Committee, I have so many close friends on this Committee. Forgive me for not going down the aisle, but I want to acknowledge my respect for all the members of the Committee.

My father served here in this chamber. I was reflecting this morning on the differences that have occurred since he first came to Washington in 1938. There are all kinds of jokes about the hot air on Capitol Hill. I am not going to make those jokes, but I am going to refer to the air on Capitol Hill, because when he came here in 1938 there were around about 300 parts per million of CO_2 in the air that he and his colleagues in this Senate breathed. Today, it is 383 parts per million.

It didn't really go above 300 parts per million for at least a million years back, maybe longer, but in the Antarctic ice record, that is about as far back as they can go. Even though the Earth has gone through all these big swings in natural cycles, the CO_2 content never went above 300 parts per million in all that time.

And just in the short span of time from my father's first service in the Capitol here and today, it has gone up a dramatic amount. More CO_2 means warmer temperatures. There really should be no doubt about that. That has been known for 180 years. And for at least 100 years, they have known roughly how much the temperature would go up with what concentrations of extra CO_2.

For most of human history, we lived on the harvested energy that came from the sun, and it was a net energy balance. Then

with the beginning of the use of coal and then oil and other fossil fuel supplies, we began to use the accumulated reservoirs of hundreds of millions of years worth of accumulated solar energy. Of course, that meant returning carbon to the atmosphere in very large quantities. From the early days of that period, there were a few scientists who said, wait a minute, that is going to have some consequences. And it did.

It has now reached a point where we have literally changed the radiated balance between the Earth and the sun. The scientists who study global warming gained a lot of their expertise by looking at the other planets in the solar system. Mars has just 1 percent of the Earth's atmosphere, and the temperature is not 15 degrees centigrade or 59 Fahrenheit, it is 55 below zero on average, because the CO_2 doesn't trap the heat.

Venus, by contrast, has much more CO_2 and the temperature is above the boiling point of lead and it rains sulphuric acid, not the kind of weather forecast you want to see in the morning. And it is not because Venus is closer to the sun, because it is much hotter than Mercury, even though Mercury is right next to the sun. It is the CO_2. This is extremely well established, well understood, and well known.

Senator Boxer, I want to start off by saying that there is really hardly any way to overestimate or overstate the degree of hope that people out in our country have because of what you are doing, because of what this new Senate and Congress everybody hopes will do. This is not a normal time. We are facing a planetary emergency and I am fully aware that that phrase sounds shrill to many people's ears, but it is accurate.

The relationship between humankind and planet Earth has been radically altered in a very short period of time. What would make us believe that we could go through these changes and not have an impact on the planet? We have quadrupled human population in less than 100 years, from 1.6 billion in 1900 to 6.56 billion today. And that is stabilizing of its own accord, as girls are educated and women are empowered, and girls and women gain literacy, and as family planning that is culturally acceptable is made more widely available in every nation, and most importantly as infant mortality goes down and maternal and infant health standards go up.

The death rates come down first, and then after a few years the birth rates come down and the population of the Earth is stabilizing. But with a four times increase in less than a century, our impact on the planet has been dramatically changed.

Secondly, and more importantly, the technologies we have at our disposal today are thousands of times more powerful than any that our grandparents had available to them. That makes all of our activities more effective and productive, but it also makes us sometimes like the proverbial bull in a china shop, and we are capable of doing damage that we are not always fully aware that we are doing. Of course, the common assumption is the Earth is so big we couldn't possibly have a lasting harmful impact on it.

But the most vulnerable part of the Earth's ecological system, the scientists tell us, is the atmosphere. It is so thin. The number of molecules is known. They say it is 10 to the 44, which is above my pay grade. It sounds like a big number, but compared to what

we are able to put into it every hour of every day now, it is not that big. It is just a few miles from here to the top of the sky before we can't breathe anymore. So we are changing its composition.

We are putting 70 million tons every day of this global warming pollution into the Earth's atmosphere. As you noted, Madam Chair, 25 million tons go into the oceans every day. And that is literally making the oceans more acidic. But where the atmosphere is concerned, that extra CO_2 is retaining in the atmosphere much more of the outgoing infrared that normally escapes back into space and keeps a normal healthy balance within which humankind has developed, and within which all of our civilization has evolved, and all the cities have been located, and all the ports and the places where the rain can be predicted to fall reliably enough for agriculture. And we are putting all those patterns at risk.

The 10 hottest years ever measured in the record have been since 1990. Twenty of the 21 hottest years have been in the last 25 years. The hottest year of all was 2005. The hottest year of all in the United States was 2006. The hottest winter ever measured worldwide was this winter, December, and then January and February of this year, last month. This is going on right now and it is continuing to increase.

The scientific leaders of the world have given us the fourth unanimous report in less than 15 years. They gathered this time in Paris 6 weeks ago. They said the evidence supporting this consensus is, and I quote them, "unequivocal, unequivocal." Scientific American had a special issue in September that began with an article that said the debate on global warming is over. The editor in chief of Science magazine said it is extremely rare to have a consensus as strong as the one supporting the consensus view on man-made global warming.

It is real. We are causing it mainly, the vast majority of it. The consequences are bad and will be catastrophic unless we act. We can act. We can solve it. There is still time. And we have everything we need to get started. Those points are in agreement.

One of the leading scientific experts said the consensus supporting this view on global warming is as strong as anything in science, with the possible exception of gravity.

[Laughter.]

Mr. GORE This is a challenge to our moral imagination because the natural tendency for me, for all of us, is to think that something this big and this challenging is not real; we don't want it to be real; it is hard to think about. Contemplating changes to deal with it automatically creates a feeling of discomfort. We just wish it would go away. It is not going away. We have to deal with it.

As I started to say, Madam Chair, the people out there in our country are so hopeful that this Senate will act, and that this Congress will act. And they know how hard it is. I want you to know that there is a big change in public opinion that is building out there.

I am going to deliver to your offices, I didn't bring all the boxes with me from the House side, where I spoke this morning, but they are being delivered electronically to your offices. I have a site called algore.com and just a few days ago we started asking people to join in presenting this statement. And 516,000 Americans signed it just

in the last several days. We have been getting new names at the rate of 100 per second.

This should not be seen as a partisan issue. Sometimes you will hear people say that, and you think, oh, it is just boilerplate, it is a throwaway. He is trying to get some Republicans to vote for it. This really shouldn't be seen as a partisan issue or even a political issue.

It is a moral issue. There are some times in history when a small number of people in one place have to make difficult decisions that will affect the future for everybody. One of the most popular movies out there now is 300. I haven't seen it, but the young people love it. It is about the battle of Thermopylae in 480 B.C. when, Senator Warner, you are a great military historian, and I would love to hear you talk about this sometime. As you know, 300 saved the future of Western Civilization against 10,000, one of the great stories of courage when a few made a decision for the many.

The Greatest Generation, the label we give to the generation that won World War II and defeated fascism in the Atlantic and the Pacific simultaneously, rose to the challenge of fascism and in the process saved our country. Significantly, when they came back here, no longer 19, 20, or 21 year olds, they found that they had gained moral authority. Senator Warner, you were one of the youngest members of that generation. Weren't you part of World War II? God bless you and thank you. Thank you.

And when your generation came back, the GI's General Omar Bradley said, "Now is the time when we have to steer by the stars, and not by the lights of every passing ship." Another General, George Marshall, said, "Let's go and lift our adversaries from the battlefield from their knees and walk with them toward self-determination and prosperity." And your generation said "yes."

And you adopted a 50 year horizon, and established the institutions that help this world move in a positive and favorable direction. And you know what? They don't export world wars from Europe anymore, because a United Nations was established in your home town, Senator Boxer, and then a lot of other steps were taken. Our mutual predecessor, Cordell Hull, helped establish the world trading system, reciprocal free trade, as he would always remind us to say.

Now, this generation and this Senate faces such a challenge, the few. The stakes are high. The time is now. The people are hopeful. It can be done.

I just came last week from the United Kingdom. I met with not only the Chancellor of the Exchequer and leaders of the Labor Party in power there, but also the Tories. I met with their entire front bench, 80 of them. And both of their major parties are unified in their determination to solve this climate crisis. It is not partisan. They are competing with one another. They have an election coming up probably later this year. Who knows. Their system is different, you know, but they are competing vigorously with one another.

But they are competing on the basis of which party can offer the most creative and meaningful solutions to this crisis. They are not arguing about the science. They are arguing about how to design solutions that will go farther faster. And they joined with all of

their European neighbors just last week when I was over there, to adopt a much tougher reduction, mandatory reduction in CO_2, 20 percent, and 30 percent if we join in the global effort to address this crisis.

We are the leaders of the world. The United States of America is the leader of the world, and the members of the Senate and the House in this legislative branch of Government are the ones. The history of freedom is the history of legislative bodies.

In that time after World War II, what made it possible for that Greatest Generation to claim that title and change the world after saving the world, was Republicans, led by Senator Arthur Vandenberg and others, stood and said we are Americans first, and we see the challenge, and we are going to do the uncommonly difficult; we are going to do our duty as we see it.

Now is such a time. We have too much partisanship. Every one of us, myself at the front of the line, has contributed too much to it. But a time will come, I promise you, a time will come when a future generation will look back on 2007 at this hopeful time, and they will ask one of two questions. Either they will ask: What in God's name were they doing? Didn't they see the evidence? Didn't they hear the warnings? Didn't they see the mountain glaciers melting in every part of this Earth? Didn't they see the north polar ice cap melting? Didn't they hear the scientists say it may be gone in as little as 34 years? Didn't they hear the seismographers telling them that the Earth is shaking because of the glacial earthquakes on Greenland? Thirty-two of them this year, up to 5.1 on the Richter scale.

Didn't they see the evidence of nature being on the run? Senator Alexander, we had, and maybe you saw this, I get clippings and what not that other people don't necessarily get. Manatees live in South Florida. One of them showed up off Memphis this summer. Yes, the first time ever. Have you ever seen a manatee in Memphis? No.

[Laughter.]

Mr. GORE It got too hot in Southern Florida. I am not making this up. Another one showed up off of Cape Cod, the first time ever. Nature is on the run.

Senator Inhofe, there were some big fires in Oklahoma last year. All over the west, there have been these big fires. A brand new study in the scientific peer-reviewed literature now definitely links it to global warming. When there is an earlier spring melt and the precipitation doesn't keep the soil moist enough, the soil dries out from the higher temperatures, and the vegetation dries out, and they call that kindling. And all over the west, the fires have been raging out of control. They have megafires in Australia now, and what some of them call a thousand year drought, and fires across Russia also.

I want to talk to you a little bit about some ideas that I believe could hopefully help in your deliberations. First of all, I think that we ought to have an immediate freeze on CO_2 emissions and start the reductions from there. All the talk about prospective cuts, all the time we have been talking about prospective cuts, the emissions have continued to increase. I think we ought to have an immediate freeze.

I remember back in the days of the nuclear freeze, I was opposed to that, but it sure mobilized public opinion. And it helped, Senator Warner, when you and I and some others were working with Sam Nunn and Norm Dicks and President Reagan, and we built a bipartisan coalition to move in the right direction, and we got it done. And a freeze helped on that. Neither one of us was for it, but I am for a freeze on carbon emissions. And then I think we ought to have reductions from there.

Secondly, I think that we ought to use the tax code, not to increase taxes, Senator Inhofe. I am not for that. And what I am about to propose to you, I am fully aware is considered way outside the range of what is considered politically feasible, so I would advise you not to spend too much of your ammunition on it because people don't yet think it is going to be on the agenda.

But here is what I think we should do. I think we ought to cut taxes on employment and take that burden off employees and employers and make up the difference with pollution taxes, principally CO_2 taxes. Some other countries are talking about it seriously, because in the developed world, we are now in a new competitive global environment.

Our big disadvantage is these developing countries with big populations, still growing significantly, with low wage rates, all of a sudden have access in an IT-empowered world to the best technology in container shipping, and we are competing with them. And we don't want to lower our wages, but we don't have to pile on top of the wages the full cost of our health and welfare and Social Security and social programs. We ought to be encouraging employment and small business, and discouraging pollution instead of the other way around. We ought to use some of that revenue to help the poor with the adjustments that are coming forward.

Third, the third suggestion, I am in favor of cap and trade as part of the freeze. I am very strongly in favor of it. I have supported Kyoto, but I understand the realities of the situation. I think the new President, who takes office in January of 2009, should take office at a time when our country has a bipartisan commitment to de facto compliance with Kyoto, and then I think we should move the starting date of the next treaty period, now due to begin in 2012, forward two years to 2010. And we ought to start a sprint to negotiate and ratify a new, tougher treaty that starts in 2010. We need to find a creative way to get China and India involved sooner, rather than later.

That is a tough challenge and an important one for many reasons, not least because China's emissions will be larger than those of the United States in another couple of years. And it has to be a negotiation, and there are factors like land cover and methane that might be used to get them involved sooner, rather than later. But we need to focus on ratifying a cap and trade system so the market will work for us instead of against us.

I remember, incidentally, Senator Warner, when I was working on arms control under former President Carter and the SALT II Treaty was withdrawn from the Senate. And then President Reagan, after a few years, had even deeper reductions and call it START and everybody was for that. I think it will be good to have

a new treaty. Let's comply with Kyoto, but let's ratify a new treaty earlier, rather than later.

Third, I believe that we ought to have a moratorium on any new coal plants that are not fixed with carbon capture and sequestration technology. It is simply irresponsible to go forward without carbon capture and sequestration.

Fifth, I believe that this Congress, this Senate should fix a date in the future beyond which incandescent light bulbs are banned and there may be some other technologies that fall in that category. Give the industry time to make sure all the sockets are worked out and all the dimmers and all the things that people want, but then tell them by a date certain you are going to have to sell this other kind. And they will do it. They will make money at it.

It is like Wal-Mart. Wal-Mart has not taken on the climate crisis simply out of the goodness of their hearts. They care about it, but they are making money at it. And if we set the standards, our economy will work for us.

Sixth, the creative power of the information revolution was unlocked by the Internet. When the scientific and engineering pioneers came up with Arpanet and this Senate empowered them with a legislative framework and research and development funds, all of a sudden people just developed it amazingly. We ought to have an Electranet, and we ought to encourage widely distributed power generation by homeowners, by small business owners.

And here is the key: We ought to take off the cap. Let them sell as much as they want to into the grid. And remember that the flip side of a monopoly is a monopsony, the tyranny of a single buyer. Don't let the utility in each area decide how much they are going to pay homeowners or business people for selling the electricity. Set the rate the way a public utility commission does now.

Have a tariff that reflects the market price. You may never have to build another central generation power plant. You watch. You give them the ability, individuals out there, families, small businesses, they are going to go to town with this, an Electranet.

Then I think we ought to raise the CAFE standards for auto efficiency. I do think it ought to be part of a comprehensive solution. Don't single out autos as the main culprit. It is part of it and it is a significant part of it. And so we ought to raise CAFE standards as part of a larger package.

Next, I would propose that you pass a carbon neutral mortgage association or Connie Mae. And here is why. The buyers of new homes and homebuilders and sellers of new homes, all focus on the purchase price. The market clears it. It is a very sensitive number. But the expenditures that go into more insulation and window treatments and the expenditures that don't pay back immediately, but they pay back over two or three years in lower energy bills, they are not used because they raise the purchase price. Put those in a separate instrument, and have a Connnie Mae that bundles those and sells them in the marketplace. Then when you go to a closing, you sign your mortgage, and the banker and the seller say, now here is your Connnie Mae here; this is going to lower your electricity bills; you are going to save and reduce CO_2 at the same time.

You ought to also, and I will respectfully recommend, and this is my last recommendation, require corporate disclosure of carbon emissions. Investors have a right to know about material risks that could affect the future value of the stocks that they purchase. They are not now routinely reported. You may know that just two days ago, pension funds managing a total of $4 trillion called upon the Congress and the SEC to require these disclosures.

Finally, Madam Chair and Senators, as many of you know, the Chinese and Japanese way of expressing the concept "crisis" in the kanji characters uses two symbols. The first means "danger" and the second means "opportunity." With all the focus on the danger of this crisis, which I think is the gravest we have ever faced, I want to close by reemphasizing my belief that it is also the greatest opportunity we have ever confronted.

We can become more efficient and more productive. We can create more jobs and lift our standards of living. And in the process, we can save the habitability of this planet and tell that future generation that we were up to the challenge and we did what some thought was impossible. We did it on a bipartisan basis. And in the process, we gained the vision and moral authority in our generation to take on these other challenges that also need our attention.

Thank you.

[The prepared statement of Mr. Gore follows:]

STATEMENT OF HON. AL GORE, FORMER VICE PRESIDENT OF THE UNITED STATES AND FORMER SENATOR FROM THE STATE OF TENNESSEE

Madam Chairman, Senator Inhofe, and members of the Committee, I want to thank you for your gracious invitation to be here today, giving me the opportunity to return to the Senate to talk about the climate crisis.

I want to testify today about what I believe is a planetary emergency—a crisis that threatens the survival of our civilization and the habitability of the Earth. Just six weeks ago, the scientific community, in its strongest statement to date, confirmed that the evidence of warming is "unequivocal." Global warming is real and human activity is the main cause. The consequences are mainly negative and headed toward catastrophic, unless we act. However, the good news is that we can meet this challenge. It is not too late, and we have everything we need to get started.

As many know, the Chinese expression for "crisis" consists of two characters side by side. The first symbol means "danger." The second symbol means "opportunity." I would like to discuss both the danger and the opportunity here today.

First of all, there is no longer any serious debate over the basic points that make up the consensus on global warming. The ten warmest years on record have all been since 1990. Globally, 2005 was the hottest of all. In the United States, 2006 was the warmest year ever. The winter months of December 2006 through February 2007 make up the warmest winter on record. These rising temperatures have been accompanied by many changes. Hurricanes are getting stronger. Sea levels are rising. Droughts are becoming longer and more intense. Mountain glaciers are receding around the world.

New evidence shows that it may be even worse than we thought. For example, a recent study published by the University of Alaska-Fairbanks indicates that methane is leaking from the Siberian permafrost at five times the predicted levels. Methane is 23 times as potent a greenhouse gas as carbon dioxide and there are billions of tons underneath the permafrost.

However, there is a great deal of new momentum for action to solve the climate crisis. Today, I am here to deliver more than a half million messages to Congress asking for real action on global warming. More than 420 Mayors have now adopted Kyoto-style commitments in their cities and have urged strong federal action. The evangelical and faith communities have begun to take the lead, calling for measures to protect God's creation. The State of California, under a Republican Governor and a Democratic legislature, passed strong, economy wide legislation mandating cuts in carbon dioxide. Twenty-two states and the District of Columbia have passed renew-

able energy standards for the electricity sector. Much more needs to be done, but change is in the air.

I do not believe that the climate crisis should be a partisan political issue. I just returned from the United Kingdom, where last week the two major parties put forward their climate change platforms. The Tory and Labour parties are in vigorous competition with one another—competing to put forward the best solution to the climate crisis. I look forward to the day when we return to this way of thinking here in the U.S.

The climate crisis is, by its nature, a global problem—and ultimately the solution must be global as well. The best way - and the only way - to get China and India on board is for the U.S. to demonstrate real leadership. As the world's largest economy and greatest superpower, we are uniquely situated to tackle a problem of this magnitude.

After all, we have taken on problems of this scope before. When England and then America and our allies rose to meet the threat of global Fascism, together we won two wars simultaneously in Europe and the Pacific.

This is a moral moment of similar magnitude. This is not ultimately about any scientific discussion or political dialogue. It is about who we are as human beings and our capacity to transcend our limitations and rise to meet this challenge.

The solutions to this problem are accessible, but politically - at least in the near term - seem quite difficult. In practice, however, they will turn out to be much easier than they appear to us now.

For example, the Montreal Protocol on Substances that Deplete the Ozone Layer first negotiated in the 1980's was opposed by industry for fear it would hurt the economy because its provisions were too stringent. However, governments and industry rose to meet the challenge and the treaty was strengthened twice in quick succession to quickly ramp down the chemicals that were causing the hole in the ozone layer.

There are some who will say that acting to solve this crisis will be costly. I don't agree. If we solve it in the right way, we will save money and boost productivity. Moreover, the consequences of inaction would be devastating to both the environment and the economy. Recent reports make that clear.

When I think about the climate crisis today I can imagine a time in the future when our children and grandchildren ask us one of two questions. Either they will ask: What were you thinking, didn't you care about our future? Or they will ask: How did you find the moral courage to cross party lines and solve this crisis? We must hear their questions now. We must answer them with our actions, not merely with our promises. We must choose a future for which our children and grandchildren will thank us.

RESPONSES BY AL GORE TO ADDITIONAL QUESTIONS FROM SENATOR INHOFE

Question 1. In your testimony before the House of Representatives on March 21st, you made the point that you have not asserted hurricane frequency will be increased by global warming. Yet there are repeated mentions by you of this asserted link in your book An Inconvenient Truth. Now that you have had time to reflect, do you wish to modify your statement on March 21st, or, given the statements in your book, do you now admit that you were mistaken when you repeatedly claimed global warming would cause an increase in the number of hurricanes?

Response. No.

Question 2. Based on your pro rata share of the offsets sold by the company(ies) from which carbon offsets have been purchased on your behalf, how many tons of carbon-equivalent emissions have been reduced to date from completed projects (i.e. how much carbon has actually been sequestered to date)? Since you have stated that we only have 10 years to act on global warming, do not count projects that are being "planned" or tree sequestrations that will not occur for years of decades. In short, how many tons of carbon have been actually reduced from the atmosphere so far by the companies that sold you offsets and what is your "share" of those reductions?

Response. I am unable to obtain the aggregate data that you have requested from the offsetting firms with which I work. My pro rata share of emissions offsets is difficult to provide to you. However, the methodology that is used gives me a very high degree of confidence that my emissions are more than fully offset.

Question 3. What is the estimated amount of carbon emitted into the air from your private jet travel each year, and how does this compare to the carbon emissions from driving a Hummer 15,000 miles?

Response. This is impossible to calculate based on the information in the question.

Question 4. At the hearing, I asked you to take the following pledge:

As a believer:

that human-caused global warming is a moral, ethical, and spiritual issue affecting our survival;

that home energy use is a key component of overall energy use;

that reducing my fossil fuel-based home energy usage will lead to lower greenhouse gas emissions; and

that leaders on moral issues should lead by example;

I pledge to consume no more energy for use in my residence than the average American household by March 21, 2008.

Given that hundreds of Americans—a great many of whom could not afford offsets—would follow your example by significantly reducing their home energy consumption, will you now agree to take the pledge?

Response. No.

Question 5. An Inconvenient Truth bombards us with scene after scene of devastation from hurricanes, floods, droughts, and the like, creating the impression that global warming has made the world a more dangerous place. In reality, both death rates and overall numbers of deaths related to extreme weather have decreased by about 95 percent globally since the 1920s, according to Indur Goklany of the U.S. Department of Interior.

What is there no mention of this in An Inconvenient Truth? Is you film designed to inform people, or just frighten them?

Response. An Inconvenient Truth is designed to inform people.

Question 6. An Inconvenient Truth presents a chart showing a sharp increase in recent decades in economic losses and insurance payments related to extreme weather. But the film does not mention that the data have not been adjusted for increases in population, wealth, and the consumer price index. This makes a huge difference. For example, in coastal areas in Florida, population has increased by about 75 percent since 1980. So of course there is going to be more weather-related damage. There are more people, more homes, and more things in harm's way. Research by Roger Pielke Jr. of the University of Colorado and others finds that, once weather-related losses are adjusted for changes in population, wealth, and the consumer price index, there is no upward trend in recent decades.

Why did you feature a chart of weather-related losses and insurance payments that had not been adjusted for changes in socio-economic factors? Is your film designed to inform people, or just frighten them?

Response. The data in the film came from Munich Re and Swiss Re, two well-respected insurance firms. And, as noted before, the film is designed to inform people.

Question 7. An Inconvenient Truth blames global warming for Hurricane Catarina (2004), the first hurricane on record to hit Brazil. You say textbooks had to be rewritten because scientists had thought it was impossible to have hurricanes in the South Atlantic. You imply that global warming caused Catarina by warming up the South Atlantic. In fact, according to the University Corporation for Atmospheric Research (UCAR), the seas were cooler than normal when Catarina formed. However, the air was the coldest it had been in 25 years. The air was so much colder than the water that it triggered the same kind of heat flux from the ocean to the air that can spawn hurricanes in warm water.

In light of this information, is it still your opinion that global warming caused Hurricane Catarina?

Response. It is my opinion that human-induced climate change is causing and will continue to cause more intense hurricanes.

Question 8. An Inconvenient Truth claims that 2004 set an all time record for tornadoes in the United States. In fact, the frequency of tornadoes has not increased; rather our capacity to detect smaller tornadoes has increased. National Climate Data Center data shows that if we consider just the big tornadoes that have been detectable since 1950—Category F-3 or larger—there has been a slight downward trend since the 1950s.

In light of this information, isn't your discussion of tornadoes in An Inconvenient Truth misleading? Doesn't it present a falsely scary picture of what's actually going on?

Response. An Inconvenient Truth is designed to present well-documented information so that people can draw their own conclusions.

Question 9. An Inconvenient Truth blames global warming for the record-breaking, one-day downpour in Mumbai, India, in July 2005. But scientifically, it is not possible to attribute a particular weather event to a gradual increase in average global temperatures over several decades. Long-term weather records from

Mumbai's two weather stations show no increase in rainfall in the month of July over the past 45 years.

In light of this information, isn't your discussion of the Mumbai rainfall event misleading? Doesn't it present a falsely scary picture of what's actually going on?

Response. An Inconvenient Truth is designed to present well-documented information so that people can draw their own conclusions.

Question 10. An Inconvenient Truth claims there is a new, strong emerging consensus that global warming is making hurricanes stronger. But recently, 120 hurricane experts at a meeting of the World Meteorological Organization stated that "no consensus has been reached" on this issue. There is in fact a debate among scientists as to whether global warming will increase hurricane strength. For example, Phil Klotzbach of the University of Colorado found an increase in hurricane strength in the North Atlantic, a decrease in the North Pacific, and not much change in the other four hurricane basins. A modeling study by Bengtsson, et al. (2006) projects no change in the extremes of tropical storms even if sea surface temperatures increased by 2 to 3 degrees centigrade, and projects a decrease in strong storms in the Atlantic.

In light of this information, isn't it misleading to say that there is a new strong emerging consensus that global warming is making hurricanes stronger?

Question 11. In your documentary An Inconvenient Truth, you said, "And then came Katrina. The consequences were horrendous. There is no way to describe them." Although you never quite say, you rather heavily imply that the devastation of Katrina was due to global warming. However, Kerry Emanuel of MIT, a leading proponent of the view that global warming is making hurricanes stronger, cautioned against linking Katrina or other recent Atlantic storms to global warming, saying it was more likely due to a natural cycle. And when Katrina made landfall, it dropped from a category 5 to a category 3 storm. Katrina was the worst natural disaster in U.S. history not because of the extra strength it allegedly got from global warming, but because the federal government for decades failed to build adequate flood defenses for New Orleans.

In light of this information, isn't it misleading—even demagogic—to use the suffering of people in New Orleans as a rationale for suppressing fossil energy use?

Response. No.

Question 12. An Inconvenient Truth says that scientists have observed "significant and alarming structural changes" in the underside of the West Antarctic Ice Sheet.

What specifically are those structural changes? What makes them significant and alarming? What makes them different from ongoing changes that date back to the early Holocene—changes, for example, that have reduced the size of the Ross Ice Shelf by 2/3rds over the past 8,000 years? Which scientists should we contact for further information?

Response. For more information, I would refer you Dr. Jim Hansen at NASA-GISS as well as Dr. Chris Rapley at the British Antarctic Survey.

Question 13. An Inconvenient Truth warns that moulins—vertical water tunnels formed from melt water at the surface of the Greenland Ice Sheet—could cause the ice sheet to break apart and slide into the sea. You show a photograph and a diagram of moulins that comes from a study by Swally et al. (2002), in Science magazine. However, the Science study found that moulins accelerate annual glacial flow by few percentage points. For example, the moulins might add an extra five meters to normal glacial flow of 105 meters of the course of a year.

How do you go from that—an extra five meters of glacial flow—to a scenario in which a structure hundreds of kilometers across breaks apart and slides into the sea? Also, are you aware of the research by Chylek et al. (2006), which found that Greenland in the 1920s to the 1940s was warmer than it was during 1995 to 2005? Doesn't this research suggest that there were probably more moulins and more glacial acceleration back then than we observe today?

Response. No.

Question 14. The Greenland ice sheet is thinning at the edges and thickening in the interior. If the gains are subtracted from the losses, the net volume of ice lost during 2003 to 2005 was—101 gigatons a year, according to Luthcke et al. (2006). That translates to 0.28 mm of sea level rise per year, or a little over 1 inch per century.

Why in An Inconvenient Truth didn't you discuss the actual amount of sea level rise attributable to ice mass loss in Greenland?

Response. There is only so much information that can be provided in a 90-minute documentary. The point is that rapid destabilization of the ice on Greenland and West Antarctica—or both—can lead to very large increases in sea level.

Question 15. In An Inconvenient Truth you warn that half the Greenland ice sheet could break off and slide into the sea but also that half the Greenland ice sheet could melt. A modeling study reviewed by the IPCC (TAR, p/ 678) estimated that it would take an additional 5.5C of warming sustained "over a thousand years" to melt half the ice sheet.

What time span did you have in mind when you warned of global warming melting half the Greenland ice sheet?

Response. Scientists vary with regards to what time span one might expect the de-stabilization or break up of the Greenland ice sheet.

Question 16. An Inconvenient Truth shows several before and after scenes of coastal areas inundated by 20 feet of sea level rise. You count up all the millions of people living in Beijing, Shanghai, Calcutta, and Bangladesh who would be "displaced," "forced to move," or "have to be evacuated" (An Inconvenient Truth, pp. 204-206). This language implies an imminent threat, a catastrophe that could strike in our lifetimes or those of our children, if not today then maybe the day after tomorrow.

Is that what you meant to imply—that 20 feet of sea level rise is a real possibility not as a cumulative change over millennia but as a catastrophe in which people in the present generation or maybe the next generation could be "displaced," "forced to move," or "have to be evacuated"?

Response. Because scientists vary with regards to the time span one might expect with regards to the de-stabilization or break up of some of the larger ice sheets, it is difficult to project at what point some the peoples of Bangladesh, for example, might be displaced. It could be in our lifetimes, those of our children, or the next generation. Worldwide even a 1 meter increase in sea level would displace an estimated 100 million climate refugees 17 million of them in Bangladesh.

Question 17. You conclude An Inconvenient Truth by saying, "I believe this is a moral issue." I agree it is a moral issue, but for different reasons. Much of the world lives in energy poverty. About 1.6 billion people have never flipped a light switch. About 2.4 billion people still rely on primitive biomass—wood, crop waste, and dung—to heat their homes and cook their meals. These people breathe indoor air pollution that is many times dirtier than the dirtiest air of the world's most polluted cities. Millions of women and children in these countries die every year from indoor air pollution—induced respiratory disease. Backbreaking labor is not a metaphor for people in this condition but a daily reality. What these folks desperately need is access to affordable energy. The most affordable energy on this planet, now and for the policy relevant future is carbon-based energy. But your goal is to decarbonize the world's energy systems.

An Inconvenient Truth features—and I believe exaggerates—the risks of global warming. Why does it say nothing about the risks of global warming policy? Is it moral to put an energy-starved world on an energy diet?

Response. I discuss the topics of poverty and inequity in the longer version of my slideshow. Most studies show that the poor of the world would be the hardest hit victims of global warming.

Question 18. For the 15 years between 1990 and 2005, we didn't license a single new coal-fired power plant. China is building one every 3 days, and will become the world's largest emitter of CO_2 within the year. Do you believe that China and other developing countries should be left free to dramatically increase their rate of greenhouse gas emissions while we spend tens or even hundreds of billions of dollars per year to reduce greenhouse gases, or do you favor mandatory emission restrictions on China?

If you do not favor mandatory restrictions on China, please answer the following question:

CNN quoted a statement by you about the Kyoto Protocol on December 11th, 1997 saying that:

"As we said from the very beginning, we will not submit this agreement for ratification until developing nations participate in this effort "This is a global problem that will require a global solution."

You can't have it both ways. Were you wrong in refusing to allow the Senate to vote on the Kyoto Protocol or do you stand by the idea that the U.S. shouldn't commit to damaging carbon caps as China's emissions explode?

Response. I favor the inclusion of China in a successor agreement to Kyoto.

Question 19. NCAR/UCAR scientist, Dr. Thomas Wigley, calculated during your administration how little the Kyoto Protocol would accomplish. Only 0.07 degrees Celsius over 50 years, which is negligible. Is this why you were unwilling to send the treaty to the Senate for ratification?

Response. I support the negotiation of a successor agreement to Kyoto, by 2010, and the submission of such an agreement to the Senate for ratification.

Question 20. You believe that global warming is a moral issue. According to the HUD website, the poor spend five times as much of their budget on energy costs than the average consumer. How do you morally justify putting in place a program to raise energy costs that would hurt the poor, elderly, and small businesses in this country the most while providing almost no environmental benefits?

Response. As I testified before your committee, I believe that any domestic legislation should include set-asides so that those most vulnerable to higher energy costs will be protected from economic harm. Also, see answer 17.

Senator. BOXER. Thank you very much, Senator. Speaking for myself, I found your testimony very moving and very important.

I want to say for the benefit of all members, we have every single Democrat on this Committee as present today. Mr. Vice President——

Senator. INHOFE. Obama is not here.

Senator. BOXER. Obama is no longer on this Committee.

Senator. INHOFE. Okay.

Senator. BOXER. No. But every single Democrat is here who is on this Committee today. I just want to make a note of that because, let me put it this way, it is rare that we have that because of everybody's schedules.

So as a result of that, I am going to give up my question time and save it for last. I am very worried we will run out of time, and I have such a great committee on both sides. So I am going to do that. I am going to just not question.

Here is what we are going to do. I am going to lead it off with Senator Inhofe, who has 12 minutes. It is going to go back and forth, seniority on your side. On our side, I just want to tell people when they are going to be called on: Klobuchar, Sanders, Lautenberg, Lieberman, Baucus, Clinton, Whitehouse, Carper, Cardin and Boxer. All right?

Senator Inhofe.

Senator. INHOFE. Thank you, Madam Chairman.

Senator Gore, I enjoyed it very much, a great opening statement.

Mr. GORE. Thank you.

Senator. INHOFE. I don't agree with it, but I agree with your history. It was very good.

What I am going to do is, since she has allowed me to go three minutes over, I am going to try to make all of this in a very short period of time. I have structured my questions so they are yes or no questions, and they don't require a lot of elaboration. So let me start off with four, and these should be pretty easy. I know the answer because I have heard some quotes from you that lead me to believe what the answer is.

First of all, yes or no, do you believe that human-caused global warming is a moral, ethical and spiritual issue affecting our survival?

Mr. GORE. Yes, I do.

Senator. INHOFE. Yes or no, do you believe that reducing fossil fuel-based energy usage will lead to lower greenhouse gas emissions?

Mr. GORE. It depends on what the substitutes are, but basically yes. I think that we can capture and sequester the carbon and continue using carbon-based fuels.

Senator. INHOFE. Very good. And yes or no, do you believe that home energy use is a key component, not the only component, but a key component to overall energy use?

Mr. GORE. I believe that buildings as well as cars and trucks and factories are definitely a part of the problem, yes.

Senator. ISAKSON. All right. I would like to put up the little pledge thing here. I am going to ask you if you would like to commit here today. Do you know how many hundreds of thousands of fans you have out there that would like to follow your lead? And this pledge merely says, as you can read up there, that you are agreeing to consume no more energy in your residence than the average American household by one year from today. Not right now. You have a whole year to try to do this.

Now, the one thing I would like to have you not use in response to this question, which is a yes or no question, is the various gimmicks. I have something I want to submit for the record, Madam Chairman, that talks about the effects. The offsets and the credits are gimmicks used by the wealthy so they don't have to change their lifestyles. I have an article that is last Sunday's United Kingdom Times I would like to submit for the record at this time.

Senator. BOXER. You may.

[The referenced document follows:]

From The Sunday Times

March 11, 2007

Offsetting your carbon footprint takes decades

Jonathan Leake, Environment Editor

SCHEMES used by environmentally conscious consumers to cut their "carbon footprint" could take up to a century to deliver the promised benefits, a study has suggested.

Researchers found it takes that length of time for "carbon offsetting" which often involves the planting of trees in the developing world to absorb the greenhouse gases emitted by a single flight.

Dozens of fortunes have been made in recent years by entrepreneurs offering people and businesses the chance to neutralise their carbon emissions for a fee.

The new research, carried out by scientists at the Tyndall Centre, based at the University of East Anglia, and Sweden's Lund University, suggests that such schemes may, in fact, do little more than salve the consciences of those paying for them.

"What we are seeing here is the emergence of a new and completely unregulated financial market," said Lund's Professor Stefan Gossling, who led the study.

"These schemes may eventually recapture the carbon people emit now but will only finish the job after most of them have died. That is too long."

The schemes studied by Gossling included one offered by British Airways to its passengers through Climate Care, a British carbon offsetting company.

It found that an offset bought through the scheme would take about 100 years to recapture the carbon emitted by a flight.

This is because Climate Care includes forestry in its offsetting portfolio, meaning that carbon emitted can be recaptured only as fast as a tree can grow.

The research coincides with a sharp rise in the political temperature over climate change. Last week EU leaders agreed to cut European carbon emissions by 20 percent from 1990 levels by 2020.

The voluntary carbon offsetting market has sprung from the same global concern over carbon emissions.

There are now dozens of companies charging fees to help people and organisations deal with their carbon emissions. One of the richest is Climate Change Capital, a merchant bank specialising in low-carbon investments, which controls funds of more than £500m and has made millionaires of its founders, James Cameron and Lionel Fretz.

The firm specialises in big industrial projects. Most offsetting companies prefer, however, to support smaller energy-efficiency projects and renewable energy schemes.

A favourite is to buy low-energy lightbulbs for distribution in developing countries. Such schemes can take years to recover the carbon emitted by, say, a flight, but when forestry is the chosen offset mechanism this can stretch into decades.

"When companies offer to offset a single flight over a period of 100 years then the schemes lose credibility," said Gossling. "How can anyone predict the fate of a forest? A hundred years from now it could burn down and all that carbon would be released."

Some forestry projects have ended in spectacular failures. Coldplay, the rock group, sponsored 10,000 mango trees in southern India to offset the environmental impact of its 2002 album, A Rush of Blood to the Head.

By last year, however, the trees, supplied by Future Forests, now The CarbonNeutral Company, had withered and died.

Jonathan Shopley, chief executive of The CarbonNeutral Company, said the firm had since moved out of forestry and in to schemes such as wind farms and low-energy lighting. "Any offsets taken out with us in future will recover the relevant carbon emissions within 4 years," he said.

The turnover of the CarbonNeutral Company has risen sharply to £4m a year and it has just signed up Silverjet, a new air-line dedicated to business class passengers. It charges an average £999 for a return flight between New York and London of which £11 goes toward offsetting each passenger's carbon emissions.

David Wellington, managing director of Climate Care, said: "Many of the criticisms raised over offsetting were valid. This is a young industry and it is still settling down, but the standards are improving very fast. For example, we have already moved out of forestry into renewable energy projects that reduce the time over which offsets take effect."

But others believe that carbon offsetting is deeply flawed. Dieter Helm, professor of energy policy at Oxford University, said it was little more than a mechanism to allow rich westerners to ease their consciences.

"What we are really doing is paying poor people to reduce their carbon emissions so that we can maintain our luxury lifestyles. If we really want to live sustainably we are going to have to accept the knocks and give up things like flying. In the end they are unsustainable," he said.

Senator. INHOFE. All right. What is your answer?

Mr. GORE. Well, first of all, Senator, thank you so much for your question.

Senator. INHOFE. Sure.

[Laughter.]

Senator. INHOFE. I notice Tipper didn't say thank you for the question.

Mr. GORE. Oh, I am sure she would.

[Laughter.]

Mr. GORE. You know, one of the other recommendations that I would have is that you also set standards for green energy produced by utilities. One reason I say that in response to what you are saying here is that that is what we purchase. We pay more for it because it is still relatively uncommon.

Senator. INHOFE. Senator Gore.

Mr. GORE. If I could just——

Senator. INHOFE. Well, you can't.

Senator. BOXER. You have asked the Senator an important question. He is answering it. Give him a minute or so to answer.

Senator. INHOFE. All right. If you could just stop the clock during this time?

Senator. BOXER. No. I am not going to stop the clock. He has a minute to answer. How can you ask the question and not give the man a minute to answer? Please.

Mr. GORE. We purchase wind energy and other green energy that does not produce carbon dioxide. That does cost a little more now,

and that is one of the reasons why it costs a little more. We are also in the process of renovating an old home. We live not far from where Lamar and Honey Alexander live, and ——

Senator. INHOFE. Senator Gore, you have had so much more time that I am going to have to——

Mr. GORE. Can I make one other point? Because a lot of communities actually have laws preventing the installation of solar photovoltaic——

Senator. INHOFE. So I assume the answer is no. Let's go to the next question.

Mr. GORE And if I could continue, I don't believe that there should be a Federal provision that overrides any local restrictions on the use——

Senator. INHOFE. All right. Senator Gore, I am very sorry. I don't want to be rude, but from now on I am going to ask you to respond for the record in writing, since you are not going to respond——

Mr. GORE Well, if I choose to respond to you verbally here, I hope that will be okay, too.

Senator. INHOFE. If it is a very brief response.

All right. I am sure you read the article that quoted the scientists that I mentioned in my opening statement, about their criticizing you for being too alarmist and hurting your own cause. Now, I will ask you to respond in writing for that one, because that would be a very long response, I am afraid.

It seems that everybody in the media has joined the chorus ——

Mr. GORE May I respond?

Senator Boxer. Excuse me. Senator Inhofe, we will freeze the time for a minute.

Senator Inhofe. Yes, take your time. We are freezing the time.

Senator Boxer. We are freezing the time. Just for a minute, I want to talk to you a minute please.

[Laughter.]

Senator Inhofe. Would you agree to let the Vice President answer your questions, and then if you want an extra few minutes at the end, I am happy to give it to you. But we are not going to get anywhere. You are asking questions.

Senator Inhofe. Why don't we do this? At the end, you can have as much time as you want to answer all the questions.

Senator Boxer. No, that isn't the rule. You are not making the rules. You used to when you did this. You don't do this anymore.

[Laughter.]

Senator Boxer. Elections have consequences.

[Laughter.]

[Applause.]

Senator Boxer. Elections have consequences, so I make the rules. But here is the thing, I want you to get your questions answered. I promised to give you an additional three minutes of time, but if you will allow the Chair, if I believe the Vice President is wandering into another area, I will just say that quietly and he will I know move on. He knows the rules here.

Senator Inhofe. You know the rules here. Let me read to you what you said to Mr. Johnson when he was before this Committee. You said, "The fact is, I don't need to talk now. I don't want to talk anymore."

Now, I am not going to be rude. I am not going to do that, but that is what you did. I only want to be able to get through my time. I can't do it if you filibuster. All right?

Senator Boxer. Go ahead.

Senator Inhofe. Now, it seems that everything is blamed on global warming. You talked about the fires in Oklahoma. Last summer, we had a heat wave and everyone said, oh, that is proof that it is global warming. Then we had a mild December, oh, that is proof that global warming is taking place.

Now, I wonder, how come you guys never seem to notice it when it gets cold? If you put up chart number two there. This is for your benefit, Senator Clinton. This is of Buffalo, New York. I have in my hand here the document from the National Oceanic and Atmospheric Administration. They set records all over America in January, with 183 cold records; 183 of them. This is a new record, all over America. That was all in one month.

I would just have to say that, for our sake in Oklahoma, we had three days that were the coldest days in history. Where is global warming when you really need it?

Now, what I would like to do is also be aware that the debate that took place last week in New York, and I would like to have a brief thought about this. This is when the prominent group of five scientists and one doctor on each side of the issue had a chance to talk, to survey their crowd. It was a very large crowd, and 57.3 percent of the audience agreed with you that global warming is a crisis. About 29 percent said it wasn't. After the debate, it completely turned around, and it was 46 percent to 42 percent. Now, I think that is all the more reason why there should be a lot more discussion on this. It was a huge shift.

Now, on science. You talked about science. It is very interesting that when people don't want to talk about science in a debate format in terms of how many scientists are on this side; how many on this side. What happens is you just say it is settled.

I mentioned in my opening statement Claude Allegre. He is from France, and Nir Shariv from Israel, Reid Bryson. These are all people who were solidly on your side of the issue up until recently, and now they are not alarmists anymore. All three of them have come over to the other side.

Now, if you put up chart number three, there are literally hundreds of scientists on this chart. All of these scientists disagree with you. In addition to that, I am sure you have heard this many times before because people are quite upset that the 60 scientists were advising the Prime Minister of Canada 10 years ago said that we want you to join Kyoto, and so they did. Those same 60 scientists now are petitioning Prime Minister Harper of Canada to get out of the Kyoto Treaty. They are saying, and this is a direct quote, "If back in the mid-1990s we knew what we know today about climate, Kyoto would almost certainly not exist because we would have concluded that it wasn't necessary."

And the last chart that I will put up is one that everyone knows. I think some of my colleagues may not be familiar with this person. His name is Richard Lindzen. He is the Sloan Professor of Atmospheric Science at MIT. He wrote an op-ed piece for The Wall Street Journal. I will read it as you read it. It is not very flattering to you,

Senator Gore, but this is what he said: "A general characteristic of Mr. Gore's approach is to assiduously ignore the fact that the Earth and its climate are dynamic. They are always changing, even without external forces. To treat all change as something to fear is bad enough. To do so in order to exploit that fear is much worse."

So we have thousands of meteorologists, geologists, physicists, astrophysicists, climatologists, scientists who disagree with you. Are they all wrong and you are right?

Mr. GORE Senator, thank you.

I am sitting here trying to think what I could do or say that might make it possible to reach out to you. I am serious about this. We have a mutual friend named Doug Coe. I would love to have breakfast with you sometime with Doug, just the three of us, and talk with you without the cameras and without the lights, and tell you why I feel so strongly about this.

Senator. INHOFE. Well, I think you have told us in your opening statement, and it is very eloquent.

Mr. GORE But anyway, you know, if there was a way that I could talk with you that would make a difference to you, I would like to do it.

But let me respond to your question. The National Academy of Sciences here in this country and in the 16 largest or most developed countries in the world, the ones that have respected large national academies of science, all of them unanimously have expressed agreement with the consensus that I stated to you.

The Intergovernmental Panel on Climate Change that has had its fourth unanimous report in 15 years agrees with the consensus that I stated to you.

Senator. INHOFE. Okay. Senator Gore? My time has almost expired completely. Are you aware of that?

Mr. GORE If I could complete my answer.

Senator. INHOFE. Well, if you do, then my time has expired. Are you aware of that?

Mr. GORE Well, I can't help that, because you went on for a long time. But I would like to——

Senator. INHOFE. No, I have 15 minutes. You had 30 minutes. I had 15 minutes. You have to let me have my 15 minutes, Senator Gore.

Mr. GORE. If I could just complete my response.

Senator. INHOFE. You have already done it. The National Academy of Sciences——

Mr. GORE. I actually haven't.

Senator. BOXER. Senator, I will stop the clock and allow Senator Gore to complete, please, and then we will go back to you.

Senator. INHOFE. Good. Thank you.

Senator. BOXER. Okay. Go ahead.

Mr. GORE. I will just give you one other example. The University of California did a very well respected, well picked-over peer-reviewed study. The team was led by Professor Naomi Oreskes. They reviewed every single peer-reviewed scientific journal article for the previous 10 years on this topic. They took a very large sample of almost 10 percent of them, 928. About 25 percent of the articles did not deal with the central point of the consensus, some arcane matter. But of those that dealt with the main consensus, the number

that disagreed with the consensus was zero. This is a very well established and very strong scientific consensus. It is not me saying it. It is what the scientific community is saying.

Senator. INHOFE. Okay. My response to that is that, first of all, every scientist that I named up here is a member of the National Academy of Sciences. They disagree with you. They disagreed with that statement. But the National Academy of Sciences back in 1975, they had a very interesting observation. They said, however, asserting a finite possibility that a serious worldwide cooling could befall the Earth within the next 100 years, exactly what they are saying now, except at that time it was cooling.

Mr. GORE. Could I comment on that?

Senator. INHOFE. With all respect, Senator Gore, we can't do that. You know that.

I wanted to keep going and discuss China, but it is virtually impossible to do now because we have used up too much time. I will ask you to do this——

Senator. SANDERS. Madam Chair, I would ask unanimous consent to give Mr. Inhofe another two minutes so that Mr. Gore could respond.

Senator. INHOFE. Oh, why don't you give it to Mr. Gore to respond?

Senator. SANDERS. You get two, and Mr. Gore gets two. I would ask unanimous consent.

Senator. INHOFE. Oh, that is great.

Senator. BOXER. I am going to object, because here is the thing. What I am going to do is, and Senator, you will get your chance. Please. If you would just trust me for five minutes, you will be fine. He is going to lay down the rest of his questions in moments, and then I am going to give the Vice President the time he needs to respond, within reason. Okay? And then I am going to go Senator Klobuchar, and then we are going to try to get control of this hearing.

Senator Inhofe, was that your last question?

Senator. INHOFE. Oh, no.

Senator. BOXER. You have one minute, then, to go ahead and ask your questions. Why don't you lay them all down, and then he will answer them. Go ahead. You have one minute now.

Senator. INHOFE. One minute for my last question? Well, I already had three minutes.

Senator. BOXER. Well, I am giving you another minute.

Senator. INHOFE. Okay.

Senator. BOXER. Go ahead.

Senator. INHOFE. I will skip all the questions. I had 15 minutes of questions, and Senator Gore, I agree. Let's get together with Doug Coe and talk about it privately. But this is a public forum. People have to know. I have listed all the scientists who disagree with you, and you did not respond to that question.

So I would just say that I hope people understand what the issue is, because a lot of people don't know the issue. A lot of people think the issue is global warming taking place. The issue is, is it manmade gases, anthropogenic gases, CO_2. That is the issue. Unfortunately, I think it is more of a money response than anything else. We have a lot of people who are pouring money into these

things, George Soros, Michael Moore, Richard Branson and all of that.

But what I am going to do in the last times since my time has expired, I am going to ask you on your film, the last frame on your film, and it is kind of interesting because yesterday I ran into a parent of a student at a school in Maryland, that said that her students in an elementary school were watching your movie under instructions once every month. The last frame in that movie was, and would you put that frame up? You are asking, and you have asked people all over America: Are you ready to change your way of life? Are you ready to change the way you live?

I would have to ask you that same question, because we started my term on would you take a pledge to do that. I think the answer to that is no. But in terms of changing the way you live, I think it is very difficult for you to ask other people to do it unless you are willing to do it. Are you willing to do it?

Mr. GORE. We live a carbon-neutral life, Senator, and both of my businesses are carbon-neutral. We buy green energy. We do not contribute to the problem that I am joining with others to try to help solve. We pay more for clean energy and I think that utilities ought to provide more green energy that doesn't produce CO_2.

We are in the midst of installing solar panels. Again, I think that we ought to have a law that says communities and localities ought not be able to prevent that. I have never made that public, by the way. The community where I live, it is a city within a city. I asked them to change it and they said we will. It just takes time.

So these kinds of things are what people are going through all over this country. They are buying the new light bulbs. They are putting in more insulation. People are changing. People are changing. The American people are ready to help solve this problem, but we have to have legislation that takes away the right to pollute without any accountability or without paying a price for it, because when we have cap and trade, when we have laws that allow us to use the market in our favor, then those of us who are part of the solution rather than part of the problem will be able to leverage what we are doing.

I will respond to the other questions for the record, out of courtesy to the remaining Senators.

Senator. BOXER. Thank you.

Senator Klobuchar.

Senator. KLOBUCHAR. Vice President Gore, welcome to our Committee.

Mr. GORE. Thank you.

Senator. KLOBUCHAR. It is not every day that our Committee has an Academy Award winner testifying. More often, our witnesses have awards from important, but not so glamorous organizations like the American Chemical Society or the American Society of Civil Engineers. So we are very pleased that you brought all your friends here so that there can be more focus on this important issue.

I can tell you that in Minnesota, contrary to what Senator Inhofe has been talking about, we believe in science. We brought the world the Post-it note and the pacemaker, but it is more than science now. I can tell you that there are hunters in Hibbing, Min-

nesota that wear orange caps that care about this issue because they have seen the change to our wetland.

There is a couple out on Leech Lake who care about this issue because they have seen how long it takes for them to get their fishhouse out to go ice fishing. There is a City Council in Lanesboro, Minnesota who decided to change their light bulbs because they can see the effects of global warming. And there is a little eight year old in Roseville, Minnesota who came up to me at an event with tears in her eyes because she had read about the penguins dying, because they were drowning trying to get food.

So this isn't just science. It is real people in the real world that care about this issue.

In our State, we actually passed one of the most aggressive renewable electricity standards, 25 by 25, just a month ago. By the year 2025, the State's energy companies are required to generate 25 percent of their electricity from renewable sources such as wind and solar and other forms of biomass. Energy is held to a higher standard, with 30 percent by 2020.

The reason I bring this up is that this was adopted, as Senator Alexander was talking about, with bipartisan support. It is a Democrat State House and State Senate, but the vote was 123 to 10 in the State House, 61 to 4 in the State Senate, and it was signed into law by a Republican Governor. So that is what you are talking about when you talk about bipartisan solutions.

I wanted to focus on the last question a little bit about those solutions. You were, when you were here, you were widely regarded as a pragmatist. Today, you were talking about the importance of using the Omar Bradley quote of guiding ourselves not just by the lights of each passing ship, but by the stars.

As you have seen today, there is some opposition to change in this area by certain quarters in the United States Senate. So my questions are about what thought you have given to what needs to be done to get this legislation passed quickly.

Specifically, have you thought about what first steps need to be taken so we can immediately do something and immediately respond to your call for action?

Mr. GORE. First of all, Senator Klobuchar, thank you so much for your comments. I was in Minnesota during your campaign. I was so impressed with the prominence of this issue in the campaign dialogue, and so impressed with the people and leaders of your State for truly making it a bipartisan issue. I think it is the wave of the future for our whole country.

This used to be a bipartisan issue. When Senator Baker was the Ranking Minority Member for Ed Muskie on this Committee, they passed the Clean Air Act and Clean Water Act, one of them unanimously, as I recall. I think it can be that way again.

I truly believe that the first step ought to be a freeze. I think that the support is growing out there so rapidly. A cap and trade system that starts with a freeze can let us use the economy in our favor. I support the Sanders-Boxer bill. I think that is an excellent piece of legislation. I don't consider myself expert on all the details of the different provisions of all the legislation that has been introduced, but I have taken note of that legislation. I think it is an excellent beginning fo this.

Each of the recommendations that I made to you are ones that I think are practical as well as aiming high. I think the cost of not solving this crisis would be devastating for our economy as well as to the environment. The so-called Stern Report in the United Kingdom made that point very forcefully. Although there are arguments about the so-called discount rate that he uses, I think it is an excellent report.

So I really think that it is pragmatic, as well as idealistic, to take this bull by the horns and really solve this crisis.

Mr. KLOBUCHAR. You brought up the issue of the economy. How about technology? There is an argument that if you don't do anything about it, if we don't develop the technology, other countries will, and we will fall behind economically.

Mr. GORE. I think that is definitely the case. Just look at the crisis that our auto industry is in right now. It may not be fair, but the apocryphal saying was years ago when the Clean Air Act was passed, every Japanese company hired 100 new engineers and every American company hired 100 new lawyers. As I say, that may not be fair, but if you look at the effective way that a company like Toyota has made more environmentally efficient cars. There are a lot of reasons for this. Health care needs to be solved also. That is a problem for our auto companies.

But one of the principal reasons why our auto companies are in trouble is that they got the tradeoff, the so-called tradeoff between the economy and the environment wrong, and they have all these gas guzzlers that they can't sell because people don't want to buy them. It is not as if it was impossible to predict that oil prices might go up at some point in the future. We get it from the most unstable parts of the world.

So what we really have is a carbon crisis. We borrow all this money from China to buy all this oil from unstable countries, and burn it in ways that destroy the habitability of the planet. We need to change every bit of that pattern. In changing it, we will become more competitive and allow our companies to get out there on the cutting edge and develop the new technologies that you are focused on that will create more good jobs.

Senator. BOXER. Thank you very much, Senator Klobuchar.

Senator Warner.

Senator. WARNER. Thank you, Madam Chairman.

Mr. Vice President, I welcome you and Mrs. Gore. I was privileged to serve with you in this institution. We served together on the Armed Services Committee, and you, in a dignified way, you earned the respect of this institution, and I am privileged to try today to return that respect and dignity to both of you, sir, here in the Senate.

I also thank you for reference to my modest little contribution to World War II. I would acknowledge that my good friend down here, Senator Lautenberg, also served in that conflict with great distinction in Europe.

Mr. GORE. Pardon me for the omission.

Senator. WARNER. You talked about the Battle of Thermopylae. I remember reading about it quite well. I have not seen the film, but intend to do so. You may recall that overwhelming force sent a message to the brave 300: Surrender, or we will darken the skies

with arrows. And the reply came back: We will not surrender. We will fight in the shade.

Now, I mention that because you have thrown down a very tough challenge today to the Congress. I am prepared to take some risks and fight with you and our Chairman, but we are not going to fight in the shade, because we need a lot of daylight brought on this issue. I would be the first to say that I have a lot to learn. I am proceeding to do that with a great deal of pleasure, to forge ahead in a new area.

But I want to talk about the first issue that concerns me. As long as we are talking about political slogans, you remember the slogan that we worked on in arms control: trust, but verify. Well, I want to trust as much as I can, your position, and those that advocate this, but we need some verification. And that first verification comes as we study this problem, on whether or not there is in existence today the technology to make the corrections that you advocate.

Mr. GORE. Well, that is an excellent and thoughtful question. Thank you for your kind words in preface to the question.

We have the technologies we need to begin addressing the crisis. Two economists at Princeton, Professors Socolow and Pacala published an immensely influential study that is based on what they call the wedges analysis. The reason I use that jargon is that it directly addresses the question you are asking.

We can start with what we now have available, and begin making reductions, even as we continue the research and development into new waves of technology that will make the solutions steadily more accessible and easier.

For example, just to use one example, everybody here has talked about ethanol and biofuels. The present generation of ethanol has some controversy associated with it. We all know that. If the energy use of the agriculture used to produce it is carefully handled, it can be a net positive addition. I am for it. But within less than five years, we will have a second generation of ethanol products available to us known as, I believe it is enzymatic hydrolysis. Some people call it cellulosic ethanol, lignocellulosic, which is a biodiesel form. Again, this is above my pay grade also, but my point is this: We can start now with what we know to do; begin putting the infrastructure and the laws in place; wean ourselves off as much of the foreign oil as we are using; and reduce the CO_2 associated with it. And then plan ahead so that within less than five years, we can roll into this second generation, which is infinitely better. There are comparable second generation technologies all along the road, including photovoltaics, where a new generation there will soon become available.

Senator. WARNER. Let me bring in another point here, and that is we are in a one world market today.

Mr. GORE. Right.

Senator. WARNER. And when we are sleeping, the rest of the world is up trying to figure out how to compete with us, and frankly take away our jobs. Too many jobs are leaving our shores. I am just concerned about China and India. They are major polluters today and projections are they will even be bigger in the years to come.

How do we persuade them to assume the burdens that we will have to take to meet your challenge, and that we go together as partners? We simply can't be followers to China's growing economic capabilities, and military, I might add.

Mr. GORE. Yes, Senator, it is a global problem and it has to be solved with a global strategy. The military historians tell us that battles and conflicts fall naturally into three categories: local battles, regional wars, and the rare, but all important global or strategic war, like World War II.

Environmental issues are much the same. Much of what we discuss are local problems, air pollution, water pollution. Acid rain is an example of a regional problem, the dead zone in the Gulf of Mexico coming out of the mouth of the Mississippi River draining the Midwest. But this is the rare, but all important global or strategic problem. Its aspect is in the global dimension, and every nation has to be a part of the solution.

Now, that is a challenge, and every global treaty since the end of World War II has had the same binary architecture. The wealthier per capita countries are in one category, and the other countries, even if they are strong, their per capita incomes are only a fraction of ours, and they band together. And every treaty has recognized that distinction. We might not want that, but as a practical matter that is the world we have to deal with.

How do we get China and India, falling in that second category, even though China might arguably bridge those categories now, they are the Saudi Arabia of manufacturing, after all. Their emissions will soon exceed ours. But how do we get them involved?

Two steps. Number one, when we lead, we greatly improve the odds that they will be a part of it. Number two, there is excellent evidence that they themselves have their own reasons for joining in solving this crisis. President Hu Jintao and Premier Wu, both have made speeches within the last 10 days on this issue. Words alone don't count for much, but they have made this goal coequal with GDP in their new five year plan.

They now face a situation where some months of the year, the Yellow River no longer reaches the sea. The Yangtze River, much larger, is still a problem for them. They have a water crisis. The Tibetan Plateau is melting. The sandstorms off the Gobi are getting stronger. They are worried that their coming-out party at the Olympics is going to be spoiled by the environment. They are facing demonstrations with the start to construction of new coal-fired powerplants now. Not that that is a problem over there, but it actually is beginning to be a problem.

So since they have their own reasons for trying to address this, the odds increase that if we provide the leadership and find creative ways to bridge out across that category, I think that they will join.

Senator. BOXER. Thank you, Senator Warner.

Senator. WARNER. My time is up.

Senator. BOXER. I am sorry. That is so fascinating, but we need to move on.

Senator Sanders.

Senator. SANDERS. Thank you, Madam Chair.

Mr. Vice President, thank you very much for being here. And thank you not only for focusing our country and much of the world's attention on this planetary crisis, but you have done something else. I think it is no secret that a lot of young people are disenchanted with the political process, are alienated from it. I think you have given that generation the hope that maybe they also can become a great generation, and break our dependency on fossil fuel and move us toward energy efficiency and sustainable energy.

I think the hearts of a lot of young people are beating a little bit faster today because of your work, and I want to thank you very much for that. On behalf of Senator Boxer and myself, we want to thank you for your support of our legislation, which we think is the most comprehensive that has been introduced in the Congress.

Mr. Vice President, I want to pick up on a point that Senator Klobuchar raised a moment ago. We have heard from some people who disagree with us philosophically that if we move forward aggressively in reversing global warming, that it will be a terrible, terrible thing for the economy. That is what some people say.

Some of us believe, in fact, that if we are aggressive in terms of energy efficiency, if we reverse the absurdity of no longer having the United States being the leader in solar energy. We are way behind where other countries are; no longer being a leader in terms of wind technology, or many of the other sustainable energies that are out there; that in fact if we focus on these issues, if we bring labor and business together, that in fact we could create millions of good paying jobs as we not only reverse global warming, but we clean up the environment, which is causing so much illness and other problems.

Could you speak briefly on what you see as the economic plus, the advantages of moving toward a green revolution and energy efficiency and sustainable energy?

Mr. GORE. Thank you, Senator Sanders.

I agree with you first of all that the young generation is getting very deeply involved with this. I remember when I was a teenager and the Civil Rights revolution became a moral issue. And when my generation asked our elders to explain why the segregation wasn't immoral, and when they couldn't answer, that is when the laws changed. I think that this young generation is getting deeply involved in this as a moral issue.

Your fellow Vermonter, Bill McKibben, has been among those who have really tapped into that. My hat is off to him.

On the economic benefits of attacking this problem, Amory Lovins has testified before this Committee. He is one of these guys that is so smart you think you are drinking from two fire hoses at the same time when he talks. He has been right about a lot of things for 30 years, but he has so many great ideas. He told me one time, he said, you know, Al, the problem with the debate over the economic impact of the solutions is that you have the sign wrong. I thought, this guy is so smart he is talking about trigonometry, which I can't talk about. I thought he was talking about cosines or something. No, he was talking about plus sign and minus sign. That was a relief to me.

What he meant was, there are all kinds of solutions to the climate crisis that people think have a minus sign, when actually

they have a plus sign. Take the insulation and building improvements I was talking about earlier and proposing this Connie Mae. If we made those expenditures, we would sharply reduce CO_2. There is more CO_2 that comes from buildings than comes from cars and trucks.

Would that hurt our economy? No. It would greatly strengthen our economy. It would create jobs, number one. And it would sharply reduce our annual expenditure for energy that goes purely to waste. So that is a plus sign, not a minus sign. If we develop the new technologies that Senator Klobuchar is focused on, and we give our auto industry, just to take that one example, the ability to recapture some of the markets they have lost to the hybrids from Japan, is that minus sign? No. It creates jobs. It adds to our economic strength. And there are literally thousands of similar examples.

Now, there are also some minus signs out there, and we have to pick and choose carefully and keep our wits about us, but if we go about it in the right way, we can strengthen our economy while we reduce the CO_2.

Senator. BOXER. Thank you, Senator.

Senator Bond.

Senator. BOND. Thank you very much, Madam Chair.

Welcome, Mr. Vice President. It is good to have you back.

Your Inconvenient Truth spends a lot of time discussing the problem, but little time detailing solutions my constituents can live with. Indeed, the chart on this book shows that of the 305 of the 328 pages, or 92 percent, there are pictures of glaciers, lakes, graphs, charts. If you actually want to find out how society or how Government or how the world can deal with this problem in ways that won't turn off the lights or heat or cost poor and middle-income families billions, this book truly is inconvenient.

Only 5 percent of the pages provide personal solutions like composting and buying local. Economists get two pages. Wind get another, the same amount; renewable energy the same amount. That is a handful of pages on proposals that will cost families and workers hundreds of billions of dollars in the transportation, power and energy sectors, and unfortunately, cost many of them their jobs.

We are being asked to threaten blue collar manufacturing workers supporting middle class families and threaten the poor on fixed incomes with heating bill increases. But we get almost no discussion of their plight, how they would suffer or how they would cope under certain carbon cap plans.

Your own words confirm this approach of focusing on the problem, and not the pain of the solutions. Last year when speaking to Grist magazine, I understand you said, "I believe it is appropriate to have an overrepresentation in factual presentations on how dangerous global warming is to open up the audience."

Well, that is pretty stark language, if you believe you can overstate the facts to get a message out. You justify this by calling global warming a moral issue. You say we should think of the children when we consider the issue. I agree with you. But I happen to agree that the moral issue here when we think about children may be represented by what I consider a moral commitment to the child

pictured here, and many like her. The little girl appeared in Capitol Hill newspapers. I don't know her name, but I fear her plight because it is shared by many Missourians.

This girl is cold because her family cannot afford to pay their heating bills. This is an ad by AARP for more LIHEAP funding. It notes that 29 million American families cannot afford to pay their heating bills. LIHEAP is a program I support, but it can only help one in six suffering families. Even if we doubled funding, we couldn't help all that is needed. This leaves the little girl to wear a coat inside when it gets too cold, and that is exactly what the caption beside her reads: "I have two coats, one for inside and one for outside."

But with higher heating bills from carbon cap legislation, would this little girl have to wear two coats inside? How many millions would suffer her fate of freezing through the winter? Should we tell this freezing little girl we can only listen to one side of the story? That we should ignore the latest research, including that showing perhaps a correlation between temperature change and changed particles from sunspots? That we need to better understand the Earth's feedback mechanisms and our climate systems.

Now, I strongly support taking action that will have significant environmental benefits. I support biofuels like biodiesel that can cut CO_2 emissions by 30 percent. I support IGCC coal gasification that allows for carbon captures. You mentioned Asia. I strongly support President Bush's Asia Pacific Partnership. I support the auto industry doing more with flex-fuel vehicles, hybrids, plug-ins. I am a big fan of nuclear energy. I personally planted 10,000 trees, not just for carbon, but for the wood.

But your proposal today to freeze immediately CO_2 emissions would stop economic growth and, I fear, jobs. I will fight against unwise carbon plans like caps that unfairly punish certain parts of the country like the coal-dependent Midwest and the South, jacking up heating bills, making air conditioning unaffordable, and taking jobs away from blue collar manufacturing and other workers.

Experts estimate that heating, cooling and electricity bills from traditional coal-fired plants would go up 80 percent if carbon sequestration is required. Do you believe families and workers should pay this price?

Senator. BOXER. Let me just say that the Senator has five seconds left, so I will give you a minute, and then we will move on to the next Senator.

Mr. GORE. Was one of those questions about sunspots? I didn't understand the reference to the sun spots.

Senator. BOND. There are some scientists who say that sunspot activity is directly related to global warming. That is one theory, like the theory that humans are the main source of global warming; that our emissions are.

Mr. GORE. Okay. Well, you know, again the international scientific community and the American scientific community, our National Academy of Sciences and the international group that has four unanimous reports now in 15 years, says that the conclusion that humans are the principal causes is unequivocal. The idea that sunspots are causing this problem, I respectfully disagree.

One of the signatures of the issue is a really interesting phenomena. As the atmosphere heats up, the stratosphere cools down. There is a reason for that. If it were being caused by sunspots, then both the troposphere, the lower atmosphere, and the stratosphere would both be heating up. If it were caused by CO_2, which it is, according to the scientists, they predicted in advance, okay, that means it will warm up in the part we live in, but it will cool down above this area where the greenhouse gases are accumulating. And sure enough, it happens exactly that way.

Moreover, in the last 30 years, there has been no appreciable increase, the scientists say, in the solar radiation output, and yet the 10 hottest years ever measured have been since 1990; 20 of the 21 hottest have been in the last 25 years. I mentioned earlier, the hottest was 2005.

So the so-called sunspot theory, according to the scientists, has been pretty definitively discarded. That is not coming from me. That is coming from the scientific community.

Now, on the question of the affordability.

Senator. BOXER. Senator Gore, I will give you 60 seconds to address the issue.

Mr. GORE. I will respond further for the record, Madam Chair.

Senator. BOXER. No, I would like you to just, the question of affordability, I think the picture of the little girl and wearing two coats, I think is——

Mr. GORE. I also support the so-called LIHEAP program, the Low Income Heating and Energy Assistance Program. I said in my earlier testimony that I think that that ought to be a robust program and we should make sure that there are no families in this country that go without heat if they need it. I think Government ought to assist them. Absolutely.

Senator. BOXER. Thank you, Senator.

Senator Lautenberg.

Senator. LAUTENBERG. Thank you very much, Madam Chair.

Thank you, Vice President Gore, for your wonderfully elaborate presentation of the facts to the American public and the world at large. The attention it has gotten has established credibility that can't, no matter how much we challenge it from this Committee's perspective or other places, it is not going to stop the public interest in getting this problem solved.

Now, I know that there was some contention here, but the fact of the matter is that our distinguished friend and colleague is the one who suggested that the greatest hoax perpetrated on the American people is global warming.

Now, I haven't heard anybody else support that notion. It just shows you where the perspective is on what we have to do in this Committee and this Congress. We talk about the cost of jobs. Well, that is an arguable thing, and you have said, and I think produced evidence that it will not damage the economy. In the final analysis, it will improve it.

But the one thing that is irrefutable is the fact that if we don't do something about this, it is going to cost lives. I want to read something here from the Union of Concerned Scientists. This is a credible organization, I would say. I hope our friends would agree. "The reality of global warming, including the role of heat-trapping

gases from human activities in driving climate change, has been repeatedly affirmed by scientific experts." They go on to say, "Every day that we choose to ignore climate science is a day we failed to protect future generations from the consequences of global warming."

Mr. Vice President, and people within the sound of my voice, my biggest concern, and why I do what I do here, is my 10 grandchildren. If I care enough about my 10 grandchildren to want to do something to protect their health and their longevity, then I think that we all ought to be looking at what we do about our grandchildren.

When I listen to these challenges that were presented to you, Mr. Vice President, I am thinking of the Luddites who were opposed to technology and took 100 years or so to establish that maybe the technology was good for us. I think that is still the case.

I know you have spoken to scientists across the country about global warming and its impact. What do you think the persistent efforts of the Bush Administration to censor, suppress Government scientists has had on the morale of these people? Did you get a chance to hear from any of them that you talked to?

Mr. GORE. Yes, I have. Some of them are put under a lot of pressure. Absolutely. Jim Hansen testified yesterday. He is one of the most distinguished of them. He is a very gutsy guy, and has stood up to the efforts to censor his scientific reports. There are some others who aren't as visible and don't have the same chance to get out there and fight for themselves. Inevitably, there are some of them who feel the pressures. Sure.

Senator. LAUTENBERG. Yes, the one thing that we have seen here repeatedly is testimony, material submitted by qualified scientists for review who work for the Government, and when we see their reports redacted, things eliminated, meanings changed constantly, it is a discouraging thing. The attempt to influence the public against taking appropriate measures to reduce the threat that global warming and climate change poses to us is really hard to fathom. But Mr. Vice President, you have shown a persistence and tenacity that is to be admired. You can't quit because the entire world is looking at ways to relieve ourselves of this impending threat.

Mr. GORE. They are looking to this Senate, Senator Lautenberg. I know that many of you are going to be trying to redeem the promise that our democracy makes to them.

If I could say just one other thing in response. I admire your work on this issue of long standing, Senator Lautenberg. Thank you for your service. I do believe that it is morally wrong to have individuals who have a political brief and no scientific training put in positions where they censor scientific reports simply because the conclusions of the scientists are inconvenient for the commercial interests that in many cases these individuals have come out of, and then go back to after their time in the executive branch.

I remember a time when that would have caused bipartisan outrage. I know that there have been plenty of Republicans who have expressed concern about that. I don't mean to imply that there are not now. But standing up for the scientific method, for truth, for

open science, that shouldn't be a partisan issue. It really should not be a partisan issue.

Senator. BOXER. Thank you, Senator.

Senator Isakson.

Senator. ISAKSON. Thank you, Mr. Vice President. Welcome.

Mr. GORE. Thank you.

Senator. ISAKSON. I know she won't remember, but 10 years ago when I chaired the Board of Education in Georgia, I had the privilege of escorting Mrs. Gore to the Teacher of Excellence awards celebration sponsored by Cox Newspapers in Atlanta. I just want to thank her for her advocacy on behalf of kids, and particularly the content that they are exposed to. I appreciate that very much.

Mr. Vice President, I am a big believer in finding positive solutions, so I would like to look at two things for a second. It appears to me that to solve, let me put it another way. Utilities, the generation of electricity, the manufacturing of goods and services are significant contributors and are oftentimes demonized.

Yet in fact, I think they are a route to the solution of many of the problems we face. For example, if you can't burn coal because of carbon, and if natural gas increases five, six, seven times what it was a few years ago, which it has, and yet you do want to provide the energy to manufacture, to heat homes, et cetera, it seems like to me that nuclear energy is certainly a major part of the solution.

One of the things that frustrates me is every time I listen to people talk about the things that we need to do to solve environmental problems, one of those things that is never mentioned by those advocates is the great efficiency, lower cost, and non-polluting effects of nuclear energy.

Do you think nuclear energy and its generation of power is a part of the solution?

Mr. GORE. I think it is likely to be a small part of it. I don't think it will be a big part of the solution, Senator. I used to represent Oak Ridge, where we are immune to the effects of radiation. So I used to be more enthusiastic about it. I am more skeptical today for a lot of reasons. The main one is cost. I am assuming that we will somehow find an answer to the problem of long-term storage of waste. I think Yucca Mountain is deficient.

I am assuming that we will find an answer to the problem of errors by the operators of these reactors. I have been to Three Mile Island. I went to Chernobyl. The whole industry is affected when there is one of those. But I am assuming those can be solved.

Now, for the eight years I was in the White House, every nuclear weapons proliferation issue was connected to a reactor program. That is a problem if the world wanted to make nuclear power the option A for the whole world. It would make that problem worse. But the main problem I think is economics. The problem is these things are expensive. They take a long time to build, and at present they only come in one size, extra large.

In a time when the efforts to project energy demand is plagued by uncertainty over what oil prices will be, and electricity shouldn't follow the price of oil, but it does because there is enough fungibility at the margin between oil and coal that it just chases the oil price. Again, it is $60 a barrel, and what will it be next

year? The answer is not important, but the uncertainty is. The answer is important, too, but where this problem is concerned, it is the uncertainty about the answer that makes the utility managers reluctant to bet all their construction budget on very large increments that take a long time and have certain other fragilities associated with them.

In the Tennessee Valley Authority, I forget the precise numbers, but when I came to the Congress in the 1970s, we had something like 21 reactors under construction. About 19 of them had to be cancelled after the oil crisis of 1973 and 1979. You may get the same questions I used to get, Senator Alexander, about whether or not those partially completed cooling towers could be used for grain silos. People are still unhappy about having to pay for the ones that were not completed.

So I think that it will play a small role in some areas, but I don't think it is going to be a big part of the solution.

Senator. ISAKSON. On that answer, let me just make a couple of comments to think about. The 1974, 1975, 1976 period that you refer to in terms of Oak Ridge and the WHOOPS bonds in Washington, Pacific Coast, it was double digit tax-deductible interest rates on the power bonds that were generated to build those plants that shut everything down.

In fact, and I am trying to help here.

Mr. GORE. No, go ahead.

Senator. ISAKSON. The nuclear generation proliferated because, interestingly enough, of the cost of coal. Coal went so high and spiked so much in the late 1960s and early 1970s, nuclear was the next route to go to.

I know I am running over. I apologize. Let me just finish this thought.

Chernobyl was terrible, and it was in part an engineering and a lack of standards disaster. Three Mile Island, in fact, I think was a credit to the American nuclear regulatory authorities that what could have happened and did at Chernobyl, didn't happen in America.

Mr. GORE. I agree.

Senator. ISAKSON. But I can't imagine how we would work our way to a positive solution if nuclear energy is not a key component because of its capacity to build and its capacity to generate, and its capacity to provide economical non-polluting energy. So hopefully, it will be a part of this debate, because in the end it is a critical part of the solution.

Mr. GORE. Could I comment briefly, Madam Chair?

Senator. BOXER. Yes.

Mr. GORE. I think you make great points, Senator. And I have learned from you, and I appreciate it. Indeed, the interest rates on the power bonds was a big part of it. I didn't mention that. In spite of those rates, they were projecting a 7 percent annual compounded increase in electricity demand in the early 1970s, and when the price of oil chased oil and electricity rates went up, that 7 percent figure became a 1 percent figure.

So yes, it was both factors. I do agree with you, though, that it needs to be a part of the debate. I just happen to think it is going to be a smaller part. Take China, for example. We talked about it

earlier. In their five year plan right now, they are projecting 55 new 1,000 megawatt coal-fired generating plants every year, and only 3 nuclear plants. Now, they don't have to worry about public opposition. In a way they do, but they do for coal also. So see, they are looking at the same economics of the long lead construction and the cost, and some of the uncertainties.

Now, there is a new generation of reactors coming along that has a smaller increment. They may be more reliable and more standardized. We may get a solution to the waste issue. So I am not a reflexive opponent of nuclear. I just happen to think it is only going to play a small role. But I appreciate the dialogue. Thank you.

Senator. BOXER. Thank you, Senators.

And now for another reunion, Senator Lieberman.

Senator. LIEBERMAN. Mr. Vice President, thank you very much for being here. It is great to see you and Tipper. And thank you for your extraordinary leadership in this cause. You have served your Nation in many very important and substantial ways. It may turn out in the sweep of your life that this leadership you are giving to wake up America and the world to the oncoming peril of global warming and the need to do something about it quickly may be your greatest service, not just to this country, but to the world, because this is, as you said, a planetary crisis.

I appreciate very much the way in which you have gone at this with an intellectual rigor. You have studied the science. You have a tremendous capacity to convey the facts. And you have added to that the moral dimension, which is to say that we have a choice to do the right thing or the wrong thing. We have a choice as to whether to exercise our responsibility to coming generations.

So I guess what I am saying is that your leadership here has been so fact-based and faith-based. And that is a pretty powerful combination. I thank you for it.

It has seemed to me, as we have gone on, that eventually the United States Government is going to do something about global warming. The question is whether the Government will do it soon enough, whether our country will do it soon enough. To state it starkly, whether we would reach a climatological tipping point before we reached the political tipping point, I think we have reached the political tipping point now. I think the kind of coming together of people from the business community, the faith-based community, hunters, fishermen, just people worried about this is very impressive. We have a real chance to do something about this, frankly, sooner than I though we would.

It is interesting to me that the questions being asked here today by most, though not all, of the members of this Committee, are no longer whether global warming is a problem and whether we should do something about it, but how we can best do something about it. I think Senator Isakson's questions were very much in that spirit, and he will play a very important role in whether we do something here.

Senator McCain and I, as you know, have a cap and trade bill. We are very proud that it is bipartisan. Senator Collins, Senator Snowe and on this Committee, I am very grateful that Senator Clinton has cosponsored it.

I want to ask you a practical question that members are asking. It is about the role of coal, both in a natural home State sense that a lot of Senators represent coal States; and in a larger sense, coal, as you well know, is the natural energy resource that we in America have in the greatest abundance. There are some fears among people in business that if we don't do something to produce clean coal, that there will be a mass movement toward natural gas, which will raise the price of natural gas and hurt industries that depend on it.

So I would like you to talk to your former colleagues here about what the practical prospects are for using coal as part of a cap and trade system to deal with global warming.

Mr. GORE. Thank you, Senator Lieberman. And thank you for your longtime leadership on this issue. When we served together in the Senate and indeed when you were Attorney General of your State before coming to the Senate, you were already offering leadership on this issue.

I so vividly remember in Nashville, TN when your mother, bless her soul, bless her memory, came down the hallway, and I opened the door and she looked at me and said, you made a good pick.

[Laughter.]

Mr. GORE. One of the reasons I always thought she was right was your leadership on this issue. I appreciate it.

Senator. LIEBERMAN. Mom was a straight talker.

Mr. GORE. Oh, was she ever. God bless her.

I don't agree that we are at the political tipping point. I think we are near to it. I think we are very close to it, but I don't think we are over it yet.

I also agree that this is an issue that many faith-based individuals are coming to. I say this to Senator Inhofe. You know, I don't proselytize my own beliefs, but all religious traditions hold to the same teachings. I do believe that the Earth is the Lord's and the fullness thereof. I believe that the purpose of life is to glorify God, and you cannot do it while heaping contempt on God's creation.

I think that the joining of this debate by the evangelical and faith communities has been a very powerful factor changing the dynamics here.

Now, on coal, if you look at what happened with the TXU decision, first of all, to back away from eight of the eleven coal-fired plants they had planned, and then to engage in a private equity buyout that has very unusual and unexpected green characteristics to it. I think what that reflected more than anything else is the great need in the energy marketplace for a price on carbon. The future of coal depends on quickly establishing a price in the marketplace for carbon.

Morgan Stanley just executed the first post-2012 trade on carbon emissions outside any governmental framework. I think that as soon as there is a price on carbon emissions that the marketplace can clear, then you will have the unleashing of investments in carbon capture and sequestration in a realistic and reliable way, and that will open up a future for coal that does not destroy the environment of the Earth for us human beings. I think that is the key to it.

Now, the best carbon capture and sequestration in the world is probably in Norway. I asked them the secret of it. I was over there last week, 10 days ago. They said, well, the secret is we have a CO_2 tax. And there are a lot of exemptions for it, but the offshore drilling is not one of them, and we told them they would have to pay this tax unless they could capture and sequester, and they said okay. And they found out how to do it, and they do it extremely well, scientifically reliable.

Iceland is doing the same thing. I am not saying it is easy. I am not an expert on exactly which techniques are best and in which geological areas. That is above my pay grade, like a lot of things. But I do know that the predictability of the price, where you internalize the externality, that is really the key to it. And then that will drive toward environmentally safe measures.

One way to describe the essence of this problem is the market is partially blind to these environmental externalities, they call them. And we are all familiar with that phrase. What is, you know, air, water——well, I internalize water and air, and we all do. But the economy should also. And not to be glib about it, but in order to open up a future for these businesses that is sustainable and viable, I think that we have to internalize those externalities.

Senator. LIEBERMAN. Thank you.

Senator. BOXER. Thank you.

We are moving toward a time when we are going to have some votes, so we are going to move ahead. Let me give you the order. We are going to go Senators Craig, Baucus, Alexander, Clinton. Those are the next four.

So Senator Craig.

Senator. CRAIG. Madam Chairman, thank you very much.

Mr. Vice President, welcome back to a turf you knew well. We are pleased to see you here.

I am not sure that I have a question of you. You were recently in my State and you were well received. I think Idahoans were proud to have you there. One of the reasons we were proud to have you there is that we are probably one of the cleanest States in the Nation. We are proud of that. Our energy sources are clean by definition. In fact, my State just rejected a coal-fired plant to be built as a merchant generator in Southeastern Idaho, because of the technology involved.

Having said that, we have produced 50 nuclear reactors in the history of our State, and we are proud of that, and all were produced safely, and no one lost their life.

And so I have always been a little frustrated by your position on nuclear because I grew up near a laboratory, as did you. It is a safe laboratory. It was well run, as was yours. And I don't agree with you that nuclear is not part of the solution.

When you killed the nuclear industry or attempted to during your Administration, by zeroing out the nuclear budget, an inquisitive look simply does not refute the fact that you did. And in doing so, you probably set back the advance of nuclear technology substantially, in fact, the very technology that just a moment ago you endorsed, NGNP, which is the new advanced modular type reactors, high temperature, that can do a lot of things and by definition

is safer, although the nuclear industry itself is phenomenally a safer industry than many.

It is not the most expensive source of energy today. It is a least-cost producer, existing reactors are, that have been relicensed and retrofitted. At 21 percent of our energy base and 70 percent of France's, and 50 percent of Japan's, already, already the nuclear industry is a factor in contributing to a baseload that is a clean source.

The reason I say this is because when we passed the Energy Policy Act in 2005, I was one of those Senators who suggested we ought to call it the Climate Change Act of that year. Why? Because it was all about clean energy. It was all about advancing technology. This country no longer wants to produce gas-emitting sources of energy. The investment that is pouring in out there now, the investment in fact this country is putting into climate change is by a factor of five greater than the rest of the world combined as it relates to research and development. That is something we ought to be very, very proud of.

I am. I think we are advancing the cause dramatically at this moment. What this Congress has chosen not to do is to freeze or cap or trade. That is the one part of your equation we have chosen not to do. The rest of the equation we are doing, and probably in the most aggressive way that it has ever been done before. Before the passage of EPAct, we had one reactor on the drawing board. I think as of last week, 33. Probably 10 of those will pour concrete in the next 10 to 12 years.

Yes, we still have problems about waste management. That is why the creation of the very thing that you hint about, GNEP, bringing together a consortium to reflect the importance of a non-proliferating nuclear source that is manageable and controllable. I will not forget sitting on the stage with the Environmental Minister from China at the last climate change conference that meant anything, in Buenos Aires, and he said, you give us the technology and we will build them.

But right now, we are going to do exactly what you just mentioned. We are going to build a lot of coal-fired, because we are more interested in our economy and the well being and growth of our people for the time being.

I am phenomenally proud of what we are doing as a country. I believe we do lead the world. It isn't by accident that we are a large emitter of gas, because we are the largest economy of the world based on today's technologies. We are going to invest heavily. We are going to incentivize. In fact, I would like to have you look at a bill that Byron Dorgan and I just introduced. I have made a step in the direction of deciding maybe we ought to heighten our CAFE standard. You call them gas guzzlers. I say let's look at a technology that works, and in no way diminishes the safety of the transporting public.

So we are pleased you are here. I disagree with your point of view. I do not believe that this country needs to stand in shame of what it is doing or what it plans to do. We have become the world leader in clean energy and we will work to stay there and transport it to the rest of the world.

Sorry, Madam Chairman. Don't break your gavel.

Thank you very much, Mr. Vice President.

Senator. BOXER. I am not breaking it. I am being gentle.

[Laughter.]

Senator. CRAIG. As only you can be.

Thank you, Mr. Vice President.

Senator. BOXER. It took a lot of patience. I learned it right here.

Mr. Vice President, I give you 60 seconds to respond to that speech about nuclear energy.

Mr. GORE. I didn't say that I didn't think it was part of the solution. I said that I think it is part of the solution. I just don't think it is going to be a big part of the solution.

I will respond for the record on the business about killing nuclear energy. I really don't know what you are referring to, but I will find out and I will respond.

Senator. CRAIG. DOE's budget during your time and the nuclear portion of that budget. Go back and check your records.

Mr. GORE. I will and I will respond to the record.

Senator. CRAIG. Thank you.

Mr. GORE. I really enjoyed being in Boise. Madam Chair, at Boise State there were 10,000 people who came out and I couldn't believe the size of the crowd. It was wonderful. It was bipartisan. It was a great time. I showed my slide show there. I ended with Boise State winning the Fiesta Bowl. It was a great evening.

Senator. CRAIG. He played to our blue turf.

Mr. GORE. I loved the editorial the next day, or two days later, calling for carbon reductions. I was heartened that 53 Senators did vote for Senator Lieberman's bill, a version of that just last——

Senator. BOXER. With Senator Bingaman at that time.

Mr. GORE. That is right, and various versions. Thank you.

Senator. BOXER. Thank you very much.

Senator Baucus welcome.

Senator. BAUCUS. Thank you, Madam Chairman.

Thank you, Mr. Vice President. You provide such leadership on this issue, and I speak for myself and many others how much we commend you for it.

You mentioned Jim Hansen. I remember a good number of years ago, I was sitting on the Energy Committee. I am not on that committee. And Jim Hansen testified, a good number of years ago. I remember thinking then that this guy has probably got it right. He is on to something. And you followed up. I think you were part of that hearing, too, if I vaguely recall it.

It reminds me, too, of how we addressed some other atmospheric challenges and solved them. One is chlorofluorocarbons. The scientists were right there, and we solved it. Another is under the Clean Air Act, with the cap and trade system that we enacted. There were a lot of naysayers, but it turned out to be better than people thought. People made some money off of it and for the right reasons.

I also thank you for hiking up to Grinnell Glacier several years ago to demonstrate how much that glacier in Glacier National Park is shrinking as a consequence of climate change.

I do believe that the science is clear. There is no doubt about that. I do believe that we have to rally not only this country, but worldwide, and find ways to encourage China and India and other

developing countries to be in on the solution, helping them realize that they could be stakeholders, they can be world citizens by contributing to a solution here, because we are all in this together. I urge you to help us find ways to accomplish that.

I believe that a solid reasonable cap and trade system makes good sense. We should begin quickly. But I also believe that any system we put in place has to be economy-wide. It shouldn't exempt certain sections of the economy. Some suggest only with respect to stationary sources and exempt the mobile sources. I don't think that is right. I think we are all in this together.

The dynamic is much more powerful if we all agree that we are all in this together, rather than some significant section is exempted. It just won't work.

My question to you is just, you talked a little bit on this, is the use of coal, and especially carbon sequestration. We in the Finance Committee are moving aggressively to develop greater energy independence for the United States. That clearly dovetails with climate change, and trying to find the energy technologies that are most efficient on a calorie in- calorie out sort of basis, but dealing with climate change with the same intensity.

I think the practical reality is we have coal here. Coal is going to be part of the future. I think you said that. But the question is how to make coal the right part of the future. We have reports, like I say, a MIT professor just reported to this Committee a couple of days ago worried that it might take 10 years to get carbon sequestration in a meaningful ways up and going, that is to deploy it, get the legal framework, demonstration plants and so forth. I don't know that we really have 10 years.

So any thoughts you might have about carbon sequestration, how we get it working a little more quickly and more efficiently, more aggressively. You mentioned Norway, with a carbon tax. That is interesting, but maybe there are some other ways. Whatever you think would work here, it would help us not only on this Committee, but also in the Finance Committee where we are going to be enacting tax incentives to help us become more energy independent and also deal with climate change in a very realistic way.

Mr. GORE. Yes, I know that a CO_2 tax is considered just wildly unrealistic now, but you know, our pattern of financing our social programs and health and welfare programs on the backs of employment has outlived its rationality and usefulness. I know the degree of difficulty in changing that. I understand it. But you know, we are worsening our single biggest disadvantage in global competition now. And if we could shift that and give employees and employers a break, and shift over to a pollution-based tax——

Senator. BAUCUS. You mean, abolishing the payroll tax?

Mr. GORE. Yes, sharply reduce or eliminate it. Absolutely. And replace it with a pollution-based tax system, principally CO_2. I fully understand how inaccessible that sounds in this context. I really believe that that would help our economy, help our competitiveness, and I think it would put incentives in place to do the right.

Now, let's assume for the moment that you are not attracted to that. I do urge you to think about it in all seriousness, Senator. I really believe it very strongly. I think it would be a macroeconomic stroke for our economy's future. I really do.

But now, where coal plants are concerned, there are some kinds of coal plants, you take pulverized coal plants, according to the old design, there is no way they could ever be retrofitted with carbon capture and sequestration.

Senator. BAUCUS. Too expensive.

Mr. GORE. Well, just the physics of it. They produce so much nitrogen mixed in with the CO_2 that there is no way to ever capture and sequester it. It just can't be done.

Now, a brand new design of pulverized, oxygen enrichment, they say there are ways to do that. I don't know. But Ernie Moniz's report from MIT raised some questions about the IGCC, whether that is ready for prime time. Again, there are experts who know about these things far more than I do. I would say the principle is, we should not build any more coal-fired powerplants that are not readily adaptable for full carbon capture and sequestration, full stop.

Now, the banning of the one in Idaho, the demonstrations by Republican as well as Democratic Mayors in Texas leading to the banning of those, I think you are going to see that all over this country. There is going to be a de facto moratorium in a lot of places, and I think we need to open up a pathway for carbon capture and sequestration. Put a price on the carbon. A tax is the best way. Cap and trade can also do it.

Senator. BAUCUS. Thank you very much.

Senator. BOXER. Senator Baucus, thank you.

Senator Alexander, followed by Senator Clinton.

Senator. ALEXANDER. Thank you, Madam Chairman.

Mr. Vice President, thank you again for being here. As I said when I introduced you, I believe there is a problem. I believe human activity caused it and I think we ought to work together to fix it.

I want to make a comment about nuclear power, if I may, and then ask you some questions about cap and trade as it might apply to carbon and electric utilities. That is where I am going.

I hope you will continue thinking about nuclear power because as I have gotten more into this over the last three or four years, it looks to me like, and this is my judgment, that if you really want to solve or get hold of the climate change issue, the carbon problem in a generation, that nuclear power is a big part of it, because as I think of our big economy, producing about 25 percent of the energy in the world or consuming it, and I think of ways to produce a lot of electricity. Let's just start with electricity.

It seems to me there are only three ways to produce big amounts right now, in the near term. One is conservation and efficiency. That ought to be the easiest and the first thing to do. You have talked about that. Two is nuclear and three is coal.

Nuclear today produces I believe 70 percent of our carbon-free electricity, although it is only 20 percent of our power. That is a startling fact to me. If we are worried about the next 10 or 15 years, and nuclear is 70 percent of our carbon-free, then I would think we might want to do more of it. And the cost, you are right. It does cost more to build the big plants, but plants are becoming cheaper, it looks like.

TVA is about to complete a new one on cost and under budget. But once they are up, it is the cheapest power to operate. It is two

cents, while coal is next at three cents. If we add new carbon recapture technology, coal is going to go up. And then gas is higher than that. There is a big question about whether we really want to encourage everybody to switch to gas.

So without getting too far into it, the conclusion I have come to is that in the near term, despite the proliferation and waste issues, which are real issues, that if we want big amounts of carbon-free energy in the United States, that we ought to take nuclear very seriously.

Here is my question.

Mr. GORE. Could I respond briefly to that before?

Senator. ALEXANDER. Sure. Of course.

Mr. GORE. I think there is a fourth. Along with conservation and efficiency, coal and nuclear, I think the biggest source is widely distributed small scale generation in a smart grid or electranet, where individuals can use the new sources. There is so much VC money going into developing these technologies. The new generation photovoltaics, new generation windmills, and you couple that with the conservation and efficiency, new generation of enzymatic hydrolysis producing on a small scale.

I think that the old thinking, and I am not using that as a pejorative phrase, but I really and sincerely believe that the old way of thinking is big centralized, whether it is Government or corporate management or whatever, big centralized units where everything goes out from the center. I think that just as computers with the massively parallel processing, I think that the widely——

Senator. ALEXANDER. I want to make sure I get to ask you my question.

Mr. GORE. Yes, okay. Go ahead.

Senator. ALEXANDER. I grant your point. I will think about it.

Here is my question. You talked about coal freezes. Is it not true that in 1990 or 1991, that we basically adopted a sulpher freeze in this country with a cap and trade system during a Republican administration.

Mr. GORE. Yes, yes.

Senator. ALEXANDER. We said we are worried about acid rain. As far as electric utility plants go, we are going to say, no more, no more. We are going to put a cap on sulpher.

Mr. GORE. Right.

Senator. ALEXANDER. Now, that didn't mean that you had to shut down all the coal plants. It just meant you had to start reducing it and the end result, and basically we said we have a cap on sulpher; we are going to freeze it; we are going to go down to 50 percent; and we will give our allowances based on historical emissions of coal. And then over 15 years, that has been very successful. We even have new EPA rules that say, well, cut it again in half, and again in half after that.

So here are a couple of questions I have for you. One is, was the cost of that prohibitive? Do you have any figures about that? I would think not, since the United States GDP grew compared to the rest of the world during that 15 year period of time.

And the second is, why couldn't we start an effort on climate change by putting such a cap system on electric utilities since we already know how to do it. We have had 15 years of experience. It

is 40 percent of the carbon and it is the fastest growing produced part of the carbon that we produce in this country.

Mr. GORE. A great question. You know, people didn't say it at the time, but this was a Republican idea. It was former President George H.W. Bush's proposal. Some Democrats were opposed to it. Some environmental groups were opposed to it. I was for it. I had no idea that it would be as good as it was. And by making it possible to use the market forces to help us accomplish what we wanted, what happened was the price for reducing sulphur dioxide ended up being just a small percentage of what had been projected when that was put in place. It was wildly successful. In fact, Kyoto was really based on the success story of that cap and trade system.

Now, there is a new proposal that is a modification of it. Instead of giving away the emissions, the start units, auction them off. We talk about protecting the low-income Americans and helping with the expenses of this transition, auctioning them off is an idea that I think is a good one also. I wouldn't reach for that if it meant killing the whole thing, but I think it is basically a good idea. I think you are on to something.

Final point. I do think that the best approach is an economy-wide approach. I think a utility-only approach suffers from the same problem that those who want to take a CAFE-only approach do. I think that we have to put together a comprehensive bill. I think if we do it with the kind of philosophy you are talking about, Senator Alexander, let the market work for us. I think that the cost of accomplishing this is going to be far less than anybody imagines now.

Senator. ALEXANDER. Thank you, Madam Chair.

Senator. BOXER. Thank you very much. Thank you.

Senator Clinton.

Senator. CLINTON. Thank you very much.

Senator. BOXER. You are very patient. Thank you.

Senator. CLINTON. This has been absolutely wonderful. I want to thank Vice President Gore for taking his time to come back here to the Senate, and perhaps, Madam Chairman, we could indulge upon him in the future to meet with those of us on both sides of the aisle who are interested in this issue, to perhaps go into some even greater detail on some of your proposals.

Of course, I want to welcome Mrs. Gore as well.

I wanted to just ask for some further clarification on a couple of your proposals, which I find extremely intriguing. The first, to follow up on Senator Alexander, if there were a carbon-based tax, would there be a need for an economy-wide cap and trade system?

Mr. GORE. They are not either/or. We can do both. I am in favor of both. Many people discuss cap and trade and a revenue neutral CO_2 tax, swapping from employment taxes, as if you have to pick one. As a practical political matter, there would be some people who would say only one of the above.

I think the most effective approach is to do both.

Senator. CLINTON. I would really appreciate then perhaps some clarification and additional information on your view as to how that worked, because of course there is a seeming either/or choice that people are presenting, either a cap and trade system, and some of the advocates of which seem to think that it will be vol-

untary, which I find to be totally unacceptable. If it is mandatory, economy-wide or sector-wide, I agree completely with you, it needs to be economy-wide. But without the implementation and enforcement provisions being very well thought out, I am afraid we will continue to just sort of move along at a slow pace.

Secondly, the Connie Mae proposal is one that I also find very exciting, actually. I have worked with the City of Rochester and the surrounding County of Monroe County in New York to come up with a GreenPrint, using the advice and the expertise of the Green Building Council, and in effect to try to encourage and incentivize contractors and engineers and architects and others to begin to think more green and to use the technology and the efficiency standards.

How would the Connie Mae process work? Are you suggesting we actually create a federally chartered entity? And then what would its mission be, precisely?

Mr. GORE. A carbon neutral mortgage association that would in the manner of Fannie Mae take on these instruments that embody the expenditures not for the whole home, not for the whole building, but just for those expenditures that are directly related to the increasing energy efficiency. Typically, homebuilders will look at what amount of insulation is going to make the home attractive in the marketplace, and they will meet a standard that clears the market, but they won't go to the point where it really is the most energy efficient home because it raises the purchase price.

Okay. This National Mortgage Association could identify an increment that takes where the market has settled the price now, add the amount that reaches all the way to the maximum energy efficiency. The extra amount is put into an instrument that is amortized by the savings in the energy bills over the succeeding years, and they can bundle those with all of the other mortgage instruments that are in the market that year, and they are tradable commodities.

Senator. CLINTON. I think that is a terrific idea, Mr. Vice President. Would that also include the price of more energy efficient appliances, so that builders would be incentivized to use those in new home building?

Mr. GORE. Not as it is currently designed. I think that structural features of the home are generally looked at in a different way from the appliances that come with the home. Some builders include them, and some don't. I am not an expert on that. I see no reason why you could not also include extra-efficient appliance standards in that. I would have to think about it, but I don't see why you couldn't.

Senator. CLINTON. Well, in response to Senator Bond's questions, which you didn't really get a chance to respond to, about the little girl with the two coats, isn't is also the case that if we went on a more targeted approach toward weatherization, efficiency, perhaps that little girl wouldn't need two coats even with current prices, because the savings could be realized and the affordability of the energy costs could be decreased.

Mr. GORE. I think that is an excellent point, and I will include that in the response for the record.

Senator. CLINTON. Again, I really want to thank the Vice President.

And I want to thank the Chairman for inviting Vice President Gore. Again, if we could perhaps indulge him with some additional time in the future, I think it could be very helpful.

Mr. GORE. Thank you.

Senator. CLINTON. Thank you.

Senator. BOXER. Let me tell you where we are. We are going to have a vote in two minutes. We have three people left.

Mr. GORE. I will be quick.

Senator. BOXER. Yes, well, you know, you don't have to worry about this.

Mr. GORE. I will stay. Whatever you want.

Senator. BOXER. That is the nice thing. We are going to finish up, because you have to leave, and we have three votes back to back.

So I think what I am going to do is say each person three minutes. If you stick with it, at three minutes, I have to stop, and then I will say the final thank you.

So Senator, I am so sorry that time ran out.

Senator. THOMAS. That is quite all right. I will talk very fast.

Senator. BOXER. Okay.

Senator. THOMAS. Thank you.

I guess we all are very interested in alternatives over time. However, that is going to be over time. Now, in the meantime we have to have energy for this country. What do you think the role of the Federal Government should be in advocating clean coal technology so that we can use our greatest source in this next 10 or 15 years?

Mr. GORE. I think we ought to speed up the development of carbon capture and sequestration. I think we ought to have a moratorium on any coal plants that are not efficient and can't be used with carbon capture and sequestration.

Senator. THOMAS. Well, as you know, we are waiting to do some of that. I think there is some merit in having mine development because most of the coal is in certain places, and then delivering it on the line, rather than on the train. That is part of the problem.

You seem to be able to talk in 15, 20, 30, 100 years ahead. We can't hardly get a weather report for a year from now. How can you depend on what people are saying about the weather 100 years from now?

Mr. GORE. Well, the computer modelers have gotten more and more accurate with their predictions. They test them against start conditions going back and run them against the models. You are asking me about an area of expertise where I rely on the real experts, not myself. I will just tell you that you can't predict what the temperature next January 3 is going to be, as well as you can predict the fact that January is going to be cold next year.

Senator. THOMAS. That is true, but many of your plans are predicated on looking ahead at the future and so on. In terms of the best scientific available information, which came first: an increase in the Earth's temperature or an increase in global warming gas emissions?

Mr. GORE. CO_2 and temperature are a coupled system. They move up and down together. During the ice ages and the intergla-

cial periods, the Earth's orbit around the sun gets narrower and wider on a 100,000 year cycle. The tilt oscillates a degree and a half on a 41,000 year cycle, and there is a wobble called precession on a 22,000 year cycle. And in many cases, that has affected the amount of incoming solar, but it has also at times affected the growth of vegetation depending on what part of the Earth was getting more sun.

So sometimes, CO_2 has preceded temperature; sometimes temperature has preceded CO_2. But at present, CO_2 is preceding the temperature and it is well established that that does affect temperature.

Senator. THOMAS. They are both factors over the years.

Mr. GORE. Correct.

Senator. THOMAS. You choose to become carbon neutral because you pay for the carbon you use. We have a utility in Wyoming that has 3,800 customers. They offered to have wind energy at $3, and 30 people signed up.

Mr. GORE. I would be one of them. I am one of them in Nashville.

Senator. THOMAS. I know, but I guess I am saying how are we going to pay for all these things that you are talking about.

Mr. GORE. I think as the wind becomes mainstream, and it is becoming mainstream, that cost is going to become ever more competitive. I really believe that.

Senator. THOMAS. But it is going to be the user that has to pay.

Mr. GORE. I think the cost is going to come down for these alternative sources and for the new approaches that I have recommended.

Senator. THOMAS. Thank you.

Senator. BOXER. Thank you.

And now, next on my list is, who is next on my list? Senator Whitehouse, you are next on my list.

Senator. WHITEHOUSE. Thank you, Madam Chairman.

Mr. Vice President, thank you for being here. I want to offer first a particular thank you, and then ask a question. I am married to a scientist, a marine biologist, an environmental scientist. People who know us both say that I am preposterously over-married, which is probably a condition you can sympathize with.

Mr. GORE. They say that about me, too.

[Laughter.]

Senator. WHITEHOUSE. And she has spent a lot of time thinking about these issues. When we saw your movie, I came out feeling educated and informed. She came out feeling relieved. She said, you know, we have known this stuff in the scientific community for more than a decade. Please, let's hope that this movie gives us the voice that we need.

Your voice has given the scientific community that voice that it needed and on behalf of my wife and other scientists, thank you for that achievement.

Mr. GORE. Thank you.

Senator. WHITEHOUSE. In terms of the question, could you say a few words about the national security consequences of where we are in two dimensions: one, our strategic problem with dependence on foreign oil; and two, the risk we face as a country of the con-

sequences of dislocation of communities around the world from climate change, from a national security perspective.

Mr. GORE. Well, the Pentagon has done a study of this. One of their most distinguished security analysts did a long-term study and said this is a major national security threat. Now, they were focused mainly on the environmental refugees and the dislocations and the potential political disruptions around the world that could come from some of the consequences that, again, the Pentagon study highlighted.

Of course, our dangerous over-dependence on sources of oil from countries that are among the most unstable on Earth is well known. But I want to raise one other brief point, and I know we are pressed for time. I mentioned the internet earlier. That was a national security proposal. Its purpose was to make communications survivable in the event of nuclear war. That is how it started, really.

Well, this electranet that I have talked about would also have security benefits. We wouldn't be so dependent on these few central generation plants.

Senator. WHITEHOUSE. Thank you, Mr. Vice President.

Madam Chair, I yield back the rest of my time.

Senator. BOXER. Thank you, Senator.

Senator Cardin.

Senator. CARDIN. Mr. Vice President, thank you very much. You have really pointed out the urgency of this issue. I very much appreciate that. In my own State of Maryland, we had habitable islands that no longer had habitation. The sea level change has been dramatic in the State of Maryland. I was at Blackwater Wildlife Refuge over last weekend, and saw so much of the wetlands that used to be that are no longer there.

So it is a real problem for the people of Maryland. I thank you for bringing it to our attention.

We need a comprehensive approach that deals with the production and use of energy. I want to just add one additional part to the agenda, and that is public transit. I know in our region here, there are so many reasons that we need to move forward with public transit, but part of it is climate change. That is something we can control in the use of public transit, and it certainly takes a lot of carbons out of the air. I just would urge you to perhaps include a slide on that.

Mr. GORE. Thank you. I agree with you. Light rail is one of the things that is looked at in the movie, and I couldn't agree with you more. I think light rail and affordable, efficient, comfortable mass transportation is a big part of the solution here, and redesign of communities also.

Senator. CARDIN. You don't need anybody to respond to Senator Inhofe on your behalf, but I can tell you that if everyone in this country did what you have done in regard to this issue, we would be very much further ahead, and we would be the leaders of the world. I am just proud of the work that you have done to elevate this issue in the United States.

I agree with you. We need to comply, as an international leader, and then negotiate an aggressive international agreement that hopefully China and India and other countries participate, because

that is the only way we are going to really get ahead of this issue. I just am very proud of your leadership in this area.

Thank you for being before our Committee.

Mr. GORE. Thanks so much, Senator. I appreciate it.

Senator. BOXER. Well, Mr. Vice President, you have given and given of yourself and your time, your family's time.

I see Senator Carper is here. Senator Carper, we have one minute for you if you want to say something, unless you want to close the hearing. Did you vote already?

Senator. CARPER. I have not.

Senator. BOXER. You better just do it in a minute, then, and I will go back to closing here.

Senator. CARPER. Mr. Vice President, it is great to see you, and my old friend Roy there over your right shoulder. Thank you for joining us today and for your extraordinary leadership on this point.

Mr. GORE. Thank you, Senator.

Senator. CARPER. One of the issues that if I could just ask you maybe to consider responding if you would on the record on this. I worked for about five years on legislation with some of my colleagues to try to figure out if we can at least get started on reducing not just CO_2 emissions, but sulphur dioxide, nitrous oxide, and mercury emissions from utility plants, to get started with a cap and trade system, using market forces.

The hangup has been for a number of people the way we allocate the trading system that we set up. Would it be on CO_2? Would it be input-based historical? Or would it be output based? The idea we favored in our legislation was an output-based approach because ultimately we want to create the most electricity that we can with the least amount of pollution.

I would just welcome you to think about this a little bit, and maybe getting back to us on the record with your thoughts on input versus output. Because ultimately, we are going to have to make that decision. I think most of our colleagues haven't focused on it, haven't thought about it. I think your input would be much appreciated and valued.

Mr. GORE. Well, I appreciate it, Senator. I do believe that a so-called four pollutant approach is obviously the most efficient, where you get all four of them at the same time. I actually favor an auction system. I said earlier to Senator Alexander that if that meant it was impossible to pass the whole thing, then we ought to get it one way or another, but I think that would be the best way to do it.

The sulpher dioxide cap and trade system was enormously efficient, a fantastic success. Take that approach, cap, trade, freeze, go down, take the limits on down, auction the permits. That is what I would do.

Senator. CARPER. All right. Thank you very much.

Senator. BOXER. Senator Carper, I just wanted to say to Vice President Gore what an important member of this Committee you are.

He has so many obligations today, but he does head the Subcommittee on Clean Air, Mr. Vice President, and has just really been a leader on this.

Mr. GORE. For a long time, and I am aware.

Senator. BOXER. We just so appreciate it.

Okay, so we have five minutes to vote. So I am going to speak for about a minute to tell you how much this meant to all of us, I think even to the other side of the aisle. Senator Inhofe was waiting for this chance to chat with you. I am a believer in that kind of debate going on. I think it is absolutely key.

Mr. GORE. You have to do it.

Senator. BOXER. And so when I decided to ask you to come, I knew that yes, you would face some tough and hostile, if I might say, questions. Let me just say, as just a one woman reviewer, you did good, Mr. Vice President. I agree with what Senator Cardin said, that you really are in so many ways a role model for us all, not just as elected leaders, but really as citizens of this country.

Mr. GORE. You don't give out any kind of statue or anything, do you?

[Laughter.]

Senator. BOXER. I am going to give you something. I am giving you something that is a little bit less than that in a minute. It is a lot less than that. But before I do, I just want to say something that really meant a lot to me, and I know to other members of the Committee, hopefully on both sides. I think on both sides.

When I took the gavel and I said before elections have consequences, so right now I have the gavel, by a hair, okay, by a hair. And as long as I have it, I really said I had two goals at the start of this term, and that was to make the environmental issue a bipartisan issue again, because you and I are of the same time in politics.

When I started off as a County Supervisor, it was a nonpartisan race that I had. The fight with the Republican and I was who was the best environmentalist. And the people benefitted from it, and have benefitted every since over in Marin County where we are really in the lead on so much of this.

And then the second thing I wanted to do was focus on global warming, because we had so much time we had to make up for. And this is our fifth hearing. We have many more. We have the fundamentalist community coming before us. We are going to have small business leaders. We really have a tremendous range of folks that are going to come before us on this, and we will get a bill out of here.

I think there are two approaches: the long-term approach that we hope will happen tomorrow as soon as we get the votes we will have that economy-wide bill. You know, the minute we have it, we will do it. And then taking action now, as we look toward that moment in time, which could be a week from now or a month or two months, or six. We can do things on buildings, on utilities, on lots of other places.

So let me just tell you, I am going to give you a little gift. It is not a statue. It is not beautiful. But to me, it is important, and none of my friends have seen it, but the very first hearing we had on the Committee was an open microphone. I think you were listening to this. We had all Senators from the entire Senate come up and we had an open mic. And they presented their points of view.

We had one-third of the Senate come to us, one-third. You know how hard that is? We actually did it. And most of them were very much in favor of taking action and some of them were not. Well, we have recorded that and we have put them in this little book. So because of your leadership and because you have certainly inspired me as the Chairman of this Committee to move on this, I wanted to present you with the first bound copy. I have signed it over to you. I hope you will come here. I hope my colleagues will join me here.

It says, "Dear Al, with deep respect and admiration. Barbara Boxer, '07." And that is for you. And we thank you very much.

Mr. GORE. Thank you so much. I really appreciate it.

Senator. BOXER. Thank you, Mrs. Gore, and thank you to the whole Gore staff that came here today.

The Committee stands adjourned.

[Whereupon, at 5:15 p.m. the committee was adjourned.]

STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Psalm 19 exclaims "The heavens declare the glory of God; the skies proclaim the work of His hands."

Anyone who has visited Montana would agree. The beauty of the untamed Yellowstone River. The Abundance of wildlife on the prairie. The majesty of Glacier National Park. In the wide open spaces and the majestic Big Sky, we Montanans see the work of God's hands.

With this great gift comes an important responsibility. We are called to be stewards of creation. And never has creation faced so great a challenge as that posed by climate change.

I would like to thank the Chairman for calling this hearing and inviting Vice President Gore to testify. Vice President Gore joined me on a hike at Grinnell Glacier a few years back. Grinnell—located in Glacier National Park—is ironically one of the many glaciers that climate change is threatening. We had a good time. Although Grinnell is a better hike without the crowd the Vice President attracts!

No one has done more to call attention to this issue than our former colleague from Tennessee. I agree with Vice President Gore that climate change is real, it is man made, and the need for action is urgent.

Montana is an agricultural state, a tourist state, and a coal state. While action is not without cost, the costs of inaction are far greater. What is the cost of a trout stream whose waters are too warm to fish? What is the price of more devastating forest fires, longer droughts, and no glaciers in Glacier National Park? How do you apply a cost benefit analysis to this moral responsibility?

In February, the International Panel on Climate Change report stated that there is 90 percent certainty that most of the temperature increase since the middle of the 20th century is due to the increase in man-made greenhouse gases. While some will continue to debate the fringes of the issue, this finding cannot be ignored. The earth is warming, and there will be real consequences.

Montanans know this too well. 2005 and 2006 were two of the hottest years on record. And hotter weather means bigger fires. We are coming off another horrible fire season. Over one million acres burned in wildland fires this past summer. In Montana, wildfires over 1,000 acres have increased six fold over the last 40 years.

The potential costs to our wildlife and tourism sector are also great. Montanans are outdoors people. We hunt, we fish. We take our kids hiking and camping. It's part of our great outdoor heritage. But that heritage is at risk.

Already warmer temperatures have lead to stream closures to protect stressed trout in the heat of summer. Some studies indicate that warming water temperatures could reduce trout habitat in Montana by 5 to 30 percent by 2090. Fishing defines us as Montanans, but it's also big business. The sport generates $235 million dollars in economic activity every year.

Montana is also an agricultural state. Our farmers are suffering through the seventh year of drought. With less water for irrigation and lower yields, some of our farmers are barely hanging on.

The good news is that our farmers are part of the solution. Through practices like no-till farming the good stewards of our land can also sequester carbon. I look for-

ward to working with my colleagues to make sure climate legislation rewards farmers for their good practices.

Finally, Montana is a coal State. Montana has 120 billion tons of coal, more than any other state in the union. This resource will have to be part of the solution to meeting our energy needs. However, we must develop it the right way.

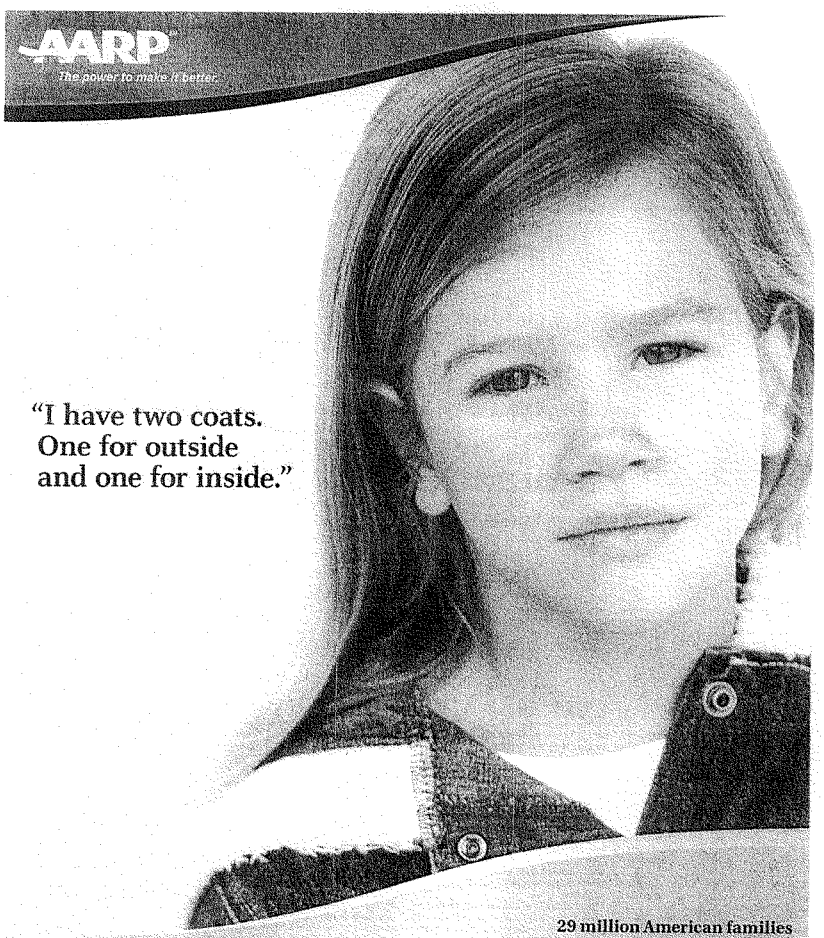
An economy wide cap and trade program is needed. Economy wide initiatives send the proper price signals to industry that the days of emitting carbon into our atmosphere are over.

To accomplish our carbon emission goals we must make sure the allocation formulas and tax incentives are in place to accelerate carbon capture and sequestration.

Our most important resources are our resolve and ingenuity. In Montana we have increased our wind generating capacity over 70 fold in the last two years. The potential for this clean energy is huge. We can replicate this success with solar, biofuels, and other clean forms of energy. We must begin the process of developing the next generation of energy technologies here at home.

During World War II we rose to the challenge of Hitler and defeated fascism. Under President Kennedy we rose to the challenge of Sputnik and put a man on the moon. Now it is our turn to rise to the challenge of climate change.

29 MILLION AMERICAN FAMILIES CAN'T AFFORD TO PAY THEIR HEATING BILLS



29 million American families can't afford to pay their heating bills.

Restore Low Income Home Energy Assistance Program (LIHEAP) funding to $3.2 billion and provide emergency assistance for those who need it. Only one in six qualified families is helped within the current budget. This is a program that can serve millions more families in times of need — energy assistance during both the coldest months of winter and the scorching heat of summer. And increased funding has the support of 72% of Americans. This is help that America needs — now.

MAIN DISH Hard-hitting news, thought-provoking features, and inspiring profiles

grist

Al Revere

An interview with accidental movie star Al Gore

BY DAVID ROBERTS

09 May 2006

Al Gore is on the campaign trail again, and he actually seems to be enjoying it.

Like Brad Pitt, but wonkier.
Photo: Eric Neitzel/WireImage.

For those who remember his ponderous, consultant-driven bid for president, the idea of Gore enjoying anything about campaigning may seem far-fetched. But this time, the campaign's not about him; it's about the issue that has been his consuming intellectual passion for nearly a quarter century: what he calls the "climate crisis." It's a perfect union of dedicated wonk and intractable problem.

In the years since his dramatic "loss" in 2000, he has, largely under the media radar, been practicing a form of retail politics: traveling the globe with a computer slideshow on global warming, educating small crowds, trying to boost the public profile of the problem through sheer force of door-to-door persistence.

At one of those presentations, Hollywood producer Laurie David was in the audience. Galvanized, she recruited a team of producers, filmmakers, and philanthropists, and together they persuaded Gore to star in a documentary based on his climate slideshow. *Deadwood* producer Davis Guggenheim was brought on to direct, and the movie was done in little over a year.

Now, as anticipation builds for the May 24 wide release of *An Inconvenient Truth*, Al Gore is squarely back in the public eye. Despite denials from Gore's camp, rumors of a 2008 presidential run are rampant. *Grist* met with Gore during his recent stay in Seattle and found him hale, jovial, and relaxed -- a man invigorated.

There's a lot of debate right now over the best way to communicate about global warming and get people motivated. Do you scare people or give them hope? What's the right mix?

I think the answer to that depends on where your audience's head is. In the United States of America, unfortunately we still live in a bubble of unreality. And the Category 5 denial is an enormous obstacle to *any* discussion of solutions. Nobody is interested in solutions if they don't think there's a problem. Given that starting point, I believe it is appropriate to have an over-representation of factual presentations on how dangerous it is, as a predicate for opening up the audience to listen to what the solutions are, and how hopeful it is that we are going to solve this crisis.

Over time that mix will change. As the country comes to more accept the reality of the crisis, there's going to be much more receptivity to a full-blown discussion of the solutions.

The New York TImes

1. From a Rapt Audience, a Call to Cool the Hype

By WILLIAM J. BROAD

March 13, 2007

Web link

Hollywood has a thing for Al Gore and his three-alarm film on global warming, "An Inconvenient Truth," which won an Academy Award for best documentary. So do many environmentalists, who praise him as a visionary, and many scientists, who laud him for raising public awareness of climate change.

But part of his scientific audience is uneasy. In talks, articles and blog entries that have appeared since his film and accompanying book came out last year, these scientists argue that some of Mr. Gore's central points are exaggerated and erroneous. They are alarmed, some say, at what they call his alarmism.

"I don't want to pick on Al Gore," Don J. Easterbrook, an emeritus professor of geology at Western Washington University, told hundreds of experts at the annual meeting of the Geological Society of America. "But there are a lot of inaccuracies in the statements we are seeing, and we have to temper that with real data."

Mr. Gore, in an e-mail exchange about the critics, said his work made "the most important and salient points" about climate change, if not "some nuances and distinctions" scientists might want. "The degree of scientific consensus on global warming has never been stronger," he said, adding, "I am trying to communicate the essence of it in the lay language that I understand."

Although Mr. Gore is not a scientist, he does rely heavily on the authority of science in "An Inconvenient Truth," which is why scientists are sensitive to its details and claims.

Criticisms of Mr. Gore have come not only from conservative groups and prominent skeptics of catastrophic warming, but also from rank-and-file scientists like Dr. Easterbook, who told his peers that he had no political ax to grind. A few see natural variation as more central to global warming than heat-trapping gases. Many appear to occupy a middle ground in the climate debate, seeing human activity as a serious threat but challenging what they call the extremism of both skeptics and zealots.

Kevin Vranes, a climatologist at the Center for Science and Technology Policy Research at the University of Colorado, said he sensed a growing backlash against exaggeration. While praising Mr. Gore for "getting the message out," Dr. Vranes questioned whether his presentations were "overselling our certainty about knowing the future."

Typically, the concern is not over the existence of climate change, or the idea that the human production of heat-trapping gases is partly or largely to blame for the globe's recent warming. The question is whether Mr. Gore has gone beyond the scientific evidence.

"He's a very polarizing figure in the science community," said Roger A. Pielke Jr., an environmental scientist who is a colleague of Dr. Vranes at the University of Colorado center. "Very quickly, these discussions turn from the issue to the person, and become a referendum on Mr. Gore."

"An Inconvenient Truth," directed by Davis Guggenheim, was released last May and took in more than $46 million, making it one of the top-grossing documentaries ever. The companion book by Mr. Gore quickly became a best seller, reaching No. 1 on the New York Times list.

Mr. Gore depicted a future in which temperatures soar, ice sheets melt, seas rise, hurricanes batter the coasts and people die en masse. "Unless we act boldly," he wrote, "our world will undergo a string of terrible catastrophes."

He clearly has supporters among leading scientists, who commend his popularizations and call his science basically

sound. In December, he spoke in San Francisco to the American Geophysical Union and got a reception fit for a rock star from thousands of attendees.

"He has credibility in this community," said Tim Killeen, the group's president and director of the National Center for Atmospheric Research, a top group studying climate change. "There's no question he's read a lot and is able to respond in a very effective way."

Some backers concede minor inaccuracies but see them as reasonable for a politician. James E. Hansen, an environmental scientist, director of NASA's Goddard Institute for Space Studies and a top adviser to Mr. Gore, said, "Al does an exceptionally good job of seeing the forest for the trees," adding that Mr. Gore often did so "better than scientists."

Still, Dr. Hansen said, the former vice president's work may hold "imperfections" and "technical flaws." He pointed to hurricanes, an icon for Mr. Gore, who highlights the devastation of Hurricane Katrina and cites research suggesting that global warming will cause both storm frequency and deadliness to rise. Yet this past Atlantic season produced fewer hurricanes than forecasters predicted (five versus nine), and none that hit the United States.

"We need to be more careful in describing the hurricane story than he is," Dr. Hansen said of Mr. Gore. "On the other hand," Dr. Hansen said, "he has the bottom line right: most storms, at least those driven by the latent heat of vaporization, will tend to be stronger, or have the potential to be stronger, in a warmer climate."

In his e-mail message, Mr. Gore defended his work as fundamentally accurate. "Of course," he said, "there will always be questions around the edges of the science, and we have to rely upon the scientific community to continue to ask and to challenge and to answer those questions."

He said "not every single adviser" agreed with him on every point, "but we do agree on the fundamentals" — that warming is real and caused by humans.

Mr. Gore added that he perceived no general backlash among scientists against his work. "I have received a great deal of positive feedback," he said. "I have also received comments about items that should be changed, and I have updated the book and slideshow to reflect these comments." He gave no specifics on which points he had revised.

He said that after 30 years of trying to communicate the dangers of global warming, "I think that I'm finally getting a little better at it."

While reviewers tended to praise the book and movie, vocal skeptics of global warming protested almost immediately. Richard S. Lindzen, a climatologist at the Massachusetts Institute of Technology and a member of the National Academy of Sciences, who has long expressed skepticism about dire climate predictions, accused Mr. Gore in The Wall Street Journal of "shrill alarmism."

Some of Mr. Gore's centrist detractors point to a report last month by the Intergovernmental Panel on Climate Change, a United Nations body that studies global warming. The panel went further than ever before in saying that humans were the main cause of the globe's warming since 1950, part of Mr. Gore's message that few scientists dispute. But it also portrayed climate change as a slow-motion process.

It estimated that the world's seas in this century would rise a maximum of 23 inches — down from earlier estimates. Mr. Gore, citing no particular time frame, envisions rises of up to 20 feet and depicts parts of New York, Florida and other heavily populated areas as sinking beneath the waves, implying, at least visually, that inundation is imminent.

Bjorn Lomborg, a statistician and political scientist in Denmark long skeptical of catastrophic global warming, said in a syndicated article that the panel, unlike Mr. Gore, had refrained from scaremongering. "Climate change is a real and serious problem" that calls for careful analysis and sound policy, Dr. Lomborg said. "The cacophony of screaming," he added, "does not help."

So too, a report last June by the National Academies seemed to contradict Mr. Gore's portrayal of recent temperatures as the highest in the past millennium. Instead, the report said, current highs appeared unrivaled since only 1600, the tail end of a temperature rise known as the medieval warm period.

Roy Spencer, a climatologist at the University of Alabama, Huntsville, said on a blog that Mr. Gore's film did "indeed do a pretty good job of presenting the most dire scenarios." But the June report, he added, shows "that all we really know is that we are warmer now than we were during the last 400 years."

Other critics have zeroed in on Mr. Gore's claim that the energy industry ran a "disinformation campaign" that produced false discord on global warming. The truth, he said, was that virtually all unbiased scientists agreed that humans were the main culprits. But Benny J. Peiser, a social anthropologist in Britain who runs the Cambridge-Conference Network, or CCNet, an Internet newsletter on climate change and natural disasters, challenged the claim of scientific consensus with examples of pointed disagreement.

"Hardly a week goes by," Dr. Peiser said, "without a new research paper that questions part or even some basics of climate change theory," including some reports that offer alternatives to human activity for global warming.

Geologists have documented age upon age of climate swings, and some charge Mr. Gore with ignoring such rhythms.

"Nowhere does Mr. Gore tell his audience that all of the phenomena that he describes fall within the natural range of environmental change on our planet," Robert M. Carter, a marine geologist at James Cook University in Australia, said in a September blog. "Nor does he present any evidence that climate during the 20th century departed discernibly from its historical pattern of constant change."

In October, Dr. Easterbrook made similar points at the geological society meeting in Philadelphia. He hotly disputed Mr. Gore's claim that "our civilization has never experienced any environmental shift remotely similar to this" threatened change.

Nonsense, Dr. Easterbrook told the crowded session. He flashed a slide that showed temperature trends for the past 15,000 years. It highlighted 10 large swings, including the medieval warm period. These shifts, he said, were up to "20 times greater than the warming in the past century."

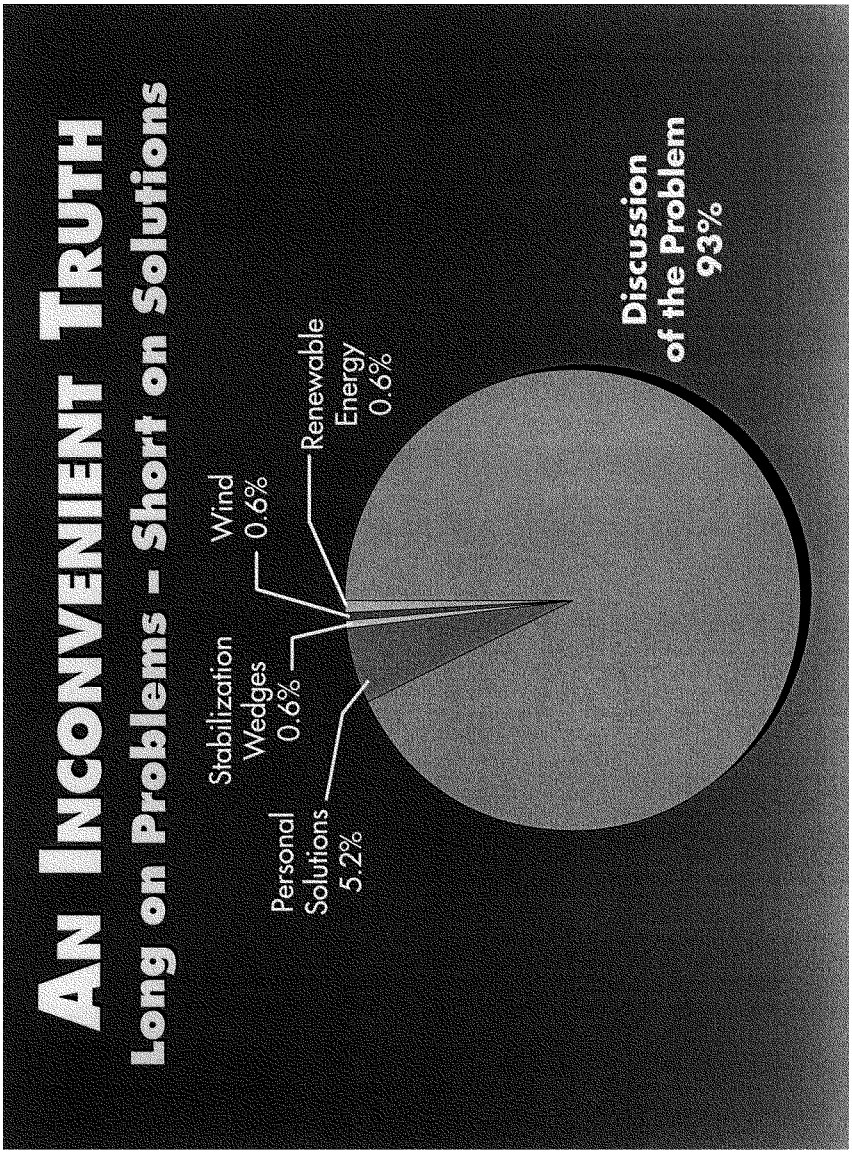
Getting personal, he mocked Mr. Gore's assertion that scientists agreed on global warming except those industry had corrupted. "I've never been paid a nickel by an oil company," Dr. Easterbrook told the group. "And I'm not a Republican."

Biologists, too, have gotten into the act. In January, Paul Reiter, an active skeptic of global warming's effects and director of the insects and infectious diseases unit of the Pasteur Institute in Paris, faulted Mr. Gore for his portrayal of global warming as spreading malaria.

"For 12 years, my colleagues and I have protested against the unsubstantiated claims," Dr. Reiter wrote in The International Herald Tribune. "We have done the studies and challenged the alarmists, but they continue to ignore the facts."

Michael Oppenheimer, a professor of geosciences and international affairs at Princeton who advised Mr. Gore on the book and movie, said that reasonable scientists disagreed on the malaria issue and other points that the critics had raised. In general, he said, Mr. Gore had distinguished himself for integrity.

"On balance, he did quite well — a credible and entertaining job on a difficult subject," Dr. Oppenheimer said. "For that, he deserves a lot of credit. If you rake him over the coals, you're going to find people who disagree. But in terms of the big picture, he got it right."


An Inconvenient Truth
Long on Problems - Short on Solutions
Personal Solutions 5.2%
Stabilization Wedges 0.6%
Wind 0.6%
Renewable Energy 0.6%
Discussion of the Problem 93%

http://www.ncdc.noaa.gov/oa/climate/research/records/

Daily Min Temperature

January 4, 2007	New Record	Old Record	Previous Year
Kodiak AP, AK	−4°F	4°F	1949

January 7, 2007	New Record	Old Record	Previous Year
King Salmon, AK	−40°F	−36°F	1975

January 8, 2007	New Record	Old Record	Previous Year
King Salmon, AK	−37°F	−36°F	1975

January 12, 2007	New Record	Old Record	Previous Year
Whitman Mission, WA	−19°F	−16°F	1963
Stanley, ID	−35°F	−26°F	1964
Crescent City, CA	26°F	30°F	1960
Roseburg, OR	19°F	24°F	1971
Lake Arrowhead, CA	30°F	31°F	1963
Quillayute AP, WA	17°F	20°F	1993
Settle WFO AP, WA	20°F	25°F	1993
Kamiah, WA	4°F (24-hour)	27°F (24-hour)	2005
Wisdom, MT	−9°F	−5°F	1997

January 13, 2007	New Record	Old Record	Previous Year
Dillon AP, MT	−17°F	−11°F	1962
Sacramento Exec. AP, CA	24°F	25°F	1949
Boundary Dam, WA	−12°F (24-hour)	−10°F (24-hour)	1998
West Yellowstone, MT	−46°F	−41°F	1917
Stanley, ID	−34°F	−32°F	1964

Marysville, CA	24°F	25°F	1963
Ely, NV	−19°F	−17°F	1963
Eureka, CA	25°F	27°F	1997
Ukiah, CA	19°F	21°F	1963
Seattle WFO AP, WA	25°F	27°F	1997
Farmington, UT	1°F	3°F	1975
Utah Test Range, UT	−2°F	2°F	1993
Lake Arrowhead, CA	6°F	10°F	1950
Big Bear Lake, CA	−2°F	2°F	1963
Campo (COOP), CA	21°F	23°F	2002
Ramona F.S., CA	25°F	27°F	2002
Ramona ARPT, CA	23°F	27°F	2002
Eureka, CA	25°F	27°F	1997
Ukiah, CA	19°F	21°F	1963
Seattle, WA	25°F	27°F	1997
Winchester, WA	−12°F	−5°F	1949
Rawlins AP, WY	−19°F	−17°F	1985
Dillon AP, MT	−17°F	−11°F	1962
West Yellowstone, MT	−47°F	−41°F	1917
Wisdom, MT	−37°F	−33°F	1997

January 14, 2007	New Record	Old Record	Previous Year
Ely AP, NV	−17°F	−13°F	1955
Bountiful-val, UT	2°F	20°F	1989
Cedar City FAA, UT	−17°F	−10°F	1962
Delta, UT	−24°F	−5°F	1975
Grantsville, UT	−6°F	8°F	2004

Pleasant Grove, UT	1°F	2°F	1950
Bagdag, AZ	14°F	18°F	1963
Flagstaff, AZ	−15°F	−9°F	1963
Grand Canyon NP S RIM, AZ	−5°F	−1°F	1917
Greer, AZ	−10°F	−2°F	1964
Jerome, AZ	14°F	15°F	1963
Sunset Crater NM, AZ	−19°F	−11°F	1989
Lake Arrowhead, CA	9°F	18°F	1963
Campo (COOP), CA	12°F	15°F	1948
Campo (ASOS), CA	12°F	15°F	1950
Thermal, CA	18°F	21°F	1963
Ramona AP, CA	20°F	26°F	2002
Ramona F.S., CA	17°F	27°F	1989
Beaumont 1E, CA	21°F	23°F	1963
Wild Animal Park, CA	22°F	28°F	2002
Escondido, CA	25°F	28°F	1926
Ontario AP, CA	25°F	38°F	2002
Riverside UCR, CA	26°F	27°F	1963
El Cajon, CA	28°F	33°F	1979
John Wayne AP, CA	33°F	43°F	2001
Redmond, OR	2°F	3°F	1993
Satus Pass 2SSW, WA	1°F	5°F	1956
Bakersfield/Meadows Field AP, CA	23°F	25°F	1963
Yuma, AZ	25°F	27°F	1898
Blythe, CA	25°F	28°F	1964
Imperial, CA	21°F	24°F	1963
Sacramento Exec. AP, CA	22°F	24°F	1963

Redding, CA	19°F	21°F	1983
Laramie AP, WY	−20°F	−13°F	1962
Rawlins AP, WY	−25°F	−11°F	1985
Ukiah, CA	19°F	22°F	1997
Organ Pipe Cactus Nat'l Monument, AZ	21°F	26°F	1963
Oracle, AZ	16°F	17°F	1898
Kitt Peak, AZ	9°F	20°F	1962
Seattle WFO, WA	22°F	23°F	1997
San Diego/Brown Field, CA	27°F	36°F	1955
Laguna Beach, CA	27°F	30°F	1963
Oceanside Marina, CA	30°F	32°F	1963
West Yellowstone, MT	−42°F	−36°F	1964

January 15, 2007	New Record	Old Record	Previous Year
Bakersfield/Meadows Field AP, CA	24°F	26°F	1972
Alpine, UT	−4°F	−3°F	1975
Alta, UT	−7°F	−5°F	1950
Bountiful-Val Verda, UT	2°F	11°F	1985
Bryce Canyon AP, UT	−17°F	−11°F	1950
Cedar City AP, UT	−16°F	−10°F	1997
Coalville, UT	−16°F	−12°F	1989
Delta, UT	−21°F	−10°F	1997
Duchesne, UT	−25°F	−17°F	1932
Ferron, UT	−10°F	−7°F	1963
Fillmore, UT	−10°F	−3°F	1947
Manti, UT	−24°F	−8°F	1964
Nephi, UT	−8°F	−5°F	1964

Pleasant Grove, UT	−2°F	0°F	1989
Price, UT	−7°F	0°F	1989
Provo BYU, UT	−2°F	4°F	1984
Randolph, UT	−23°F	−15°F	1997
Richfield, UT	−22°F	−9°F	1989
Spanish Fork, UT	−5°F	1°F	1964
Springville, UT	−5°F	3°F	1997
Tucson Int'l AP, AZ	20°F	23°F	1964
Utah Test Range, UT	−8°F	13°F	1992
Douglas/Bisbee AP, AZ	9°F	16°F	1962
Greer, AZ	−11°F	−7°F	1992
John Day (City), OR	5°F	7°F	1987
Meacham, OR	−13°F	0°F	1950
Monument 2, OR	3°F	4°F	1987
Stanley, ID	−25°F	−21°F	1987
Pueblo, CO	−14°F	−13°F	1984
Imperial, CA	23°F	30°F	1963
Laramie AP, WY	−27°F	−21°F	1992
West Yellowstone, MT	−41°F	−38°F	1947
Olympia AP, WA	15°F	16°F	1997
Alpine, CA	27°F	30°F	1963
Borrego Desert, CA	24°F	35°F	1989
El Cajon, CA	26°F	29°F	1989
Escondido, CA	25°F	33°F	1989
Oceanside Marina, CA	30°F	31°F	1963
Palomar Mountain, CA	19°F	20°F	1962
Thermal, CA	20°F	23°F	1962

Montgomery Field, CA	32°F	42°F	2006
Oceanside AP, CA	25°F	38°F	2006
John Wayne AP, CA	38°F	43°F	2005
Brown Field, CA	28°F	38°F	1960
Sacramento Exec. AP, CA	22°F	23°F	1949
Stockton AP, CA	20°F	23°F	1963

January 16, 2007	New Record	Old Record	Previous Year
Oakland/Downtown, CA	35°F	36°F	1977
Oakland AP, CA	28°F	30°F	1930
San Rafael, CA	30°F	32°F	1963
Sslinas, CA	26°F	29°F	1960
Alpine, UT	−4°F	2°F	1985
Bountiful-Val Verda, UT	3°F	8°F	1984
Delta, UT	−19°F	−11°F	1984
Farmington, UT	1°F	11°F	1989
Helper, UT	2°F	20°F	1999
Pleasant Grove, UT	1°F	3°F	1997
Greer, AZ	−5°F	−3°F	1992
Prescott AP, AZ	8°F	10°F	1987
Read Bluff, CA	22°F	23°F	1883
Sacramento Exec. AP, CA	23°F	25°F	1947
Stockton AP, CA	21°F	25°F	1963
Imperial, CA	25°F	31°F	1963
Burbank, CA	32°F	33°F	1954
Long beach, CA	34°F	35°F	1963
Lancaster, CA	9°F	14°F	1963

Palmdale, CA	15°F	17°F	1949
Santa Barbara AP, CA	24°F	29°F	1987
Pas Robles, CA	16°F	20°F	1963
Borrego Desert, CA	25°F	32°F	1987
Chula Vista, CA	30°F	31°F	1949
El Cajon, CA	27°F	28°F	1987
Montgomery Field, CA	31°F	39°F	2006
Oceanside AP, CA	28°F	32°F	2006
Brown Field, CA	31°F	35°F	1960
Vermillion, SD	−24°F	−23°F	1965
Harlington, TX	40°F	47°F	1984

January 17, 2007	New Record	Old Record	Previous Year
Cottonwood-Tuzigoot, AZ	17°F	18°F	1987
Bountiful-Val Verda, UT	6°F	8°F	1984
Farmington, UT	3°F	8°F	1984
Lancaster, CA	8°F	12°F	1987
Camarillo, CA	32°F	33°F	1960
Blythe, CA	25°F	29°F	1963
Imperial, CA	26°F	30°F	1960
Sacramento Exec. AP, CA	25°F	26°F	1963

January 18, 2007	New Record	Old Record	Previous Year
Chula Vista, CA	34°F	35°F	1949
Montgomery Field, CA	35°F	36°F	2002
Brown Field, CA	33°F	34°F	2002
Ramona AP, CA	17°F	25°F	2001
Wild Animal Park, CA	24°F	27°F	1988

January 22, 2007	New Record	Old Record	Previous Year
Saint Paul Island, AK	−2°F	1°F	1976

January 23, 2007	New Record	Old Record	Previous Year
Greer, AZ	−8°F	−4°F	1979
Saint Paul Island, AK	−6°F	−3°F	1956
Stockton AP, CA	27°F	28°F	2002
Ramona AP, CA	23°F	29°F	2004
Redding AP, CA	26°F	27°F	2002

January 24, 2007	New Record	Old Record	Previous Year
Red Bluff AP, CA	27°F	28°F	1949

January 27, 2007	New Record	Old Record	Previous Year
Hilo, HI	58°F	59°F	1962

January 28, 2007	New Record	Old Record	Previous Year
Hilo, HI	57°F	58°F	1983

January 29, 2007	New Record	Old Record	Previous Year
Lumberton, NC	24°F	25°F	2005
Jackson, KY	11°F	16°F	1997

January 30, 2007	New Record	Old Record	Previous Year
Lumberton, NC	26°F	34°F	2004
Massena, VT	−22°F	−20°F	2003

○