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IMPACT OF CLIMATE ISSUES ON
AMERICA'S ENERGY COAST HEARING

WEDNESDAY, FEBRUARY 24, 2010

The Battle House Hotel
Moonlight Ballroom
Mobile, Alabama

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Reported by: Karen S. Snell, CCR

- Sidney Coffee, Americaís WETLAND Foundation
- Val Marmillion, Americaís WETLAND Foundation

OPENING REMARKS
- Gary Serio, Entergy
- Heather Holsinger, Pew Center on Global Climate Change

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Moderator: Dr. Robert Twilley, Louisiana State University
- Dr. David P. Brown, LSU

- Dr. George Crozier, Dauphin Island Sea Lab, Alabama
- Dr. Torbjˆrn E. Tˆrnqvist, Tulane University

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- Janice Adair, Department of Ecology, State of Washington
- Eddie Fisher, Texas General Land Office
- Pat Hogan, Pew Center for Global Climate Change

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- Thomas D. Peterson, The Center for Climate Strategies
- Dr. Tracie Sempier, Mississippi-Alabama Sea Grant
- Dr. LaDon Swann, Mississippi-Alabama Sea Grant
- Julie Harrison, Southeast Energy Efficiency Alliance

ADJOURNMENT
- Gary Serio, Entergy
- Heather Holsinger, Pew Center on Global Climate Change
- Sidney Coffee, Americaís WETLAND Foundation
- Val Marmillion, Americaís WETLAND Foundation

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Gary Serio, Entergy (Co-Chair)
Heather Holsinger, Pew Center on Global Climate Change
Maura Wood, National Wildlife Federation

OTHER LEADERSHIP PANELISTS
Sidney Coffee, Americaís WETLAND Foundation
Val Marmillion, Americaís WETLAND Foundation
Tina Shumate, Mississippi Department of Marine Resources
Dr. Robert Twilley, Louisiana State University

PROCEEDINGS

MS. SIDNEY COFFEE:

I want to welcome everyone today. Thank you so much for participating in our climate hearing. My name is Sidney Coffee. I'm senior adviser for the America's Wetland Foundation. And this is the third or fourth hearing that we've held in the region on various topics that are important to our region.

And before I turn it over to Val Marmillion, who is going to really give you some background of the AEC and explain how today is going to work, I wanted to point out the fact for those of you who know nothing -- who are in the room and know nothing about this organization or collaboration and what we do.

To point out a couple of things. The America's Wetland Foundation started this America's Energy Coast Initiative almost three years ago now, and it includes the coastal producing states of Texas, Louisiana, Mississippi, and Alabama, who have a very special set of circumstances that they deal with, which brings me to the uniqueness factor, which is an extremely important factor.

And as you listen to this hearing and as you participate and ask questions and make presentations, we'd like very much for you to keep the uniqueness of this region at the forefront.

Just to show you how unique it is, almost 90 percent of the nation's offshore oil and gas is produced through offshore and comes through this coastline. It has the largest port system in the world. Louisiana's south Louisiana port system is literally by tonnage the largest in the world, and I'm not even counting Texas and Mobile and Mississippi as part of that.

Fisheries. Most productive in the United States outside of Alaska. The largest two migratory flyways in North America are located in this region. The communities are extremely vulnerable. Communities that support this region and all of its economic activity are extremely vulnerable as we all

know.

We are facing sea level rise. We are facing -- we're on the front lines of sea level rise. Aggressive storms. This region contains the seventh largest delta in the world. We have a set of circumstances, just associated with that delta from sediment being trapped upstream to, as I mentioned, sea level rise, to subsidence to the leveeing of the Mississippi River which shoots the sediments that can come down and the fresh water that does come down off the continental shelf and into the deep Gulf.

We move the nation's commerce. We produce its energy. We supply its seafood. And we're all vulnerable. Not to mention everything that happens on this region, every -- in this region, every issue that converges in this region depends on a sound environment. So what applies from a federal

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policy perspective and on and on and on.

When you look at this region, you cannot have cookie cutter approaches to it. What works for the coast of North Carolina or the coast of Washington state does not work here in this region. This region has to be understood by its uniqueness. And all of the approaches we take to this region and all the policies that affect this region have to be handled within that context.

So that's just something I wanted to point out at the very beginning because I think the uniqueness is a huge point that has to be taken into everything that we discuss.

Val.

MR. VAL MARMILLION:

Thank you, Sidney. And thank you for coming this morning. We're very happy to be in Alabama for our first session in Alabama. We have slowly moved across from Texas through Louisiana and Mississippi and are engaged in Alabama in a broader way, because we realize as we began the America's Wetland Foundation

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sometime ago, before Katrina, that our job was to try to save the wetlands in coastal Louisiana, that we are dealing with something beyond the parochial boundaries of states, definitely beyond the parochial boundaries of congressional districts, where budgets are made, authorized, and appropriated, and that we have a system in the gulf that at times does not have the quality and the volume of voice that is necessary from a unified sense

to go out and talk about what we need in this region. So we have come together because of that.

You don't see elected officials around this table because, in a sense, we are a group of stakeholders that impact what others are thinking, and that's our agenda to do that. Toward that end, over time, we do polling. And a little over a year ago we polled the region for the first time. And the attitudes that we found were important to this discussion.

We found that -- we asked which best

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following describes how you feel. Americans must learn to consume less of everything; it is the only way we can become energy independent and protect the quality of our environment scored 47 percent against 44 percent of there's plenty of oil off our shore and we should feel free to go out and drill and find it. That's the only way we will become energy independent.

And so we a very -- if that poll was taken again today, we would have -- we have mixed feelings, and what that says to us is not either/or. It says that we have a group of people living down here who many are employed by industries that provide energy to the country, but there is a real want to develop this region with environmental stewardship.

And so that's our -- that's our charge. This America's Energy Coast has the words climate, energy, and the coast in it for very specific reasons. Because we want to cover all topics.

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Further in that goal, we ask if you believe climate change is a serious problem that threatens everyone and is a serious problem for everyone, threatens everyone is 35 percent. Is somewhat of a serious problem, 22 percent. Is not nearly as serious a problem as other problems, 23 percent. And is not a problem at all, 17 percent.

So there is concern and there is an awareness. And I think that oftentimes we hear from other places around the country and the world that this particular region does not have maybe a sense of where the world is moving.

And our discussions today are about trying to figure out what the regional sense is. What really does make sense for us to

maintain our economic vitality, knowing that there is going to be conventional energy development along our coast and to maintain really one of the most dramatic ecosystems or one of the most impressive ecosystems on the planet that is also one of the most vulnerable

at this time.

Our charge for those of you who don't have packets is from an accord for sustainability that was approved two years at our first Texas meeting. And in this particular -- we have a number of task groups, and I won't go through them for the sake of time, but what we are talking about is that for the foreseeable future the America's Energy Coast will continue to develop domestic energy supplies and has the opportunity -- opportunity -- to be a global leader in alternative energy resources and technologies in the mitigation of greenhouse gases, including carbon capture sequestration and energy conservation and efficiency.

It is imperative in the Gulf region to take a balanced approach to the introduction of climate change, taking into consideration mitigation and adaptation measures. So this is an accord that passed by a group of people thinking we were a bit of an oddity. We announced our opening as a foundation with the

president of Shell on one side and the Governor of Louisiana and the president of Environmental Defense. From that moment on, it has been sort of a balanced dialogue. And I must say it's not easy to keep it balanced.

It's probably less benefits to keep, to have balanced approaches oftentimes than to have a strong position in one regard or another. So that's what our intention is today to have a balanced discussion, which in no way means that we should not feel open to disagree with each other.

I'm going to turn it over to the chairman of our task force for climate, Gary Serio from Entergy Corporation.

MR. GARY SERIO:

Thanks, Val. I notice, Val, when you said there's disagreement, then you turned it over to me. I don't understand that.

Well, good morning. I just want to tell you it's a real pleasure to be here today. I've been looking forward to this meeting for about 18 months so that we could

get together collaboratively and talk about climate change issues.

But before I get started with climate change issues and discussions, I'd like to go on and recognize some people that made this all possible. Sometimes we take that for granted and move on. I guess the first thing I would like to recognize is America's Wetlands Foundation because they had the vision and the foresight over three years ago that climate change was an issue and looked to bring a diverse group of people together to discuss the issue, to see if we could solve this issue.

And specifically with Val and Sidney and Amy and Lisa and a lot of the people behind the scenes. They were very effective in facilitating this journey for the last two years. Very spirited discussion. Some trouble finding common ground, but they were effective in moving us to where we can at least get together and have a good discussion. So thank you for the America's Wetlands

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Foundation.

Second of all, I would like to really recognize -- and you will see today those people that are participating in our panel today. Some of you have come a long ways to participate in this and share your expertise and your experience on climate change issues. And as we all know, knowledge is power. And we only move the ball down the field when we have that knowledge on the table. So thank you for being here today.

Third, I'd like to thank the Pew Center on Global Climate Change for co-chairing the Climate Solution Task Force with me. Without them, it would have been a very lonely road to travel. I depended on them for their expertise and their guidance, and it's truly appreciated.

And then, lastly, I'd like to recognize a colleague of mine, Jeff Williams, over here sitting here. He's been with me, America's Energy Coast, since its inception in the fourth quarter of 2007, and he was

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instrumental in helping us put the panelists together. So, Jeff, thank you for that.

When I see or look at AEC, I don't see an acronym. I don't even see America's Energy Coast. What I see are four states who are truly blessed, now, four states -- Alabama, Louisiana, Mississippi, and Texas -- that are

blessed with abundant shorelines, wetlands, natural resources, aquatic and land animals in the boundaries of their states.

But with that blessing also comes a tremendous responsibility, a responsibility that we have to protect, to preserve, to sustain those national assets, and that's where the challenge comes in. It somewhat reminds me of Apollo 13 in 1970 when we got that famous message that came back at Johnson Space Center that says, "Houston, we have a problem."

Well, I'm here today to say, Mobile, we have a problem, and climate change is our problem. And unless we're willing to address that problem in the near term, it

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significantly grows on us to where we are transferring a significant liability to our grandchildren and future generations.

Now, there's 10 million people that live in 48 contiguous counties and parishes between Galveston, Texas, and Mobile, Alabama. Most people -- most of them aren't really involved in climate change. They expect or think that those national assets that I've just referenced are always going to be there.

We have industries that have billions of dollars of infrastructure in those counties and parishes that don't truly get involved in climate change. We're expecting that they will be able to operate there as long as they want to. But the fact is they're all depending on the scientific community and decision-makers at the federal and our four-state level to make the proper decision when it comes to climate change.

Well, we all know, especially the scientists in this audience today know, that not addressing climate change is not really an

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option for us. In fact, at Entergy the debate on whether climate change was a myth, although we obviously settled way back in the year 2000. We were the first utility company in the United States that voluntarily signed up for mandatory, for ourselves, greenhouse gas reduction, and we continue to march that path today.

In fact, our chairman and CEO Wayne Leonard is very passionate about climate change. He has publicly gone on record saying that this is the final environmental issue in his lifetime. And he firmly believes that if you don't address this, that the consequences

for future generations are significant.
So we have five guiding principles at Entergy when it comes to climate change. Only two that I will leave you with today is that climate change is real and, number two, it needs to be addressed. But I know you're not here to determine what point of view Entergy has. And we have assembled a group of experts, scientific experts, to be here today.

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In fact, I was talking about we should have had this meeting in Las Vegas because we have stacked the deck. We have again for this environmental experts. And they're here today to put more knowledge on the table and to help us navigate the landmines that are out there when we deal with climate change.
The first thing I'm going to look forward to today, we're going to look at the impacts of sea level rise on our coastal communities.
Then we're going to move into a second panel where they're going to be looking at the practices that we're seeing in the northeast and in the west and other states that deal with it. Climate change is not specific to the four states that we're interested in America's Energy Coast, but it's a global issue. And we're going to look at the best practices that they have and the fact that we can take some of those practices and make our path forward more efficient and less costly.
Then our last panel of experts, we're

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going to look at some very user friendly, cost effective tools that we can use to not only plan for climate change, but to negotiate and deal with the adaption and the mitigation issues associated with climate change.
And when it comes to adaptation and mitigation issues, there's no better place to go than the Pew Center On Global Climate Change. So I'm really proud today to go on and introduce Heather Holsinger, who is my co-chair on this task force and let her spend a few moments with you on an idea of how the Pew Center sees climate change.

MS. HEATHER HOLSINGER:

Well, thank you, Gary. I think you have really summarized some of our challenges and opportunities very well for this region.
On behalf of the Pew Center, I'd like to thank you all for coming today as well. I would also like to speak on behalf of Judi Greenwald, my colleague, who many of you have

worked with in the past. She was not able to make it here today, but she certainly sends her regrets. And I'd also like to thank the staff of America's Wetland Foundation for their help in organizing the hearing today.

The Pew Center On Global Climate Change believes that having diverse groups come together to discuss global climate change is important, and that is why we have partnered with Entergy on the impacts program and have actively participated in the America's Energy Coast project.

The Pew Center brings together businesses, policymakers, scientists, and other experts to bring a new approach to complex and often controversial issue of climate change. Our approach is based on sound science, straight talk, and a belief that we can work together to protect the climate while sustaining economic growth.

We hold regular briefings with members of Congress, with state leaders, with national leaders, and folks in the executive branch as well. And we engage the business community, such as folks at Entergy, and others, in the search for solutions in reaching out to educate key audiences about Global Climate Change.

Without cooperative and constructive discussions among public and private entities, this region's rich national resources, productive landscape, and energy, maritime, and environmental assets will remain at risk. So I look forward to hearing from all of you today, and I think we should probably go ahead and get started and start with introductions here around the table.

I think start here, going in this direction, although you've already been introduced to the folks to my right. And then let's try to keep it as quick as possible so that we can keep everything with our really great agenda today.

MS. TINA SHUMATE:

I'm Tina Shumate with the Mississippi Department of Marine Resources and also the chair of the Resilience Committee for (inaudible).

MS. MAURA WOOD:

I'm Maura Wood with the National Wildlife Federation, sitting in for Carla Rettig and Susan Circa.

MR. JEFF WILLIAMS:
I'm Jeff Williams and I do climate consulting for Entergy.
MS. JULIE HARRISON:
I'm Julie Harrison and I'm the deputy directory of the Southeast Energy Efficiency Alliance.
DR. LaDON SWANN:
Good morning. My name is LaDon Swann. I'm the directory of the Mississippi-Alabama Sea Grant Consortium, which represents (inaudible).
DR. TRACIE SEMPLIER:
Good morning. I'm Tracie Sempier, and I'm the Coastal Storms Outreach Coordinator for the Mississippi-Alabama Sea Grant for Mississippi, Alabama, and Northeastern Louisiana.
MR. TOM PETERSON:

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Hi. I'm Tom Peterson. I represent The Center for Climate Strategies. We've worked with many states on policy development for climate and energy related issues. I'm also an adjunct professor at Johns Hopkins University at their Global Security Center and I teach U. S. climate change and energy security at their grad school.
MR. PATRICK HOGAN:
I am Patrick Hogan with the Pew Center for Global Climate Change. I work with Heather and Judi. I focus primarily on state and regional climate policies.
MR. EDDIE FISHER:
I'm Eddie Fisher. I'm with the -- I'm director of Coastal Finance Policy for the Texas General Land Office. I'm here today to represent the Coastal States Organization Climate Change Work Group, which I formerly co-chaired and am a member and representative of the Gulf of Mexico region.
MS. JANICE ADAIR:
I'm Janice Adair. I'm the special

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assistant for climate policy for Washington state Department of Ecology and I'm here today representing the Western Climate Initiative, which I'll talk more about later. I chaired that organization for the first year of that organization and I used to be six feet tall.
DR. GEORGE CROZIER:
Good morning. I'm George Crozier. I'm the director of Dauphin Island Sea Lab, which is the state's academic marine laboratory, ideally situated on a barrier island off the

coast of Alabama.
DR. TORBJORN TORNQVIST:
I'm Torbjorn Tornqvist, associate professor of earth and environmental sciences at Tulane University.
DR. DAVID BROWN:
Good morning. I'm David Brown. I'm a professor at LSU and investigator with NOAA's Southern Climate Impacts Planning Program.
DR. ROBERT TWILLEY:
I'm Robert Twilley. I'm a professor in the department of oceanography and coastal

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sciences at LSU.
MR. VAL MARMILLION:
We're going to begin, and I would like to just say to all of our panelists we have -- we need to get this before noon and so if you could keep your remarks tight and allow for some questions, we will try to keep this moving. I'm going to turn the program over to Dr. Robert Twilley, who's going to manage the -- or moderate the first panel. Robert.
DR. ROBERT TWILLEY:
Okay. I notice we're down to 30 minutes, I guess, instead of about 35. And knowing these three that I'm going to introduce, that's going to be a real challenge. So I will cut my remarks in half in keeping with the spirit.
The other comment that I want to make at the beginning is to pick up on a term that Sidney used and I think that we all need to focus on and that's the term vulnerable. And when we think of vulnerability, and we know this, and I just want to put it on the record

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and in the discussion, that when we think of vulnerability, it's not only the physical change when we talk about climate change and sea level rise and the ecologic impacts, but we have to keep that in the context both of natural systems and the social systems; that is, that degree of change relative to our capacity to adapt.
And if, in fact, it is just purely change and a degree that can be compensated by adaptation, then we're not vulnerable. And so vulnerability is a balance between the two. And so what we're going to start out with on our panel is talking about the degree of change.
And I think what we're going to involve later on in this discussion is what path we go down. And I think quantitatively what we're

going to be required to do in this region -- and this region is highlighted as being one of the most vulnerable and vulnerability, but I would argue that we also have tremendous resources to adapt.

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And so the other -- the last comment I will make is that also what's unique -- that's another term that Sidney used -- in our region is that we have to deal with policy that's very complicated, because we place in our region such a national significance of many other sources of CO2 has tremendous national significance.

But as we deal with what policy is fair from a region that serves the nation, we also have to do that in the context of also acknowledging that we have a problem we have to deal with. And that by arguing or discussing policy should not be done, I think, in our region in the context of ignoring the problem.

And so we have to find a way to deliver the message of what's fair, but also our potential contribution to the solution. And I think our region -- and that's a big challenge for our region, and I hope that that's something we come out of today with some clear examples on how to move forward.

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Our panelists -- this is Torbjorn Tornqvist. He's the director of the National Institute of Climate Change. He will start with some comments. And then George Crozier will talk about -- from the deltaic point of view. And then George Crozier, who is quite knowledgeable on barrier island, will talk about -- director, again, of the Dauphin Island Sea Lab -- will talk about the aspect or the degree of sea level rise impacts. And then David Brown, who is with the Southern Climate Impact Planning Program at LSU, which is a NOAA-funded program, is going to follow with some comments related to adaptation.

So Torbjorn.

DR. TORBJORN TORNQVIST:

Thank you, Robert. I actually have a couple of slides, so if we could get that started. When we talk about climate change and the Gulf Coast, we really talk to a very large extent about sea level rise because that is the 800-pound gorilla in our part of the world.

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So I'm going to talk a little bit about

the current status of sea level science and then basically introduce it initially by looking at the big picture. So what we see here is a grant that came out from the last IPCC report in 2007 that shows the global pattern of sea level change going back into the 1800s. This is basically what we call the instrumental record.

And you can see that there is a steady rise that seems to accelerate when you approach the present. At the very tail end of this record, you can see that little solid black line. That is what we call the satellite era, where we have the highest quality measurements, which is now just over 15 years long.

Now, this is still -- in the larger perspective, this is a relatively short record, and so the same question could arise as you could raise, maybe look at temperature ranges which look very similar. What does this really mean in the longer term

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perspective? Are we looking at just some natural fluctuation or is this really a novice?

So if you look at this new panel in the lower right-hand half of the slide, you can see the same record we looked at here, which is not only that little squiggly line right here, we know based on geological data that it was likely not very much sea level change going back in time. And I will get back to that issue later talking specifically about the Gulf Coast.

And then here we see the projections into the future, and there is always a fair amount of uncertainty, but that doesn't take away from that every prediction into the future anticipates a further rise, and very often expect an acceleration of the rise that we see right now.

So to illustrate this a little bit further on where we stand right now when it comes to predicting things like sea level change, I really want to call your attention

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to the lower half of this graph. What we see here is a measured record going back into the '70s. Those are the little dots that are connected. You can see the red line that shows -- that's the trend line through this record. And the importance of this diagram is that we are now at a point in time that we can actually evaluate predictions that were made

by the IPCC, say, 20 years ago. That's why this vertical line is here through 1990 when the first IPCC report came out.

And the really importance here is that all of these predictions -- naturally, you have this cone of uncertainty. And you have the sea level rise, you have a high, and it doesn't appear -- and the lower end is right here. And what we see right now is that the observations are really tracking the high range estimates. All right.

So over the past few decades we're really sending out the worst case scenario, and this is very much the reason why a lot of scientists now believe that IPCC predictions

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may well be too conservative. And an important reason for that is that the biggest challenge in creating sea level change is to understand the large ice sheets, because those are going to be potentially really dangerous contributors in terms of sea level rise.

And I will just illustrate that with you that environment for us here in North America is the biggest threat. The part of the Antarctic ice sheet that we're mainly concerned with is what's called west Antarctic ice sheet, if you hear all this, several meters of sea level rise.

Something some of you may have noticed a number of years ago that got a lot of attention was the very abrupt break-up off of what's called the Larsen B Ice Shelf, which is located right here on the Antarctic Peninsula that literally exploded over, you know, a matter of days. These are actually things that happened both in Antarctica and in Greenland that potentially might do away with climate change.

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And these are the things that are very difficult to model, but could potentially contribute to very large amounts of sea level rise. So I'm going to finish off by going back here to the Gulf Coast and talk some specifics of what we can expect around here.

What you see here are three graphs. I want to start with the lower panel, which are two typewritten records. These are direct things of sea level change covered in much of the last century. This is Pensacola, Florida, which is obviously very close to here. And as it happens, the long-term trend here is a rate of just over two millimeters per year. That's the long-term trend of the rate of sea level

rise over most of the last century.
This is actually one of the lowest rates along the Gulf Coast. To contrast that, we have the type, age Grand Isle, Louisiana, which is right in the Gulf. The subsidence that leads to rates that are much higher, close to a centimeter per year on the higher elevation along the Gulf Coast.

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Now, the importance here is that, again, ask the question: What do these numbers actually mean within the longer term of natural context. And that is where this record comes in. This is a reconstruction of the rate of sea level rise on the Gulf Coast over the 1000 year interval from about 660 AD. So this is the pre-industrial period. And you can see that that long-term is about half a millimeter per year.

So the bottom line is what we see here is not unlike what we see in most of the world, that the rate of sea level rise over the past century is at least four times higher than it was naturally prior to that.

So just to kind of wrap this up, we know from geological records that focusing on sea level rise has been fairly close to stationary during the last few thousand years prior to the industrial revolution. And then somewhere in the late 19th or early 20th Century, we got this celebration that started kicking in. These are the rates we see over

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the last few decades and we expect them to further accelerate in the future.

As I said, along the Gulf Coast, these rates over the last century are about four to five times higher than they were naturally. The acceleration is likely to continue, although the amount remains uncertain. In fact, again, that has a lot to do with that we don't really fully understand the behavior of (inaudible). That is the main challenge within the scientific community right now, to further narrow down these projections.

I'd like to leave it here.

DR. ROBERT TWILLEY:

The way we'll do this is if there's a quick question, we'll follow up with that, and then I will just hold my general panel discussion after the three speakers.

Is there anyone around the table -- a quick question by Jeff.

MR. JEFF WILLIAMS:

The difference, that four to five times

more sea level rise here, is that attributable
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to subsidence or is there --
DR. TORBJORN TORNQVIST:
It's absolutely. The nature of the data is that the subsidence has been ruled out. So it's entirely because of actual rising sea level, so -- and an important component is -- I didn't have time to mention, but is global thermal exchange, basically a heating of the shallow ocean that these slight expansions, which is very measurable at the surface.
DR. ROBERT TWILLEY:
I will ask. Is there another question? And just in context, if you do go back over, say, interglacial periods, even though you cite a half millimeter is pre-industrial, certainly before there was human, you know, influx in our coastal region, there was higher lines that these references could adapt to.
DR. TORBJORN TORNQVIST:
That's -- oh, yeah, well, there are -- obviously, if you go further back in geologic
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history, say 20,000 years ago sea level was on the order of 100 meters lower than it is today. So there's obviously been areas with extreme rates of sea level rise. But these are all -- and that's the key here. These are processes that are driven basically mainly by what we call orbital forcing, which is the way the earth orbits the sun. And those are processes that operate over much longer time spans. Those are not things that play any significant role, say, within the last few centuries.
DR. ROBERT TWILLEY:
But the natural system has had a long timeframe at which it has -- (inaudible) adapted. One of the points I wanted to make is that before the human impact on our region is that we had sea level rise, we had hurricanes, and we had subsidence. There were processes that allowed the wetlands and barrier islands and sand supplies -- there were things that, you know, in which the coastal landscape had capacity for adaptation.
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So the real difference is the industrial -- you know, now we're facing human and the natural processes.
DR. TORBJORN TORNQVIST:
That's right.

DR. ROBERT TWILLEY:
Any other questions?
MR. TOM PETERSON:
A comment that I think that it is very helpful to try to bring out those very points in terms of communication. I can well remember in North Carolina in meeting with our group there, people talk about a mastodons running around out where the Outer Banks are and what's the problem. It was a time element, where realistically we're looking at both a magnitude and a rate of change that is vastly in excess of anything previously encountered is a really critical point to be responsive to those kind of questions.
I think it's also helpful to go backwards in time, because also what we hear a lot of is, well, gosh, this truly is a short

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snapshot. If you look through geologic history, this is a very different story. So I would like to encourage you to stretch the time out and focus on communications also on this rate issue as well.
DR. ROBERT TWILLEY:
This is the first presentation I've seen of matching the observations with the IPCC models, and that is very powerful.
DR. TORBJORN TORNQVIST:
I think it's possibly the most compelling piece of evidence I've seen there is. It becomes -- you know, as long as you are simply using models projecting into the future, even if, you know, you test them by looking into the past, you know, people -- the ultimate skeptic will say, well, you know, just tweak your model until it fits the data. But, obviously, in 1990, nobody could know what the temperature and sea level was going to do in the next 20 years.
So you made predictions. And most of these people within their own lifetimes, their

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own predictions were going to be tested. And we will see a lot more of that down the line, because obviously these records will no longer be --
DR. ROBERT TWILLEY:
We keep telling point -- the other point is that, you know, we are running a big experiment here, because one thing to keep in mind is even if you go back 160,000 years, we've never seen CO2 concentrations that we're seeing today. And it is an experiment and, therefore, we really don't know all the, you

know, the realities of the predictions. And so having so much empirical evidence with modeling is going to be, just from a scientist's point of view, is really critical to build some time (inaudible).

DR. ROBERT TWILLEY:

George.

DR. GEORGE CROZIER:

So much that I'd like to say and so little time. One of the things that I think is of interest in what Torb just said is true.

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The Pensacola tide gauges are used to cause -- the Mobile area is really dominated by the river. In other words, the tide gauges don't give us as much information about the actual sea level rise and tide.

The mobile River is the third or fourth largest in the North American continent. People don't realize that. But other than the Mississippi, which shouldn't be counted, it's the largest going into the Gulf of Mexico. So it's not to be ignored.

The interesting thing, as we talked about this, is that the Mississippi and Alabama coast, there are barrier islands, and people have used them. And Mississippi was smart enough that they didn't inhabit their barrier islands. Unfortunately, they are substantial in ebb tidal delta off of Mobile Bay has allowed probably four or five generations of inhabitants on the barrier island, on Dauphin Island, so I know a great deal about that.

But what's interesting is that -- I'd

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like to take this one further stage of concern, and that's really the storm incidence. Because we all know now that a lot of our planning and our willingness to inhabit as humans on the coast was based on the 50 or 60 years or so of the 20th Century when there was relatively low storm incidence.

And, again, one of the more recent announcements, and I will just take it that way at this point has been projections that they have confidence on the Atlantic in terms of storm incidence. What was intriguing about it is that the new models -- and this is as of January at Princeton, the new models don't really show an increase in number of storms. It's relatively stable.

On the other hand, it's fairly significant in a lot of the results that the intensity will increase in the storms we have.

It's not a huge percentage, but it is enough when we think about the kind of devastation that we have in the aftermath of intense storms. This is something that we have to be

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concerned about.

And I have seen this on the Alabama coast in my lifetime, which although some people say is geological, it's not. The islands particularly are close to the coast in Alabama. This is one of the concerns, and, Robert, I talked with Ken about this yesterday, and there are islands that existed in the Mississippi Sound, on the northern side of Mississippi Sound, which have clearly disappeared in the 30 or 40 years that I have been here.

And as a result, we're looking at a substantial marsh exposure and even grass bed exposure that at the rate it's going, we'll lose these resources and what they mean to the national system.

The west end of Dauphin Island, which is not protected by the ebb tidal delta is perhaps the poster child of bad barrier island mismanagement. We have seen since -- in the last decade, in the years of Ivan and Katrina and Rita, the west end of Dauphin Island,

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which is virtually at sea level, has been devastated.

And it's interesting because the system left alone, as Robert said, the natural system is pretty doggone resilient. I think part of our problem is that we have fixed the coastline. We have fixed it in place with infrastructure -- roads, pipelines, oil and gas structures. And natural gas is very significant in Alabama. And I told Robert I thought one of the vulnerabilities for us was in fact that the point that we are -- maybe a central point in the infrastructure of natural gas distribution on the Gulf Coast.

I think this is something that is indeed vulnerable. I think we are less resilient than we should be. I think that's one of the reasons that there's a lot of interest in the Sea Grant which LaDon said is heading in other areas and with AEC in trying to define the resilience and find the ways that we can adapt.

Because we're not -- we're not really

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very good at it, and particularly when you fix structures and the losses of the bridges in

Mississippi and Alabama over the last storm events have clearly shown what we are faced with. And so they are raising the bridges going into New Orleans. They're considerably higher than they used to be. The bridge to Dauphin Island. The bridge between Biloxi and Ocean Springs. Everything is trying to respond to this, but we are still trying to stay right there. We are just sort of raising everything.

And I think that part of our problem -- and I was interested in your call -- I talked to Jeff before the meeting. Part of the problem for us, and I would say this applies to Texas and all four of the states, frankly, Texas, Louisiana, Mississippi, and Alabama.

We are at a generational change. Most of the people that control management and let's just say the decision-makers and the policymakers in these four states, particularly with the ones I'm familiar with,

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Mississippi and Alabama particularly, they grew up being able to fish and catch as much as fish they wanted, shoot as many ducks as they wanted, go to the beach as often as they wanted and find the beach there and the dunes there. And it's very, very difficult for them to accept this change of management that we now have to allocate these resources. They can't have everything that they want all the time.

And it may take a couple of generations for that resiliency unless we can find a way to educate them to respond to what we all around the table obviously believe is a very really threat. And we are indeed highly vulnerable even where we have these barrier beaches.

In the 30 years, I have seen these barrier beaches diminished substantially, so it's not something that can be avoided, and I think that our problem has been the unwillingness to be flexible.

And I have to agree with Robert. I

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think when this first came up decades ago, I think I thought we would adapt. You know, there would be time for plants to migrate. You know, temperature change to deal with it. But the combination now of the sea level rise, which is certainly a dangerous issue for us, and couple that with the storm exposure and increased storm incidence. And now to think that there's going to be an increase of the

intensity of the larger storms, which had not been modeled up until very recently, is a little overwhelming.

But I think this is something that we're going to have to -- it is an educational issue. It's something we're going to have to deal with.

DR. ROBERT TWILLEY:

All right. Thanks, George.

And education is one of the real hallmarks, and so you know it's without a doubt the most (inaudible) for the Gulf Coast region as far as resources, and I would put it up there with about any of the other coastal

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laboratories as far as education.

MR. VAL MARMILLION:

Talking about education either last night or the night before, you have stories about the cooling of the Gulf and the less vulnerability of the hurricane season, so we deal with information like this and you get national stories that roll across that you have to deal with with the public. Because I think public will is tied to political will, and you hope in a discussion like this, you tie it to scientific advice.

But one of our real challenges at the time is that this project, we're trying to the build the elastic between the public and the knowledge of the scientific information that we have. But I can tell you, I have seen that story and they say, oh, well, you know, this must be bogus because, you know, this sea level here or this sea is cooling.

DR. GEORGE CROZIER:

Well, I think the problem -- and I wasn't going to drag it down to this level

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originally, but you opened the door. The problem that I find in dealing with the community -- and I do most of the Rotary Clubs and Kiwanis clubs and groups around. The vast majority of the people in our part of the world think Glenn Beck is God. They listen to Fox TV. And even more on course, they listen to Rick and Bubba in the morning.

I had the misfortune of listening to those -- it was the only station I could get going to Montgomery a couple of weeks ago. But that is the problem.

And the difficulties that we're facing is that those that are skeptical are very good at finding the weaknesses in a huge argument. And as I told some people this morning, I

think what people don't realize is that scientists are human. They make mistakes, and these mistakes are ferreted out and hung out as the example of what's wrong with the whole argument, which of course is not the case at all.

And I don't know -- this is something that I think presents a real challenge to us.

MR. JEFF WILLIAMS:

One of the things that struck me about your comments was this adaptation that -- that we do, but it's as if it's in the rearview mirror. We adapt based upon our world view. This is the way it's always been, but not really, perhaps, taking into account how the environment is going to change.

The barrier islands may not be there in the same way that they are today. So I think it's really critical that we kind of take a look at what is changing and then factor that into earth adaptation policies. I don't know if the bridges out of New Orleans are high enough.

DR. GEORGE CROZIER:

Well, I think one of the things that disturbs me and Robert here -- we were in New Orleans a few months ago. I think part of the problem that I see, and it's because of my own biases is that I see the costs of our approach to adaptation so far as to build it bigger and higher and better, which costs more. And if it costs more, I think it's adding to a separation of an awful lot of people from the coast itself. Because a majority are not going to be able to afford to go to the beach or rent a condo or whatever.

And I think this is one of the things that really bothers me on a very large scale. This is not going -- this really isn't good for the country. And I'm pretty much an advocate of the public trust doctrine. I think the ocean and the coast is one of the great national treasures and it belongs to everybody.

And it bothers me that our solution so far -- well, even in Mississippi, how many people can't afford to come back because the zoning ordinances have changed and the floodplains have raised so much. And, moving forward, people who lived in small neighborhoods and small houses are left behind in this process.

So I don't mean to go into sociology of

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it, but it is a factor that I think we have to deal with. But part of our problem, I think, is that we've had this about 6,000 years of relative stability on the coast and let's get used to that. And it's very difficult for people to accept that it's a brave or not so brave new world along the coast.

MS. TINA SHUMATE:

I just wanted to say one thing. The Corps is here -- Tom Smith and Bob Terese are here to hear the hearing today. The delta missed the (inaudible). We just missed it because (inaudible) program. And I know a few years ago we shadowed them with Dr. Bill Walker, the executive director for Mississippi DMR.

And people actually thought we were trying to take their property concerning land acquisition. Well, the funding has not come down at this point. We were waiting on that. But you would have thought that we were the big, bad government coming to (inaudible).

Now we have a stack of about three

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inches with people who got flooded so many times, and that may be the type of education that we have to get over and actually feel the pain.

And so now we have quite a few -- there's probably 1000 or more that want to (inaudible). So the education there is just -- it's just a hard issue that you don't have to actually touch.

DR. GEORGE CROZIER:

One of the problems that we have again is socioeconomic in our barrier island systems. And this actually includes the barrier beaches to the east involving the town of Gulf Shores and Orange Beach are barrier beaches. They're not really islands. They're exposed.

The difficulty that I sense in all this is often -- there aren't that many people that live in these places. They are vacation homes. They don't sense the pain that Mississippi has sensed. Now they feel it in their pocketbook because this house on the

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west end of the island is not there anymore. It's in the water. It's threatened or it's endangered and they're not going to put another dune up. Whatever. But it's a small number. And I don't think that this has really -- it hasn't engaged a resident

population, and it makes it very difficult.

And I have had these arguments with the town of Dauphin Island, which only sees the houses on the west end as revenue generators. And why wouldn't the town ask for the roads to be rebuilt and the power restored and the water and sewer restored. They're not paying for it. The taxpayer is. And, in fact, this has been one of my arguments for some time, that our problems are more complicated than people realize.

DR. ROBERT TWILLEY:

We're getting right down to the guts pretty quick. But let's move on to David and a few comments from David Brown and we'll wrap up.

MR. DAVID BROWN:

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And I will also cut my comments in the spirit of keeping things moving, but I did want to start with a quote, which I think nicely synthesizes some of the things that we've been talking about. This is from the 2009 United States Global Change Research Program Report on Climate Change Events. An increase in average sea level of two feet or more and the likelihood of increased hurricane intensity and associated storm surge are likely to be one of the most costly consequences in climate change in the southern United States.

As sea level rises, coastal shorelines will retreat, wetlands will be inundated and eroded away. Low lying areas, including some communities, will be inundated more frequently. Some permanently. Current buildings and infrastructure were not designed to withstand the intensity of increased storm surge, which would cause catastrophic injuries.

Sea level rise will also take sea

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grasses, coral reefs, and other important habitats. It would fragment barrier islands and place into jeopardy existing homes, businesses, infrastructure -- including roads, ports, water systems. Portions of major cities would be subject to inundation by ocean water during storm surges or even during regular high tides. And, in short, rapid acceleration rate of increased sea level rise threaten a large portion of the southeast coastal sediment.

I think given that rather dire prognostication, it's fair to say that

adaptation efforts in this region as well elsewhere will require truly collaborative efforts among the research and the state coastal communities. And Gary mentioned in his opening remarks that the public is depending on the science community to take a leadership role in this fashion.

I think to do that it's incumbent upon those of us in the science community to move forward in a couple of various areas that I

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would broadly call climate surfaces. For example, we must make improvements on how we measure, archive, and deliver climate data and climate information, particularly improving the accessibility of the information to really an infinite range of user groups who have a very high level of expertise in interpreting climate information.

We must also help decision-makers build new tools to use in the operational context. That will require new research endeavors, (inaudible) attempts, experimental products, and so forth.

And perhaps, most importantly, the social and climate services really requires an interactive and early process of continued learning between the information provided us and those who are utilizing the information.

Fortunately, we do have some of the infrastructure already in place. They will require services here in the Gulf Coast. NOAA Sea Grant is here today. We'll be hearing from them a little later. They're one of the

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best in working with local communities along with the university extension agent, state climatologists, others that deal with global issues.

But we also have regional resources. NOAA funds six regional climate centers around the country, which deliver ongoing and experimental climate products to a range of users. NOAA also sponsors nine regional integrated science and assessment programs, which are really test beds for new products, new programs, to benefit decision-makers and policy planners who deal with climate sensitive issues.

Recent projects included topics such as coastal restoration, water resources, fisheries, and the list goes on. And then on top of this, we have the newly announced umbrella of the National Climate Service -- recently announced within the last few

weeks -- which will ideally synthesize and facilitate increased interaction involving, at least as far as NOAA is concerned, among its disparate climate services entities.

At LSU we have been trying to move forward with climate services in a bit of an innovative fashion. In the beginning, one of the investigators with the newest of those recent programs is called the Southern Climate Impact Planning Program, SCIPP. And this is novel in the sense that it also brings together both the state planning office and NOAA's Southern Regional Climate Center, both which are also based at LSU.

This is the first time NOAA has linked several different climate surface entities in a formal way with the idea of making a more seamless continuum between the data set of creation and archiving to research to out research and engage the decision-makers.

And I think that this new framework is going to be the strange new prototype for the types of -- the kind of (inaudible) that the climate services community play in adaptation to the sea level rise is really a brain (inaudible). And I'd be happy to talk more offline about some of the work that we're doing at LSU, but I'll just leave it at that.

DR. ROBERT TWILLEY:

Any questions? Comments?

MS. WOOD:

I do have a question just of clarity. All these centers that NOAA has and the work that you're doing at LSU, how is that information being disseminated to decision-makers and to communities?

DR. DAVID BROWN:

Exactly. Well, naturally, that's the crux of the issue. The mission behind the recent program is really sort of the philosophy we have adopted is to engage with decision-makers, broadly defined, to identify their needs and then just to go back to the research community and work on new research, new products that can then be transitioned into that decision-maker's operational capacity. That's sort of the framework we operate in.

So, for example, some of our work right now, we are linked with some of the drought folks in Texas, in Austin, and Oklahoma City to develop a new drought monitoring tool. For

example, that they can use on a day-to-day basis.

We are developing a storm surge database, which will be delivered to a variety of coastal folks across Texas, Louisiana, Mississippi, Alabama, all the way to Florida. We've also done some work actually funded by Sea Grant to talk with information provided to Louisiana about how -- for example, hurricane information. When a hurricane is approaching, how that information is delivered to the public and how the public responds and trying to improve how to get that information.

So we have some very specific pathways for the delivery of climate services. As I say, I think it will be a growing prototype perhaps to do that.

DR. ROBERT TWILLEY:

Follow up? Do you want to follow up?

MS. WOOD:

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Well, the only other thing I was going to say is through listening to all three of these and then what you had to say maybe about the hard lesson is that -- and maybe we're going to hear about this later in the day. But it seems to me that one of the challenges is to deliver a resource to people, to make the changes they need to make in a timely manner in terms of making those changes.

For instance, people may be most ready to make a change after they've had a hard lesson of a storm or something like that. But our experience has been that the resources are slow to move and they don't come out and coordinate fast enough.

So after Katrina people might have gotten their insurance money months before resources became available to elevate their homes. You know, so there's kind of a disconnect. They might have already gone on and restored their home and moved back in before the resources became available to elevate them is more problematic.

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So we're kind of working on that timing of making resources and information available, it seems to me, to be a part of this adaption.

DR. ROBERT TWILLEY:

I gave -- go ahead, David.

DR. DAVID BROWN:

I was just going to make a brief comment that one of the things that we find in the science community is that people will come to us and say, I'm interested in climate

information, but I don't know how. I know it's important, but I don't know how it's important.

And so I think this idea of integrated process of feedback really is what you're saying. User group and the science is at the crux. There's education, you know, creating awareness of the kinds of information that's out there. You folks may not (inaudible).

And then if there's something missing, there's a gap here in the tools or in the information that some particular user group is going to need, then we can work to fill that

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gap.

DR. ROBERT TWILLEY:

And I really think that one of the things in our region, because of that, we have to find these innovative agency, university, private partnerships that provide prescription and don't just do diagnostics.

And the Department of Energy, I think, is funding the Natural Institute of Climate Change Research at Tulane. That's another example. I mean, these are the -- you know, working with the agencies, the extension service that was mentioned, there's a history of this social contract that universities have had that we've got to be much more aggressive, and particularly in our region.

And so I just -- you know, I think that's stating the obvious, but I know it's something that we focus on in the restoration world, and now we need to bring it to the climate adaptation world. We need to talk about these things, but it's really something that's critical.

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In the short timeframe -- if you go back in history, and I can give you a lecture on this and that. And in class last week, the parallel to the Everglades in south Florida and south Louisiana following the 1928 to 1938 catastrophe and how the system reorganized itself, so it was so vulnerable. It was right after those major events. That short reorganization phase right there is what sets your trajectory for decades.

And so it is the most critical point of how any departure lays out how well you are adapted right during that frame time. So your comment fits right into that point.

MS. TINA SHUMATE:

I just want to make a point that you said. A partnership -- it's totally about

partnerships. Because since the storm, we had to learn the hard way instead of this is my material, I'm not going to share it with somebody is my (inaudible). But everybody shared everything.

Now, Sea Grant (inaudible) working with

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the government in reliance and resilience group that they're doing. But it's about pre and post how to warn the community on what you did before and what do you do afterwards. Who do you contact. How you find this information, the materials and things.

And so we have come a long way with Katrina being a hard lesson, but still Sea Grant has played a major part. If you all get to throw in some of those things we're working on.

MR. LaDON SWANN:

Just a comment. We'll talk about four different examples of things that interface between the academic community and the user community. And one of the things that we're looking at right now is the whole concept of states challenges of moving somewhere from pre-contemplation, contemplation, preparation, action, and maintenance. And we have -- we have a thousand communities at different levels from each one of those. How do you take that great research, make it relevant to

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the local communities and then help them move from one state to another and get them to do that in preparation.

That pre-contemplation, a lot of people are at that stage right now, just at the beginning. So there are the need for programs, education programs, for communities underway right now that will do just what you are talking about.

DR. ROBERT TWILLEY:

So, Val, with those comments, I think we will wrap up. Six minutes over.

MR. VAL MARMILLION:

Thank you very much. And thanks to the panel. We're going to move directly into our second panel, which is Regional Approaches to Climate Issues. And we were hopeful that we could bring several folks to talk about how they approach coming up with a climate position as a region. A lot of these happen outside the realm of legislation, and we have three fine presenters: Janice Adair, the Department of Ecology, State of Washington.

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Eddie Fisher form the Texas General Land Office. And Pat Hogan, who will do cleanup batting, Pew Center for Global Climate Change.

Janice, we want to thank you for coming all this way to be with us.

MS. JANICE ADAIR:

I have brought in a visual aid. This is a map of the Western Climate Initiative because I thought it would be useful for folks to see what this organization looks like. And I don't know how familiar you all are with the west.

What we have, the partners here in blue: British Columbia, Oregon, Washington, California, Arizona, New Mexico, and Manitoba Quebec, and Ontario. So we're not even really so west anymore.

As observers in green, we have the states of Alaska, Idaho, Nevada -- my vision isn't very good here -- Colorado, Kansas, and Wyoming, and the six Mexican border states, and the province of Nova Scotia, which has been highlighted up there, and the province of

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Saskatchewan.

So we're a fairly large group. Started out between the five western states. And really what got people talking about coming together as a region was around the impacts from climate changes that we perceived. Most are around water. Here it might be storms. In the west, it is water. We either have drought -- we either have not enough or we have too much, depending on the time of year and depending on where you are.

And the other issue that we have is our western water laws are all based on first in line, first in time. So those folks that were first there to use the water got the first rights to use the water. And people in communities that came after are junior water right holders.

Since water rights are all based on what was and what was is no longer what is, we are having tremendous water issues in the west. And even though we tend to be seen as environmentally conscious, I've been

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interested in just the conversation around how do you get people to act. People are not willing to take on this issue because it is so politically charged.

And even though they are -- they can actually see the impacts, we have communities who are junior water right holders -- they

have been holding the water rights since the '30s -- they are being cut off every year because there's not enough water, but there are still this sort of incapacity to really take the actions that are necessary.

But that aside, so the Western Climate Initiative came together. You can see how broad our geographical distribution is, but what you may not be able to tell is how different we really are, even as states and provinces.

There is a tendency, I think, to think that the west is sort of homogeneous, but we're not. Washington, Oregon, British Columbia -- we rely largely on hydropower for our electricity, so we're fairly a low carbon

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footprint to begin with. But we also have Montana and Utah who are big coal states.

New Mexico and Arizona have a lot of oil or gas. And Quebec, Ontario are also hydro. Manitoba is just little tiny and really doesn't have a big carbon footprint at all. They are very sparsely populated given their land mass.

But what's been interesting in this processes is the coming together is really the process for reaching agreement. In large part, we were driven by the fact that no one was prepared to go back to their governors and say we couldn't do this. We were unsuccessful.

So taking failure off the table is a huge motivator. We were able to -- what we did was design a regional cap and trade program. It is economy-wide. It covers about 90 percent of the emissions in our region.

For most of the states, the problem is that transportation is our number one source of greenhouse gas emissions. So we had to

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really deal with some difficult issues around not just the type of car we drive and the type of fuel that use, but the demand site, which tend to be into land use planning. And I'm sure it can't be too different here in the south.

That's probably all spelled with four-letter words. Very, very controversial when you start telling local communities or giving local communities advice on how to plan out their -- those communities so the demand for transportation is less.

We also have issues in the west. Two of our states, at least, fuel taxes can only

be used for highways. They cannot be used for transit. So that puts another issue in how you pay for alternatives to single vehicle -- single passenger vehicles.

We also deal with what we call complementary policies, or those policies that would not replace a cap and trade program, but it would work in concert with a cap and trade program to not only reduce the cost, but to

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increase its effectiveness.

We have all adopted or considering adopting the California tailpipe standards for vehicles. We are working together on a low carbon fuel standard. I think all of us have a renewable portfolio standard, so requirements for utilities to have a certain percentage of renewable energy in their portfolio.

And just to make sure everybody understands that hydro power is not considered a renewable fuel in that context because we have so much of it. The opportunities to grow hydropower are fairly limited, again, going back to the issue around water. So that is somewhat controversial in Washington, I can assure you.

We are working on some sharing issues around speed limits, speed limiters for heavy-duty trucks that travel between British Columbia and California along I-5, Interstate 5. It goes up and down our coast. So a variety of policies like that to try to get

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our arms around greenhouse gas emissions in more totality.

And we're just starting to work somewhat on adaptation issues. We do share some issues, as I already mentioned, around water, but there's going to be some issues like sea level. We do have concerns around sea level rise and other coastal impacts in Washington, Oregon, California, and British Columbia. Not so much in Utah and Montana.

But we do share a river. The Columbia River does go between Washington, Oregon, a little bit into Idaho, and that is where most of the dams are that provide electricity for that part of the country. Bonneville Power Administration runs those dams as do some of the local public utilities. And so that is a huge issue for us.

And we're taking out dams and other rivers because of salmon concerns and trying to restore salmon runs. And so trying to find

that balance between the natural environmental issues and energy production is a constant balance that all of us are facing.

The most important thing, I think, in coming together and the thing that I think any group of states can benefit from such an effort is just learning about one another. We have learned -- we have learned so much about even our neighboring states. Now, you would think that Oregon and Washington would understand one another fairly well, that Washington and Oregon and California would understand one another fairly well.

But, in fact, we have had to work together at a level that just exceeds kind of the superficial understanding that we might have had before. We've had to have honest conversations about the politics in our states because what's really truly possible to do. And how can we find common ground understanding that what's possible in one state just is not going to be possible in another state and still have a functional, regional approach to the issue.

We compete with one another, and that's been another issue that we've had to deal with. We have companies that -- in Washington -- that have subsidiaries in Quebec. In fact, Quebec is our largest competitor, which is pretty interesting. It's something that -- who knew. But that's part of what we learn in this process, and how our different approaches to policies will impact or not that competitive position that our companies have.

Of course, here in the south, we have a lot of competitors. You all have a lot of competitors from companies that are in the northwest, and we're very aware of some of the policies that exist down here around energy use and tax breaks for energy use that we don't have there. And so we have to look at some of the issues around the country when we look at limiting carbon emissions in our area.

What does that mean for companies that have subsidiaries outside of the northwest who could pretty easily switch production to the southeast, and what does that mean for us.

We have been able as a region to have a fairly large voice in Washington, D. C., because we do come together as a region. And I don't think it's only because California is

part of the Western Climate Initiative, although it certainly hasn't hurt -- well, sometimes it has, but that's a whole other story.

But it really has been beneficial for us to go back to Washington, D. C., to present positions as the Western Climate Initiative representing these states. We are about 20 percent of the U. S. economy, and the -- a lot of what was in the Waxman-Markey bill was the things that have come out of the Western Climate Initiative. So we saw that we had an impact.

When the bill was being debated in committee and when it was being debated on the floor, we were getting phone calls from congressional staff asking for our help to craft amendments or to craft language to move the bill forward. And that's very beneficial.

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They wouldn't be calling Washington state otherwise. They just wouldn't.

So as you think about working together, I would encourage you to think about expanding to some extent, as you can, to bring in states in your region that aren't like you. Because I think that that provides you with the ability to understand some of the -- and work at it in a very real way -- the compromises that have to take place to make something happen.

We are very, very different from Utah and Montana, but we found ways to work together. We found ways to come to agreement on some very basic and very fundamental issues around limiting carbon emissions that we wouldn't have done if they hadn't been at the table. We wouldn't have even thought about it, because we just don't have that reality. We don't have great big coal plants in our states.

So it's been very beneficial, and I don't want it to sound like it was easy,

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because it wasn't. But it was a good experience and one that I think all of the states have benefited from. And I think that the membership that we have demonstrates the value that other jurisdictions have seen from just even being part of the debate, part of the discussion, and in the room while we have sorted through these issues.

MR. VAL MARMILLION:

Thank you very much. Are there any quick comments? We will move on to a very

different part of the country in Texas.
Eddie.
MR. EDDIE FISHER:
Okay. Thank you. I have a presentation too that we will bring up just a few slides.
I thought when I saw the state of Washington ahead of us that, what were you thinking as the chairs, but it's a really good tie-in showing the alliances and the differences and the challenges that we have. And I think the two presentations that we have

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here are going to be very effective in conveying what Janice says is we need to build alliances and partnerships where we can listen to in congress.
As I said, I'm from the Texas General Land Office. There was a question earlier about how are some of the research from NOAA distributed. We work really hand-in-hand with the Coastal Zone Management Program, the Coastal States Organization. In fact, that's who I work for in the Texas General Land Office is the Coastal Management Program. So those tools come through NOAA to the coastal managers and then we take them to the local planners. So there is a good link there.
To give a little bit of background of exactly what the Coastal States Organization is, it's really the 35 coastal states and territories and commonwealths. They get very upset when you leave them out. The Great Lakes states as well. All of the members of the Coastal States Organizations, the delegates are appointed by the governor of

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that state, and we meet a couple of times a year in D. C. We also have an executive committee that I'm a member of and we have certain work groups.
And one of the work groups that we think is very important is the Climate Change Work Group. The Climate Change Work Group early on -- let me go back to Janice's -- is that we had a consensus that we could not agree on the overarching issue of CO2 emissions. The California and Washington representatives really wanted to talk about mitigation, and we wanted to talk about adaption in our areas. And we agreed as coastal managers that our challenge was really adaptation, and that's where we could have the most difference.
Some of the things that the work group

has done, and you kind of look at this and say, well, why is this important. Again, some of what's been said before. Some of the language that we have written in these reports, congressional staff that are

authoring climate change bills, contacted CSO.

And one of the last bills, the adaptation part of it, was taken word-for-word from one of our working papers. So this is a very good way to get through your states meaningful language that will affect congressional legislation.

Our next thing that we're working on this year is to really define -- and we're going to call to task our scientists here on the first panel on this is what our real challenges are and what we're going to be asking for in legislation coming up this year.

I have some slides that point out some things here in the Gulf of Mexico, but all of the planners, our main concerns are is that we don't have the data that we need to make the right decisions. We don't have the data that we need to be able to pass that on to the local planners.

There's a huge difference between a meter of sea level rise in this century and five meters. Those are two entirely different

planning strategies. And we can't operate in that kind of environment. And that's the challenge that we're going to present to NOAA is to give us more -- and that's what they are working on -- give us more research, including showing that Antartic melt, to be able to measure that more accurately so that we can define these ranges more closely so that we can have a better idea of what we're looking at. And also what is the potential of what are called nonlinear events, such as the entire ice sheet melting off at one time.

We need to know those possibilities. We need to have scientific data to back that up that we can stand behind and be able to get legislation and start planning.

In the Gulf of Mexico, we're very different from, again, Washington. We're the canary in the coal mine as far as sea level rise. This is a barrier island in Texas. When your entire barrier islands are less than three meters in elevation in some areas, even a meter a century is a big deal. If we are

looking at more than that, it's a huge

problem.

And even a small rise or increase or acceleration in that is very important, because it starts to exacerbate erosion. It starts to do things that we hadn't predicted or planned for.

Some of this has been mentioned before, but just to give you an idea. When we come to the meetings from the Gulf Coast, when we come screaming with our hair on fire, is that -- this is information produced from the EPA, Jim Titus and Charlie Richland, that say that 58,000 square kilometers of land along the Atlantic and Gulf lie below the 1.5 meter contour. Louisiana, Florida, and Texas and North Carolina account for more than 80 percent of that low land. So that is why we are concerned.

We've talked about some of the tools that we need to be able to take this down to the local level. This is a product produced by (inaudible) research entity. We didn't

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actually fund this under the CMP directly. The study would be funding a lot of the data that he used to create this. And this was sort of how the evolution of this process of addressing adaption and climate change has developed.

The city of Galveston asked for this plan to show what the hazards are. And without getting into the legend here, you're okay if you are dark green. Everything gets consistently worse until you're red. And it's a very high normal area.

The city had asked this to be produced and presented to the city council. When they got the product, they were so shocked that they had asked if there was any questions. And there were no questions from the council after they saw that.

However, we had, again, a major event happen in Texas when Hurricane Ike hit in 2008. It completely changed the way the city planners looked at this. They developed a restoration plan for the marshes on the bay

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side, which we got funding for. Also, on the gulf side, where I will show in a minute, where there's development right up to the Gulf of Mexico, the city for the first time in its history is considering setbacks.

At the General Land Office, we do manage construction on the beaches, but it's really implemented at the local level. And

for the first time, our commissioners went to the legislature and had a bill passed at the local governments. Sheldon Phillips, a local, wrote in response, they're going to have to show how they're going to adapt to the climate change.

This is an example of -- people were talking about differences. This area here on west Galveston Island, there were 200 feet of dunes, four dune ridges before you got to the dunes, and then it was the Gulf of Mexico. In this particular photo, it looks like three rows of those houses are now in the Gulf of Mexico in this area. So that's what we're dealing with with the current sea level rise

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situation in Texas.

And the tools that we need -- those contours that are done by USGS LIDAR, which are at four-foot contours, we extrapolate two-foot contours out of that. What we are asking for is Gulf -- Gulf of Mexico planners is we need LIDAR at one-foot contours to be able to accurately monitor what's happening to the wetlands and to the Gulf and the dunes. So when you speak of that to other states where the coastline meets a bluff that's 40 feet high, four- to eight-foot contours work pretty good.

But for us, where you have a slope of barrier islands that are 50 to one, it doesn't work for us at all. So what we're asking for is, especially on a regional basis, the tools to help us understand what's happening.

And, again, kind of going into the whole debate of sea level rise is what is it? One of the things that we're very fortunate to have is historical data, which is hard to argue against. This is measured in Galveston

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exactly 100 years. Approximately two feet over the last 100 years. So, again, if we only look at the data that shows what happened over the last 100 years with no acceleration, we have a tremendous adaptation problem to be able to cope with that.

And what we are looking for is if we have an acceleration, to be able to quantify that so that we will be able to adjust to it. And one of the other questions I think Jeff had about the subsidence issue. If you look at the chart, probably in the major exploration, production in Texas was probably in the '40s to early '60s. There's really no variation in that graph one way or the other

that shows any trend.
There are some geologists that contend there's some more regional subsidence phenomenon in the Louisiana and Texas coast unrelated to oil and gas and water extraction, but that's still somewhat debated as well.
So I would like to close with just saying, we'd be glad to help America's Energy

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Coast carry this message through the Coastal States Organization. I missed a conference call when I was at work yesterday, where NOAA released a product that's out for public comment, and I will distribute that to the group to look at.
Again, what we're really going to ask of NOAA and the federal government in (inaudible) provide information for legislation. We need the tools. We need more accurate predictions that we can sell to local policymakers to be able to make the right decisions.

MR. VAL MARMILLION:

And just one short question, Eddie. When you were working with this committee that was trying to come up with climate policy, how long was the process and what were the big obstacles?

MR. EDDIE FISHER:

It's been about a five-year project. The big obstacle at first is were we going to include mitigation in our strategy or were we

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only going to look at adaptation. And we decided that certain mitigation is important, but that's somebody else's bite, because our authority as coastal managers comes from the Coastal Zone Management, not from the Clean Air Act, and so we felt like we could have the most impact on adaptation.

MR. VAL MARMILLION:

Any other quick comments? Yes.

MS. WOOD:

So you mentioned that -- I'm looking to see. It seems like you said that you don't -- that implementation moves down to the local level, or something along that line, in terms of responding to climate change.

MR. EDDIE FISHER:

Well, what we try to do, again, NOAA, through the Coastal Zone Management Act, states how Coastal Zone Management plans. And through those plans, how we implement those, we usually provide grants to local governments. We provide workshops for local

governments. And the tools that NOAA
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produces, we use those on a state level through our Coastal Zone Management programs.
And then we share that with the local planners in order to carry the message through to everyone who's working on that. We have a lot of information that we put on our website that is available to everyone, but we also try to hold conferences.
We had a coastal conference a year ago. It was actually scheduled to be held the week that Ike hit. But it was delayed about a year, and we had almost 500 participants from industry, from elected officials, local planners, researchers, that type of thing. That's how we get a lot of the message out, through conferences and other things like that.
MR. VAL MARMILLION:
Okay. Thank you very much. Pat Hogan with Pew, we welcome your comments.
MR. PAT HOGAN:
Thanks again for having me down here today. So as you all mentioned, I will do a
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quick cleanup and pass over the other regional initiatives around the country. Just a few quick words about the Pew Center, who we are and what we do. The slide, please.
We're coming up on our 12th birthday, so we're entering adolescence. We're an independent, non-profit, non-partisan (inaudible) research and education firm. We do research on pretty much every aspect of climate change problems, including economics, science, and policy at the state, national, and international levels. We engage governments and stakeholders at every level as well.
I also work very closely with the business community through our Business Environmental Leadership Council, which is a group of about over 40 mostly Fortune 500 companies that see quite a problem and want to be part of the solution.
So a lot of what I'm going to say here is going to echo comments that Janice and Eddie already made, but I think some of these
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bear reiterating. So this is just the quick list of why states and regions are taking action on climate change.
Of course, first and foremost, many regions are seeing climate impacts and are

justifiably concerned. We have heard a lot about sea level rise in this region, again, discussion of water in the west. But other regions, such as the midwest are facing the prospect of more severe droughts, heatwaves and heavy precipitation amounts, among other things.

So states see this as a problem and having moving for most of the last decade to fill what they perceive to be a leadership gap at the federal level. They just don't see that the feds are doing their job. They're not taking it seriously enough, and the states and regions are moving to fill that void.

The flip side of that is that many states and regions also see addressing climate change from the standpoint of adaptation challenges as a chance for economic

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development and opportunity. They see the potential for clean energy jobs, the ability to claim any clean energy markets. Regardless of what happens at the federal level, they see the way the future is going. There are no arguments substantially made. It's for a variety of clean energy technologies that may position themselves to take advantage of these opportunities.

In addition to those primary motivators, mainly concerned about more energy independence. The key words I think are energy independence and security. Tack on energy price volatility. And many policies can reduce greenhouse gas emissions and have co-benefits as well, such as better ambient air quality in general. I believe even traffic congestion in cities, among other things. Next slide, please.

So while a lot of states are taking individual action, states are also starting to realize the main benefits of regional collaboration in working together. And,

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again, this echos what Janice said. States can really accomplish a lot more by working together, you know, be it whether they want to reduce emissions to try and mitigate climate change or ensure best practices on adaption. They're realizing that some of the potential for the (inaudible) tackling the challenges individually.

And as Val mentioned in his opening, these problems and opportunities ignore state and regional boundaries. It's not something that's just going to affect that one state,

it's going to affect that entire region. So everybody has a chance to benefit by working together to address these challenges.

In addition, in working on these policies that we (inaudible) region-wide economic development. This includes clustering new clean technology firms, manufacturing firms, and the spillovers that you get from that.

And a way to benefit is that the full benefits of taking action on clean energy

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policies -- (inaudible) you realize that at the regional level. If states want to pursue aggressive alternative energy policies, that frequently involves building new transmission infrastructures to get the electricity to where it needs to be. And building an infrastructure often involves working across state lines.

In addition, states engage in a lot of resource and information sharing. And regional action also provides substantially more certainty to the business community. Businesses are operating in multiple states. They want to know that they're not going to be facing one set of regulations in one state and a totally different set of regulations in its neighboring state. Next slide, please.

And one key point that's been referred to several times already is that regional collaboration really provides all the states involved a much stronger voice at the federal level. And I will talk about this a little more later on, but this was a really explicit

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motivator for action that's been taken in the midwest.

Several states there saw that the federal debate was moving forward and accelerating and that they didn't really have a voice at the table. So they got together, and over the course of a couple years, they put together a very aggressive climate and energy package which gives them a much stronger voice in that debate.

One point that's not up here that I think also bears mentioning is that regions really know what works for themselves. They know their own strengths, their own vulnerabilities, and it makes sense to tackle those on a regional basis.

One other point is that many of the states and regions taking action would very much prefer to have a comprehensive, unified

federal policy, such as the national greenhouse gas trade initiative. But without such a policy, regional action can be more efficient and more effective than individual

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states working alone. Next slide, please.

So this kind of builds on the map that Janice showed in her presentation. This shows all the states that are either participating in or participating as observers on climate initiatives in North America. And this actually doesn't include -- I'm sorry. It has both the Mexican border states and the Canadian provinces as well.

And I think it's pretty striking that we're talking about a huge chunk of North America at this point, not just the huge chunk of the United States, but a substantial portion of the entire continent. And most of these regional initiatives are focused on mitigation. We're looking at ways to reduce greenhouse gas emissions across their regions.

Adaptation is definitely a concern for many of these regions and it's taken up in their policy design. But, to date, mitigation has really been the focus. Next slide, please.

So just building upon that map, if you

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look at just the U. S. states that are involved in these initiatives, we're talking about 23 states that account for nearly 40 percent of U. S. greenhouse gas emissions, very close to half of the U. S. population, and over half of U. S. gross domestic products.

So I think, you know, that really brings home the point that this isn't just sort of isolated patches working independently. We've got a huge portion of the country covered at this point. Next slide, please.

So just to give some quick details on the major regional initiatives. The first I will talk about is the Northeast Regional Greenhouse Gas Initiative, which has the distinction of being the first greenhouse gas trading program in North America. It includes 10 states that account for over 10 percent of U. S. emissions. It's a power sector only carbon (inaudible). It just covers CO2 emissions from the electricity sector. And it

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is up and running. It just started last year, so they're over a year in.

And they have set -- they initially set fairly modest but certainly meaningful greenhouse gas reduction goals. They initially wanted to stabilize their emissions at more or less current levels between now and 2015. And then in the few years after that, reduce them 10 percent below that level. So these are just some details on the trading market itself.

As I think many of you are aware, cap and trade works by setting a cap on the overall economy-wide or sector-wide emissions of a particular group. In this case, CO2. And then issuing to all the companies under that cap a number of allowances, whatever the cap is. So if the cap is a thousand tons, there are a thousand tons distributed, and these are tradable.

The ultimate goal is that as the cap declines over time, you achieve a desired level of pollution reduction at -- at the

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least cost and the least cost manner.

So the way RGGI went about this process, they -- most of the state functions, the vast majority of the participants trade allowances and RGGI's original design, all the states agreed to set aside at least a quarter of their allowance value to support related policies, such as energy efficiency measures and renewable energy investments.

So far, the RGGI states have held six allowance auctions. Prices have ranged from just over two dollars to about three and a half dollars. And if you look on the next slide, this sort of gives the rundown of the totals that each of the participating states have realized from these allowance auctions.

(inaudible) revenue, and they are turning these funds around and investing them in efficiencies, which everyone agrees is the most cost effective way to reduce energy, energy use, energy efficiency reductions and ultimately save money in the long run. And they're also investing in low income

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weatherization programs and (inaudible).

I think I will probably skip over the WCI slides since Janice really already addressed what the western states are doing and go straight to what's happening in the midwest. So this is the Midwest Greenhouse Gas Reduction Accord, the participating states and observers.

Again, these states would have a

significant percentage of total U. S. emissions, and they have at least what they call draft final recommendations for an economy-wide ultimate sector greenhouse gas trading program that has a fairly aggressive target, in the range of 18 to 20 percent below the 2005 levels by 2020.

On the next slide, I just wanted to talk about some kind of unique features of the midwest effort. You know both the Western Climate Initiative and RGGI have had substantial stakeholder involvement in their processes. I think what sets the midwest apart is that they -- from the beginning,

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their whole policy design revolved around having stakeholders for the first time in the room.

So it wasn't just the point and go officials or the state energy officials and staff. It was the people from the business and environmental communities, academia, agricultural, and wavering trusts all working together to try and put together a design document for a response to that, a very aggressive regional oriented climate program.

As is the case in the Western Climate Initiative, they are aggressively pursing complementary policies and energy efficiency and clean coal and renewables as well.

And as I will talk about in a minute, job creation and retention is one of the key drivers and key goals behind this idea as well. So that trading program that you just saw is really just part of a much broader energy climate policy package that includes aggressive goals for energy efficiency. A goal of carbon capture and sequestration,

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renewables, and alternative fuels.

I don't want to spend too much time on this, but you can see an energy efficiency goal of 2 percent savings per year is both aggressive, but, as the states have found, achievable. As a region, they have some of the most aggressive goals regarding development of carbon capture and storage technology that exist anywhere.

Let me just show very quickly the goals they have set regarding alternative fuels and renewables. On the next slide, I will just conclude with briefly noting the most recent developments in the midwest. Like I said, they really see these policies as a means to stimulate economic development, job creation.

And just last October, they built on their existing process by putting together a roadmap that looks at how pursuing these policies and additional policies will result in job creation.

The key features of the roadmap is that they recognize the role or potential in the

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west and emerging clean energy features and really seek to build on existing regional strengths in manufacturing, in particular. And then tied to this, they have also released an energy security and climate (inaudible) roadmap that came out around the same time that gives us more detailed policy recommendations for achieving the goals that we saw in the last few slides.

So this is really a very broad kind of full-sector approach to these problems. And I think I will wrap up there for any questions people might have.

MR. VAL MARMILLION:

Thank you very much. I'm struck by your comment that regions know best what works for themselves. I'm struck by Sidney's opening comments about the uniqueness of our place here, these four producing states.

And how do you accommodate the current dialogue in this region right now that these states are going to suffer under most of the policies, because the region is not treated as

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unique, as the source of much of the energy that's produced in the country? How do you accommodate that -- that issue? And you also had some heavy, heavy environmental issues, like coastal restoration, which we would love for our science community to tell us if that should be part of the regional policy. That includes the carbon issue.

Do these come together in a region? Do we, you know, make a special package that doesn't follow, you know, everything we have seen? That keys off of what you are saying, which is, you know, we know best what to do in our region and we need to get on with it.

MR. PAT HOGAN:

Yeah, I think those points -- that points to a lot of perils that this region and especially this process had with the midwest and what they have been doing.

The midwest really -- a lot of the states felt they were in a very similar place. They felt they were being ignored, their needs were not being met by the policies that were

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being discussed across the country and in Washington, D. C. That was a big motivator on getting together and really talking about, you know, what they wanted from climate energy policy.

So in the case of the midwest, they have a heavy emphasis on coal carbon capture and storage development. Recognizing that, you know, we're not going to flip a switch overnight and get rid of our existing energy base. Fossil fuels, especially coal and oil, are going to be part of the energy mechanics for sometime to come regardless of what happens with climate managing policies.

So the midwestern states recognize this and built that into their policy design. And I think there's a potential for something similar to that in this region, that they're addressing their energy problems (inaudible). It's a very broad portfolio (inaudible) over several decades.

And it's possible to participate in that and take climate change seriously and

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address that at the same time. In addition, I think, like I mentioned earlier, these major existing initiatives are primarily focused on mitigation. They definitely take adaption seriously.

But I think an unified, strong, detailed regional approach to adaptation would be something both unique and really powerful. If this region put together a package that included something like that, I think it could give them a very strong voice.

MR. VAL MARMILLION:

Other points?

MR. GARY SERIO:

I'd like to ask Janice a question. You talked about the effect of the states participating (inaudible) to get an agreement on what was in and what was out classified within a renewable standard? If so, was that difficult?

MS. JANICE ADAIR:

We actually have left a lot of details up to individual states. Even with the design

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of our cap and trade program, a lot of the details will be left to individual states, because we recognize the ultimate political process used that we have to go through.

So we have certainly an overarching policy that states any problems that

(inaudible) figure out the best fit for them it. And that's something that I actually think has made it extremely workable. And probably one of the reactions that a lot of us has to what happens in D. C. that I think somebody used the term earlier this morning as a cookie cutter approach. We have the same, exact feeling.

And we also felt like we weren't being paid attention to in the national debate. It wasn't reflective of what we wanted or what we thought we needed. So I think that's part and parcel of what comes with regional efforts in trying to pars out where you need some flexibility and provide you with the opportunity to build a case for why you can still achieve the overarching goal and within

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the design that you have for your own area.

And that, I think, is really important and one of the things that -- one of the -- something that would just be ideal is if as states some -- any number, any mix of states that perhaps on the surface would seem particularly divergent could find a way to come together to find common ground. Because I don't think that's going to come out of Congress. And if -- that's a profound statement.

And I agree with Patrick that focusing on adaptation for a region like yours, there is a sense to that, but I would just observe that -- that the very next question then, is, well, so what do you do about that, and that brings you back to you've got to do something about the greenhouse gas emission.

Alaska is an observer in WCI. And while they don't participate all that often -- Alaska is my home. I have just been in Washington a few years. And I have gone back up to Alaska to talk with their groups that

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are working on greenhouse gas emissions, and they grapple with the same thing. 80 percent of the state's revenue come from oil production. They don't have any other broad-based taxes in the state and they have huge economic needs. So they're looking at this in terms of, God, you know, what do we do. We reduce production. That reduces their revenues. And they don't have -- they don't have the mature economy like you have down here to even think about a way to make up for it.

But they're really trying to address

that issue. And part of what they're looking at is kind of that highest best use for the oil that they have. Instead of using it to power every vehicle, instead use a variety of ways to power your vehicles, whether it be electricity or, you know, you can get Governor Schwarzenegger's hydrogen Hummer and, you know, whatever else, and then you have the fossil fuels available for some higher, better use, which in their estimation, actually

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brings in more revenue.

So you know it's some of that creative thinking that they're having to grapple with. They have -- some of the oil companies -- British Petroleum has been very active. BP is very active in the Washington process as well. They (inaudible) a refinery. Most of Alaska's oil is refined in Washington. So we have some connection to energy production in the nation as well.

But that's where just trying to pull together different viewpoints in a setting where people can really brainstorm and really think through a lot of the what ifs and how would we, I think, can be so beneficial.

MR. VAL MARMILLION:

Robert.

DR. ROBERT TWILLEY:

Yes. It's very interesting listening to this and having discussed this within the America's Energy Coast for several years now. I really enjoyed listening to this imperial we. Who is the "we" in these regional

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settings? Is it -- you know, you say there's got to be some starting point in any of these regional initiatives. So who is the we?

In a regional climate setting, is it the state -- you know, the government getting in and saying we are going to build an initiative? Is it congressional bodies that say we've got to do this? I mean, how does it get started?

MS. JANICE ADAIR:

Within WCI, and actually the Midwest as well, started with something that all the governors sort of -- the staff wrote it up and the governors signed onto this. So it's not exactly an executive order, but it sort of looks like one that the governors say that sort of we, the undersigned, we're this, we're that, we're this other thing, and we're going to direct our staff to go forward and do these things.

And they all signed onto it and that's been the marching orders then for the staff. Some of the folks come from governors' offices

at the table, the people who are sitting around the table. Some come from an energy office. We have representatives from most of the environmental agencies. We have commerce or trade, you know, whatever that might be in a given state or province.

Most of the jurisdictions in WCI have two to three representatives. California brings a herd. And then, you know, states like Montana, Manitoba, again, a small province, they just have one. We have a whole structure of committees. We have outreach to groups. We don't have private participants because there was a concern that not every voice would be equal.

So it's the states and provinces that do the negotiations. At least part of our meetings are open to the public, whoever wants to wander in. But then all of the information that we develop, all of the drafts, all of that going out to the public for review and comment. We have stakeholder meetings, webinars, teleconferences.

Before Congress started to act, we had a lot more activity. While the House was debating the bill, we were sort of yesterday's news. Now, the interest is starting to pick up again. Does that answer the question?

DR. ROBERT TWILLEY:

That answers it. I guess that's similar to the Gulf Coast Alliance, if we did something on climate, it would be quite similar. I think my last comment, real quick is that I couldn't help but think that with this mitigation and adaptation, then what we really might consider is that we not only start talking about carbon with the midwest, but we talk about sediment. Let's make a deal.

MR. VAL MARMILLION:

We will wrap up with the general discussion for some of these topics and, Maura, if we can just -- can you hold it to that. Because I would like to get this other panel in and we'd like to end around noon if we can.

Tom Peterson with The Center for Climate Strategies. Tracie Sempier from Mississippi-Alabama Sea Grant. LaDon Swann,

Mississippi-Alabama Sea Grant. And Julie Harrison with the Southeast Energy Efficiency Alliance. And this topic is Prospering in a Carbon Constrained Economy and Adapting to Climate Impacts.

MR. TOM PETERSON:

So we have been active for the last several years across the United States helping states with the development of comprehensive climate action plans and other forms of technical assistance. We're also working with all six of the border states of Mexico and we're helping the Chinese provinces right now.

A interesting story, and we'll circle back to it because in China, each of the governors for the next five years will be required to meet two goals. One is an emissions reduction goal and the other is an economic growth goal. And so we're sharing experience in how states in their state course

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here have also addressed these dual objectives.

And so that really is central to the work that we did with the southern governors this last year. And I'd like to thank Jeff for inviting me to be here today. And also Entergy was one of the many stakeholders we have worked with in the south during our process in Arkansas. Pew was a great participant in that, and we really appreciated all the help you guys provided.

So let me zoom in, if I might, on what these southern governors asked us to do. They commissioned us last year to do two things. One is a regional economic study of the potential impacts associated with climate actions in the SGA region. And the second thing they asked us to do was a meta analysis of a wide range of different studies that were crossing their desks that were also estimating the cost of climate action, either in their state or the region, and they wanted some help understanding why they were hearing such

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dramatically different things all about the same issue.

So a couple of backdrops are very important here. This is a governor-run initiative directly with the governors, directly through their offices. This was not an agency level initiative. And when we did the presentation, for instance, in Williamsburg in August, 11 of the 18 governors were physically present. So everything we did

was at that level. The nature of these discussions as a consequence are a bit different than we have seen in other regional initiatives.

This was based on an initiative that Tim Kaine, Governor Tim Kaine from Virginia, launched. He has since been replaced by Governor McDonnell in Virginia, but Tim really was the lead convenor for this initiative.

So let me dig into a couple of details here. And what we -- what I'm going to do is show you the results of this analysis. And there are some reference data here you can

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circle back to. I won't spend too much time on all the details.

But the bottom line was one of the really important requests that the governors made, as we worked with them, is that they wanted to understand the views of their stakeholders in some very organized and very fact-based, objective, analytical way. They were very, very uninterested in hearing the views of institutions and their perspectives on the issue.

And so we had worked with five states previously in the SGA region, starting from Arkansas, Florida, South Carolina, North Carolina, Maryland, and then provided some assistance to Virginia as well, and worked with better than 300 stakeholders over a couple-year period to do that, to go through a formal step-wise, fact-based, consensus-building process. And that resulted in the generation of climate action plans and then specific recommendations within them that covered over 200 specific policy actions that

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were fully analyzed that had gone through this very intensive, formal, public decision process.

So the starting place was the results of those plans. And they wanted to understand what we could learn from them if they were to be applied regionally. 16 states, two territories. So the SGA region's 40 percent of U. S. population, over 50 percent of U. S. energy, 40 percent of House votes, a third of the Senate. So it's a pretty important region, and it's a big one. It stretches from Texas, Maryland to the U. S. Virgin Islands, Puerto Rico.

So they wanted some notional understanding of what would this look like at a region level if we learned from these five

efforts and stretch them out. They also wanted to know what these would look like for each individual state, because a number of them hadn't developed climate action plans yet. So part of what we did was develop customized cost curves for every single state and territory that did not already have them, which they have and they were provided privately to the governors for their own use.

But publicly, we provided aggregate information that I will share with you. And the way we did this was, as the first order of business, updating the plans that had already been conducted. A couple of key things have happened of late that change the numbers. First is a recession and changes in economic forecasts. The second are changes in energy price forecasts, which are always fluid. And the third are recent actions, whether they're at the federal level or at the state and local level.

Now, we also know that there are a lot of private sector actions that have occurred in the private sector in advance of markets and policy, and a tremendous amount has actually happened in the south. And this is one of the underappreciated realities of this region is the degree of private sector activity.

So we did an update based on all of those things. So then we went through an extrapolative process, which I won't bore you with the details, but it's a modeling process that used 37 different factors that are able to tag unique characteristics of each state or territory and unique characteristics of the sectors within them so that this base of information can be extrapolated out.

One of the things -- and that process, by the way, that whole analytical process was developed jointly with the governors and with their key staff. So we really built this specifically at their request for them. The isolation of the factors, their application and all that went through this joint process.

One of the key things that we learned along the way is that 23 major policy actions were responsible for over 80 percent of the greenhouse gas emissions reduction potential out of these plans, so we focused the analysis -- let's just call it like two dozen big ticket policy actions, recognizing that

there's another bucket of smaller things that are important for other reasons and are included in the state plans. But we did that simplification.

Let me also just say that this was an interesting gathering that we did in Williamsburg. In addition to having most of the governors present, our presentation was preceded by a security analysis by former Senator John Warner and Major General Richard Engle from the U. S. Air Force, who is with the National Intelligence Climate Change Council now.

And that's available on the SGA website. You can see what they did, but it was essentially framing this issue along security lines and providing an understanding of how this would translate into a security analysis with respect to climate change impacts and energy and economic security impacts that are associated with it.

So we framed the discussion with that, and then went into the presentation of the

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material that was developed through stakeholders, through open public fact-finding and policy development process.

One example of a state that we used of the five is Florida. These are on our website, Climate Strategies dot U. S., and like the other states, they involve this portfolio of actions that were converted on a microeconomic basis to cost curves and also to what we call the good, old-fashioned (inaudible) alligator's jaws.

And in Florida, you can see a bunch of lines and the top line is the emissions trajectory and the bottom line is the achievement of a planning process, and a bunch of lines in between show the emissions actually have come down already in Florida associated with particular executive orders, laws, and other actions.

And so we have that kind of depth for each and every one of these states. What we also have, and I'm going to comment on the national version of this a little bit later on

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is macroeconomic analysis in some of these states that isolates for each of the individual policy recommendations their impact on jobs, income, employment, value-added investment, the prices of goods and services, including energy, market share-ships, distributional impacts, a whole bouquet of

things that fall into a bundle of secondary or macroeconomic impacts.

Now, we didn't do that for the southern governors, but we did it for a couple of the individual states. And so we have an example here that is from Florida. And in Florida, it's interesting that most of the economic -- macroeconomic benefits from that plan which were quite substantial are associated with the renewable portfolio standard. And within that, most of them were associated with solar power.

So solar emerged as a huge issue in terms of both emissions production potential and in terms of economic growth in Florida. And that's not the same everywhere else. It's

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unique to Florida. But the process by which that is done is something that does now exist, capability exists to be able to create these customized policies and to be able to assess their economic expansionary effects. And they're not all equal, but Florida is a really great example of that. And then solar is one of the best examples of all.

We see other examples. Just so you know, in North Carolina, we did similar work. The graph on the left is a series of response curves for energy efficiency actions proposed by their group. And this -- I think; I can't see it -- is probably the income response for what we found. And the first thing was for energy efficiency opportunities. When you run the macro numbers, in North Carolina every single one of the options without exception, net gains on jobs, employment, and economic growth.

The graph on the right is cellulosic ethanol. By far, the biggest employment response of any action by any of the states in

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the south. And you can understand why it was a consequence. There was so much focus on cellulosic ethanol in the region as an economic development opportunity. So, again, the tools exist and we have now a pretty good set of numbers to indicate that there are economic development opportunities here. We also know that some of these things don't work as well others. And some of them actually have the opposite effect.

In terms of the process, it was all customization. This was not cookie cutter. We have heard a lot today about the states wanting to exercise rights to

self-determination in everything they do. And so the point of these processes was to gather stakeholders working with the state in partnership to make a series of decisions that would customize their action plan: Which policies. How are they designed. Which instruments would be used. Exactly how they would analyzed, right down to the data, sources, methods, assumptions, et cetera.

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A repetitive process we went through many, many hundreds of times to develop these, but it's the process of what we call mass customization. And it results in a policy portfolio, which is what these climate action plans are. A combination of actions within the sectors that would be implemented by specific policy instruments. And it's not an one size fits all.

So part of what they did and where most of their conflict resolution occurred was figuring out how to do these things exactly right to fit their circumstances back home. Parenthetically, we are in the process of -- we have done a couple of adaptation plans. Maryland being a great example. I'm in the middle of doing a full one for New York right now. And we're in the process of converting that process very much in parallel to what has been done and what we have done on the mitigation side, comprehensive step-wise, fact-based using a series of methods, et cetera. So just FYI on that.

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So what are some of the results in the region? We did an inventory forecast. Short story is the emissions dominate that coal and oil. We took a look at the changes in emissions over the last couple of years and they have come down. Turns out they have come down really significantly. We will see in another graph in just a moment.

And now a reminder, when we drew the data from these five state plans, we also have a database of 20 state plans nationwide that have over 900 different policy options in the database that have been fully analyzed that we can draw upon. And we have done a national version of all this that will be available in the month of March.

In terms of the 23 big ticket items -- this may be hard to follow, but it broke down into ag, forestry, waste, transportation, improvements, residential, commercial, industrial, and energy supply and power. It's

a familiar list, not surprisingly because as stakeholders sat around the table and worked

to find the things that they could build the highest consensus around, things that would have the lowest costs and the highest benefits. They wanted the things that were well understood and had expansion potential or gap fillers that they thought could be done in a practical fashion.

And so this list includes those things. And if you look at the far right, not a surprising list here, and the same we found exists nationally. Just to shine light on one, for heat and power. Coal plant efficiency improvements in the way of power, renewable portfolio standard, carbon capture scores, and reuse of nuclear power.

And so just to give you a flavor of the isolation on the really big ticket items here, that cost that came out of these analysis, the really important take-away here is that half of this stuff was below the zero line, which means on a net basis, it saves half of it on a net basis expense. The composite of it is break even or less.

And we broke down the cost per those five additional sectors. They're not all created equal. They perform differently and have to be handled differently in terms of policy instruments. The orange line is basically the energy efficiency series of actions, which are residential, commercial, industrial sector. The purple line is transportation. There's a green line for ag, forest, green waste. And there's a dark blue line that's the heat and power. So, again, not all sectors are created equal. Not all states are created equal.

And then we have data for each and every one of these which shows -- again, the cost curves are the visual on this. The cost per ton and then the emissions removed for each of these actions. And so we've got one batch, this first slide, which on a net basis actually saved money. And it's a long list.

So one of the big discoveries or one of the big points of conversation with the governors is the notion that of this set of

things, about half of them potentially can save money and save energy.

And there's another set that require net spending, but are important not only in

driving emissions production down, but providing other co-benefits, particularly on the energy side. And we'll circle back to this in just a moment.

So we didn't have this graph at the time. We put this together just before our work in Copenhagen. But this is a series of lines that show U. S. emissions trajectories as calculated by the Department of Energy, starting in year 2005, went all the way down to the most recent one in 2009. They have dropped like a rock.

So emissions have come down better than 20 percent overall. And about 500 million metric tons or so of that has come down specifically because of actions that have been committed to by states. So back to the idea that emissions are coming down and that the update of recent actions is important. We can

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actually measurably show how much of these emissions trajectories have come down over the factor, so it's really, really significant.

But we're in a very, very different place today than we were just a couple of years ago in terms of the emissions profile than before. And so the scale up analysis that we've done at the national level, which shares out how this could actually -- how these different actions in the sectors could actually get overall national emissions down. I won't dwell on that for the moment.

And then just to let you know, at a national level we have run not only a full, 50-state version of this, but we have also done a full macroeconomic impact analysis, not only in aggregate, but for every single one of the individual actions within that. So, again, in terms of the ability to pitch it as designed and implement actions that are expansionary from an economic standard, process the tools to exist, we've got a pretty good body of information now of how that can

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be done.

Another very interesting thing that shook out of this is an understanding of who has to make all of this happen. And this is a -- this is based on the recommendations that came out of the state plans in terms of the level of government that would be most appropriate for the implementation of these individual actions. And you can see not an even divide, but a pretty big divide. We see the purple is shared state, federal. The

green is primarily state. And the red is primarily local or shared local, state.

So one of the things that we have found repeatedly is that if you want to keep the costs as low as possible, the co-benefits as high as possible, and actually let states tailor make things that work best for them, you need to allow them to work at different levels of government as well as picking and choosing and customizing within the sectors.

And I think that's it. Let me just add with respect to the macroeconomic story. One

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of the things that is really important to understand here in this region is the coal issue. And when we have done macroeconomic analysis of energy supply issues and heat and power with electricity predominantly and we've looked at all four of the major actions that have come not only out of this region, but every other region as the four big ones that try to tackle that issue, it's the coal repowering efficiency, either renewable standard or a payment system, nuclear, and then carbon capture. They have negative effects. They are not expansionary based on the configuration of these options that has come out of these exercises.

Now, to be fair we didn't have these macro numbers to be able to cycle back through the state work process to adjust these policies so that they would work better from a macroeconomic standpoint. And that's possible because each of these is a ball of clay that can be shaped.

But just so you know, and that's

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critical to this region, what's going on, we think, underneath this is that we have a lot of low cost coal in the system. And the price tag for these new approaches or alternative approaches, their costs are high enough in comparison to coal, that that relative difference outweighs the better multiplier effects of shifting to the new and alternative energy sources.

And so the consequences that you raise the price of goods and services throughout the economy has a drag effect. It counteracts the stimulus effect of moving in these other directions. Now, there's a lot you can do to shrink that differential and turn that around. But it's not surprising as a consequence that in this region and in every other region in the country, the role that low cost

electricity based on coal generation plays from a macroeconomic standpoint is very, very dominant and very, very sensitive.

It is particularly sensitive in this region because everywhere we have gone and

everywhere we go, every state wants to have a production-based economy with strong manufacturing. And one of the sensitive points on manufacturing is keeping electricity prices low enough to support that.

And so the challenge is how do we do that while we get carbon out the system. We're in the middle of this right now. Kentucky, where we launched comprehensive energy and climate planning process recently, highest footprint of coal per capita of any state in the United States.

But where the real story is in Kentucky, as I think it is for most of the rest of this region, is manufacturing. It's an additional place to go, and the question is how do we grow out manufacturing. How do we grow out a production-based economy and still do it while we're reducing emissions in the other sectors, and, particularly Jeff and Serio, in the electricity sector where this is such an integral part of the economy of the south.

So this is the next step that came out of the SGA work, but very much, I think, one of the platforms things that they wanted to be prepared to be able to deal with. Thanks.

MR. VAL MARMILLION:

Thank you. Jeff.

MR. JEFF WILLIAMS:

You know, I think that coal is both a challenge and an opportunity for this region. There's a tremendous capacity for geological sequestration. We know a lot about the subsurface down here. I've heard estimates just offshore in the Gulf that you could sequester over 200 gigatons of CO2, which is 100 years of U. S. electrical supply. And also the opportunity to use the CO2 in the interim for enhanced soil recovery is another, I think, opportunity for the region.

The kickers are how do you get the cost of carbon capture down and how do you remove some of the uncertainty about whether it's going to stay there and what are the risks and whatnot. But what may be a challenge also may

be giving us an opportunity.

MR. VAL MARMILLION:
And the four states that we are talking about is much tighter than, I think, the region you are talking about where you are talking about coal.
MR. JEFF WILLIAMS:
Correct.
MR. TOM PETERSON:
And this region, one thing this analysis didn't do was go deep on oil and gas. It also didn't go deep on Gulf Coast issues. It went deep on Atlantic Coast issues just because of the configuration. Now, we know from work in the west, we know from work in other -- in both the southwest and in the Great Plains and northern, western states, et cetera, how important oil -- and all over Alaska -- how important oil and gas can be. It reduces -- it broadens that supply curve out and it changes things, but it's another thing that needs to be added. And certainly these four states will be unique in that

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regard.
When we were working in New Mexico, one of the first things we found when we did the inventory forecast is that 20 percent of overall state-wide emissions were just from the oil and gas sector. And the vast majority of those emissions were, believe it or not, from leaving the hole unplugged for a period of time to let it clear before we plug it, you know, on the gas wells.
So in terms of best practice, it's a baseline and we think immediate focus in terms of doing things that will help correct that. But going through that analytical process is at least doing an inventory of where your emissions are coming from is a really critical starting place.
MS. SIDNEY COFFEE:
Well, just a little exchange. Because I was sitting here thinking, okay, how does this translate to these four states because of the high concentration of oil and gas refineries that we have here. I mean, our set

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of issues is entirely different from the rest of the region. And how do we get to the bottom of that, because what, you know, a really heavy coal-producing state could do is far, far different from what is even available for us to do.
MR. TOM PETERSON:
Right. And so within the region, you

see a combination of major coal producers and then other states that produce none whatsoever or virtually none but use it by wire extensively. So you just do that; that makes your region. I think the other thing is is it's absolutely the case that the oil and gas issues, although there's a little bit of that, you know, from our work in Arkansas, for instance, and elsewhere that would be more dominant. I think realistically what they do did is they expand this out of it, but you still have a tremendous level of overlap.

If you go through each of the items in this major list, they pretty well apply. I spoke at some length to Governor Barbour, for

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instance. And one of the things that's unfinished business in Mississippi is changes to building codes post Katrina that got stuck in the legislature but would accomplish multiple objectives. So that's very much one of the top things that came out of this and an example of quite a long set.

Statistically, out of the 23 major actions, when you pool this all together, the reality is that on average, every state locked onto 17 of them. So there's some subset that are really exactly right for them, but the composite, when you applied it out, you know, you drew out the whole 23. So there's still, you know, a lot more tailoring that needs to be done.

MR. VAL MARMILLION:

Thank you. And we're going to move on. And I'm just going to let everyone know that we will probably go over, a little bit over, you know, in our question and discussion here. If anyone needs to leave, obviously, please do. We are going to get through our folks

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here on the panel. Dr. Sempier and Dr. Swann.

DR. TRACIE SEMPLIER:

Thank you. We're going to be sharing this presentation about how local communities are adapting and looking at that from an education, outreach, extension, which they did, and letting you know what is going on at the very local level.

And one of the things I think is important to mention is that a lot of the work that we do is -- really cannot be possible without the different partnerships that we formed in this region. So my particular position is a cooperative agreement between our National Coastal Storms program and the

Mississippi-Alabama Sea Grant, and we're able to sort of expand our regional efforts to include the other Gulf of Mexico states through the Gulf of Mexico Alliance. So through these states we're able to disseminate some of our information.

So the first line that we have is -- as many of these things have already been

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mentioned by those around the table, and this certainly is not an exhaustive list, but when looking at our local communities, there are many barriers that they face in terms of trying to adapt to sea level rise and to climate change.

These are some of the major ones that I hear on a pretty much daily basis. The cost of resources at the local level, for being able to put reason to making your hazard mitigation plans or the comprehensive plans.

Not having enough staff or having a lot of staff turnover is difficult, especially when you're trying to continue the dissemination of information and continually educate people about sea level rise.

So I will skip down to education, because it's already been mentioned, and rightfully so. In many cases, it's just convincing others that sea level and climate change are real. And although we have come a long way in that, I think you will find as we go into a lot of our local communities, that

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the predictions, that all the science behind it is still very confusing to people and is still presented in a way to where they feel like there are some uncertainties in the science. And so some of our communities, I think, have some doubts and disbelief. And I think that's a hurdle that we need to be aware of and know that we're still facing.

Also a changing political environment has been stated by a lot of our local communities. Just educating some of the local officials, the new folks that are coming into the office. That's always changing. And so that's a difficult reality for them to face. Especially when they're trying to do good things and take mitigation measures in their community. They're always faced with how to present that to the next folks that are coming into office.

And as has already been mentioned already today, the disconnect between the information, the research that's being -- the

tools that are being created, all of this great research and the end user. There does seem to be this information gap. When communities are asked to adapt to climate change, they want examples of how can we do this. What do we need to do.

And although those examples in other states are always nice to have, someone here in Alabama doesn't really want to hear about how the state of Delaware is adapting. They'd really rather have some examples of what's being done here.

And generally what happens when they ask that question is they're given a report, you know, a book, a big paper, and this is not exactly what they're looking for. And so they want something that's practical, on the ground that they can use and talk to you and interact with you right then and there. So these are some of the barriers that communities face, and all of you, I'm sure, are aware of these.

And that brings up a whole other list of needs, and one that again, just to reiterate, that there is this need for a consistent message among all of us to those local communities. So what they hear and see in the media or they hear and see from maybe a scientist that's visiting their community, all of those are education and outreach, and the extension person needs to be a consistent message.

If we tell them what the rate of sea level rise is, then who would like to hear this. So the same from all those different entities, and that's something that we may not be doing at this point.

Also a need for confidence intervals in our models. They want to know, you know, basically a risk analysis. So how sure are you that this is what it's going to be. And they would like for that to be also a consistent message.

And then in looking at some of the tools that we're going to present, many of the stakeholders that I've worked with have talked about how the tools that we currently have are not specific enough, are not too scale levels. They need somebody who is going to capture it at street level so that they can take these to their local planners. They can incorporate these GIS planners into some of the mapping that they already have. And they would like

to be able to see it on a much more defined scale.

And then, finally, as some of the tools that are in progress right now are created, there may be one tool that talks about sea level rise and another tool that talks to them about where their critical infrastructure and facilities are located and another tool that, you know, helps them to plan for something else. And what they would really like is to have all those things in one place so that they have one thing that they can go to and use that in their planning.

And, of course, as has been mentioned earlier, the accessibility of that and access to get to these tools.

So I'm just going to tell you about two tools and then I'm going to turn it over

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LaDon. And there are a couple of things that we have been doing here on the Gulf Coast. And one of the things that we have been doing is trying to help communities establish a baseline for which to measure their future resilience to in this case coastal storms. And we call this our resilience index.

This is a very simple document. You will see that it only contains six sections, but what it does is start a conversation that is very much needed, especially in some of our smaller local communities. And what it does is gives a community sort of a self-assessment. So they take a tool that's meant to be used just within their community, and to take a look at, well, where are we now and, you know, where are we going, where do we need to be a year from now, six months from now.

And in this particular document, the way that the pilot tests have worked for this is we've had these roundtable discussions where we've sat down with local communities

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and we've asked them to answer questions about what their storm record -- what their bad storm would look like. And then what would look worse than that. What would be worse -- you know 50 percent worse than this. We have them actually establish a scenario based upon events from -- based upon the worst storm.

And then we ask them to look at where their critical infrastructure facilities are located. We ask them what would happen in that worst case scenario. You know, we get them to talk through this sort of a series of

questions about, okay, now we know where our vulnerabilities are. We're more so aware of that and what actions can we take to help reduce our vulnerability in the future.

Then we move on to a transportation section which talks to them about their priority roads and their evacuation routes, things of that sort. And it's a very easy yes-or-no question, but it does provide a conversation. And the process of this is so important. So although they get a

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quantitative score at the end, actually going through and asking a lot of questions with the right people in the room, all hearing the same thing, has proved to be invaluable for the communities in which we've worked.

The third section talks about their community plans and agreements. Do they have memorandums of understanding with other communities. You would be really surprised how the folks right next door may not know of something, a really wonderful example of something that a community next door is doing. And so part of this process of facilitating this is to make them more aware of what's happening locally and what they may be able to take from other communities.

The mitigation section talks about mitigation from both an ecological perspectives, of things like beach renourishment. But also from the perspective of acquisition of repetitive loss structures, for instance. So it sort of runs the gamut of different mitigation measures that the

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community can take.

And then we have a business plan section which seems to be the most difficult for them to fill out. And it sort of forces them to be very aware of what's going on in their local communities and how prepared some of those local businesses would be to get back up and running.

And then finally I have a social system section which asks those questions about their civic organizations and asks about their church networks and are those coordinated efforts. And, if so, how does that work in their area.

And then at the end they come to compile the score together and they look at if they have this low, medium, or what we call a high resilience. And if they're very weak in one area, then we sort of go through and talk

about, well, what can we do to address that.
So, as you can see, there could be lots of variables that could be added to this. But in some of our local communities, just having

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asked those questions is really important.
And just to give you an idea, some of the people that might sit at that table might be your emergency operations person, and it could be from the county if they decide to participate with the city. It would be your police officers, your fire chief. In some cases we've had the mayor there, your (inaudible) managers, your public works director. All of these folks that on a regular basis work together, but may not have addressed some of these particular issues as a group. And so we found that to be a really effective tool and have gotten some good feedback.
I'm just going to show you -- these are the pilot communities. We have been to 16 different pilot communities throughout the Gulf of Mexico and collected this qualitative data from the index and put them into a matrices and we're using that to help us to strengthen the document and then to be able to provide that document to all of our local

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communities.
And I can tell you that all of these communities that have participated have given their time generously and have all agreed to give their -- share their case studies to help other communities to sort of start or facilitate that communication and dialogue that really needs to occur not only within their community but outside of their community.
The other two I was going to talk about today really quickly, and I just have this -- I forgot to tell you that there is a tool that goes along with the index, because some of our communities do not have all of this GIS capability that some of our larger communities do. And so Mississippi and Alabama, we do have a tool that they can use to help locate those and answer questions on the index. And we're hoping to expand that because we're finding that the types of resources and the amount of resources have been very different across communities.

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I know that earlier we were talking about the uniqueness of our area. But even

within our communities, there's a lot of uniqueness and differences in what they have and what they do not have.

But the other tool I wanted to just take a few minutes to talk about was one that has been created in this past year as a joint project between the USGS, NOAA, and the U. S. Army Corps of Engineers, and this is called a sea level rise viewer. And this takes the coastal areas of Mississippi and Alabama and allows you to overlay the Katrina storm surge.

It allows you to overlay a three-foot and a six-foot sea level rise projection as a visualization tool. And there's an address finder so you can look up a particular address with this, go down to the street level. Let's you do flood frequency predictions. It lets you overlay population of the area. And then you can look at in several different ways, like through the satellite imagery that you see here. You can look at through a street

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map, a topo map, or a shaded relief map. But the blue here indicates the areas that are vulnerable for potential flooding into those levels of sea level rise.

And last March we held a stakeholder session where we had members of various private sector, state, federal, local stakeholders to take a look at some of the issues surrounding sea level rise and ask them what they would like to see in a tool, and then we generated this tool is a result of that.

And then last October we invited them all back again and asked them for some feedback on how to strengthen this. And it was interesting to have folks from the insurance field there and to talk about how you could add wind and other things into the same viewer, again, hitting multiple variables but into one tool so that you could see the big picture. Being able to shift predictions. You know, what would have happened if Katrina had hit this far east or this far west. And

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just having that functionality was really important to the audiences that we were dealing with.

So I have put the address up here if any of you are interested in taking a look at that viewer and offering feedback. I'm going to let LaDon talk about the other projects we've got going on.

DR. LaDON SWANN:

Advanced technology always challenges me, though I have been working with it for a long time.

I have spent the better part of my career teaching adults one topic or another. And one thing I've learned is that teaching is mostly listening and learning is mostly talking. I think that really ties into a couple of things that we are looking at doing.

One, first is a climate community of practice that we will be rolling out in April. We have been planning on this for the last six or eight months. This overarching goal for this is very simple. We want to see every

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community that has a comprehensive plan to include some sort of climate adaption section to that plan.

So that's -- that's difficult. We believe of a goal, to achieve that goal, may be very difficult. I mentioned earlier about the different states of change. And, you know, one of things that we're struggling with is finding communities right now in the Gulf of Mexico that are somewhere beyond contemplation. They are actually planning or conducting some sort of action, but we have found some. I am sure there are others out there.

So we believe that working with the research community, working with extension, outreach, and education staff from not only Sea Grant but from the many programs that mirrors others, university programs, that we provide the tool kit that will allow them to make the decision to begin that contemplation and even planning process.

Some of the measures assessed are

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really internal and external. Even the outreach staff are at different levels on the states of change. We have professionals in the Sea Grant network across the Gulf that probably don't believe that sea level change is happening. So it's pretty hard to ask them to go in and work in a community right now, when they may not belief it themselves.

So some of the -- another goal is to provide that sort of in-reach to them. Provide them with the right sort of tools that they can use themselves, internalize, to make a decision. And then the second part, as I mentioned earlier, is to go in and work with those communities. So that's the one.

I think this community of practice

brings together a lot of the things we have been talking about: Regionalization, making it place based, those sorts of issues that we need to grasp to get communities to where they need to be.

And, obviously, that ties in very nicely with the resiliency team of the Gulf

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States Coast Alliance as well as some of the other things that Sea Grant and other NOAA-funded programs are doing.

I will mention this, that we all saw that the NOAA drew certain analysis climate service. Sea Grant has more focus here, as we are healthy coastal eco systems, as a resilient coastal communities, safety and sustainable seafood, and sustainable coastal communities.

There's been great debate on whether we should add a climate focus team, but if you think about those focus teams that we have, focus areas, you will realize that climate cuts across each one of those.

For example, one degree of sea level rise over in the Cedar Key area, where they raise a lot of hard clams, would probably -- in fact, definitely would affect their growing season, but also would affect where they might grow clams. So climate change is pervasive, and the things that Sea Grant does are things that we all do.

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So if you look through our strategic plan, you probably won't see an area for climate and that's because it cuts across everything.

Which really ties into the second one. Ms. Coffee, you probably recall that you were asked to represent America's Energy Coast on the Climate and Resiliency Regional Panel. That's a panel Gulf-wide, Gulf of Mexico panel, that's being rolled out by the NOAA Regional Collaboration Team. Sea Grant is helping to facilitate that.

I felt really good about this until I saw that one of the primary recommendations from California was to set up a panel. Someone did this. In Alabama and Mississippi, things that come out of California, we always take with a grain of salt. But I do think they got that right. So we're very excited about this. It does involve industry. It involves federal and state agencies, local agencies. It involves non-profits and universities.

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All right. Kind of give you an idea of what we hope to do. It's a panel that we want to use to improve NOAA's products and services that come from the Gulf of Mexico. We also hope that there is a secondary benefit, that this network and opportunity among those people to discuss climate resiliency related issues will have the benefit -- a benefit to those individuals as well.

That's really all I have to add to that. And, for the record, I did say that I didn't need to talk, that Tracie could do a fine job, and we're trying to overlay with Sea Grant being here today.

MR. VAL MARMILLION:

Thank you very much. Are there any comments at this point? We'll move on. Thank you for your patience. Julie, we're looking forward to hearing from you.

MS. JULIE HARRISON:

So one of the things I'm going to talk about today is -- well, in the brief time I'm going to talk about today is using energy

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efficiency to combat climate change and how -- what are the most effective policies.

And so I thought I would begin first by talking about exactly who SEEA is. We are a pretty young organization. We encompass the 11 southeastern states. And what's so interesting about the southeast, as Sidney was saying earlier, just in this region alone, there are so many energy resources. And then we've got Kentucky filled with all their coal resources.

But then we have states like Georgia that has basically absolutely no energy resources. Traditional. They have no national gas, no petroleum, and no coal.

So it is a very interesting region. We also, as I'm sure some of you know, have some water wars going on, based -- so much about water -- those water issues are based on the need for the water for power generation. And so it's a very, very interesting region and it's facing a lot of issues when it comes to power.

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So at SEEA, we work with state, federal, and local governments -- state energy offices, governors' offices -- and also we work with the private sector and utilities. In fact, I used to work at the Georgia State Energy office, and I read one of the early

drafts of Tom's research. It was very interesting and how it was -- gave comment on that.

Anyway, so going back to energy efficiency, one of the easier spans, as Tom was showing in his North Carolina slide was that energy efficiency cannot only combat climate change, but it also creates jobs and saves money. So it's a very -- it's a great all-around solution.

Unfortunately, most of the time when you say energy efficiency to people, their eyes sort of glaze over. Sometimes they back away. They get very bored easily.

And so it is a topic where education and getting the word out is very, very important. So recently SEEA has partnered

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with Georgia Tech and Duke and Oak Ridge and we have done an enormous research project about energy efficiency policies and which energy efficiency policies would be the most effective for the southern states. And we began by looking at over 200 different energy efficiency policies and practices. And we then narrowed those down to 12. And then from there we narrowed it even further down to nine.

And what we have done with these policies is we've tried to look at the ones that we felt were from a benefit cost analysis the best ones and also that we felt in the political climate and the economic realities of the south would be the most effective, would be the most realistic.

So what we found with these energy efficiency policies -- and I will get to the specific policies in just a minute. We found that there was a 1 percent -- you could reduce your energy consumption by 1 percent annually over 10 years using these energy efficiency

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policies. And you look at the graph, that top blue line is from EIA's reference case and their projection for energy consumption for the southeast.

And when I'm talking about that area, it's looking at the 16 states, not just the 11 states that SEEA overlooks. But if you looked to the energy efficiency policies, you can see that it keeps our energy consumption basically the same. And so that is a very good thing.

So energy -- and if you look at this. I'm not sure how well you all can see this. But the south is responsible for a lot of

energy use, but our potential is one of the greatest across any other region.

So energy efficiency policies that we specifically looked at are these. And we looked at -- we found that the most effective -- the area where the most, the largest change could occur from the energy efficiency polices was in the commercial area. And there were a couple of surprises that we found in some of the different areas.

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But in the commercial ones, tighter commercial appliance standards had the largest impact followed by the commercial retrofit centers. And we originally had another commercial policy, and there we had commercial building codes, but we found that since -- that with our modeling, it didn't -- the cooling and heating aspects canceled each other out, so we ended up taking that out.

But with the residential, we found that the most effective, largest one, was the residential retrofit and equipment standards. And then with industry, we found that the industrial process improvements were the largest chunks. So I don't know how much you all can see this.

But we found that in terms of both present and energy reductions actually decreases in energy is greatest in the commercial building and the least in residential buildings. And this doesn't mean that residential policies of energy efficiency don't -- aren't a good idea and don't work.

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We just found from a standpoint of the largest impact.

For example, we found that with low income weatherization programs, those have a large benefit. The costs, I think -- I think the benefits are two times the amount of public and private investment into that. However, that's only a small sector, because it doesn't do -- it only does low income. And so that's why it doesn't have such a large percentage when it comes to potential of the impact.

But, as you can see, if you look at the industrial area, the biggest one was the process improvements. They have the potential to generate more energy savings and assessments of planned utility upgrades or incentives that combined heat and power.

And then when it came to the commercial, the commercial appliance standards

are estimated to have the greatest impact. And then with residential, you'll see that retrofit incidence and (inaudible) standards.

This just shows the electricity and natural gas bill savings per capita. If you look at it, you can see the specific states. It's a huge chunk that can be achievable.

And then this is one of the -- these studies have been a three-stage process. And the first sort of study that came out was the investment in Appalachia, and that did not include Louisiana and Texas, but it did include Mississippi and Alabama. But we found that these are the jobs and the wages that can be created and generated by energy efficiency investment.

And then are there any questions or comments? I tried to fly through that. Sorry.

MR. VAL MARMILLION:

Well, I'd like to open questions now to this panel. If there are any specifics and then generally -- general comments about where we take this information, literally where we take it, this meeting that we will have in May, at the end of May to the America's Energy Coast's Leadership Forum, where there will likely be a report of this session and then recommendations for some regional action based on what we have heard and been able to find. So any comments that, just generally -- you had one.

MS. WOOD:

So I'd like to go back to the second panel and just ask. It sounded like in the northeast a cap and trade program has been completed; is that correct? And it wasn't clear to me in the Western Climate Initiative whether the cap and trade program had been implemented or if they were just in planning.

But I wonder what the experience is where they have been implemented regionally. What are the -- I mean, there's a lot of concern about impact to the economy and impact to businesses and such as that, but what is the experience that they're having in the northeast (inaudible) based on what you know?

MR. PAT HOGAN:

Yeah, well, so again the Regional Greenhouse Gas Initiative has only been up and running for a little over a year, but I haven't seen anything that's talked about

really noticeable, adverse economic consequences. I think if there have been any increases in electricity prices, they have been really minimal.

Part of that is due to a number of factors, including fuel switching before the program got up and running essentially and sort of unexpected changes in winters over the past couple of years. The initial cap is a little above what they actually thought they would need. So at the moment, the allowance price is selling fairly low, around three dollar allowance, and that will change over time. The real reductions don't really kick in for another five years or so.

But today I think they've found it's very successful from the standpoint of avoiding and (inaudible). And in fact by recycling those revenues back into things like energy efficiency, I think it's very

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reasonable to expect (inaudible) and realize cost savings over the next several years.

In terms of where the Western Climate Initiative is at, they've completed their overall general design -- uh-huh. Go for it.

MS. JANICE ADAIR:

The WCI program is not running and isn't scheduled to be until 2012. We will start with electricity in industrial sources and then bring in transportation in 2015. But only California and the four Canadian provinces have the necessary authority at this time to operate that program. The rest of us still need to do something with our legislatures to get that approval.

So most of us are looking at 2011 to do that, though we recognize that some states won't even come in in the very beginning. And it's different from RGGI. There's carbon dioxide from electricity. Ultimately, our some smaller greenhouses gases, all sources. So it's fairly (inaudible). And the other thing that's important is the federal

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legislation that is pending places a moratorium on all states and regional cap and trade programs. So should there get to be energy underneath either of those bills again, that's going to dictate what happens in the states that don't have authority.

And we will have to balance the pain of trying to get it with the actual ability to use it. If we're going to be suspended for -- I think it's seven years if we had

legislation. We will have a moratorium on it.
MR. VAL MARMILLION:
Your group, the carbon sequestration issues or the carbon (inaudible) issues with restoring coastal wetlands and (inaudible) are a viable option and what will it take to understand how viable it is to be part of a package in this region for addressing some of our carbon issues. Torbjorn.
DR. TORBJORN TORNQVIST:
Well, you bring up a very interesting issue, and we'll see if Robert agrees with me, but my take on this is that it's -- it's

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something that may have potential, but we know extremely little about. But it's obviously something that should be a very high research priority to better understand what is the capability of the coastal zone here on the Gulf Coast in sequestering carbon, and in particular what could we potentially do in the future on east coastal restoration to further enhance that.
Now, I certainly don't have an answer. My gut feeling is that coastal restoration could certainly help in sequestering carbon, but how effective would it be in the grander scheme is something I really don't know. But it is certainly something we need to know.
DR. ROBERT TWILLEY:
It would be very interesting to look at when you have a large delta and you have a geologic framework that Jeff was talking about, you really need to sum these up, because we need to have some real -- we actually took the Soil Science Conservation District data, all the organic matter, soil

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content across the state of Louisiana or in the coastal parishes and, actually, I think, took $12 a ton on CO2 and came up with about $150 million a year program.
And so it's quite substantial. That assumes -- that has huge assumptions in it related to what the potential is of soil development in this region. But it's something that I know that is in the state master plan that they're revising right now. And in the original plan to be in the center, that we that we need to look at in our region. And there's actually action moving forward to sustain those -- develop those numbers.
DR. TORBJORN TORNQVIST:
I agree with Robert that there's no doubt that there's an enormous amount of

carbon in the active soil throughout the coastal zone right now. I think the big question is how much of that can potentially actually stay there. Of course, there's a lot of cycling going on and a lot of that goes back into the atmosphere as CO2. The real

issue is going to be how much can we actually really capture and store away.

DR. GEORGE CROZIER:

I think it's a very interesting question and it also points out the differences between the states in the sense that Mississippi and Alabama's wetlands and coastal areas are miniscule compared to Louisiana's. And how that would be worked out, I'm not quite sure, but my reaction would be that carbon sequestration are two words that never occurred in Montgomery, Alabama.

MR. TOM PETERSON:

Of course, there's also the plant carbon and terrestrial carbon sequestration, and that has been a very important recommendation that has come out of some of the southern states and most other states in the country.

And I guess a couple of helpful things. First, the numbers on those options to protect land from being permanently lost or recovered, et cetera, are pretty favorable, both in being

low cost, and the macroeconomics of that are expansionary. This is net profit in terms jobs, growth, et cetera. And it gets to protecting the working land base, et cetera. Gets to protecting the energy supply source, for instance, in cellulosic and cellulosic ethanol. So there are a number of things that converge here.

It's also really kind of ground zero in terms of the United States for the protection of land carbon because the latest set of projections, business as usual, are that nationally, by, gosh, I don't know whether it's 2025 or some such, we lose 44 million acres of land -- of forest land permanently. 30 million of that is lost in the south alone.

So there's, you know, the notion of a 30 by 30 thing, trying to protect 30 million acres by 2030, but otherwise this number goes (inaudible). And, again, circling back to the prospering in a carbon constrained economy notion, those things actually can work economically as ways that are expansionary.

And I think it was noteworthy in Copenhagen for me the amount of unfinished business that was left on the table. That one thing that did get done there is the forestry -- the so-called REDD agreement. And it has an interesting history, which I think is important to keep in mind here. And that is when the forestry issue was first raised 10 or 12 years ago, when I working out in Kiev, the reaction was it's too complicated. All this business of land carbon and all that kind of stuff, they said it's too complicated to deal with. Lo and behold, now, it's the first international (inaudible) based agreement out of the gates that is now a part of the formal agreement by signatories going forward.

So they, you know, have really seen that this is something that can work. It's been nailed down at the international level. I expect that at the national level we're going to see a lot more support for this. The U. S. Geologic Survey is putting in place a national methodology for this and piloting

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around regions, including this specific four-state region, and other places in the country. So I would just draw attention to that as something that's emerged as a pretty opportunity in this region.

DR. ROBERT TWILLEY:

Coupled with that, when we did our Gulf Coast climate change work for the Ecological Society of America and the Union of Concerned Scientists -- in fact, this came out in 1999, 2000. One of the striking statistics that came out of that report is the private land ownership for forest in the southeast, which everyone knows. But also you combine that with the fact that in our delta, the coastal landscape that I just talked about is also privately owned.

So to really -- so the behavior of how you factor in carbon sequestration is going to be the economics that have to be translated to the private landowner and not the large, you know, corporate entities or federal lands or things like that, out in the west or, you

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know, other regions of the U. S.

It's going to be the individual, and that has huge opportunities, I think. Some people say, well, gee, how are you going to manage this landscape. I looked at it and said what a great opportunity. But you've got to get it on the individual basis and not

these big corporations.
MR. JEFF WILLIAMS:
I just wanted to kind of highlight what Tom was talking about and what you were getting at, because there's a real nexus, I think, between sequestration and adaptation that comes here, you know. You know, these wetlands are vitally important, giving us protection from storm surge, an integral, important part of adaptation. But it's also, I believe, a really important capacity for mitigation that will hold the overall cost of mitigation down.
We have looked at studies of what it would cost to do a cap and trade program without offsets, and it makes a big

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difference. So if you combine what needs to be done down here in the south with the need to mitigate, the need to adapt, I firmly believe that even if we're wildly successful in mitigating emissions, greenhouse gas emissions globally, that there are still adaptation vulnerability that we need to deal with down here. They're all integrated. Hopefully, it will be a lot cheaper to do the adaptation with the mitigation.
But I think it needs to be an integral part of the supply solutions that we have. That's a unique opportunity down here. If we could, you know, rebuild wooded wetlands, get carbon credits for that, provide storm surge protection, that's a real (inaudible).
MR. VAL MARMILLION:
And what recommendations do any of you have in the next three months as we look at this. Really, what we're hearing is that this region is confronting great loss because a lot of the policy recommendations are about the producer and not the consumer. We know how

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many producing states there are. We know where they're located. And how do we deal with that issue in this region.
These political folks are going to pay much more than anyone else because energy is produced in this region. What recommendations can this region make to its policymakers on that question?
MR. LaDON SWANN:
I certainly think education is the key in this, and it's not education in grade school or a university. It's more so for marketing. There is a fundamental level of knowledge that everyone in the Gulf needs to

have about what climate change is. And I don't know what level that is, but that's certainly something that we haven't pushed.

We talked about storing carbon. And if you believe what you read, we make the vast improvement. So if we're talking about storing carbon, that might help us 100 years from now when we're all dead and gone. So what sort of adaptation do we need to

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implement right now with coal (inaudible).

It's really two different things I'm hearing here. Certainly the science that supports all that is very important, but we have to be very pragmatic in how we address it at the local level. And I think we don't have that level of understanding of what it is.

MR. VAL MARMILLION:

Yes.

MS. JANICE ADAIR:

One of the challenges that we have faced within all the states of the WCI and then also just in Washington by itself is I think all the states have that belief at some level, that they are going to end up paying more than someone else or than they should or than their contribution -- you know, pick your word, but everybody has got some sense of it.

And it seems like all the states have some sense about we are uniquely vulnerable, you know, for any variety of reasons, and it probably goes to the diversity of our country, that we probably all do have all sorts of

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vulnerabilities.

What we have tried to do is always put those two things in the same conversation. Because I don't think you can fairly talk about the costs that you bear for reducing your emissions without also looking at the costs that you will bear sooner for having to deal with the impacts.

And those are very broad costs. And they can probably be quantified -- at least we found in Washington, they were easier quantified than to quantify the cost of trying to take out, to just reduce greenhouse gas emissions. I mean, certainly, we have our economic analysis. Tom was very instrumental in getting our first one done. We have since gone back and refined it.

WCI has had an economic analysis done. But the work that we had done by our climate impact group at the University of Washington is very good information. And when people see

that, it does get their attention in a way that all of the talk around mitigation just hasn't been able to do.

And we were able to bring it down to a household cost. The per family cost in Washington state for the impacts of climate change are $1,268 a family. And we know that. And it's pretty easy to quantify and it's pretty easy for people to understand.

MR. TOM PETERSON:

I just have to chime in. I agree with Janet. I thing that also in terms of recommendations, I would go back to the southern governors in kind of a before and after, it was my understanding. Because the before is and was, rather, a pretty common mind-set, not just among governors, but really among stakeholders, and that is that fixing this problem is all about facing pain and trying to minimize it and trading pain. It's not about gain and the race to the top and the ability to come out on top by doing smart things.

The reality is you can't be Pollyannish issue about that. It's hard work. You have to be expert. You have to go through a very diligent process to be able to identify the things that aren't going to work well and identify the things that will work well.

But the good news is that there are a whole bunch of things that can. And so I think that if you can get over that hump, then the next thing that happens is that forward movement about chasing down the things that are win-wins now that can be an initial basis and a platform for subsequent steps that will follow. But you have got to get over that first hump.

And I would just say in the last couple of years, the effect of the recession on this country right now is profound and we are not within the norm of public concern about economic impacts. And so Janice was mentioning household impacts. I think we're now in the arena where we actually not only have to do household impacts, but we have to lay policies out really in terms of their community level impacts. Because people are asking in any given community, okay, that's fine. You gave us this big thing, but what does it mean back here. So the bar has really been raised.

But I do think you do need to get over that first hump, and the good news is there's ample evidence that you can. And there's work that can follow, and it seems to me that's the show stopper right now.

MR. VAL MARMILLION:

Any other comments?

DR. ROBERT TWILLEY:

I will just say in following those two comments -- and I'm not aware of it and it may be out there, but I'm not sure whether if you take the four states, the AEC group, where is the analytical evidence on the margins by which you can even have this discussion, and, you know, as to what the cost of doing nothing versus the cost of various strategies. And right now, all of the message is what we're hearing, which is, you know, it's a cost that we can't do anything.

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And so somewhere we need to generate that within our region. That's got to be a part of the dialogue. Because right now, there's just one message we're hearing.

MR. JEFF WILLIAMS:

(inaudible) Every study I see, energy efficiency is just low-hanging fruit. It makes a lot of sense. This policy has a lot of things that have to get worked out to really go after it in a big way. But if we could kind of take the state-by-state approach and develop a supply curve of those things that can be done and stack it up with those things that we need to do for the future, I think we can begin a discussion over how do you position yourself as a state, as a region to make this transition that's coming. And I think there's a lot of promise for that.

DR. ROBERT TWILLEY:

As a group we need to focus.

MR. TOM PETERSON:

Well, you know, again, we're happy to carry forward what we can from the initial

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body of work, because it actually has the state-by-state breakdowns in it, so there's a well that you can go back to there.

And I do think there's a lot of evidence that is already in hand. The other thing, though, just to bear in mind, again, one of the big things that these guys want to help with it and it's an enduring issue is that they're hearing fairly different things from different groups about how much this whole issue costs them back home. And when

you actually take a look at it in black and white and sort of break down the way we did it through this meta analysis, what exactly is driving the outcomes of all these studies.

Then you can begin to sort out fact and fiction, and they get a whole lot more comfortable with the arena of things they can start to work on and some other things that are not.

And so we did spread that out and looked at some of those things. But I know that the headlines are grabbing bad news

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pretty quickly. But when you look at what's underneath some of those headlines, and when they've had a chance to look at them, it's another story. So there's another process, which is all about a little bit of transparency that might be helpful there, too.

MS. JULIE HARRISON:

I do know that -- I wasn't able to bring these slides with me because this study is going to be published probably within the next two months. But in our analysis, we did do a state-by-state analysis of individual policies and which ones would help them lessen their energy consumption. And so we looked at each of those issues and then projected it over to 2030.

MR. VAL MARMILLION:

We can have that?

MS. JULIE HARRISON:

Yes. I can't give it to you now, but for right now, actually, we're in the draft mode. But when it is (inaudible), right.

MR. VAL MARMILLION:

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Okay. I am going to close out my part. Sidney, do you have anything? And then I'm going to turn it over to our co-chairs to round out the discussion and close the meeting with our thanks to the sponsors who always allow us to meet and pull these sessions together.

MS. SIDNEY COFFEE:

I just want to thank everyone and for your input. We have already been getting requests for any of the copies of your presentations and we would like to be able to put those on our website and offer them to folks who want them. I have had several requests just today.

MS. HEATHER HOLSINGER:

And I just wanted to say really quickly I was struck by a couple of things today.

First of all, the good work that is being done by all of the great experts in this region, the scientists and business community and also practitioners.

I was also struck by what Val said earlier about how this region is really suffering both from the impact and also from potential legislation about to come out of Washington. So I think it's a tremendous opportunity to really come together and do some hard work to make really proactive and constructive suggestions to D. C.

And I think if we can do that hard work, they'll listen to us because they don't have to do that hard work. So if we can just pull together heading to Galveston. Great attitude.

MR. GARY SERIO:

I just want to again thank all the panelists who participated in a wealth of information that you provided. It was enormous. And I keep up with climate change almost daily. It never fails when I come to a session like this and I learn things that I never knew before, and that's what we need to do.

As Val mentioned earlier, we will codify the information that has been put on the table today in a report. Each of the panel members will be getting a copy of that draft report, so we have not presented it as intended to be. We will change that before the final report is delivered on May 26 in Galveston.

We also extend a courtesy invitation to anyone to meet us in Galveston on the 26th. You don't need a special invitation from us to be there and kind of see what the efforts of this hearing kind of bear. So thank you so much for making the trip and making this session worthwhile. It really added value to our process to work climate change, so thank you.

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CERTIFICATE

State of Alabama:
County of Baldwin:

I, Karen S. Snell, Certified Court Reporter and Notary Public for the State of Alabama at Large, do hereby certify that the above and foregoing proceedings were reported by me at the time and place hereinabove set forth; that said proceedings were thereafter reduced to printed form, as per the foregoing transcript; and that the same is a true and correct transcription of my shorthand notes then and there taken and were completed without adjournment.

I further certify that I am neither related to, employed by, nor of counsel for any of the parties or attorneys herein, nor am I otherwise interested in the outcome of the within matter.

Dated this 9th day of March, 2010.

My commission expires June 6, 2011.

_____

Karen S. Snell, CCR
ACCR No. 197