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# *Senate*

CLIMATE CHANGE—(Continued)

The PRESIDING OFFICER. The Senator from Hawaii.

Mr. SCHATZ. Mr. President, I thank the Senator from Delaware for his powerful words and his participation in this great debate.

There is plenty of room for a robust discussion about what set of choices we need to make in order to deal with this very real challenge. We are here tonight to ask for that discussion, for that debate, in the tradition of this great body. Climate change is the challenge of our generation, and the debate of how we confront it belongs here in the Senate.

We have no illusions about being able to reach the number of votes we need to pass significant legislation during this Congress, but we must start this conversation now. We must start now. We are here agreeing it is time for us to find a way to work together to find solutions.

The Senate is supposed to be the place where we address and debate the big issues. I hope we can work with the House on how best to tackle climate change as well. But there is no room for those who deny science itself exists or those who deliberately propagate misinformation and scare tactics because they profit from pollution.

I know people are smart enough to know the difference between today's weather and what is generally happening with the climate. People cannot be misled into thinking that just because winter still exists, the planet isn't warming in totality. We can't possibly believe that because there was a snowstorm last week, there is no such thing as climate change.

Since 1991, scientists have published more than 25,000 scholarly articles on climate change. Only 26 out of the more than 25,000 articles reject the existence of climate change. This is 1 in 1,000. The idea that because scientists, frankly, are scientists and always leave a little room for additional information or for the possibility of revising their projections, assessments, and estimates somehow introduces significant doubt about what climate change is does violence to the very principles on which science operates.

This problem is no longer confined just to our wilderness areas or to those of us concerned with biological diversity or environmental issues. In other words, this is no longer an environmental problem. This is an economic one. All we have to do is look at the extreme weather and the way it has affected both the Nation's fiscal condition and our continuing ability to deal with natural disasters, and the very real possibility that many of our coastal communities will be literally flooded by the end of the century. There is no way we can allow this issue to remain a priority for only one party in American politics. This is everyone's problem. This issue impacts every single American.

Every single Senator should be down here. This is our responsibility for future generations, not just to preserve birds and butterflies but to preserve the American economy and our way of life. Scientists, leaders of States, cities, and counties, the leadership in our Department of Defense, the rest of the world, the business community, the largest insurance companies—which insure actual risk—all agree on the reality of climate change. The only place where we are proceeding as if this is an actual open question, as if the science is not settled, is in the four corners of the U.S. Capitol.

I am not going to point to any one extreme weather event and say it was caused by climate change, but climate change has increased the likelihood of increasingly strong and frequent storms, drought, and floods.

Through the 1980s, the United States experienced an average of two to four billion-dollar disasters per year for storms severe enough to rack up more than $1 billion in damage. But 2011 and 2012 together experienced 25 individual billion-dollar storm events. This is over $25 billion in damages in just 2 years.

I will talk a little bit about what is happening with our Department of Defense. There is growing consensus within the Department of Defense that climate change is shaping the global security environment in new and profound ways which will affect the U.S. military. Climate change is dramatically shaping the U.S. military's strategic operating environment. In its 2010 strategic planning document, the Quadrennial Defense Review, the Department of Defense concluded that:

> While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world.

The U.S. military concluded that it is increasingly likely to be called on to respond to crises which manifest as a result of climate-related instability. These include natural disasters which emanate from extreme weather events, which climate scientists expect to become more frequent and more severe as a result of climate change, because, like many first responders, the U.S. military has an obligation to respond when called for help, and indeed, the U.S. military is often the only organization capable of helping, with its fixed-and rotary-wing lift capacity and personnel to get relief supplies to those most in need.

Admiral Locklear, the head of the U.S. Pacific Command, headquartered in my home State of Hawaii, said last year that climate change is the greatest long-term security threat in the Asia-Pacific region, an area covering more than half the Earth's surface area and almost 60 percent of its population. Upheaval and political instability from climate change, he said, ''Is probably the most likely thing that is going to happen . . . that will cripple the security environment, probably more likely than the other scenarios we all often talk about.''

● This "bullet" symbol identifies statements or insertions which are not spoken by a Member of the Senate on the floor.

Eleven retired three-star and four-star admirals and generals in 2007 stated that climate change is ''a significant national security challenge'' which can serve as a ''threat multiplier for instability in some of the most volatile regions of the world.''

Climate change is also likely to impact the U.S. military's facilities and capabilities. America's military installations may be particularly vulnerable to climate change, and the Department of Defense has dedicated resources to assess the risks. According to a 2008 National Intelligence Council finding:

More than 30 U.S. military installations were already facing elevated levels of risk from rising sea levels.

The Department of Defense's own QDR acknowledged that the U.S. military's operational readiness hinges on continued access to land, air, and sea training and test space, which means ensuring that climate change does not prevent the military from accessing these critical training and range areas. This may require costly intervention to adapt to sea level rise and other climate impacts that might otherwise undermine defense readiness and preparedness.

The Department of Defense is already working to map out its vulnerabilities with offices like the Strategic Environmental Research and Development Program, helping installation planners develop the tools they need and to plan accordingly. Climate change has become an urgent national security challenge that our military cannot and will not ignore.

Secretary of State John Kerry was right when he said that among the global challenges ''know no borders''—''terrorism, epidemics, poverty, the proliferation of weapons of mass destruction''—''the reality is that climate change ranks right up there with every single one of them.''

Let me talk about the insurance industry. I make this point about the Department of Defense not because this admiral or these generals are members of the Sierra Club or the National Resources Defense Council. It is because when they do their defense review, they have a single-minded objective: To analyze what they see as their strategic challenge. They are not grinding an ideological ax. They are talking about what is real.

Insurers are risk experts in a different way. They are not paid to care about the environment or conservation or future generations or to steward resources. If insurers have personal environmental opinions or whether they voted for President Obama or Governor Romney, they do not bring that point of view to the table when it comes to risk assessment. They can only think about and quantify risk. Their goal is to figure out what is going to happen and how much it is going to cost to cover it. What they are saying about global climate change is it is happening. Climate change is presenting real risk. They have determined that climate change is underway already and is causing economic damage and therefore needs to be insured and underwritten. From their standpoint, when billions and trillions of insurance and reinsurance dollars are in play, they recognize what is real, which is the threat of climate change.

When it is the highest stakes, projections, and assessments, these people look at the world with very clear eyes and say climate change is real. It is happening now, and it is already causing economic damage. When money is on the line, whether these people are Democrats, Republicans or Independents or do not vote, they are looking at the facts and measuring the risk. They have determined that this risk is already upon us. It is not imaginary.

Let's talk about big business. Big businesses, from Nike to Coca-Cola to Starbucks, and insurers like Lloyds of London, recognize the economic threat of climate change as well because it affects their bottom lines. For them it is simple numbers. Their motivation is simple: Protect the bottom line. With billions and trillions of dollars at play, risk experts such as Lloyds are making high stakes risk projections to protect their business models. These projections are telling them that the risk is increasing.

For many multinational companies, climate change has moved from a corporate social responsibility issue to a bottom-line issue. They are starting to see the impact of unpredictable and extreme weather and realize that investing in environmental protection means investing in the economy. Climate change affects the supply of key inputs, disrupts factories, demolishes infrastructure, and drives up prices. The economic calculus is shifting for them.

Major companies doing business in America have signed the climate declaration, which acknowledges that tackling climate change is one of America's greatest economic opportunities of the 21st Century, and it is the right thing to do. These companies include Apple, Avon, eBay, GM, Ikea, Intel, Levi's, Mars, Microsoft, Nestle, Nike, Owens Corning, Starbucks, Swiss Re, Symantec, The North Face, and Unilever. If we do not make serious changes, the only thing we can be certain of is that uncertainty will increase. Extreme weather events, drought, floods, spreading infectious diseases, resource wars and other tests of human civilization will test us repeatedly. Our economy thrives on certainty. Climate change increases uncertainty. The pragmatic, conservative approach requires us to take action.

We have heard the argument tonight, earlier in the evening from the Senator from Oklahoma, from some in this body at other moments, about climate change today, that there is either nothing we can do or that action will be too expensive. Regulations will kill jobs and hurt the economy, driving up prices on everything from gas to bread. Opponents of the Clean Air Act, vehicle efficiency standards, energy efficiency, and removing lead from gasoline all used the same arguments. They denied it was happening, they spread misinformation, and they sowed fears of economic destruction. In every case they were wrong.

Largely as a result of government regulations between 1970 and 2011, total air pollution dropped 68 percent while the U.S. gross domestic product grew by 212 percent, more than doubling.

Well designed solutions to environmental problems can, in fact, contribute to a healthier and growing economy. America can innovate its way out of this problem. Inaction comes with financial costs. Climate change is absolutely right now hurting our economy. It is affecting individual fishermen everywhere from my home State of Hawaii, to the Presiding Officer's home State, to the lobstermen in Maine—which my good friend from Maine has already discussed.

A 2012 study commissioned by 20 governments which was written by more than 50 scientists, economists, and other experts found that climate change is already contributing to multiple deaths per year costing the world $1.2 trillion in 2010, and reducing global GDP by 1.6 percent.

The study also said by 2030 the cost of climate change and air pollution combined could rise to 3.2 percent of global GDP with a 2 percent hit to the U.S. GDP. Similar effects could cost China $1.2 trillion. Every time we try to move forward with environmental or public health legislation there are people who will say that the U.S. economy will collapse as a result. This happened with the Clean Air Act and the Clean Water Act. Almost every time they are proven wrong.

The American economy is an innovation economy. Whenever we require our American companies to innovate, whether in the interest of public health, the environment or the economy, they have thrived. They step up to the plate. Climate change is a challenge where America can once again be the global leader. We have to believe in our ability to innovate our way out of this problem.

When the U.S. economy and our businesses are presented with opportunities to innovate, they thrive. During the debate on the Clean Air Act we heard those standards would destroy the economy, but since 1970 every dollar invested in compliance with the Clean Air Act standards has actually produced $48 in economic benefits. It is not just that the American economy and business can innovate and thrive in this context, it is also that we are still the indispensable Nation. America is still the Nation where other countries look to see whether real leadership will be displayed. For that reason we need to act.

On this issue that affects every single American and the entire planet, we cannot afford to give up on American leadership. We have to believe in our

ideas and the power of our ability to innovate, in the strength of our economy and in the American ideal that whatever problem our generation is faced with, we will meet it.

The idea—and we have heard it before on this floor from climate change deniers—that we shouldn't do anything because China won't do anything misses the point. If we do something, China will do something.

Some are saying let's not do anything because of China and India. I am saying let's do something because of China and India. If we lead here we will have the economic advantage.

In fact, China has already begun the work to fight pollution and to transition to a clean energy economy. Last week at the opening of China's annual meeting of the parliament, the Chinese Premier said that China will declare war on pollution in the coming years. China faces a two-fold threat of extreme local pollution and the effects of climate change, and it recognizes that transitioning to clean energy sources is an economic and political stability imperative.

In January the executive secretary of the U.N. Framework Convention on Climate Change said that China is ''doing it right'' as it begins to tackle climate change. She said that the Chinese are ''not doing this because they want to save the planet, they are doing it because it is in their national interest.''

The Chinese State Council's September Atmospheric Pollution Prevention Action Plan set specific goals: A reduction in the construction of new coal-fired power plants, a goal of generating 13 percent of its electricity from clean energy resources by 2017.

Last year China installed 12 to 14 gigawatts of solar panels and is expected to do it again this year. Prior to 2013 no country had ever added more than 8 gigawatts of solar in a single year. A price guarantee for utility-scale solar projects known as a feed-in tariff, as well as low-cost panels drove this dramatic growth. China is taking decisive action. I, for one, do not want to give up on American leadership here.

We have to believe in our ideas, in the power of our ability to innovate, and the strength of our economy, and the American idea that whatever problem our generation is faced with, we will address it.

I would like to talk a little bit about our Hawaii experience. I have seen firsthand from our experience in Hawaii that with commitment and specific goals, real progress can be made. We have led the way to building clean energy infrastructure, producing renewable energy, and reducing our petroleum dependency. I know we can achieve this kind of change across the Nation. As Lieutenant Governor, I led our efforts toward Hawaii's 70-percent clean energy goal by the year 2030, and we have made encouraging progress. The Hawaii Clean Energy Initiative Partnership has the enthusiastic support of our business community, the U.S. DOE and DOD, the State government and even our monopoly electric utility company. By 2013 it would surpass our 2015 goal of 15-percent clean energy while having one of the lowest unemployment rates in the Nation. Hawaii's progress has taken creativity, collaboration, and innovation, the same qualities that have helped America overcome other seemingly unsolvable problems.

Transformation did not come easily and would not have occurred without collaboration between Federal, State, county, and private sector partners. But because of their hard work, we are now on track to achieve the highest renewable energy portfolio in the Nation, with 40 percent by the year 2030. Not everything we are doing in the State of Hawaii will work in all states, but we are learning that some policies have broad application. We know that climate change is a real problem, and that it is caused by humans, but we also know that it is a problem that we can fix, and we know what to do.

The challenges of climate change won't disappear overnight if Congress acts, but for the U.S. or the world to fight climate change while Congress sticks its head in the sand is like trying to fight with one hand tied behind their back. Americans agree that climate change is real and caused by humans. They agree that something must be done. Congress is a necessary but not sufficient part of this problem, for we face the biggest collective action problem in the history of humankind—bigger than war, bigger than disease, bigger than poverty.

America must continue our role as a leader that does not shy away from the big problems. Climate change is an economic issue, a health issue, and a national security issue.

I would like to take a moment to recognize the many professionals who have made tonight possible. The Senate stands out as the greatest deliberative body in the U.S. and, in my opinion, the world. Even in our disagreements, our remarks are generally at least collegial and usually friendly. The reason is simple: Respect. Respect for one another as representatives of the concerns of our home States, respect for the diversity of experiences that qualify us to serve as Senators but, most of all, respect for this institution, which is so much more than the physical infrastructure.

Even for the short time I have had the honor of serving, what I see is an institution built on people. The Capitol may be made of bricks and mortar, but the Senate lives and breathes through the people who work here. Often in the course of our daily business, we thank the people we work with for their help. But in light of the unusual demands that our event requires tonight, I would like to thank not only the individuals but their offices and departments. Without them, we would be unprotected, we would be in the dark, and we would be unable to function.

I would like to start with the Sergeant at Arms and all of its departments: doorkeepers, capitol facilities, media galleries, executive office, recording studio, printing and graphics, direct mail, the fleet office, and the U.S. Capitol Police. You keep our Senate orderly, safe, and functioning smoothly, and we thank you for that.

We almost must recognize the Secretary of the Senate: the executive office, the office of the Bill Clerk, the Captioning Services office, the Daily Digest office, the office of the Enrolling Clerk, the office of the Executive Clerk, the office of the Journal Clerk, the Legislative Clerk, our Parliamentarians, and the Official Reporters of Debates. You maintain order in the legislative process and record our actions so this body's work can be transparent and accountable to the American people, and we thank you.

The cloakrooms help to preserve order on the floor so that our deliberations perpetuate the rule of law in our great Nation, and we thank you.

The Senate librarians and CRS make it possible for us to make informed statements based on the best information available, and we thank you.

The Senate pages stepped away from their usual classrooms and schoolmates to support our actions here and participate in American democracy. We thank you.

While all have roles to keep tonight moving smoothly, I would like to call special focus on the Official Reporters of Debates. These folks transcribe every word we speak here tonight for the CONGRESSIONAL RECORD, which is then distributed the following day to more than 20,000 subscribers.

In 1956, then-Senate majority leader Lyndon Johnson explained the importance of the CONGRESSIONAL RECORD:

Locked in its pages are the debate, the resolutions, the bills, the memorials, the petitions, and the legislative actions that are the reason for the existence of the Senate. Without them, our words tonight would be lost, so I offer on behalf of all the Members who have helped to coordinate tonight our sincerest thanks.

I am happy to yield to the Senators from New Mexico and New Jersey if they are ready; otherwise, I would be happy to continue to speak.

Does the Senator from New Mexico need a few minutes to prepare or would he like to start?

The PRESIDING OFFICER (Mr. WHITEHOUSE). The Senator from New Mexico.

Mr. HEINRICH. Speaking through the Chair to the Senator from Hawaii, I am happy to get started and give an opening statement and focus on the State of New Mexico and some of the climate impacts we have seen in the last decade, and then perhaps engage in a conversation with my colleague the Senator from New Jersey.

I think it bears saying that this is a historic evening. This is an incredible

first step in recognizing the challenge that lies ahead. I am here tonight as a member of the climate change task force. I join my colleagues in calling for action on tackling what is unquestionably one of our country's greatest challenges but a challenge we are up to meeting.

We are here to illustrate, for starters, that climate change is not theoretical. We are here to discuss how sound science can be used to better understand and manage the very real impacts of climate change that we are seeing and to highlight the moral imperative we have in Congress to implement real solutions.

I thought I would start tonight with something that is just about anywhere in the United States. If you are a gardener, if you are a farmer, if you are a horticulturist, if you have an orchard of fruit trees, you probably know these maps. They are the U.S. Department of Agriculture plant hardiness zone maps.

When I hear people deny our climate is changing and how much our climate has already changed, I think it is very helpful to look back to the year 1990—the year I graduated from high school—and to look at the USDA plant hardiness zone map for the United States and to compare it to the one that came out in 2006. What you see when you look at this map is literally every single plant hardiness zone. If you are a gardener, you take these to the bank. This tells you whether a certain crop can grow in your zone. If you are in Minnesota, the answer to what is going to thrive in your garden is going to be very different than if you are in Arizona or New Mexico. What you see when you look at these maps is all of these zones have literally moved north.

In the case of my home State of New Mexico, there are zones that existed in the northern part of the State—up around Taos and Chama, and at a high elevation, where the Sangre de Cristo mountains reach up to over 13,000 feet. There are zones that existed in 1990 that exist nowhere in the State today because it has warmed so much. In fact, those zones only exist at the highest elevations in the State of Colorado to our north.

I don't think you can look at this map and say our climate is not getting warmer. It captures year after year of real-world experience of the people who rely on these maps to make sure our food supply and all the plants we use for other purposes as well are safe and productive.

In my home State of New Mexico, one of the other impacts we are seeing we have heard from other Western States tonight, as well as up and down the intermountain West and the Rocky Mountains, has been the impact of forest fire. We are seeing bigger fires and drier summers. We are seeing more severe floods when it does rain and less snowpack in the winter.

In 2012, looking back just 2 years ago, it was our Nation's second most extreme year on record for weather. In New Mexico, it was actually the hottest year we have experienced since we started collecting temperature records. With humidity levels lower and temperatures higher, we are dealing with fire behavior in the Southwest that is markedly more intense than anything we have seen in the past.

When people think of the State of New Mexico, and if they have not been to New Mexico, they often think of it as one of the southwestern arid desert low-elevation States. The reality that I grew up with was the high elevation forests of New Mexico. We literally have millions of acres of mountains and forests. If you just saw a photo, you might say: Well, that looks like Colorado or that looks like Montana. Those are all up and down our mountain ranges from the southern part of the State. We have the Gila. Up in the northern part of the State, we have the Santa Fe National Forest, the Carson National Forest, the Jemez mountains, and the Sangre de Cristo mountains.

One of the things that has evolved over the years which exists in the high elevation western forests is the ability to deal with forest fire, in particular, our Ponderosa pine forests. We used to have a regime where every 10 years or so we would have a fire in those forests. That fire would not burn the forest down. It would move through the Ponderosa pine. It would burn fine fuels, as we call them, such as the needles that fall from the canopy of the Ponderosa pine forest, the small pieces of woody debris, and the grass that grows in between the Ponderosa pine trees, and it would sort of clean out the understory and it would leave this incredible cathedral of high elevation Ponderosa pine forest with grass in between the trees, but that is changing.

This incredibly sad photo is exhibit A on what happens when the temperature increases just a little bit. We are seeing fire behavior in New Mexico that is like nothing in the historical record and nothing within the context of normal behavior. We are seeing what they call stand-replacing fires. I believe this was a couple of months after the Las Conchas fire a few years ago. If I remember correctly, the Las Conchas fire was in 2011 in the Jemez mountains. It was the single largest fire in our State's history at the time. Since then, we have had a bigger fire, the Whitewater-Baldy fire.

What was particularly concerning about the Las Conchas fire is how it burned—how intensely it burned, how it burned down slope with stand-replacing flames, and how it literally didn't leave behind any of those big fire-protected trees. Those Ponderosa pines are built to survive fire after fire throughout the course of their lives. They may live to be 300 years old. They have such thick bark that typically in the past they survived dozens and dozens of fires in the course of their lifetimes.

As we can see from this, almost nothing survived large parts of this fire, and that is what we are seeing as temperatures increase. As those temperatures increase, the humidity level in the fuels goes down, and the fuels burn hotter. The fuels are able to jump up into the canopy and literally burn out the entire forest. We can see a few patches of green here. This is one of the most destructive fires in our State's history.

Over the last 4 years alone, as I mentioned, we have seen the two largest fires in our State's history. With elevated temperatures, studies by Los Alamos National Labs predict that three-quarters of our evergreen forest in New Mexico could be gone by 2050. In my lifetime, three-quarters of our high-elevation conifer evergreen forest could be gone.

These are places we rely on for our economy. They hold snow in the winter. They produce an enormous number of jobs. We have approximately 68,000 jobs that are tied to public lands recreation in the State. Many of those are centered around these high-elevation forests where people hunt for elk in the fall. They produce the waters that allow people to raft in the Rio Grande during the summer. They are the places where people cross-country and alpine-ski in the winter. They are under direct threat from a changing climate.

We now know that the extreme weather we are seeing comes at an enormous economic cost. There was a new study produced in the journal Frontiers in Ecology and Environment that reveals the trend and how much ignoring this problem has cost the American taxpayer over the course of the last couple of decades. They went back and looked at firefighting in the early 1990s, around 1993. The average cost of fighting fires in our national forests at that time was $350 million a season. That is a lot of money; that is real money; and that is spread over many different States. Fast forward to today, and on average we are spending $2 billion, with a B, a fire season fighting fires.

Yesterday the Washington Post reported that the study's conclusions ''underscore what the agencies responsible for fighting wildfires—the Interior Department, the Agriculture Department's Forest Service—have said for years. Global warming is accelerating climate change in the West, resulting in winters with less precipitation and a drier landscape. The wildfire season that historically started in June and ended in September now starts in May and ends in September.'' I would say that in New Mexico we haven't been lucky enough to have it begin in May and end in September; we have actually had some fires that were completely outside of that window.

I remember a few years ago as I was running for Congress in the fall of 2007, leading up to the 2008 elections, I watched as the Monzano Mountains near my home in Albuquerque burned in November, around Thanksgiving time. We saw extreme fire behavior

there—fires once again burning down slope, in November, and fire behaviors even in the middle of the night that we normally wouldn't see except in the middle of the day in the middle of summer.

It has been something that has touched our State dramatically. It happens now with such regularity that we are almost used to it, but it puts lives at risk. It puts property at risk. Many people in this Chamber probably remember all of the brave firefighters who literally lost their lives in Arizona last year fighting these fires. In fact, those firefighters helped on a New Mexico fire before in the very area we saw with the picture I showed of how the Las Conchas fire burned.

One of the related issues is the relationship between the economy of my home of New Mexico and the impact of snowfall and how snowfall has changed as a result of a changing climate.

This is a map of the Four Corners States. This is Albuquerque, NM, here, Santa Fe; this is the Four Corners area where Utah, Arizona, Colorado, and New Mexico all come together. Historically, our economy relies very much on not just rainfall and precipitation but the value of a strong snowpack. Agriculture in the Southwest does not work as it does in other parts of the country where crops are literally watered by rain. We store our snowpack in reservoirs. We rely on the fact that snow lasts longer and is released slowly from the high elevation forests and mountains. It gets stored in reservoirs and then is used to irrigate hundreds of square miles up and down the Rio Grande Valley throughout the heart of New Mexico, as well as other valleys in the State, such as the Pecos Valley. We have seen dramatic changes in the extent of both snow cover as well as the amount of water that is stored in that snow.

These two images show snow cover in 2010 and in 2014. They illustrate a trend that is becoming all too common with the current drought conditions and with warming winter temperatures. So 2010 was a relatively good year for us. We had snow cover, as my colleagues can see, across much of the northern part of the State. As we move into even higher elevation areas up in Colorado, very intense snows in the San Juans that drain down into the Rio Grande, the San Juan rivers in New Mexico. If we look at the Mogollon Rim, which goes all the way from Gila, NM, up through Arizona on its way toward the Grand Canyon, just a long, high-elevation geologic feature that stores snowpack for both Arizona and New Mexico, we can look over at the 2014 image and what we see is a dramatic reduction in the amount of snow cover. As a result, the runoff we have experienced in this drought has been a fraction of what we used to think of as normal. It is sort of the new normal.

In December of 2012, two researchers affiliated with the University of New Hampshire unveiled a study around snow and winter tourism impacts called ''Climate Impacts on the Winter Tourism Economy in the United States.'' That report, completed for the Natural Resources Defense Council and Protect Our Winters, an organization founded in 2007 by professional snowboarder Jeremy Jones, concluded that the economies that rely on winter sports tourists have a lot to lose if we fail to take action on climate change.

The Presiding Officer probably heard some of the recent stories around the Sochi Olympics—stories I couldn't have imagined as a child—of literally covering up huge amounts of snow to insulate it from the elements so it didn't melt, so it could be used in some of those sports. The report states that December 2011 through February 2012 was the fourth warmest winter on record since 1896 and the third lowest snow cover extent since 1966 when satellites began giving us images just like these.

When it doesn't snow in the Intermountain West, communities that rely on winter sports tourists take an enormous economic hit. Fewer people lodge in their hotels, fewer people shop in their stores, and fewer people eat in their restaurants. If we were to ask the businesses in places such as Taos, NM, or Ruidoso in the south central part of the State, Red River and others spread across the high-elevation portions of my State, they will tell us when there is no snow; they see an enormous reduction in the amount of business activity, in the gross receipts in those small towns, and it ripples through the entire economy.

That report points out that ski resorts in the northern part of New Mexico are the primary drivers of New Mexico's $182 million ski industry. Winter tourism in New Mexico provides more than 3,100 jobs. We are a State of only 2 million people, but 3,100 jobs has a $104 million impact on our economy. In low snowfall years, New Mexico lost out on an estimated $48 million in ski resort revenue and had nearly 600 fewer jobs compared to higher snowfall years. Winter sports tourists are an extremely important part of my State's economy, and I am very concerned that if we continue to do nothing about climate change, we will lose those tourist dollars.

Climate change is very real and it is impacting our bottom line in the State of New Mexico. Climate change is also leaving a devastating imprint on our agricultural industry in the State of New Mexico. These images are striking to me, and these are satellite images from NASA.

This is the largest reservoir in the State of New Mexico. It is called Elephant Butte Reservoir. It is in the central part of the State. If a person is used to growing up in a State such as New Mexico and a person knows there are certain crops that are just iconically connected to the State, including green chili being at the top of the list, red chili—they are actually the same plant, but we will save that for another day—pistachios, pecans, all of these things are tied to irrigation and the ability to irrigate hundreds of square miles of agricultural land along the Rio Grande throughout the State.

In 1994, in the midnineties, Elephant Butte Reservoir was functioning as it had since the early 1900s, storing all of that snowpack we talked about a few minutes ago, making sure it was released to serve agriculture, to extend the irrigation season, to make sure those crops were realized. Then we began to get into this long-term, persistent drought. My colleagues have probably heard the stories about California and its drought and its impact on agriculture. New Mexico has experienced just as intense a reduction in snowpack, in predictability of summer precipitation. We get a lot of our moisture in the summer monsoon, the wettest time of the year outside of the winter. So we get some in the wintertime in snowpack typically and then in the summertime we have the summer thunderstorms, and the predictability of that has all changed now. But as we can see, so has the quantity.

Elephant Butte Reservoir is about 2 million acre feet in capacity. An acre foot of water is literally taking an acre of land and covering it in water 1 foot deep. It is about 325,000 gallons, if my memory serves me well. This is about 2 million acre feet. People can do the math. But it is literally the largest single body of reservoir water for agriculture and other uses in the State of New Mexico.

Fast forward to 2013. These were both taken in the same month, the month of July, which is kind of the height of the irrigation season. Three percent is what was left in Elephant Butte Reservoir. It literally doesn't even look like the same place. The northern extent of the reservoir has been dry land for much of the year in this photo. This has enormous ramifications for agriculture in our State and for other industries that use and rely on that water.

Farmers and ranchers are often first to see the effects of extreme weather. A 2012 study found that by 2020, New Mexico agriculture and ranching will lose $73 million annually due to climate change. We can layer that on to the $48 million we talked about a little while ago from impacts to the winter ski season. We start to see the very real cost of not doing anything about climate change.

The agricultural sector is incredibly vulnerable due to the sustained threat to the water supply, to soil and vegetation from sustained drought. Livestock levels in many areas of New Mexico were one-fifth of normal levels last year due to the scarce forage. So year after year of drought—not just 1 year but over and over again—is what leads to this incredible inability to even manage water. We don't have the water in the reservoir to be able to deal with the fact that we are not getting enough

precipitation. We have over the years sort of used our savings account, and now we are down to a very small amount of water that has to be stretched as far as we can in summer irrigation season. We have seen a number of parts of the Rio Grande run dry in the summer as a result.

Things are only going to get worse if we don't act and begin to address some of these conditions. If we have any hope of reversing the effects of climate change—and we truly must—it is critical we embrace this challenge now and that we lead the world in innovation, in efficiency, and in clean energy.

As our colleagues Senators PORTMAN and SHAHEEN know, there is no cleaner source of energy than the ones we don't use in the first place. Energy efficiency and conservation should be the centerpiece of any strategy to address climate change. The easiest way we can reduce the amount of carbon pollution, methane pollution, and other greenhouse gases that make it into the atmosphere is to not use those in the first place.

Conservation pays enormous dividends. I remember when my wife and I bought our first home, we decided we wanted to make it as sustainable as we could, but it was a retrofit, so where do we start. Well, we have had solar on the roof of that home in Albuquerque for many years now, but that is not where we started. That wasn't the first place we put our investment. It wouldn't have made sense. The first thing we did is we insulated a home that had been built without insulation. We replaced windows that were leaking warm air to the outside all through the wintertime, not keeping cool air inside during the summertime. Efficiency is absolutely critical if we are going to begin to address our overall energy usage in this country and to reduce the amount of carbon pollution in particular we are putting into the atmosphere.

Getting the most out of each unit of energy, kilowatt, Btu should be a concern at every level of our government. The U.S. Federal Government is the largest energy consumer in our country, and the Federal Government has an obligation to lead by example when it comes to energy performance.

We heard a lot about the transportation sector and the advances we have made due to the fuel economy standards. But buildings are also an enormous part of our carbon and our pollution footprint in this country. They account for about 40 percent of our energy use, and they offer the greatest opportunities for savings. Investing in energy efficiency in those buildings isn't just good for our environment and for reducing air pollution; it is literally one of the fastest and most cost-effective ways to grow our economy.

We have seen business energy efficiency take off in recent years and produce high-quality jobs all across this country. Energy efficiency is a large, low-cost, underutilized U.S. energy resource. Increasing our energy efficiency in the residential sector, commercial sector, industrial and governmental sectors offers Americans savings on their energy bills, opportunities for more jobs, improves our Nation's competitiveness, and it stretches every tax dollar further.

To help the Nation transition to cleaner and renewable sources of energy, I am also supporting efforts to streamline permitting for renewable energy projects on our public lands, while protecting access to those public lands for families and sportsmen to enjoy.

Another key to further development of renewable energy is to alleviate the bottlenecks in our electric power grid. Much of our power grid was developed decades ago, some of it nearly 100 years ago, and I am working in New Mexico to help tap our renewable resources by adding new transmission capacity and smart grids to an aging infrastructure.

We need to find better ways to make sure new transmission projects are well planned to protect the environment but can also move forward in a reasonable timeframe. Whether for our national security, our energy independence or our Nation's ability to compete in the global economy, our efforts and our solutions should be rooted in fact and driven by the best available science.

As we heard earlier tonight from our friend and colleague from Oklahoma, not everyone agrees. There are some who deny that climate change exists. There are some who are simply paralyzed by how big the problem is—the fear of the economic or political costs along the way. But one of the things that has bothered me the most, as we have had this debate, is too often we see scientific integrity undermined. We see scientific research politicized in an effort to advance ideological or purely political agendas or to protect certain industries and interests. Too often we see that some in Washington believe they are not just entitled to their own opinions but believe they are somehow entitled to their own facts. Frankly, none of us are entitled to our own facts.

No area of innovation in science will be more important than our Nation's ability to tackle climate change and lead the world in clean energy technology. We saw a lot of information earlier in the evening about the incredible growth we have seen in renewable sources of energy in recent years, particularly in wind and solar. The cost of solar has come down precipitously in recent times. It reminds me that in 1961 President John F. Kennedy made a bold claim that an American would walk on the Moon by the end of the decade. To many people that seemed absolutely ludicrous.

This is a similar challenge we face. Eight years after President Kennedy made that claim, Neil Armstrong did just that. It did not even take a decade. We need that kind of effort to be able to address the incredible challenge we have with a warming globe. We need to think big, we need to execute, and we need to innovate, as the Presiding Officer said.

Innovation is going to be so important as we deal with this issue. Frankly, in the United States we have met issue after issue that people said could not be solved or was too big or would cost us too much. We turned those around and into opportunities to grow new jobs and grow new industry.

As we look at this particular challenge, the real question is, is the economic activity that is going to be associated with solving these challenges—are we going to get the benefit of those technologies? Are we going to get the jobs from manufacturing, installing, developing those things or are we going to cede that leadership to other countries around the world?

Even the sleeping giant in China, with all of their policies over the years that have led to the incredible, dangerous pollution levels we see—where students actually put masks on statues in China to make a political point that there is no clean air to be had—even China is realizing they have to invest in this innovation, that they have a national interest in it.

We have the most innovative folks in the world. We have our National Laboratories. We have scientists and entrepreneurs who can come up with solutions that will take us further than we have seen with the incredible growth in wind and solar in the last few years. We need to make the commitment and move from just having a debate about these issues to employing the policy changes that will drive that innovation.

(Mr. SCHATZ assumed the Chair)

Mr. WHITEHOUSE. Will the Senator yield for a question?

Mr. HEINRICH. Mr. President, I would be happy to yield to the Senator from Rhode Island.

Mr. WHITEHOUSE. The Senator's point about China makes me think that if you look at the behavior of the Chinese with respect to this power, you see a couple things. You see, first of all, that they have worked very hard to try to undercut our domestic innovation by dropping prices on solar artificially. You see that particularly if you are involved on the Intelligence and Armed Services side, the extraordinary efforts they have made to hack into our intellectual property and to try to steal it back to China so their companies can compete unfairly against ours.

When you see this activity, particularly in the area of solar and renewables, and you see the extent to which the Chinese are investing in solar and renewables, what conclusion must one draw about what the Chinese see as the future of solar and renewables?

Mr. HEINRICH. The Senator from Rhode Island brings up a very good point because obviously the Chinese have come to the conclusion that it is in their best interests to innovate and

to do it as rapidly as possible. He brings up some issues that, frankly, are not necessarily what I would call the most responsible or moral ways to move rapidly through that ladder of innovation. But, nonetheless, it is unmistakable that they are realizing just how important this is.

I think it is important for us to come to the same conclusion. I think it is important for us to realize if we cede these industries to China, they will be selling us the products of the future. We have seen this already with their ability to undercut the price and artificially lower the cost of producing solar panels and how deleterious that has been to our domestic manufacturing base for those technologies.

We need to make sure we are making the technologies of tomorrow's clean energy economy here and installing those technologies ourselves and getting the jobs, all the way from the innovation to the manufacturing, to the supply chain, to make sure we see the opportunities in this as well as other challenges.

I think what motivated me to be part of tonight is that, similar to the Presiding Officer, I have a couple of young kids at home—a 7-year-old named Micah, a 10-year-old—soon to be 11 years old—named Carter.

When I think of some of the issues the Senator from Rhode Island brought up and the briefings I receive on the Intelligence Committee—and not only the intellectual property theft that has been reported in the open media but also the impacts we are seeing in places such as Central Asia, the glaciers that an enormous part of the world's population relies on for their fresh water, a place that has inherent and sometimes volatile conflicts right below the surface, where Pakistan and India and other countries come together—when we look around Southeast Asia and realize there is an enormous amount of the world's population living just a few feet above sea level who are exposed to those superstorms in a way that even those of us who have had to deal with superstorms such as Sandy cannot imagine because they did not have a home to shelter in or at least a home that looks like the places we have, it certainly sobers one.

I see the Senator from New Jersey is here.

Mr. BOOKER. If I may interrupt for a question because I would like to stay on point.

Mr. HEINRICH. Absolutely.

Mr. President, I ask unanimous consent to engage in a colloquy with the Senator from New Jersey who knows firsthand what some of these superstorms are capable of.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. BOOKER. I would like to continue to have the Senator from Rhode Island as well involved in this colloquy.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. BOOKER. Because he brings up a tremendous point.

For all of us who are competitive and have this belief that this Nation of ours should remain a leader in the globe, the Senator from Rhode Island makes a very good point. We are a nation that has led in innovation, led in ingenuity. Generation after generation, we have seen our country excel and exceed economically because of American innovation.

What the Senator from Rhode Island brings up so pointedly is that in this area—the technologies of the future that are going to have us have an ability to produce the energy of the future—America runs the risk of falling behind some of our most fierce competitors.

But what I would like to ask the Senator from Rhode Island—because it goes further than that—we know that as to the challenges of the future, we can look at the past and see how economic policy has so dramatically influenced foreign policy. You can go back to right after World War II, how America's economic dominance helped us to advance.

Looking at the Suez crisis, when America and Britain had different agendas, it was a fact that we held their debt, that we had the economic advantage that allowed us to press our interests, but there are other threats too.

What is interesting to me is, as has been stated tonight already—and I would love to talk to folks because both of you have already talked about Senate intelligence briefings and military briefings—I would like to read from a document that talks about Navy ADM Samuel J. Locklear, III, the commander of U.S. forces in the Pacific, stating very dramatically—and I would love to get the reaction of the Senator from Rhode Island to this—that significant upheaval related to the warming of the planet, the admiral says, ''is probably the most likely thing that is going to happen . . . that will cripple the security environment, probably more likely than the other scenarios we all often talk about.''

You see, Admiral Locklear focuses on risk management and preparedness for our Nation. He does not have time for philosophy. He does not have time for politics. He is focusing on a concrete risk analysis when it comes to the safety, security, and preparedness of our Nation.

He goes on:

While resilience in the security environment is traditionally understood as the ability to recover from a crisis, using the term in the context of national security expands its meaning to include crisis prevention.

I read on:

Admiral Samuel Locklear had a meeting the other day with national security experts at Tufts and Harvard. After this session, he met with a reporter who asked him what the top security threat was in the Pacific Ocean. Rather than highlighting Chinese ballistic missiles, the new Chinese Navy aircraft carrier, North Korean nuclear weapons, or other traditional military threats, Admiral Locklear looked to a larger definition of national security.

Locklear commented that ''People are surprised sometimes'' that he highlights climate change—despite an ability to discuss a wide range of threats from cyber-war to the North Koreans. However, it is the risks—from natural disasters, to long-term sea level rise threats, to Pacific Nations—that have his deepest attention.

Here he is being quoted:

You have the real potential here in the not-too-distant future of nations displaced by rising sea levels. Certainly weather patterns are more severe than they have been in the past. We are on super typhoon 27 or 28 this year in the Western Pacific. The average is about 17. Climate change merits national security military attention for very pragmatic reasons.

So the Senator from Rhode Island—we have talked about many things tonight—understands this issue, and he is one of the motivating factors for an amazing array of Senators from all around the country tonight to be talking about the impacts on our individual States, which I hope to do about New Jersey soon.

But the bigger issues at stake are long-term economic competitiveness, which the Senator from New Mexico has talked about, and also the threat that our military experts see to our Nation and global security. I wonder if the Senator for a moment would comment on that.

Mr. WHITEHOUSE. On the point the Senator from New Jersey makes about economic power being the foundation for military power and the power of persuasion around the globe, one really does not have to look any further than back to the decline and fall of the Soviet Union, which is widely viewed as being based on a country that spent so much on its military without an underlying economic engine powerful enough to support it that it finally fell in.

So when we are looking out at a clean energy market that has been estimated to be a $6 trillion market, the idea that it is in America's interest to cede that entire market to the Chinese, to let them be the manufacturers, to trust that we will be fine if they are manufacturing solar and wind and all of the new battery technologies and that we are just consumers of that, is crazy. That economic weakness has national security overtones.

In addition, as the distinguished Senator from New Jersey pointed out, in addition to Admiral Locklear—and the distinguished Senator from Hawaii mentioned Admiral Locklear as well, but he is not alone. Secretary Mabus, Secretary of the Navy, has pointed out the same thing. We are at risk from global warming from a national security perspective. The Joint Chiefs of Staff is on record about the national security consequences of climate change to our country. As the Senator from New Mexico knows from his time on the Intelligence Committee, there are NIEs—National Intelligence Estimates—that speak to the danger climate change presents for America, for our national security interests when it happens in other lands. The Defense

Quadrennial Review, which is the key document that drives our defense policy, has over and over again emphasized climate change as a national security risk, as a liability for our country. So, yes, it is very important that we deal with this.

I had a conversation with Henry Kissinger the other day. He was speaking generally. He used an interesting phrase. He said that the big upheavals and revolutions in the world have always come from a confluence of resentment—a confluence of resentment.

So I would add to the immediate risk of climate change causing upheaval and causing military problems that threaten our national security interest the larger problem is that America stands for something in this world, and we all benefit because America stands for something in this world, and the rest of the world knows it. If we come to the point where around the world people are seeing in their homes, in their lives, in their villages, in their hamlets, and on their shores the effects of climate change and it is bad for them—the fish they used to catch are not there; the crops they used to grow will not grow any longer; the river they used to irrigate is not running as strong any longer; and their lives have been hurt as a result of that, and they look around, what greater resentment could there be than a resentment of the country that knew this was coming, that said it was a leadership nation, and that did nothing about it when it knew.

Now, there is a confluence of resentment around the world. That, too, creates a national security risk for our country.

Mr. BOOKER. I appreciate that from the Senator from Rhode Island. I have only been in the Senate for about 4 months. As soon as I made a decision to run for this office, I asked for national security briefings to study hot points in our country. I figured if I was going to win this office, New Jersey would expect me to be prepared to serve and deal with national security issues.

I was amazed that, when I was being briefed by a group of folks who focus on national security issues, a general came up to the briefings in New Jersey as well and began to be very intent and intense on letting me understand that the military is not waiting for us to figure this out in Congress. They are preparing. He told me about flying planes on biofuels, thinking about the resiliency of our military bases here and abroad. It was amazing to hear this general talk in such fierce pragmatism about what we must do to protect the safety and the sanctity of our country.

But I will tell you this: We are in a bad economy right now. When I go back to New Jersey, I hear people talking to me about jobs. I hear people talking to me about government spending. I hear about the strength of our country.

If the Senator from New Mexico would allow me to ask him a question, what moved me about your remarks—I have to say, again, I am a new Senator. But the Presiding Officer and I have both gotten to know the Senator from New Mexico. The Senator lives and bleeds New Mexico. Our conversations when we are in the cloakroom are amazing. I have learned more about New Mexico than the Jersey boy ever did back in my own State. It is amazing the pride with which you talk about your State. I hope your constituents understand how much you are about New Mexico every day you are here.

What was amazing to me as I listened to you speak was the numbers that rolled off your tongue about the financial impact of climate change on the New Mexico economy. When you started talking about the billions—you emphasized ''b''—spent on fire protection, you mentioned the grievous loss of life of firefighters in Arizona who nobly fought fires in New Mexico. You talked about the grievous impact—hundreds of millions of dollars—on industries in your State, and those numbers, to me, which fly off the tongue, represent jobs, represent government tax dollars which are being used in your State to fight forest fires but which could be reinvested in the things that rebuild infrastructure, educate children, do research.

It is an undeniable fact that fires are burning hotter, that reservoirs are getting emptier, and that is having a serious impact on your economy, but this is the truth about our country: We are not New Mexico, Rhode Island, New Jersey, Hawaii; we are the United States of America. As much as we might think your economy is insulated from mine, that is not true. When I heard Senator KLOBUCHAR talking about what it is doing to crops in her State, that affects food prices in New Jersey. When I heard the Senator from Maine talking about the lobster industry, we eat lobster in New Jersey as well. We are one integrated economy. King said it so profoundly—that ''injustice anywhere is a threat to justice everywhere.''

So if the Senator would comment for me a little deeper because I know when you leave here and go back to your State, you are not looking at data or the statistics, you are talking to people whose lives are not just being disrupted by climate change but severely affected, I wonder if the Senator could—we have seen lots of data and charts tonight and all day, but I was hoping the Senator could speak a little bit more to the grievous financial damage it is doing in our interconnected economy, to the people of your State and thus to the people of America.

Mr. HEINRICH. I thank my friend the Senator from New Jersey. These issues have such a profound impact on individual people and communities. When I think back to that Las Conchas fire that I talked about a little bit in my comments, I cannot help but think about Santa Clara Pueblo. Actually, maybe we can put up this other image too, because normally the fires lie down at night. That is what they used to do, at least. Here you can see the fire burning north of Los Alamos in the Jemez mountains in the middle of the night. You can imagine, this was sort of a scene from Espanola and Santa Fe across the valley. Everyone I talked to at the time had never seen a conflagration in the northern part of the State quite like it.

One community that was particularly impacted and is still recovering today is Santa Clara Pueblo. They have this incredible, beautiful canyon that is tied to their identity and their religion and who they are as a people. Unfortunately, this fire burned the headwaters of that canyon, and that produces the water for their irrigation, as well as with the Rio Grande. It is more than just economics. It is an identity. It is a place that cannot be separated from the community and the people there.

The impact of that, unlike a typical disaster we think about, such as an earthquake, where you have the disaster and then you have the recovery from the disaster, these fires in these communities happen multiple times. You have the fire, and it is usually in May or June, which is the driest time of the year in the State of New Mexico. It is the time when the snowpack is long gone and we have not had precipitation, oftentimes in months. Then you get these early lightning strikes that do not actually have rain associated with them.

You have the fire. Finally, the fire goes out when the rains come, and then you have the thunderstorms that come and flood these communities and take their farmland and bury it under 6 inches of cobble and gravel or a foot of everything but topsoil, so they cannot use it. You have roads literally impassable and infrastructure destroyed, irrigation ditches that have been in place for hundreds of years blown out or filled with sediment so they cannot be used.

It happens not just that first year, but until these places recover with some sort of vegetation—I have to say that they are not coming back as the same kind of forest in many cases. But as the vegetation does recover, you finally get a more moderated situation where you do not get those floods.

But I just have been too many times now with people at the Pueblos Nambe across the valley, same situation, different fire. It is touching everyone and their communities. It is really a struggle, when we cannot even recognize the problem here in Washington, DC, to look at my constituents, you know, and say: Hopefully, through FEMA and other measures, we can address the emergency. But we have to start addressing the problem.

I want to ask the Senator from New Jersey—I mean, your State just came through one of the most unbelievable superstorms in our country's recent

history with Superstorm Sandy. I can only imagine—we have very different States. My problem is usually not enough moisture. Oftentimes in extreme weather events you have too much. We certainly do not have coastal issues. I would love to hear more about the direct economic impact of what it meant—the Senator from New Jersey is someone who comes to this Chamber with something that I value enormously, which is the experience of governing at the local level where you are close to the people. I was a city councilor. You were a mayor of a huge city. You know what those impacts are to infrastructure and economy and to small businesses when a storm such as that hits your State. I would love to have a little bit of that perspective because I think it is important, as this grows and grows and the challenge faces us head-on, to understand how it is impacting your constituents and their small businesses and all of the things you have direct experience with from your local government work.

Mr. BOOKER. I am grateful to the Senator from New Mexico for giving me this opportunity to say a word about my State. To keep the conversation going, if the Senator from Rhode Island would indulge me in answering that question, but I would like to get back to the Senator from Rhode Island.

I want to say to the people who are watching this, perhaps on C–SPAN or others, the reason why I am so grateful to the Senator from Rhode Island is because I have been here, again, for a little over 4 months. But the Senator from Rhode Island is—and forgive me if this sounds in any way disrespectful to say it this way, but I almost think the Senator from Rhode Island reminds me of the movie ''Shawshank Redemption.'' I say that because one of my favorite moments in Shawshank was that guy——

Mr. WHITEHOUSE. I am just waiting to hear what character I remind the Senator of, because this could be for good or it could be for very ill.

Mr. BOOKER. No. I am reminded that Morgan Freeman or the main character of the movie wanted to get a library for the prison. Frankly, their strategy was every single day they sent a letter. The reason why I have great respect for the Senator from Rhode Island is he has been relentless, to my knowledge, in a way I did not know about before I came to the Senate—but relentlessly and constantly nonstop, not only one time when we are going for an entire day, but every single week going to the floor and speaking to this issue, speaking truth to power, using his office to try to not only speak to issues pertaining only to his State, but to speak to issues that relate to our planet, and I have generated a lot of respect for the Senator in his consistency.

Mr. WHITEHOUSE. I appreciate that very much.

Let me say for the RECORD I would be Morgan Freeman all day long and all night long, for that matter.

Mr. BOOKER. The Senator has it. But before I get to my Senate colleague from Rhode Island, allow me for a moment to answer the question of my colleague because I am grateful that he asked me about what is happening in New Jersey.

We know this, that no storm, no flood, no drought, was caused singularly—no single episode could be said to be caused by climate change. That would be irresponsible and give an opening for those people who choose to criticize those who talk about climate change, give an opening to pounce on that.

But we do know, when these extreme weather events happen—and I believe they are happening more frequently because of climate change—what we know factually is that when these extreme weather events happen, they become more extreme because of indisputable climate change that is happening.

Forest fires, as the Senator said, become more extreme because of a warming climate. We know in New Jersey, and we have seen painfully from Hurricane Sandy, that when flooding happens it is more extreme and more severe because of rising sea water.

We know in New Jersey that the storm had painful effects. Let me put it in numbers, and then I want to talk about people.

The numbers that affect people so dramatically are powerful. I am going to read some of them. This is a Rutgers University report that rising sea levels, as I mentioned before, mean hurricanes will produce more severe damage such as the damage caused by Hurricane Sandy, more frequent extreme weather events, heat waves. Inland flooding from heavy rains present a growing challenge to our New Jersey economy, to the environment, and to the everyday way of life of New Jerseyans and I say to Americans.

The images left by Sandy's wakes are seared into the minds of so many New Jerseyans. We saw what happened to some of the most precious parts of our State up and down the coast. The State's vulnerability to these extremes we see, the storm and its immediate aftermath resulted in 34 people dying in the State of New Jersey, and it cost New Jerseyans an estimated $37 billion. The storm, in its entirety, impacted and claimed more than 150 lives and exceeded $50 billion in damage. In New Jersey, nearly 7 million people and 1,000 schools lost power. Transit systems and streets were completely flooded, damaging our infrastructure. More than 8,000 jobs were lost in the month after the storm.

(Mr. WHITEHOUSE assumed the Chair.)

There were power interruptions that lasted for days and days, putting people into hardship. As the mayor of a city, I saw that the power disruptions actually cost people lives. There were two people who were without power in the city of Newark who tried to sustain themselves with artificial heat. It produced carbon monoxide from which they died. Hurricane Sandy displaced more than 116,000 people and damaged or destroyed 346,000 homes in New Jersey.

We have seen in our State these horrific stories and know for a fact that should more hurricanes hit with rising sea levels, they are going to do more and more extreme damage.

What I wanted to do, in answer to your question, is those were numbers, but the stories that came from Hurricane Sandy rip your gut.

This is one story of Christina, a homeowner from Toms River, as reported in the Huffington Post. They had evacuated her house before Hurricane Sandy hit, Christina did, and then returning found a mysterious note. The letter was hastily scrawled by a person who had broken into her house and taken a blanket and a black jacket to keep hypothermia at bay. The author of the note was sure he was dying.

These storms rushed in so quickly and so severely that it put people in conditions where life and death happened quickly.

I saw them as mayor of Newark. One of the people who died in my city due to Hurricane Sandy was with folks we came to evacuate from Sandy in a low-lying area east of Newark. I will never forget this because the group of men said they did not want to leave. They were going to stay on the higher floor of a structure, but one of them went to move his car at the exact time the water was rushing in so quickly and so fast that he drowned in his car.

This story continues. The man identified himself as a 28-year-old man named Mike and left contact information so that the homeowner could contact his father and tell him he had died.

The note reads: Whoever reads this, I am dying. I am a 28-year-old. My name is Mike. I had to break into your house. I took blankets off the couch. I have hypothermia. I didn't take anything. A wave threw me out of my house and down the block. I don't think I am going to make it. The water is 10-feet deep at least. There is no rescue. Tell my dad I love him, and I am trying to get out. His number is—he gives it to the newspaper and his name is Tony.

He continues: I hope you can read there in the dark. I took a black jacket too. God Almighty, help me.

The heartbreaking last words of a Hurricane Sandy victim made its rounds on social media. In an interview later, Mike told listeners the harrowing story of how he was swept out to sea.

I wish to give a couple more quick vignettes. This is Theresa, 41, Middlesex County, NJ: Walking out of my house the morning after the storm and seeing my neighbors, it was unreal. It was like a war zone. We were unprepared for what happened.

June, 51, Union Beach, NJ: Living through the storm in one of the hardest hit bay towns of New Jersey, I

learned that God is good. In the midst of the hardship and trauma, I saw His love through average people, people who care enough to smile, serve, hug, and weep with me. I saw such compassion in the young and old. I saw the best in humanity.

This is what should be driving us at the core. The heroism we see at these extreme weather conditions, made worse by climate change, shows the grit of America. It shows our strength and our courage, our willingness to be there for one another in times of crisis.

But the point of the matter is we are in a larger crisis right now, and that demands we should act. There is an old saying the only thing necessary for evil to triumph is for good people to do nothing. Well, good people in New Jersey did a lot during Hurricane Sandy as our State had billions of dollars of damage to their communities, displaced people who are still not back in their homes. But as we look at rising sea levels in and around New Jersey, we know that if future storms hit that the damage as the sea level rises will be increasingly worse. So we have an affirmative obligation to act. That is who we are as Americans. We see that right now in our country there is a crisis. It is unmistakable. Every Senator who has spoken tonight has pointed to charts with the facts. We talked earlier about the military recognizing what is happening. They are active.

But of this body, the question will be asked, did this body, when the evidence was clear, when the damage was being done, when homeowner after family after neighborhood after farm town after urban area—when we knew the crisis was coming, did we do everything we could to prevent that challenge, that damage, that infliction of economic, emotional, physical pain from coming?

I ask the Senator, as I wish to switch back in a second, the cost of not doing anything is great. But the Senator mentioned before the benefit of acting. I thought that was one of the more powerful remarks of the Senator. But actually there are rewards for acting, in creating economic activity, in creating jobs, in improving environmental conditions, and in saving money.

I was wondering if the Senator would highlight some more of that intelligent, enlightened action that could actually not be as much of a sacrifice as people are talking about at the beginning.

Mr. HEINRICH. Through the Chair, I thank the Senator from New Jersey in particular for sharing those stories, because we need to take some inspiration from people all across this country, and certainly in New Jersey, who have faced up to incredible challenges such as Superstorm Sandy and shown that when we put our minds to it Americans can accomplish just about anything. We need to take that inspiration and find the will in this body to move forward on what we know are the facts and to start to have a conversation about what are the policies we are going to put in place to make sure we do meet that challenge. How are we going to do it in a way that recognizes what the Senator from New Jersey had said a number of times tonight, that right now people care so much in this country about the fact that we need jobs and we need economic development. Even though one can look at the stock market and say there has been some sort of recovery in this country, most of our constituents will tell us they are not feeling it.

We have an opportunity to create a whole new generation of jobs. The question is are we going to create them in the United States or are we going to let someone else create them somewhere else in the world.

One of the speakers earlier tonight, the Senator from Massachusetts, brought up the incredible innovation that has happened in recent years in the auto industry with hybrids, plug-in hybrids, and even electric vehicles. Certainly my State is one of the Southwestern States competing, if you will, to try to get Tesla, a disruptive technology manufacturing company, to possibly put their battery manufacturing facility in the State of New Mexico. They are looking at a number of States in the Southwest, but we think with our combination of two national laboratories, Los Alamos and Sandia, the rail lines that we have in the State, the innovativeness around renewable energy that is part of their values, that we offer something unique we hope they will look at as their site and where to put that facility. But think of all the jobs in an industry and a company that a few years ago a few people wouldn't have believed in.

Mr. BOOKER. I beg the indulgence of the Senator, because I am going to put him on the spot. The Senator was talking about Tesla, the innovative company of today. The Senator and I were sharing stories earlier, and this goes to the point of the ingenuity of our country. I know some of the people involved in Tesla, and they are so inspiring.

But the Senator, years ago, when he was in not quite in high school or college——

Mr. HEINRICH. College.

Mr. BOOKER. College. The Senator got involved in building solar cars and racing around our country. To me, that is a tribute to the lessons of what you are talking about; that is, No. 1, we are the leader globally in innovation, but we are also one of the leaders globally in education and training and preparing people.

So this idea—and I see it in schools in Newark and in New Jersey—is kids innovating in robotics competitions, kids innovating in sciences, kids using technology and using the platforms created by big companies to do things that have value and work.

So let me put my colleague on the spot. Forget Tesla. Long before we even knew what Tesla was, my colleague was doing something with solar cars back in college.

Mr. HEINRICH. Before there was a Tesla, when I was in college in the early 1990s—and this is one of the things that makes me such a strong believer in innovation and really gives me the optimism to say that we can do just about anything as a country when we set our mind to it—my fellow students and I joined the Sun race in 1993. At the college I attended, a number of my colleagues who were studying electrical engineering—I was studying mechanical engineering, and we had people who were studying material science—we all got together and we designed and built a car, a solar car, that we raced across the United States. We raced from Dallas, TX, up to Minneapolis, MN.

People were asking us along the way: When are we going to be driving solar cars? That really wasn't quite the point, but it was a great opening to say this isn't about having solar cars. We are not going to have solar cars because you need a pretty big car to get enough sunlight to do the job. But it is about driving that innovation and engaging the best—and we have the best—education system at the collegiate level in the world and putting that to work to make sure we are growing the next generation of jobs and the opportunity that represents.

While there are not solar cars riding around in the United States today, there are now electric cars, and many of the fundamental innovations we made are now showing up throughout the auto industry. In fact, one of the things, if you look at how disruptive the Toyota Prius was a few years ago, one of the reasons why it was so efficient was a little thing called regenerative braking, where when you step on the brakes, instead of all that energy being wasted, the heat through the brakes is turned into electricity and put back in the batteries in the car. Now you are seeing that in hybrids throughout the auto industry. That is something we used in the early 1990s in this contest with our solar car.

We had LED lights long before anybody had LED lights in their cars. We were making turn signals and lights on the solar car with LEDs. We built our car out of carbon fiber. It kind of looked like an upside-down wing. All of these kinds of innovations are now standard fare. They are things that get used in the American auto industry in cars built right here in the United States to make all of our cars more efficient and to create some really good jobs along the way.

I believe we ought to be able to do that more broadly with clean energy technology to help address some of these climate issues.

Mr. BOOKER. I think my colleague's point has been seen in history, before he and I were even born. We had a President put forth a noble ambition to make the Moon not a dream but a destination. What he did was he set in motion, by charting a course for America to be first, to lead the globe to be the

innovators and to go beyond human imagination. It actually affected everyone, all the way down to our schools and our classrooms and what kids were studying. Generations came up with that, and not only did we win the space race, but it fueled new technologies, new innovations for our generation.

Think about this. This company in Silicon Valley, I think it was called Keyhole, looked at the satellite information borne out of the space race. That company was bought by another company called Google, and that turned into Google Maps, something my colleague and I probably both have on our phones.

So it is amazing when America has this attitude that we are not going to put our heads in the sand and deny a new world is upon us; we are going to lead the country. That has multipliers of collateral benefits that are not anticipated. As mayor, I became not a convert, because I knew this was an issue, but I became a zealot about this idea that you could create a multiplier effect of benefits when you talk and innovate around making the American Dream a green dream.

Let me share this with my colleague. We see in a 2012 report by the Rockefeller Foundation that it was estimated that more than $279 billion could be invested in retrofitting existing buildings making them more energy efficient. This goes back to the point we were talking about—job creation and leading. This investment, the Rockefeller Foundation study found, could yield more than $1 trillion of energy savings over 10 years, reducing United States emissions by as much as 10 percent. But this is the kicker. This creates energy savings, reduces emissions, and creates a healthier environment for cities such as Newark and Camden that are on these heat islands that ratchet up asthma. So we lower those emissions, lower the heat in those areas, which has collateral benefits. Here is the one we should be talking about right now while we are coming out of a recession. It could create more than 3.3 million new jobs, direct and indirect, in the U.S. economy.

That is just by investing in retrofitting and getting a return on the investment, with $279 billion, getting a return of $1 trillion in energy savings, and reducing energy costs for families, for governments. These jobs cannot be outsourced. They are not about foreign competition. It is about putting people here to work, and not only do these energy efficiency retrofits utilize local workers, the vast majority of the materials used for the retrofits come from where, Senator?

Mr. HEINRICH. Right here at home.

Mr. BOOKER. Right here. Energy retrofits are manufactured right here in the United States of America. This is the collateral benefit, the multiplier effect we are talking about. Attic insulation, replacement windows, and new furnaces—more than 90 percent of the energy efficient materials are made in the USA, putting Americans to work, fueling our economy, and making us strong and successful in a multiple of layers.

That is all in just one segment of the green economy. I am just talking about retrofitting. Hundreds of thousands of jobs have already been created, as we both know, in the wind and solar sectors. People don't know, but New Jersey is one of the leaders in the solar industry. Only California does better than we do, and those sectors are still in their infancy.

We can have a healthy environment and a healthy economy. These false choices that people seem to be putting up are simply that: false choices. It is not the tyranny of the ''or;'' it is the liberation of the ''and.'' They are not mutually exclusive.

When I was mayor of Newark we took action. Understanding this data and these facts, we worked with the building trades, and they created a laborers local, local 55 in my area, that focused on weatherizing residential properties in Newark. We recruited Newark residents who were taught how to perform energy audits and residential retrofits. Our residents had new job opportunities, and our homeowners who participated in the program saw energy savings.

We first did this as a pilot focusing on senior citizen homes in the south ward of my city, and it was amazing. They were seeing reductions in energy costs of 25 percent or more. It was amazing. So we were able to save senior citizens money, employ young people from our community, and improve our environment, all at the same time.

We found this was of value on all the issues. We knew one of the issues was just planting trees. We said: Hey, we are going to take action by increasing our tree canopy. We brought in private dollars at the neighborhood level through community organizing, and we began the process of making Newark greener, thus cooler, and making sure that new generations had opportunities.

My colleague and I both know that one of the great definitions of leadership is that great leaders are those who plant trees under whose shade they will never sit. By our taking action on climate change, we will benefit generations to come, but the truth is—the exciting thing for me—it is going to help us in our economy right now. This is why this doesn't have to be a political issue. It can be one about pragmatism where left and right can come together.

If my colleague will allow me, on that point of left and right coming together, I want to explain why this should not be a political issue. The opportunities are too great for America not to lead, for us to bolster our economy, for us to improve our environment, for us to reduce these savage weather anomalies. What inspires me about this is that there are a lot of people—Republicans—who are realizing this is not a Republican-Democratic issue.

When forest fires rage in New Mexico, they hurt Republicans, Democrats, and Independents in that State. When droughts hit the Midwest, they hurt the farms of Republicans, Democrats, and Independents. When the lobster industry suffers in Maine or scallops in Cape May, this affects all of us. If my colleague will allow me, and then I would love to get his comments on this afterwards, I love this editorial, and I think it is worthy of reading into the record right now. The writers are former Administrators of the EPA. Listen to this. This was written by Lee Thomas and William Kelly and this incredible woman from New Jersey named Christie Todd Whitman. She was our governor. She came and joined the Bush administration. These are heads of the EPA, people who had to deal with the facts, the pragmatism, every single day. Their job was to analyze what was going on around the country, and they wrote a letter, and I think it is worthy of reading, if the Senator will indulge me.

Mr. HEINRICH. Please do.

Mr. BOOKER. Thank you. They say:

> We served Republican presidents, but we have a message that transcends political affiliation: the United States must move now on substantive steps to curb climate change at home and internationally.

I'm telling you right now, and my colleague knows this, when we lead, other nations follow.

The letter continues:

> There is no longer any credible scientific debate about the basic facts: our world continues to warm, with the last decade the hottest in modern records, and the deep ocean warming faster than the earth's atmosphere. Sea level is rising. Arctic ice is melting years faster than projected. The costs of inaction are undeniable. The lines of scientific evidence grow only stronger and more numerous. And the window of time remaining to act is growing smaller: delay could mean that warming becomes ''locked in.''

I know my colleague and I both believe in the free market.

Mr. HEINRICH. Absolutely.

Mr. BOOKER. But we know we see businesses now that are internalizing profits and externalizing costs. I see this in New Jersey. We are cleaning up the Passaic River, and it is costing taxpayer dollars. When we hear complaints about high taxes, it is going to this kind of stuff—cleaning up the Passaic River because corporations and businesses are dumping pollutants in there and do not internalize the cost. They said: Some future generation is going to pay for it. We are that future generation.

So getting back to this—because I love the free market—I want people who externalize the cost to internalize it. If you are polluting the air and hurting the planet, you need to pay for that.

A market-based approach like carbon tax would be the best path to reducing greenhouse gas emissions, but that is unachievable in the current political gridlock in Washington. Dealing with this political reality, President

Obama's June Climate Action Plan lays out achievable actions that would deliver real progress. This is amazing to me. Four Republicans who served under Republican Presidents as heads of the EPA are saying President Obama's June Climate Action Plan lays out achievable actions that would deliver real progress.

The President also plans to use his regulatory power to limit the powerful warming chemicals called hydrofluorocarbons. People understandably don't like overregulation, but the reality is that if this is being released as pollutants into the air, we should be doing something about it.

Mr. HEINRICH. If the Senator would yield, we have heard time and time again that when we allowed the market to innovate and deal with these same kinds of challenges—whether it is $NO_X$ and SOx or other pollutants we have been able to address in the past; whether it is the hole in the ozone layer—I mean, talk about a global issue of pollution—the market was able to solve those.

Mr. BOOKER. I don't mean to question the Senator's integrity, but I just don't know if he was alive at the time.

Mr. HEINRICH. I think I read it in a book somewhere.

Mr. BOOKER. Allow me to continue because the Senator is absolutely right. I heard some incredible examples from other Senators talking about things we did. I love the story by the Senator from Maine about the pull-top cans.

Mr. HEINRICH. It reminded me of growing up as I did. My mother worked in the auto industry, and there was a time when we had a great debate. My grandfather complained based on something he heard on the radio about these catalytic converters which were going to ruin the American auto industry.

What happened is when we decided to clean up emissions from the auto industry, we actually created an entire new industry around catalytic converters, which for many years afterward was an export industry for the United States. Since we took the first step, none of the other countries understood the technology well and could manufacture it well. So as the rest of the world followed our lead to clean up their pollution, they were importing our catalytic converters.

We can look at example after example where this has been the case. When we allow the market to innovate, we can solve the most challenging pollution problems.

Mr. BOOKER. I love that. Never bet against America's ability to innovate, to be resilient, to be industrious.

So I continue on this editorial written by four past Republican EPA Administrators:

The president also plans to use his regulatory power to limit the powerful warming chemicals known as hydrofluorocarbons and encourage the United States to join with other nations to amend the Montreal Protocol to phase out these chemicals. The landmark international treaty, which took effect in 1989, already has been hugely successful in solving the ozone problem.

Rather than argue against his proposals, our leaders in Congress should endorse them and start the overdue debate about what bigger steps are needed and how to achieve them—domestically and internationally.

As administrators of the E.P.A. under Presidents Richard M. Nixon, Ronald Reagan, George Bush, and George W. Bush, we held fast to the common-sense conservative principles—protecting the health of the American people, working with the best technology available and trusting in the innovation of American business and in the market to find the best results for the least cost.

Highlighting the Senator's words.

That approach helped us tackle major environmental challenges to our nation and the world: the pollution of our rivers, dramatized when the Cuyahoga River in Cleveland caught fire in 1969; the hole in the ozone layer; and the devastation wrought by acid rain.

These are all points just made by the Senator from New Mexico.

They continue:

The solutions we supported worked——

Government acted. They worked——

although more must be done. Our rivers no longer burn, and their health continues to improve. The United States led the world when nations came together to phase out ozone-depleting chemicals. Acid rain diminishes each year, thanks to a pioneering, market-based emissions-trading system adopted under the first President Bush in 1990. And despite critics' warnings, our economy continued to grow.

Climate change puts all our progress and our successes at risk.

It says what the Senator and so many others have said: Climate change puts all of our successes and our communities—like Toms River, like Cape May County—at risk.

If we could articulate one framework for successful governance, perhaps it should be this: When confronted by a problem, deal with it. Look at the facts, cut through the extraneous, devise a workable solution and get it done.

We can have both a strong economy and a liveable climate. All parties know that we need both. The rest of the discussion is either detail, which we can resolve, or purposeful delay, which we should not tolerate.

Mr. Obama's plan is just a start. More will be required. But we must continue efforts to reduce the climate-altering pollutants that threaten our planet. The only uncertainty about our warming world is how bad the changes will get and how soon. What is most clear is that there is no time to waste.

Republicans who echoed to me these words—and I know the Senator knows who wrote them, but I will read them first and cite them later. We heard four Republicans speaking today echoing the words of someone who wrote in the 1960s:

We are now faced with the fact, my friends, that tomorrow is today. We are confronted with the fierce urgency of now. In this unfolding conundrum of life and history, there ''is'' such a thing as being too late. Procrastination is still the thief of time. Life often leaves us standing bare, naked, and dejected with a lost opportunity. The tide in the affairs of men does not remain at flood—it ebbs. We may cry out desperately for time to pause in her passage, but time is adamant to every plea and rushes on. Over the bleached bones and jumbled residues of numerous civilizations are written the pathetic words, ''Too late.''

As the Senator obviously knows, those are the words of Martin Luther King.

I know for the people in New Jersey, who stand with the understandable anguish of a State still recovering from Hurricane Sandy, that should the sea levels continue to rise in the coming years, we know cities such as Atlantic City and others could see not hundred-year floods but ten-year floods, which will severally damage those cities' ability to continue as we know them today. For my State, there can be no ''too late.'' We must act now. And the Senator sees that urgency as well in New Mexico.

Mr. HEINRICH. I do. And I think it is worth noting that when we speak about the four Republican Administrators of the EPA, they have all looked at the history of this argument and how it really reflects on a conversation we have had since the 1960s—and I think the Senator put it so eloquently—that it is not about jobs or quality of life; it has to be about both.

Those Republican Administrators of the EPA have watched as the Clean Water Act and the Clean Air Act and the work done on the Montreal Protocol—all those debates were fundamentally identical to this one. People said that this was going to cost too much, that we were going to lose jobs if we made these decisions to clean up our environment. And what happened? If we look back at 1980 and today and the policy changes made, we have a GDP twice as big as what we had in 1980. We have doubled our country's economic output at the same time we have cleaned up our air and water and said we are going to have the cleanest country in the world. We are not going to be like China, where kids walking to school have to wear masks and can't play outside.

When we think about young people in this country, the thing that always strikes me is that when we talk about climate change and when I go home, people are concerned about impacts and the things we talked about before—not the fact that forest fires are happening but that they are happening too often and with such extreme fire behavior now; the fact that drought is getting to be the norm, not the exception. But kids understand this issue, young people understand this issue in a way that calls out for action. I think that is why it is so important that we are doing this tonight, to send a message that we are hearing that because when I talk to high school students or kids in junior high or at college campuses, they understand they are inheriting all the weight of inaction.

I remember as a kid hearing explanations of how the greenhouse effect works and what this is going to do long term. Here we are close to 35 years later, and we are seeing the impacts.

Our kids and our grandkids are going to see impacts a whole lot more extreme than even what our constituents have already shouldered. We can't wait anymore. We have a moral obligation. We can argue about what the best way to address these challenges is and we should. We should find a way to address these challenges that gets the buy-in of a majority of this deliberative body. But we can't step aside any longer and say we are not going to act. That would be irresponsible.

Mr. BOOKER. I will ask the Senator about some of the vulnerable communities in his State, but I will go about it this way. I have such great memories of my father and grandfather, both of whom passed away. Probably the first time I passed through the Senator's State was in a mobile home, in which my grandfather took us and drove us across the country. I saw America, north and south. We did that a number of times. I remember standing with him and looking at Mount Rushmore. My grandfather had a great sense of humor, and if he didn't know a historical fact, he would just make it up. But he taught us to appreciate and love this country. My father was the same way. He grew up in the mountains of North Carolina and took me there as a little boy and with such pride showed me mountains and lakes, and I fell in love. My mom also took me around New Jersey to some of our great parks and hiking the Palisades of New Jersey. I have incredible memories of the Jersey Shore and walking the boardwalk with my hand in my parents' hands. All these memories are so great. My father had this story that I think makes this point about tonight. One of the slogans for tonight is ''Wake Up.''

My father tells a story about a guy walking along and sees a porch, a man sitting in a rocking chair, and this hound dog sitting next to him. The hound dog is just howling away like he was in great pain. The man says, ''What is wrong with your dog? Why is he howling so much?''

And the man says, ''Well, he's sitting on a nail.''

And the other man says, ''Why doesn't he get up?''

And the man says, ''Because he's not hurting bad enough yet.''

I tell you, the story used to always get me because my father used to always say: Son, get up. Do not tolerate bad. You are better than that. Do not just lie there.

I think about our country and know our history.

You and I have been talking about our history. You and I were born in an amazing generation. We were born after the dawn of the civil rights movement, born after going to the Moon. So much we are talking about tonight is the history of our elders who did give to us a country of unbridled possibilities. We are America, but we are hurt. We are hurt, and we represent communities that feel all this pain.

This is the point I wish to make. I heard Senator LANDRIEU from Louisiana in the debate about flood insurance and how these waters are rising. These are becoming more severe problems. I heard some of my Northeastern colleagues talk about the erosion, how we are losing acres and acres every year with rising sea levels. One of the times I got very moved listening to Senator LANDRIEU talk was when she was reacting to people who say this is about people who have lost their vacation home. I heard this in New Jersey as well. What bothered me about that is what many folks do not realize is the pain of climate change often affects the most vulnerable Americans most—the poorest people.

She was talking about those people who make a living, scratch out a living in her State, whose livelihoods—who really have not that many other choices. I was in Cape May County talking to these fishermen and listening to the kind of tough jobs they have. These aren't people who are millionaires. They go out there. Talk about an honest day's work. I have to say I am a northern New Jersey boy, listening to these men talk about the toils of pulling from the sea. Cape May is one of the most productive areas to bring in the sea's bounty in our country. They say it is No. 4.

To hear them talk about their jobs—but their fear, their worry in their eyes that with the warming waters their catch is moving north. They are getting less out of the sea. I know this as a former mayor of Newark. I see this when I go to my schools and talk to my school nurses, and they use the word ''epidemic'' with asthma, seeing the warming climate, what it is doing to the lung development on these children.

I know from Sandy that when a storm like that hits, everybody assumes why not get in the car, drive someplace, stay in a hotel. Many people, No. 1, do not have cars, cannot just pull out of their pocket a couple hundred bucks to stay in a nice hotel for 1 month or 2 months. When they lose their home, they lose everything, and then when they come back, they are told they have to build in a certain way. So this is something that affects us all.

As King said, to quote him again in the letters from the Birmingham jail:

> We are all part of an inescapable network of mutuality, tied in a common garment of destiny.

In America there is no rich destiny and poor destiny. There is no Republican destiny and Democratic destiny. There is no Black destiny and White destiny. We have one destiny here. But the truth is, in this country, the people who are most immediately impacted by this growing problem are these vulnerable populations. We have to talk more about those folks. They cannot hire lobbyists to come down here. They do not represent some industry we give tax breaks to but folks who cannot engage in expensive fundraisers. The Senator from New Mexico has a State—and again, the goodness you have done to educate me. I hope I have done as good a job educating my friend about New Jersey, and he is welcome to come to our State.

Mr. HEINRICH. I am learning everyday, but I am looking forward to visiting too.

Mr. BOOKER. My colleague from New Mexico represents everything from Native American peoples to a very diverse State. I am wondering if he could talk for a moment about the urgency he sees of this problem for the more vulnerable populations who are becoming—the situation they are in right now is becoming much more dire and should call to the consciousness of our country and should challenge our morality as a people, should expand our moral imagination about what we can and should do and must do.

Mr. HEINRICH. I think the Senator has hit the nail on the head when he said that those among us with the least economic means often bear the highest cost.

That is certainly true in New Mexico. We have enormous economic challenges. We have communities where people cannot afford to get up and move because the climate situation changed. We have literally cities where wells are dry and there is no water. Reservoirs run dry, and there is no water. Las Vegas has come within—Las Vegas and New Mexico has come within a month or two, several times now, of their reservoir literally going dry. A town such as Magdalena, NM. Their well lost water to the town for a number of weeks and they had to come up with a plan for how to deal with that and diversify their water supply again at huge costs to local residents and the State.

These are real challenges being borne by people who do not have discretionary income to be throwing at these challenges. We have people who live a very traditional lifestyle, who are living in these forests. When there are wildfires, they are the first to bear the economic brunt of that.

We see the impact drought has had. The Senator mentioned fishing off the coast of New Jersey. That is kind of how many of our traditional communities view mule deer and elk and wild game that have always called New Mexico home. We see direct impacts to our rival population when people—when the mule deer population crashes or there is a fire that literally you cannot hunt in the same places because this year it is closed due to the damage by fire and they are not letting anyone in.

There are people who rely on that activity to literally get them through the winter. Those impacts are always felt by the people who have the least need to be in control of that situation, and that is an enormous challenge. We should do a better job of illustrating some of those stories and making sure we make clear what the impacts are to the people who have the least means.

They cannot stay in a hotel simply because there is an extreme weather event on the coast of New Jersey or there is a fire in New Mexico.

There are many of my constituents who could not afford to stay in a hotel, and they are the ones bearing the brunt of the challenges. Traditional farming communities that used to be able to grow, they are cut off from the irrigation season. If they get cut off from water halfway to a crop that produces—some sort of production that is not like growing grass or alfalfa, but they literally cut off the water before their crop comes in, they lose it all. Even if they got to 90 percent but didn't quite get to where their crop actually produces, they can lose it all. It is those kinds of impacts my constituents feel when we have some of these extreme weather events.

Mr. BOOKER. I guess what makes me emotional, I have to say, is I do not need to imagine what the future will be like because I have seen it in the urban area I have represented for the last 7-plus years. Let me go a little bit deeper into what I mean.

We wanted to do urban gardening. We were told by environmental regulators in our State that we couldn't dig into our soil because the soil in my city was toxic. Not one of my residents did it, not the folks who had been living there for generations. It is toxic because folks put things in the soil.

We have the biggest urban gardening city, Newark, NJ, but they are planting in beds above ground. I already talked to you about the air quality. This is why so many cities in New Jersey now are working very hard—and I am proud—on two items, and one of them is we have epidemic asthma rates. Go to urban places around the country and you will see that. Now we are separated from the air, separated from the soil. Go to your river. It used to be, if you were poor, you could just go to the river and get some shellfish. Go fishing, eat a meal. But somebody took that away, and now you cannot do that. Now you have to find money and see if you can buy something from the store that nature used to provide in the safe river. So you are separated from your water. So the collateral damage all through the populations, I do not have to see what it is going to be, I see it now.

Mr. HEINRICH. You see it now.

Mr. BOOKER. There is wisdom in my community. There is still wisdom. If you will, allow me to share a story with you.

I have learned my best lessons in life from some of the humblest folks who have this wisdom. There is something about the DNA of human beings that knows we have to respect the environment that gives us everything. We are a people that used to be an agrarian society.

In my city there is a gentleman. I talked about this gentleman in the State of the City Address once who was living in a high-rise building across the street from a lot. It was fenced in by some iron, but the iron had given way, so it was full of debris and junk. There were some guys who dealt drugs out there. People looked at that as an area you just do not go to. This guy got a stimulus check in the mail. You were saying before how expensive it is. James Baldwin, the great American author, said something about is very expensive to be poor. But I also find there are those who have the least who are the most generous to others.

This retired State worker, instead of just saying, great, I got a check in the mail—he didn't do that—he said: I am going to use this check. So he went and bought a lawnmower, a rake, and gardening materials. He went into the lot the drug dealers were using—the elderly man goes into the lot and he tended to the earth; cleaned it up, mowed the lawn, a little bit every day. He didn't do it all at once.

First, people were worried about it. The drug dealers didn't pay him any mind. He tended to the earth. Before he knew it he became a hero in his building, not just because that lot became more beautiful than the White House lawn down the road but because after he made it look so beautiful, what happened to the drug dealers? They left. They left that spot.

I heard about this gentleman. I went to visit him in his building, and it was just to me this amazing story of the pride people have, of the desire they have to take care of their community.

Mr. HEINRICH. The amazing thing is that in our conversations we have sort of educated each other on these two States that are kind of close to each other in the alphabet——

Mr. BOOKER. Right.

Mr. HEINRICH. But miles and miles apart. New Jersey has a coastline. New Mexico does not have anything resembling an ocean anywhere near us. Our States have incredibly different histories and yet so many of the same kinds of issues. I think another State that could have a different set of issues, yet many of the same threads run through it, is obviously the State of Hawaii. Our colleague Senator SCHATZ of Hawaii took it upon himself to help organize this. I have been amazed at the things that my home State of New Mexico has in common with the State of Hawaii. I wonder if the Senator would maybe spend a little time talking about what with regard to his constituents inspires him when the Senator sees how they are stepping up and doing what we need to do in the Senate, recognizing there is a problem that we as a nation or at least in our communities have the potential to solve.

Mr. BOOKER. Can we pause for station identification in the sense that the Senator from Hawaii is really the ring leader, so to speak, in bringing us together in almost a 24-hour period. The Senator has done a great job of pulling our colleagues together. There have been a little more than two dozen Senators who have come to the floor.

I thank my friend from Hawaii for his extraordinary leadership on bringing this issue to the floor. He has spoken so eloquently about Hawaii and the impact of the severe weather changes. I am very much looking forward to hearing that now.

I do want to say that right after I turned 17 and got my New Jersey driver's license, one of the earliest places where I drove was on a trip to Hawaii—the only trip I had ever taken—and I found it to be an extraordinary State.

Mr. HEINRICH. The Senator didn't drive to Hawaii.

Mr. BOOKER. I did not drive to Hawaii. I thank the Senator from New Mexico for that clarification. I appreciate that for the CONGRESSIONAL RECORD.

I do want to say that Hawaii was a paradise, except that it lacked some fundamental things. For one, it lacked a good Jersey diner. In a future career, the Senator might want to open a diner. It would be so successful there.

Please, Senator, go ahead.

(Mr. HEINRICH assumed the Chair.)

Mr. SCHATZ. I thank the Senator from New Jersey and the Senator from New Mexico for such an energetic discussion at this earlier or late hour, depending on how you define it. It is nearing bedtime in my home State, but for the rest of us across the Nation, many of us are asleep. But we are up for climate. The hashtag is up4climate, and we encourage you to jump on that hashtag.

I thank both of the Senators for participating in that discussion.

I spent a fair amount of time on the Senate floor today talking about how serious, how dire, and how real climate change is. But I think it is important—and consistent with what Senator KAINE from Virginia and Senators BOOKER and HEINRICH have talked about—to talk about the opportunity for American leadership in economic and technological innovation. There are such incredible opportunities for our country in innovation that it is really worth drilling down and talking about the details.

First, let's talk about battery storage. One of the challenges in the State of Hawaii is this. We have abundant wind and solar energy. We are the most isolated populated place on the planet. We still burn 85 percent of our energy as low-sulfur fuel oil. In other words, we import oil and burn it for electricity, which at this point in time is really unheard of and overly expensive. Three to four times the national average is what we pay for our electricity. It is really hurting us in the pocketbooks, and so we are adopting solar and wind and other clean-energy resources as fast as we possibly can.

The challenge with a grid system that is island by island is this. When you need the energy, you need the energy. If the sun is not shining, and it is the evening time, or if the wind is not blowing, you need either dispatchable power or some other kind of reliable

power. The breakthroughs with battery storage that are being driven by this new clean-energy economy in the State of Hawaii is really extraordinary.

The technicians that have run the utility companies for many years used to think that the maximum penetration of renewable energy on to the grid—a grid like Hawaii—ought to be around 15 percent. Well, we blew through 15 percent in parts of our grid 3 or 4 years ago. There are parts of our grid that are in the high 20s to low 30s. We are on the leading edge of all of this.

The good news is that on the utility side—in terms of battery storage—the consumer side, and the power-producer side, we are making tremendous breakthroughs in battery storage. That brings us to this overall question of the smart grid.

The smart grid means a lot of things to a lot of people. It means increasing the resilience of our infrastructure in the case of either a manmade or a natural disaster. It means making sure we are not wasting energy by curtailing power. What is curtailing power? It basically means that sometimes there is clean energy coming onto the grid that cannot be used. Because battery storage is still overly expensive, there is no way to store that energy.

Although the wind might be blowing on the island of Maui—sometimes the wind is blowing and the turbines are turning, but we can't utilize that power because we don't have a smart enough grid. So what we are doing is attracting investment from all over the planet to develop a smart grid.

We have a partnership in Maui County and with the State of Hawaii with the Hitachi Corporation and the Japanese government. They are investing tens of millions of dollars in little Maui County to better understand how to integrate large-scale penetration of renewable energy into a relatively small grid.

There is a new area that I am learning about where we are really innovating in the State of Hawaii, and that is aerodynamics and hydrodynamics. Unlike the Presiding Officer, I do not have a background in engineering, but I understand aerodynamics and hydrodynamics in the following way: It is basically trying to get things to move through water or air as efficiently as possible. This has tremendous implications.

As you can imagine, the Air Force is very interested in aerodynamics because fuel costs are really out of control for all branches of the service, but in particular in the Air Force and the Navy. The Navy is also looking at hydrodynamics to try to figure out how their ships and other vessels can move through the water as efficiently as possible, and again, not for conservation reasons. It is not because they are so interested in the climate, but because they want to save money on fuel. So we are making really good progress in aerodynamics and hydrodynamics.

We have a company that has a test case where they think they can increase the productivity of a wind turbine by 15 to 25 percent. What would that mean? If they can actually prove this technology out, every existing wind farm—if they just swapped out the turbines—could be 15 to 25 percent more productive for the grid. That means no additional siting and no additional permitting. If we could simply swap out new wind turbines, we could see a massive new increment of clean energy onto the grid.

Solar energy is another area that is exploding all across the country. I was talking to somebody who was working in the Capitol Rotunda as we were doing a live television show this afternoon. He was telling me how he just got solar energy, and that is happening all across the country. Solar is just absolutely going crazy in the State of Hawaii. With costs of 38 to 40 cents a kilowatt, solar energy makes a lot of sense for everybody.

We are doing utility scale solar, but we are also doing distributed solar because people want to get their own savings. They want to participate in a clean-energy economy, but speaking practically—this is not ideological, this is not political, this is a pocketbook thing—they are doing the math. These people are not Democrats or Liberals or Independents. They don't wake up every morning—like many of us—thinking about how to solve this problem. They are looking at their own bottom line and saying solar makes sense.

Mr. WHITEHOUSE. Will the Senator yield?

Mr. SCHATZ. I am happy to yield.

Mr. WHITEHOUSE. Michael Brune, who is the head of the Sierra Club, came in to see a number of Senators the other day. He told an interesting story that lines up with what Senator SCHATZ said about how solar is a pocketbook issue and not a political issue.

This story involves Atlanta, GA, which is not exactly a hotbed of liberal sentiment. In Atlanta, the cost of solar on a residential rooftop—the cost of putting a solar panel on your home—has now leveled out with the cost of electricity at the plug in your home. As a result, residential installations of solar energy started to boom.

Now, for economic reasons, the fossil fuel polluters were against that, and so the Koch brothers and the polluters got behind this group called ALEC, the American Legislative Exchange Council, which is basically a front group for them. They tried to put through a tax on rooftop solar installations so that if you put a solar panel on your roof, you would get taxed for it because they didn't like the fact that solar had actually caught up to polluting fossil fuel power at the plug.

Who came together to fight that tax? The Sierra Club and the tea party. The Sierra Club and the tea party worked together to beat that tax and to beat ALEC and to beat the Koch brothers and the polluters back on that. Again, if you have the Sierra Club and the tea party pulling side by side, you know it is not ideology. You know at that point it is a pocketbook issue, and that people are starting to see savings from putting solar on their own home and they don't want anybody to interfere with that. That is a story that is a long way from Hawaii, but it helps to illustrate that point.

Mr. SCHATZ. I thank the Senator. Although the tea party is in the State of Hawaii, they are not as strong there as they are in other places across the country. We do have a strong strain of conservatives across the State of Hawaii who want to get off the grid or at least want to participate in the clean-energy economy, and it has to do with the very simple fact that we pay 38 cents a kilowatt hour for the privilege of burning low-sulfur oil for electricity. That is not a left-right issue. That is a ''this makes no sense'' issue.

We are one of the very few States where we have a good bipartisan consensus. We have been moving forward with our clean-energy initiative previously under a Republican Governor with the participation of the Republicans in our legislature, with our Chamber of Commerce, with our business roundtable, with our tourism industry, with our Department of Defense. It is exactly what the Senator from Rhode Island has been talking about. It is about doing what makes sense rather than subscribing to any particular political ideology.

Mr. WHITEHOUSE. It is interesting that my friend should mention his Chamber of Commerce. In Rhode Island, we too are seeing very active participation by our local Chambers of Commerce in green, solar, alternative energy, energy efficiency, and other such endeavors. They see it is a pocketbook issue. They see it makes sense.

It is a stark comparison with the so-called U.S. Chamber of Commerce—the national organization—which tends to represent the multinational corporations which have very little, if any, allegiance to this country and the big polluters. The U.S. Chamber of Commerce has been an absolute menace in terms of any responsible dealings with climate change. But as soon as you get away from the so-called U.S. Chamber of Commerce—the multinational Chamber of Commerce is what it should probably be called—and get down to these Chambers of Commerce that are grounded with our States, grounded with local businesses, grounded in commonsense, you immediately see that they step right up and want to be a part of this solution.

Mr. SCHATZ. Mr. President, I ask unanimous consent that we be given permission to engage in a colloquy.

The PRESIDING OFFICER (Mr. BOOKER). Without objection, it is so ordered.

Mr. SCHATZ. One of the things I would like to add is a specific technology that is happening that is trying to be developed in the State of Hawaii

and which is a perfect example of the kind of partnership between the clean-energy industry and some of the more traditional companies. It is called seawater air conditioning. Even with my nonengineering background, I can understand it. It is cold water from deep within the ocean that cools air conditioning systems.

Rather than using electricity to try to cool water and cool air and blow it through, you just grab the cold water and put it into the pipes and it cools systems. This makes perfect sense for Waikiki and for the physical plant of Waikiki as well as our millions and millions of visitors and our thousands and thousands of hotel rooms and our 38-cent kilowatt costs.

One of the highest cost drivers—more than labor and more than our physical plant—is the cost of energy for the Waikiki hotels. We believe that having a private sector company—one that is trying to build a seawater air conditioning system which would be environmentally conscious—move into Waikiki can literally save 40 percent for all Waikiki hotels. This is an extraordinary opportunity.

The Sheraton and the Royal Hawaiian and the Hilton Hawaiian Village and the Queen Kapiolani Hotel, and all of these wonderful hotels, I know their GMs, I know the work they do, I know their employees, and they are all doing great work. But they are not interested in sea water air-conditioning necessarily because of its environmental benefits. They are looking to save 40 percent on their electricity bill and that it just makes sense. That is what this is all about.

Mr. WHITEHOUSE. Let me mention one thing. The Senator from Hawaii was good enough to mention that our hashtag tonight is up4climate, with the ''4'' being a numeral, so up numeral 4 climate. There was a remark made earlier that we are just going to be up late at night talking to ourselves and that nobody is going to be paying attention. The reports I have are that the League of Conservation Voters is tracking this with a Web site and 70,000 people have gone to their Web site to support us in our effort tonight. 350.org has 15,000 people who have gone to their Web site to support us. Our own Web site has 40,000 people, for a total of 120,000 signatories just on these Web sites. We also have people who have been going out on Twitter on this. We have people such as Leader PELOSI from the other side of the Capitol. They are locked down hard by the polluters over in the House right now. Nevertheless, Leader PELOSI wanted her voice to be heard, and so she has tweeted out and put out a release about this. OFA has tweeted out about what we are doing tonight, and they reach 42 million people.

So if anybody thinks nobody is listening to what is going on tonight, wrong. Millions of people are following this on Twitter, have been notified about it on Twitter, and literally over 100,000 people have joined these Web sites with more to come, I hope.

Mr. SCHATZ. I wish to ask the Senator from Rhode Island to give us a little bit of context. The Presiding Officer and I are new to the Senate. I think it is important to understand tonight in context.

From my perspective, having 30 Senators on the floor, to take the floor for about 15 consecutive hours to speak about one topic, with the emphasis, with the clarity, with the unanimity of this group, 28 Democrats and 2 Independents, is significant. It is historically important. But I am wondering whether the Senator from Rhode Island can give us a little context and let us know what has happened in the past and how he views tonight in the arc of our efforts to take action on climate.

Mr. WHITEHOUSE. I think this is an important turning point, an important launch point for the final phase of getting to responsible climate legislation. We were so close. We were heartbreakingly close when the House passed Waxman-Markey and in the Senate we failed to bring up any bill that could have gone to conference. We just failed to do it.

There was a period after that when the White House would barely mention climate change. It was deeply discouraging for people across the country to see the Senate fail that way and the White House retreat that way, but that has changed. The White House is back. The President is reengaged. He has announced a very strong climate action plan that has as a critical element putting some regulation on the big powerplants that are doing so much of the polluting. By the way, when I say big powerplants that are doing so much of the polluting, I mean 50 top polluting powerplants in this country put out more carbon than Korea, which is a very industrialized country, put out more carbon than Canada. That is just the top 50 polluting powerplants.

So that was a big shift when the White House did that, and this signals a shift that is coming to the Senate. The next big shift we need to get to is one where this line in the Senate, marking Democrat from Republican, is not such a harsh line on this issue. There is no need for it to be. This has in the past been a bipartisan issue.

Senator Lieberman on our side and Senator Warner on the Republican side did one of the early climate bills. This is an issue where Republican candidates for President who served here still campaigned for President on the issue of climate change. There is a Member on the other side of the aisle who was the original cosponsor of a climate fee bill. There are Republican Members who when they were in the House voted for Waxman-Markey. There are a number of Republican Senators who have publicly said they think a carbon tax or a carbon fee is a sensible idea or is an idea they would support under the right circumstances.

So there is a great opportunity to reach out to colleagues on the other side of the aisle. Once we get past people who are elected politically, we see Republicans in abundance supporting doing something about climate.

The Presiding Officer, the distinguished Senator from New Jersey, discussed earlier the Republican former EPA Administrators who came forward to say: Hey, guys, time to wake up. This is serious. You have to be responsible about it.

George Schultz has campaigned for a carbon fee, to put a proper price on carbon so we can deal with this issue. Former Representative Bob Inglis is out barnstorming around the country arguing that there should be a Republican conservative carbon fee proposal.

So even though that side of the Senate has been empty all night since Senator INHOFE left—and he was here to deny there is a problem—so there has been no voice for doing anything responsible about climate change all night from that side of the aisle. It has been absolutely silent, absolutely empty. But it is closer than it looks when we actually look at the history of Members on that side of the aisle, when we look at the position of Republicans who are not up for election.

Mr. SCHATZ. I wish to speak a little bit about how I believe taking action on climate is consistent with conservative principles. My understanding of conservative principles—and I am a progressive—but my understanding of conservative principles is basically that they value incrementalism, that they understand the importance of institutions, that they try to move slowly where possible, that they try not to make radical changes to communities or societies or organizations unless it is absolutely necessary. There is no more radical change that we could make to our economy, to our physical environment, to our communities, to our government than to allow climate change to move forward.

It seems to me what the Senator is saying is exactly right. There are plenty of conservatives who are prepared to take action in this area. Right now what we need is a Republican dance partner. I think we have them. I think there are those who understand and may have quiet conversations with us and nod and agree that the situation is getting increasingly dire and increasingly real and scientifically based in fact, but they don't want to be the first one caught making sense. They don't want to be putting themselves at the tip of that spear.

So one of the reasons we are here tonight is to hopefully galvanize the American public to go back to their more reasonable Republican Members and say: Remember when you said you would be a middle-of-the-road Republican. This is the way to demonstrate that you are a middle-of-the-road Republican. This is the way to demonstrate that you are a true moderate.

When the Department of Defense is saying this is a real strategic challenge, this is not the province of the League of Conservation Voters anymore. I love them. But listen. This is

beyond conservation organizations. This is beyond my particular passion for Hawaii's environment. This is about the future of the United States of America and our economic viability. So there are going to be Republican dance partners, but we all as—not just as a Senate but as a country—have to create a political environment in which they can operate with us and we can get to 60 votes. We don't have those votes right now. But as the Senator from Rhode Island said, it always looks more difficult than it is, and it is always impossible until you get it done.

So that is what this is about tonight.

Mr. WHITEHOUSE. Here is a fairly well-known Republican conservationist; indeed, perhaps the greatest conservationist President in American history: Theodore Roosevelt, a Republican. He had two very important characteristics that there is no reason the Republican Party should not be following today; one was he cared about America as a physical and spiritual space. It wasn't just about the money. It wasn't just about who could make money buying and selling what, who could make money extracting this or doing the other. He cared about America as a physical and a spiritual place. He would go out and camp in the forests with John Muir to get the experience and to embody the value of America as a physical and a spiritual space.

So that was one characteristic that was very important.

Here is the other one: He was willing to stand up against the big money. He was willing to tell the big money, basically: I am against you. I am willing to have a fight with you. The fact that you are big money is not alone enough for your argument to prevail with me. He went after the big trusts and he stuck up for the little guy against the big money. There is nothing that says the Republican Party couldn't do that again, although right now that is not their situation.

I mentioned earlier how we had a former Republican Presidential candidate who campaigned on climate change, how we have a Republican Senator who was a cosponsor of a climate fee bill, how we have a Republican Senator who voted for Waxman-Markey when he was in the House, how we have Republican Senators who have spoken for a carbon fee. All of that happened before 2010. What happened in 2010 that drove every Republican back underground on this issue? I will tell my colleagues what happened. The U.S. Supreme Court decided a case called Citizens United, and the instant they decided Citizens United, the Koch brothers and the big polluters put enormous amounts of money into elections. They didn't just put the money into elections between Republicans and Democrats, they put money into elections between Republicans and Republicans. They went into primary elections and they went after Republicans who were not consistent with their orthodoxy on climate change. Unless you are a denier, they either punish you or threaten you.

Since that time, that is why there has been silence on the Republican side. It is not because there is not a tradition of Republicans caring about the environment. The Environmental Protection Agency was established by a Republican President. Theodore Roosevelt was our greatest conservationist. There is a Republican tradition of this. There is a Republican tradition of standing up to the big money and sticking up for regular people but not since Citizens United, not since that baleful decision cast an absolute avalanche of dark money—of unlimited money and anonymous money—into the elections. I will speak more about that later, but that is what the problem has been. The only thing it takes to cure that is for the Republican Party to become more worried about the reality of climate change and the opinion of the American public than they are about the Koch brothers' millions and what is going to be spent against them.

If the American public makes it clear in the coming months that they are tired of Congress being stuck, if the American public decides it is time to wake up here in Congress, then the choice becomes inevitable. As the Senator from Hawaii said, the dance partners on the Republican side have to come off the wall and come back onto the dance floor. There is a conservative way to do a carbon fee, as Secretary Schultz and Representative Inglis and Reagan's budget officer, Laffer, have all come forward to say.

Mr. SCHATZ. I would just add there is another motivation that I think will come to bear among all of our colleagues. Actually, the Presiding Officer spoke passionately along these lines, and that is our conscience. There is no doubt there are people of good will on both sides of the aisle in this Senate and in the House, and what is happening to people as a result of climate change pricks everyone's conscience.

I wish to talk a little bit about a small island state that probably most people have never heard of. It is called Kiribati. It has become a cautionary tale for low-lying places across the Asian Pacific region and the world. It is 900 miles south of Hilo. Kiribati's Fanning Atoll is the closest land feature to Hawaii, making Kiribati actually way closer to Hawaii than to California.

Put another way, the people of Kiribati are our neighbors. More than 100,000 people live on 21 of Kiribati's 33 corral islands. Thirty-two of those islands are low-lying atolls where most of the population lives just 2 meters above sea level.

The close proximity to the sea is already taking its toll, as rising seas contaminate water tables with salt water, denude fertile land, and decimate the few island crops the land can support.

Kiribati's President, Anote Tong, has taken great pains to focus attention on his country's plight. His sobering remarks from last November are worth recounting. He said:

> The outer island communities have been affected, we have a village which has gone, we have a number of communities where the sea water has broken through into the freshwater pond and is now affecting the food crops.
>
> That is happening on different islands, it's not an isolated event, serious inundation is being witnessed. These are the realities we are facing, whether they are climate change induced or not.

If you travel around Kiribati, it is impossible to miss the long stretch of seawalls people have built to protect their homes from the encroaching sea. Besides the sea level rise, low-lying atolls such as Kiribati face risk of being pummeled by the next tempest. Barely above the water's edge, places such as Kiribati face the risk of having storm surge and sea level rise amplified by the typhoon that roars through the Pacific, washing over runways, roads, and homes lying just above sea level.

The risks are even more acute for families living in these Pacific island states where, because of the limited space for agricultural and commercial development, population density remains extraordinarily high.

Take South Tarawa, the capital of Kiribati, where the population is close to 5,000 people per square kilometer—one of the most densely populated areas on the planet. These densely populated areas make Mother Nature's destructive power even more devastating. The cards would appear to be stacked against countries like Kiribati, and not surprisingly outside observers have been less sanguine about its fate.

Journalist Jeffrey Goldberg described it this way:

> The apocalypse could come even sooner for Kiribati if violent storms, of the sort that recently destroyed parts of the Philippines, strike its islands.

He said:

> For all of these reasons, the 103,000 citizens of Kiribati may soon become refugees, perhaps the first mass movement of people fleeing the consequences of global warming rather than war or famine.

Almost 6,000 nautical miles away, in the Indian Ocean, the Maldives face a similar fate to Kiribati. The island state of nearly 400,000 faces risks of sea level rise and extreme weather events that threaten to inundate its communities with swells of storm surge that leave families and their loved ones literally underwater.

In 2009, leaders in the Maldives staged a dramatic demonstration ahead of the U.N. Climate Change Conference in Copenhagen, when they held a cabinet meeting on the bottom of the ocean floor to foreshadow their impending fate if the world failed to act in the face of climate change.

Maldives President Mohamed Nasheed told observers:

> We're now actually trying to send our message, let the world know what is happening,

and what will happen to the Maldives if climate change is not checked.

If the Maldives cannot be saved today we do not feel that there is much of a chance for the rest of the world.

Leaders spent 30 minutes on the ocean floor that day. When later asked about what would happen if the U.N. Climate Change Conference in Copenhagen failed to produce an agreement among states, President Nasheed simply said: ''We are going to die.''

In addition to sea level rise, island nations face other immense challenges from climate change. Slight changes in ocean temperature from increased warming and increased ocean acidity, which scientists explain as a consequence of oceans observing more carbon dioxide from the atmosphere, disproportionately affect communities living on island nations.

I would like to ask the Senator from Rhode Island to talk a little bit about ocean acidification and the impact it is having on fisheries in the Northeast. I know it is having a real cultural and economic and environmental impact, and I am not totally sure people are fully grasping how dangerous this is, not just from an ecological standpoint but from a food security standpoint, from a price of food standpoint, from the standpoint of jobs and the economy. I am hoping the Senator from Rhode Island can elucidate this.

Mr. WHITEHOUSE. I would love to. But before I do that let me follow up on the point Senator SCHATZ was making because you do not have to go to faraway island nations to see people who are being hurt by rising sea levels and eroding shorelines. You do not have to go to island nations. You can go to Rhode Island and you can see it.

Here is a photograph of some homes at Roy Carpenter's Beach on the south shore coast of Rhode Island in Washington County after Hurricane Sandy.

This is Governor Chafee, former Senator Chafee, who used to serve in this body. These homes—I remember speaking to a lady who was with us that day, and I do not remember if it was this house in the picture or this house that was hers. But she had started coming as a very little girl. Her childhood memories were on this beach. This house used to have a lawn in front of it. She can remember playing badminton on the lawn in front of her house. On the other side of the lawn was a road—just a dirt road—so cars could come in and out. On the other side of the road was a parking lot, where the cars could park, and on the other side of the parking lot began the beach.

She can remember, as many little children who have been to the beach can remember, that when that hot Sun beats down on the sand, it gets hot, and on the child's little feet that heat can hurt. So she would have to run. She would have to run across this long, expansive beach. She can remember the distance running across the hot sand until her feet got into the cool, sparkling waters of the ocean.

Those were her memories of a Rhode Island summer: playing on the lawn, seeing the cars come to the beach, running across the hot sand to the cool water.

In her lifetime the beach is gone, the parking lot is gone, the road is gone, the lawn is gone, and the ocean is tearing out the underpinnings of these homes.

You can go as far away from Rhode Island in the United States as you can get on the mainland and where do you end up? Alaska. What do you see? A very similar phenomenon of houses falling into the sea. This is a town called Shishmaref. It is a little bit different in Alaska as to the reasons. It is often because the ice that protects the shore from winter storms—because the waves break against the ice and not the shore—the ice is not there. The ice has melted away. So now the winter storms beat directly against the shore.

There are villages like Shishmaref that have been at their location for as long as the memories and the traditions of the indigenous tribes who live there go. For as long as the memory of man runneth in those areas, those villages have been there. But now, in a generation, they are going.

We see it in comparisons like this. This was, again, after Sandy. Here is a beachfront building at the South Kingstown Town Beach in Rhode Island. You can see the ocean right up against it.

That is what it used to look like not too long ago, as shown in this picture, in just 1994. This building is that building now shown in this other picture. This walkway is that walkway. As you can see, this walkway was broken up by the storm. The ocean has now come to here. The entire beach has gone.

So we see it in Rhode Island, I say to the Senator, as much as we do in faraway island kingdoms. But to the Senator's point about acidification, the seas are an honest witness. The oceans do not lie. You can measure what the oceans are telling us about climate change, and they are telling us they are getting warmer. It is not complicated. You measure that with a thermometer. They are getting bigger, higher. The law of thermal expansion means that when you warm fluids, they expand and the seas, therefore, rise. You measure that with, more or less, the equivalent of a yardstick. Thermometers and yardsticks—it is not complicated. It is undeniable.

The third piece, as the Senator mentioned, is ocean acidification, which everybody who has an aquarium knows how to measure acidity. It is a litmus test. You can do it in any laboratory. You do it in school. It is not complicated. You can take measurements like that of the ocean and you can see it is acidifying.

It is acidifying for very simple reasons. One-third of the carbon that goes into our atmosphere gets absorbed by the oceans. Ninety percent of the heat from climate change gets absorbed into the oceans; 30 percent of the carbon. The oceans bear witness to what is happening, and right now, if you look at the rate at which the oceans are acidifying, it is happening—here is a graphic on the effects. Where does the heat go? Mr. President, 93.4 percent goes into the ocean; 2.3 percent goes into the atmosphere. The oceans are getting bombarded with this heat, and they are also acidifying.

Mr. SCHATZ. I ask the Senator, what does that mean as a practical matter for the fisheries industry, for people who like to eat fish? What is the impact of ocean acidification? Because the Senator has, in very plain language, explained the science of this.

Mr. WHITEHOUSE. Yes.

Mr. SCHATZ. But what does this mean to a regular person?

Mr. WHITEHOUSE. When the carbon is absorbed by the ocean, it makes it more acidic; and when the ocean becomes more acidic, it makes it more difficult for all the little critters that live in the oceans that have a shell to make that shell. Because shells are made out of something called calcium carbonate, and the calcium carbonate is eaten away by acidic waters. So it means a small creature such as a pteropod has a harder time making its little shell, so they do not grow as well, and ultimately they could be eliminated by acidified waters.

Who cares about the humble pteropod? Most people have never heard of the humble pteropod. I will tell you who cares about the humble pteropod. Salmon care about the pteropod. For some species, it is a huge part of their diet.

So if they are not there, then the salmon are in trouble. If the salmon are in trouble, the salmon fisherman and the salmon industry are in trouble. It really hit home on the west coast of America a few years ago when oyster fisheries—on the coast of Washington I think it was, but Oregon was hit as well—literally got wiped out when a sudden upwelling of Pacific waters that had become heavily acidified washed into where the young oysters were being grown. The waters were so acidic that the little baby oysters, the little spat, could not grow their shells. The water was too acidic for them to grow their shells.

Again, you can say: Who cares about an oyster? Well, people who grow oysters care a lot about them. It is a big industry in a lot of places. We are actually rather proud of our Rhode Island oysters.

Mr. SCHATZ. You should be proud of your Rhode Island oysters. I care about oysters.

Mr. WHITEHOUSE. I will turn it back to you. Because one of the things that Hawaii is famous for that we do not have much of in Rhode Island is tropical coral reefs. Coral reefs are affected by acidification, by runoff, by warming, and they can bleach. When they do, what once was a healthy reef, rich with fish, a nursery for all of the

species that we end up consuming, can end up looking like this, dead remnants of what was once living coral. I know Hawaii faces that problem. So why don't I turn to you to discuss that.

Mr. SCHATZ. Well, it is really important to dwell on the question of what is happening to our oceans, not just because it is critically important but because I think that because it is more difficult to see it does not get enough attention. What is happening to our fisheries is every bit as drastic, in some cases more drastic, than what is happening in our agricultural sector. When there is a drought or when there is difficulty in our agricultural sector, it is ably represented in the Senate by its able home State Senators. Yet when there is a fisheries difficulty, it is more difficult to pin down. It does not necessarily become the new story a drought or any difficulty in a growing season may create.

This is something we have to talk about both on the recreational fisherman side as well as on the commercial fishing side. I know that in a lot of States in the Southeast, in the northeast, on the west coast and certainly in Hawaii, people who fish, maybe recreationally, maybe for subsistence, or maybe as a commercial venture, it is really part and parcel of the culture of the place. It is not purely an economic issue, it is something you do with your children and their children. It is part of where you live. It is part of what it means to be from Hawaii or from Louisiana or from Florida or from Rhode Island. This is part of the American experience.

To the degree and extent we are diminishing that experience, setting aside the economics for the moment, that is very significant. I know people across the State of Hawaii grew up fishing and treasure that opportunity to share what is in the ocean with their families.

Mr. WHITEHOUSE. May I tell you story about a Rhode Island fisherman. There is a fishing captain, Christopher Brown, who came recently to testify before the Environment and Public Works Committee. He has been fishing all of his life. He is a real Rhode Island fisherman. He used to go out with his dad, who was a Rhode Island fisherman. When he was probably 20 years old, he built himself a fishing boat and then went out and began fishing on his own. He fished that fishing boat he built for 30 years. He is the real deal when it comes to fishing.

He can remember as a boy fishing offshore with his dad, dragging nets behind them, trawlers. Now he goes out to those same waters, and he gets completely different fish. He says he pulled up a net full of spot. When he was out with his dad, his dad virtually never saw a spot. He said now he is catching fish like grouper and tarpon that his dad never saw in his life. The waters are changing.

When you have regulations over what you can and cannot catch that are not keeping up with the changing fisheries, it is a nightmare for fishermen. So we are going to do our best to update our fisheries laws, but the underlying problem is that fisheries that have existed for as long as Rhode Island fishermen remember them are changing in unprecedented ways.

I will close. As one fisherman said to me when he came to visit here in Washington maybe a year ago, he said something unforgettable. He said, ''Sheldon, it's getting weird out there.''

Mr. SCHATZ. I thank the Senator from Rhode Island.

I am going to talk about something that I think is astonishing. The Senator from New Mexico earlier talked about this, but this is mind-boggling to me, and it may be a surprise that the Senator from Hawaii is talking about this. I have a 10-year-old son and a 6-year-old daughter. It has been at least that long since I have been snowboarding, but I enjoyed it when I was a lot younger and my knees were better. But what is happening to winter recreation is really bad news. One source states that roughly 23 million people participate in winter sporting activities, adding $12 billion to the economy and employing almost 212,000 people. Roughly 20 million Americans over the age of 6 ski or snowboard. The industry generates more than $11 billion across 38 States.

You do not have to be a climate scientist to recognize that skiers are dependent upon consistent, plentiful snow. You do not have to be an economist to realize that ski areas are only sustainable in places with plentiful snow and cold weather, aside perhaps from the indoor ski slopes in certain places such as Dubai.

So what does it tell you when you see ski resorts struggling to meet their bottom lines due to winters so warm that even with enormous artificial snow systems, they cannot keep snow on their mountain? Mountains cannot move. They cannot migrate. So when the climate warms, ski resorts that depend on them face difficult choices, if they have any choice at all.

According to one study on the impact of climate change on the ski and snowboard industry, more than half of all sky resorts in the northeast will no longer be viable by 2039. I will repeat that. More than half of all ski resorts in the northeast will no longer be viable by 2039.

Another study of Washington State ski resorts found that almost 13 percent of the ski areas in the Cascades and fully 61 percent of the ski areas in the Olympic mountain range are at risk from the future effects of climate change.

Another study of ski areas in southern Ontario Canada cautioned that by the year 2080, with current snow-making technology, the ski season will be reduced by anywhere from 11 to 50 percent. Operators of ski areas do not have too many ways to adapt. They can move their runs to north-facing slopes, landscape trails to reduce the need for snowpack, and move to higher altitudes. All of these efforts, however, involve massive capital investments. It is difficult to know with certainty if these changes are real solutions or just stopgap.

Of course, skiing and snowboarding are just two examples of outdoor recreational activities that are increasingly in peril as a result of future climate change. Sportsmen such as hunters and fishers should keep a watchful eye on the changing climate as well. We all know that Americans in every State love to hunt and fish. In 2011, almost 14 million people, or 6 percent of the United States population 16 years old and older, went hunting. Hunters spent $34 billion on trips, equipment, and licenses. More than 33 million people 16 and older fished in 2011, spending almost $42 billion on trips, equipment, licenses, and other items. As the climate warms, hunters and anglers will see decreased opportunities as a result of lower streamflows, population declines, and changing migration patterns.

Organizations such as the Theodore Roosevelt Conservation Partnership which exist to promote hunting and fishing recognize this trend and believe it is in the best interest of the hunting and fishing communities to take action on climate change. The organization's director, Bill Geer, published a cautionary note in 2012 that is worth recounting:

> Contentious or not, climate change is real, and it is already affecting our natural resources, fish and wildlife and outdoor opportunities. At the Theodore Roosevelt Conservation Partnership we aim to educate sportsmen about the effects of climate change and ensure sportsman involvement in mitigation efforts.

This is another example of conservatives, of independents, of progressives, of basically everybody outside of the four corners of the U.S. Capitol recognizing that is what is actually happening is actually happening. It is only in the four corners of this Capitol that the debate rages on, as if we can ignore the facts of the matter. This is no longer confined to conservation organizations or people who are concerned primarily with biological diversity.

Look, I am a hiker. I am a surfer. I love Hawaii's natural environment, in particular. So that is the origin of my passion for this issue. But the way this issue has evolved, it is way beyond any of those questions. It is national security; it is economic security; it is our ability to grow our own food and catch our own protein; it is literally the American way of life that is at stake here.

I think the reason we have had such great participation last night and well into the morning is because there is a growing recognition on the left, right, and center that we have got to take action.

Mr. WHITEHOUSE. To follow up on Senator SCHATZ's point in terms of the

bipartisanship we can hope for here sooner or later, on the skiing question and snowboarding question that was raised, the Park City Foundation in Utah, which runs all of the Park City resorts, the Park City Foundation in Utah predicts an annual local temperature increase of 6.8 degrees Fahrenheit by 2075. That would cause a complete loss of snowpack in the lower Park City resort area—a complete loss of snowpack. The foundation—this Utah foundation—estimates it will result in thousands of lost jobs, tens of millions in lost earnings, and hundreds of millions in lost economic growth.

We have to be able to find a way to work with Senators from Utah on that. The point that Senator SCHATZ made about the northeast comes home because when you drill down into the report a little further, they say the number of economically viable ski locations in New Hampshire and Maine will be cut in half; that skiing in New York will be cut by three-quarters. I do not know what that does to skiing in New Jersey, but I will say that they said there will be no ski areas in Connecticut or Massachusetts. They overlooked Rhode Island. They did not mention Rhode Island. But I can promise you, knowing geography, if there is no ski area that can survive in Connecticut or Massachusetts, then Yawgoo Valley in Rhode Island is in trouble. That is our sky slope. So this really does hit home.

I want to mention, the bicameral task force that HENRY WAXMAN and I run brought in all of the major sports leagues to talk about how climate change is affecting their sports. We had the National Basketball Association, we had Major League Baseball, we had the U.S. Olympic Committee, we had the National Football League and the National Hockey League. They all agreed we need to take action on climate change. In particular, the NHL talked about the history of their sport, with kids growing up and playing on frozen ponds. Many of those frozen ponds do not freeze any longer or they freeze so little that a child does not have a chance to learn to skate and develop that skill out on the pond. So the NHL has been active. I appreciate that.

The other point I wanted to mention is a lot of these winter sports are part of the Winter Olympics. There was a study done by the University of Waterloo that took a look at all of the different locations in which there have been Winter Olympics, all of the way up to Sochi. The green shows that from 1981 to 2010, all of these locations for the Winter Olympics were climate reliable for snow conditions.

Then they run a couple of different scenarios, 2050s with low emissions, 2050s with high emission; 2080s with low emissions, 2080s with high carbon emissions; and one by one the sites of previous Winter Olympics fall away as reasonable sites. If we go to the 2050s low-emissions scenario, there goes Sochi and there goes Grenoble. If we go a little bit further, Vancouver, Squaw Valley, Sarajevo are in trouble. When we go to this part of the chart, a number of the sites where we have had Winter Olympics are no longer climate suitable for Winter Olympics, including Lillehammer, Nagano, Torino, Innsbruck, Oslo, Sarajevo, Squaw Valley, Vancouver, Chamonix, Grenoble, and on.

So the people who are involved in these winter sports know about this. One hundred athletes of the Sochi Olympics from 10 different nations wrote a letter saying we have to take climate change seriously. They particularly focused on the small towns in the mountains where skiers and snowboarders train and where the economy is based on snowboarding, skiing, and winter sports, and the devastation that would happen in those small towns if that economy collapsed because of climate change.

I yield to the Senator from Hawaii.

Mr. SCHATZ. I thank the Senator from Rhode Island.

I would like to offer a personal story from a young lady in Hawaii because I think it is very important to think of this in generational terms. Her name is Kara Tanaka, and she is a senior at a school called Hanalani. She wrote me a letter, and I will read it into the RECORD.

She states:

Recently, I read that Hawaii is one of two destinations being considered for the World Conservation Congress.

The International Union for the Conservation of Nature is the organization that convenes this meeting which brings together nations to discuss conservation on a global scale.

As this meeting has never been held in the US, Hawaii hopes to be selected as the host location. For many reasons, Hawaii is the perfect place to hold this meeting.

Hawaii is the most remote set of islands in the world and has the most concentrated examples of flora and fauna that are in jeopardy in the United States, our islands could be subjected to rising waters caused by global warming.

(Mr. MURPHY assumed the Chair.)

Continuing:

The outer reefs that protect our shores will be in crisis if the current environmental challenges are not addressed and solutions enacted upon.

I have been blessed in growing up on the north shore of Oahu and have experienced the beautiful scenery of nature which surrounds me.

As a first generation Japanese American, my 92 year old grandpa loves to tell me stories about spending his youth living on the plantation fields in Mokuleia. During our early morning hikes up Peacock Flats and lunches on the beach, my grandpa enjoys telling me about all the edible plants we walk by and can identify all the animals that we hear and see.

My grandpa also shares with me the things that are no longer around: dry streams, less wildlife, and lower water levels. Although there may be other factors affecting the environment, I truly believe that climate change is a major reason causing these changes.

For both my grandpa and me, climate change is real, he sees the changes. It is a very important thing because Hawaii's wildlife is a very sentimental and beautiful part of our life.

Scientists tell us that the effect of climate change could be catastrophic.

For example, the rising temperatures will cause loss of habitat, there will be changes in water supply, and it could push certain species to the endangered species list. The animals my grandpa and I look and hear for may soon no longer be there at all.

In addition, I can't even imagine how it will be like if our coral reefs die from global warming. Beach erosions will multiply rapidly and people's homes will be prone to destruction. Hawaii's beaches could be gone. Not only would this affect Hawaii's beauty, but it would affect Hawaii's economy because of the heavy reliance on tourism. Climate change is real and in need of full attention.

I have seen many programs for sustainability in my community from the recently built wind turbines by my house to programs in elementary schools, like Aina in the Schools, that have raised the awareness of climate change.

I believe that there needs to be more research about climate change and its effect on the environment. When I become a parent, I hope I can share the same sounds and sights that my Grandpa has shared with me, to experience wildlife with my children rather than teach them how the environment could have been or was like before.

Kara's words, spoken from her heart, reflect the deepest feelings of her generation, not only in Hawaii but throughout the United States. I repeat the most resonant of her thoughts:

When I become a parent, I hope I can share the same sounds and sights that my Grandpa has shared with me.

Indeed, Hawaii has a remarkably beautiful environment. Yet I think we all agree that throughout our home States, from sea to shining sea, there are lands that define who we are and that call upon us to teach what is right and to rightfully protect them.

These thoughts from Kara inspire me. I think they inspire all of us. There is a Kara Tanaka in every community who inspires us to take action. It is time to wake up. That is why we are up for climate, and that is why we are in this fight.

Mr. WHITEHOUSE. If I may, let me ask people who are listening to think back in time. Think back in time to many years ago when Abraham Lincoln was President of the United States, when this room was just under construction and soldiers coming down occupied it, camped here, camped in the lounge, and actually made fires in the lounge across the way to cook their bacon. One could hear cannon fire from the Capitol. The Civil War was happening in America.

When that took place, there was a scientist named John Tyndall who delivered a paper that showed that when you added carbon dioxide to the atmosphere, it warmed the Earth. That is how long it has been that we have known that when you add carbon dioxide to the atmosphere, it warms the Earth.

Since that time, we have probably added close on 2,000 gigatons, 2,000 billion tons of carbon dioxide to the atmosphere. What happens when we do

that? This goes back to 800,000 BC. That is nearly 1 million years. We can see that in the time we have measured here, 800,000 years, there has been a very clear range of carbon concentration in the planet.

We kicked in around 200,000 years ago as human beings. This is about where homo sapiens showed up. So long before there were homo sapiens, the Earth stayed between about 170 and 300 parts per million of carbon dioxide. For every single year human beings have inhabited this planet, we stayed within that window. But then that 2,000 gigatons started to kick in, and here it goes, up through 250, up through 300, up through 350, and for the first time it hit 400 parts per million. So that is very real.

If people are worried about deniers out there, we can't deny Tyndall's theory. Nobody denies that when we add carbon dioxide to the atmosphere, it has this effect. Nobody denies that we have put roughly close on 2,000 gigatons of carbon into the atmosphere since then, and nobody denies these measurements. These are measurements. This isn't theory; these are measurements.

It is one thing if the Republican Party wants to be the party that is against science. I doubt they want to go so far as to be the party that is against measurement, but here we are at 400.

Sure enough, some strange behavior is showing up, and this shows where all the land and ocean temperature anomalies are showing up. If we look, starting in 1880 it goes from blue—the cold anomalies—to red, and we can see a very distinct line.

People who look at it say: Well, that is that undeniable climate change happening. That is that 400 parts per million. That is the increase in carbon dioxide.

How many people think that? Well, about 14,000 peer-reviewed articles think that; 24 reject global warming. That is the little red line if you are comparing the two. The blue is the universe of peer-reviewed articles on climate change, and that tiny little red line is the 24 out of 14,000 who reject climate change.

I ask my friends on the other side of the aisle, you are betting the reputation of the Republican Party on your current de facto premise that climate change isn't real? Do you really want to take a 24 out of 14,000 article bet? Is that the smart place to put the reputation and the honor of the Republican Party? I don't think so.

That is another reason I am confident we can get to a bipartisan solution. I don't think it is smart for Republicans to take the reputation and honor of their party and bet it on a theory that is 24 out of 14,000.

If we look a little bit behind the climate denial operation, we will see that it is actually very sketchy. It is very sketchy. A lot of these organizations have a tradition of denial. They denied that the ozone hole was growing. They denied that tobacco caused cancer. Heck, some of them probably even denied that seatbelts made auto travel safer. That has been their industry. They have been in the denial industry. But that is a dangerous place to be, particularly because the oceans don't lie. The oceans tell the story, and they tell it in ways we can't deny.

It is big—what happens in the oceans—because 93 percent of the heat goes into the oceans. What do we see? We know perfectly well what happens to liquids when they get warmer. That is a law of science. It is called the law of thermal expansion. When liquids get bigger—get warmer, they get bigger. Sure enough, when the ocean gets bigger, the sea level rises.

Here is a time series showing the sea level rise taking place.

So we have the principle of carbon dioxide warming the temperature of the Earth. We have the addition of the carbon dioxide. We have the measurement in the atmosphere of the effect of that addition. We have the laws of nature which show what happens when the ocean warms and rises. Then we go back out, measure, and we see it coming through exactly as predicted.

By the way, it is 93 percent of the heat, but it is 30 percent of the carbon.

We can go into a regular chemistry lab and we can do the experiment of adding carbon dioxide to saltwater and watching its acidification go up. Sure enough, we can go to the ocean and do this as well. Again, this isn't theory; this is measurement.

Does the Republican Party want to be the party that doesn't just deny science but denies measurement? I don't think so. There is no future in that.

Responsible people who back the Republican Party need to bring their party back from the brink of one of the most embarrassing fiascos any political party could get itself into.

Mr. SCHATZ. If I may, the Senator from Rhode Island has elucidated the problem with respect to climate change deniers. I wish to read a few quotes from Members of Congress, unfortunately. They would be funny if they weren't so alarming. These are direct quotes from Members of Congress who are denying the reality of climate change.

The first quote: Is there some thought being given to subsidizing the clearing of rain forests in order for some countries to eliminate that production of greenhouse gases?

Second quote: We don't know what those other cycles were caused by in the past. It could be dinosaur flatulence, you know, or who knows. Global warming is a total fraud, and it is being designed because what we have got is you have got——

Mr. WHITEHOUSE. May the record reflect that this is perhaps the first reference in the history of the Senate to dinosaur flatulence.

Mr. SCHATZ. I would hope.

Global warming is a total fraud, and it is being designed because what you have got is you have got liberals who get elected at the local levels, want State government to do the work and let them make the decisions. Then at the State level they want the Federal Government to do it, and at the Federal Government they want to create global government to control our lives.

Here is one about global climate change.

It could just be a shift on the axis.

I don't even know what that means. And they are a little humorous except these are sitting decisionmakers. So it is time to wake up. It is time for those folks who are denying the reality of climate change to move off of their position, and for those who are quietly agreeing with us about the sciences but not stepping forward and showing leadership to show leadership.

Frankly, I think it is time for those of us who have been passionate about this issue to work together and to redouble our efforts. But I have 20 or 30 pages worth of quite alarming quotes. Again, they would be funny if they weren't from sitting decisionmakers who have real authority over this question.

Mr. WHITEHOUSE. The one we hear the most often right now is: Don't worry, climate change has leveled off. Global warming and the temperature increases have leveled off.

Well, as you just saw, 93 percent of the heat goes into the ocean. So if you are measuring just the atmosphere, a tiny wobble in the 93-percent share the oceans take up will make a massive effect in the atmosphere.

But more to the point, if you take a graph, here is the leveling they show over the last 15 years. The problem is, if you go back through the data, you can show it leveled here, and then it leveled here, and then it leveled here, and then it leveled here, and then it leveled here, and then it leveled here. There are constant levels in an upward-going staircase. If you cherry-pick the data, you can say: OK, it has gotten level for that period. But if you really look at the trend of the identical data, that is the real trend. That is the actual trendline through the data.

So when somebody comes to you and says: Ignore that trendline; instead look at it having gotten flat. And by the way, forget all those other times it got flat before. What do you think about somebody who makes an argument to you like that. It is a ridiculous argument. It ruins the credibility of the person who makes it. How you can believe that is astonishing.

Mr. SCHATZ. I think the Senator is exactly right. In some ways that is a

more dangerous argument than some of the other denier arguments, because it sounds like science. It is not, but it sounds like science.

But the most recent, and in my view most absurd, and we have now I think seen it for three or four winters, is every time there is snow—and at first I thought it was sort of a little jab, a little rhetorical joke—but they are actually saying that because it was snowing last week there must not be climate change. That is an argument they are relying upon.

I think because in the face of actual evidence they are now having to rely on anecdotes, on the fact that it is icy in Antarctica or there was a snowstorm in DC, or it was unseasonably cold for a weekend in Georgia or whatever it may be, but to rely on individual anecdotes about the weather I think is pretty tough stuff to take and I want to make sure we don't let that stand; that the idea you get to look out the window and understand what is happening with the climate is a lack of understanding about the climate.

Climate is long-term patterns over large swaths of land or ocean. The weather is you get to check it on your iPhone app tomorrow morning. That is the weather. It is not the climate. It may or may not be hot or cold tomorrow. That doesn't tell you a thing about what is happening to climate change. And to the extent someone wants to pick off a day and say: Look, it is 32 degrees in Seattle and, therefore, climate change is not real, I don't think anybody actually believes that argument. But it is important the American public realizes how specious that claim is.

Mr. WHITEHOUSE. Climate science doesn't tell you that every day is going to get a tiny little bit warmer. Climate science tells you that putting that extra energy into the system will make the weather extremes worse, both warmer and colder. So the fact there have been cold snaps is actually perfectly consistent with climate science. Not only does that argument ignore the difference between weather and climate, it also takes advantage of people who haven't drilled into the climate science. Because if you knew the least little bit about the underlying science, you would know the point made no sense because that is exactly what the people who predict global warming predicted would happen. If anything, it confirms the argument that people are trying to rebut. So it really, really is a dishonest argument.

Mr. BOOKER. Mr. President, may I ask a question of the Senator from Rhode Island.

The PRESIDING OFFICER. The Senator from New Jersey is recognized.

Mr. BOOKER. There are a number of issues here and the first is: Are temperatures going up? And for me, the air temperature is increasing. We have objective measurements on that. Ocean temperatures are increasing. We have objective measurements on that. The ocean is becoming more acidic. We have objective measurements of that. Sea levels are rising because of the expansion of warming oceans. Obviously, that is just basic, basic science we learned in our earlier years. The amount of land covered in snow is decreasing in the northern hemisphere. We have evidence of that. Glaciers are melting away. There is evidence of that. Arctic sea ice is decreasing. We have evidence of that. Again, we see in New Jersey evidence of measurements of these things happening.

Scientists at Tufts and Rutgers estimate the New Jersey shore will experience a sea level rise of 1.5 feet by 2050. This is based upon what is happening right now that they can measure. The projections for the New Jersey coast are higher than projected for average sea levels that rise globally. The projected sea level rise of 1.5 feet by 2050 for the New Jersey coast in places such as Atlantic City, if there were a 10-year storm—not a 50-year storm or a 100-year storm, but just the scale of a storm that, on average, we see every 10 years—flood levels from that storm would be worse than any flooding that has ever been seen in Atlantic City, even worse than those from Superstorm Sandy.

The temperature issues in New Jersey are the same as well. In New Jersey, the statewide average temperature in 2012 was the highest in 118 years of recording it. Nine of the ten warmest calendar years on record in New Jersey as an objective measurement have occurred since 1990, and the five warmest years have occurred since 1998. Scientists predict that by 2050 summer temperatures in New Jersey will regularly surpass the current hottest temperatures on record, making the State begin to have more such as that of Alabama. I know Senator SESSIONS and Senator SHELBY can tell me a lot about those temperatures, but that is not the New Jersey we know.

Mr. WHITEHOUSE. We are seeing the same thing in Rhode Island. Indeed, Newport, RI, is known for being a summer destination. The first summer visitors to Newport, RI, the first people who made it the summer capital of the United States were traders from the Carolinas, who sailed up the coast with their families to get away from the baking fetid heat of the Carolinas and enjoy the cool shores of Narragansett Bay.

Well, what is happening is that due to climate change and the warming climate, that very climate those Carolina traders sailed up to Newport, RI, to get away from is inching its way up the coast and will soon be the climate in Newport, RI.

Mr. BOOKER. So I guess my question is—first of all, there is no denying what is happening. The bait we often get pulled into, by using a ridiculous paucity of a study, as compared to the grand total of the other studies, is what is causing this. Is it manmade or is this some regular fluctuation? But let us hold that in abeyance for a second, that question, and just deal with what we talked earlier about—the military that deals with the fierce urgency of now. Even not dealing with the question of how this issue is created, we should be doing things right now to deal with the consequences—investments in resiliency and adaptability along our coasts. There is so much we should be compromising on both sides of the aisle. If they want to argue about what is causing it, that is an argument we should take, and I believe we will win, but absent that, even if you say these trends are happening, now what are we going to do as a country? Nothing or are we going to prepare for that? Isn't there a lot of action we can take even before we get to the argument of whether this was manmade? Because these are trends that are happening and there are things we should be doing about it.

Mr. WHITEHOUSE. The Senator knows better than I what is happening in New Jersey. You know how hard New York and New Jersey in particular were hit by Sandy. You have our sympathies, because we had some Sandy damage in Rhode Island but we just caught a glancing blow. The full thrust of that hit was on New York and New Jersey, and you guys paid the price.

In the recovery, FEMA and other Federal agencies and your State agencies are starting to look at this in a whole new way. They are saying: We can't build back the same. The same didn't work last time. And by the way, with that sea level rising, the same is probably going to not only not be enough for the last time, it is going to be way less than is necessary for next time. So the very way in which the U.S. Government, the State of New York government, the State of New Jersey government, the city of New York government are taking a look at how they respond to Sandy and how they recover and how they rebuild for the future is a perfect living example of the point my colleague is making. For that purpose, it doesn't matter whether this is manmade. The fact that it is happening, the fact you can predict it means it would be reckless and foolish not to take that into account as you rebuild.

Mr. BOOKER. Right. So that is sort of the frustrating thing for me. We see these challenges mounting up all around us and we still do nothing. It reminds me of this crazy story my brother told me when I was a young guy. I think originally it was a story from Lou Holtz. You will appreciate this, because if you are in it, doing nothing is not an option.

This is a story of a very wealthy man who had no heirs to leave his money to. So he lined up a whole bunch of young strapping guys in front of his big old Olympic-sized pool with a cover over it and said: OK, anybody who can swim across this pool gets my inheritance. You are the ones. So all these young men got ready to jump across the pool,

and he pushed the button, the pool cover opened, and there in the water were snakes and alligators and piranhas, and a very mean, vicious-looking duck.

Basically he waited there, and all the men now backed off and didn't do anything. He finally had enough of it and said: Aw, shucks, and turned around. But just as he walked away, thinking none of those young men were going to be up to the challenge, he hears this big splash. He turns around and he sees navigating across the pool the youngest of all the men—a guy the age of Senator SCHATZ—navigating through this water and battling alligators, pushing back the poisonous snakes, kicking back piranhas, dodging that vicious-looking duck, working his way over, and heaving himself onto the other end of the pool. He is now bloodied and tired and breathing hard, and the man runs over and says: I can't believe it, boy. You did it. I can't believe it. You did it. Anything you want, it is yours. Anything you want, it is yours.

The young man looks up at the guy and says: Well, all I want is to know who pushed me.

I asked my brother, after he told me the story, what is the moral of the story? He said: CORY, the moral of the story is: If you are in it, you don't do nothing. If you have challenges up to your neck, you don't do nothing. You keep moving across those challenges.

So my colleague's point is excellent, that we are at a point in America where we see clearly the challenges we are facing, but right now, because of a deadlocked legislature, we are not doing that much. The cost of inaction we can actually calculate by watching countries around us begin to advance the ball down the field in innovation and new technologies that can help reduce the dependency on carbon fuels. We see vulnerabilities being created from Hawaii to New Jersey, up and down the east coast and the west coast that we are not doing anything about. Lacking the investments and that kind of resiliency will cost us more in the long run.

The point I am trying to make is, when we hear from the military that we need to do work and they are starting to do things to learn how to run their planes on biofuels and learn how to better secure property, when we hear from people in industries who say we have to be ahead of the curve on innovation, ahead of the curve on these new technologies other countries are challenging us on, when we hear even on the issue of job creation and government responsibility in terms of saving taxpayer dollars, retrofitting buildings, lowering energy costs, helping people save more money and keep it there—all of these things should be enough alone to compel us to act before we even get to the debate about what is causing this.

So what I am asking is, understanding that debate, having been in the Senate only for about 4 months, where is the bipartisan work on what is factually happening—warming seas, rising sea levels and the obvious stuff knowing these challenges are there? Why aren't we doing more as a Nation to wake folks up and invest in what we know will make us a better, stronger, and safer Nation?

Mr. WHITEHOUSE. The bipartisan work I think is mostly being done at the local level—at the level of Governors and mayors, at the level of local city councils.

One example which comes to mind is the City of Miami. Miami is really ground zero for climate change. On high-tide days, their streets already flood with water which is pushing up through what should be ways for water to flow off the streets but comes up into the streets—saltwater. The freshwater supply is already being inundated by saltwater as it pushes through the porous limestone the Miami area is built on. They realize they have a real problem. So four county governments came together to deal with this. The four counties are led two by Democrats and two by Republicans.

I mentioned earlier we used to have bipartisanship on this issue until Citizens United was decided by the Supreme Courts, until all the big money came in, until all the dark money came in, until people on the Republican side who were willing to speak up about climate change were punished and threatened so badly they could no longer do it. The Citizens United effect hasn't worked its way down to Governors and counties, so they still see the real action.

I think the Senator as a mayor will also remember there were reality-based problems to be dealt with—not every day but 10 times a day or 15 times a day.

Abraham Lincoln in the movie ''Lincoln'' said: I like to get my public opinion bath by having real people in. The Senator got a reality bath every day as mayor, and every mayor out there is getting a reality bath every day. Here, we don't deal with that. Here, it is different. We don't have to live in the same real world. We live in a more political world. So people can say things which are, frankly, irresponsible, untrue, and get away with it longer. The intimidation factor of big money is worse here.

So where is the bipartisanship? It will be back here. It is inevitable. But we know there can be bipartisanship here by looking at bipartisanship live and healthy and in action on climate at the municipal, State, and county level.

Mr. BOOKER. I share the Senator's sense of hope about our ability to come together as a country, crises after crises, generation after generation, and we come here to do the right thing. I know this from the history my parents and grandparents have talked to me about—whether it was against an external threat of fascism, and how folks pulled together, from victory gardens and conserving, to people who stormed beaches in Normandy. I know for the civil rights movement we came together as a Nation and overcame those people who were trying to deny equal rights and equal opportunity in this country. It is those past victories which fuel my hopes about the present.

We as a Nation have already set limits for arsenic, mercury, lead, and other types of pollution. We have already done that and said if a private company is going to spew this filth into our climate, they are going to have to face limitations and take responsibility for those actions. In other words, they are going to have to internalize the costs and not externalize them, not put the burden on people. Again, I have seen this in countless cities across America where, when we didn't do that, people were still paying the price in the money we spent here in the Federal Government for brownfield remediation and public tax dollars paying for the cleanup of land often in urban spaces which other people dirtied up. So it is just common sense not to allow polluters to release unlimited amounts of pollutants in the air.

Mr. WHITEHOUSE. It is a win. The only thing I would distinguish a little bit is the example of the boy who went into the pool filled with piranhas and alligators and snakes.

Mr. BOOKER. Don't forget about the duck.

Mr. WHITEHOUSE. And the particularly vicious looking duck. The solution on climate is not the equivalent of piranhas, alligators, snakes, and a vicious duck. The solution on climate is actually a triple win.

The Senator mentioned the earlier limits on pollutants. We found over and over that despite the regular claims by the industry that this was going to be the end of civilization as we know it and an economic catastrophe would ensue, when we actually look back, people saved money because of the harm they were spared. I think the Clean Air Act is $30 saved for every $1 we had to invest in cleaning up. So the limits actually saved money.

In this case, we will add—as the Senator mentioned before—the growth in new industries, the $6 trillion clean-energy industry we want to be in rather than trailing behind and buying from China. Finally, if we believe in market theory, if we believe markets are the most efficient way to make choices, then we have to set up a market which is a fair one. This business the Senator mentioned of a business being able to externalize its costs by saying, ''That is not my responsibility. I don't have to pay for that. I am just going to dump it.'' This is no more fair than a New Jersey neighbor or a Hawaii neighbor or a Connecticut neighbor or a Rhode Island neighbor, instead of cleaning up their lawn, just shoveling their leaves over to the next guy's wall. We don't get to do that. We are responsible for cleaning up our own lawn when the leaves fall, in the same

way these companies that are making this mess are responsible for cleaning it up.

So it is actually a triple win. We have markets which work correctly, limits which save money for people in the long run, and the proper investment in green industries which are going to grow. So if that is alligators, snakes, and piranhas, I think it is the exact opposite. It is abundance and opportunity and innovation.

Mr. BOOKER. Again, the Senator said it. On the local level, dealing with the urgencies of the moment, we don't have time to philosophize and don't have time for politics. We have to solve problems. The Senator's point is something I experienced as a mayor on multiple occasions. We got teenagers and trained them in solar panel installation. What happened to the buildings? It reduced the costs. People saved money. Our surrounding environment actually improved, burning less fossil fuels, putting less carbon in the air.

Every time we attended to our environment, we were able to find win-wins. We looked at that and said: Let's create multiple farms and create more locally-grown food. We found a way to address crime issues in our city.

By the way, there are studies which show cities with more trees and plant life and what have you often see some correlations with crime. We did it in a different way. We created greenfields, planting food, locally-grown produce, able to source it to restaurants over in New York across the Hudson River. But what excited me is we created a reentry program for men and women coming home from prison.

So this is the creativity we see in industry and local communities, people realizing that this is not an either-or choice, the economy or the environment. No. That is a false choice.

So people who see this as incredibly threatening haven't looked at the facts that we can create wins on multiple levels for the United States of America. So we can get the win on the economy. We can get the win on the environment. We can get the win on the costs being spent. We can get the win from being less dependent upon nations who have helped destabilize our planet. Then the biggest patriotic win of them all is an America that can lead again in this area, that can show the world the way to go. Frankly, we can show other countries that are saying: Why should I do anything on this issue, we can show a way forward which isn't about self-interest. It is about enlightened self-interest, if you go the way we are going.

We heard one of the other Senators talk tonight about what China is already seeing in terms of their pollutants and environment and how the public is reacting to that. That is one area I might question one more time—the hope that somehow bipartisanship will come here. The feeling I have is the statistics the Senator was reading about the number of people on the Web site is such an important thing for me. Often as I look at the history of this institution, change does happen here, but often it comes from people demanding it, standing up for it, letting their politicians know: I don't care if you are a Republican or a Democrat; if you don't get on board with this, you are going to pay for it at the polls.

What gives me hope is it is such common sense that folks are going to start putting pressure on this body—just like I have seen on some other issues which have come around of recent—pressure on folks to say: Hey, you have got to get on board because this is common stuff which is going to benefit my neighbor, my community, my school, my kids, my country.

I am hoping those numbers you were revealing show some of that energy. I wonder if that is your view.

Mr. WHITEHOUSE. The energy is definitely out there. There is no doubt about it. Poll after poll shows how strongly Americans feel about climate change.

My favorite one, because it involves Republicans, is a poll taken of self-identified Republican voters under the age of 35—young voters, the future of the party, the future of the country, the future demographic they need to reach out to. When asked what they feel about climate denial, 53 percent of young Republican voters described climate denial with three words: Ignorant, out of touch or crazy.

So there are lots of reasons to have confidence. But one reason to have confidence is young people in this party view the climate denial strategy which we heard here earlier this evening from the one Republican who came—they view that theory as ignorant, out of touch or crazy. If this is what the young people in their own party think about it, that is not a position they can hold. Up against the common sense and the reality, up against the force of public opinion, and up against the effort of this evening which Senator SCHATZ has done so much to make happen, there shows a new spirit of stirring in the Senate. Then I think we win. I think the American people win, more to the point.

Mr. BOOKER. I will ask one more question and then invite Senator SCHATZ—who has been the catalytic agent in pulling this all together—to address this idea of a level playing field and free markets, the subsidy that is given to oil and coal, and the predictable subsidies that have been given to oil and coal which have helped fuel the industry, compared to the unpredictable subsidies that are given to alternative energy sources such as wind, which has led to more disjointed advancements in those areas.

Again, I think of arguments about picking winners and losers. I heard a lot about this when I came to Washington. ''Why is Obama picking winners and losers?''

It seems to me this is anti-philosophy of allowing the free market to work, because we seem to be favoring—based, I imagine, on very powerful lobbies—favoring tax loopholes and tax breaks for certain industries and not allowing them for other industries, and the industries of the future that would help us to have a more blended all-of-the-above strategy.

I know you have a lot of insight into this, which to me flies in the face of conservative ideology. It flies in the face of progressive ideology. The only ideology that seems to make sense is money interests that want to corrupt a free market, corrupt common sense, and corrupt what we think should be a unifying force toward moving as a nation toward a more sound energy policy.

Mr. WHITEHOUSE. If you have two factories working side-by-side and one factory is paying attention to making its products and doing the best it can and being as efficient as it can and making a great product and going out and selling it, and then the factory next to it has figured out a way to take a big chunk of its costs and push them off on to other people—let's say one factory has to clean up its effluent, and the other one just dumps it in the river; let's say one factory has to pay for cleanup of its trash and disposal and the other just shovels it in the neighbor's yard at night; no matter how that second factory is cheating by offloading costs onto other people instead of putting them in, you do not have a fair market between those two factories. You have one that is playing by the rules, playing by market theory, and you have one it cannot compete with because the other one is cheating.

When fossil fuels dump carbon into our atmosphere and we now know the harm it causes, and it comes home to folks at Roy Carpenter's Beach in Rhode Island, and people's homes are falling into the water; when it comes to storms that smash on the shorefront of New Jersey; when it comes to the wildfires and droughts that we heard of tearing through New Mexico and Colorado; when it comes to ocean acidification, those are real costs to real people, and they have been pushed onto the rest of us by those polluters, and it simply isn't fair. It is a violation of basic market theory. So, if as the Republican party so often says, ''We want to be the free market party,'' fine, be the free market party, but have it be a fair market. It cannot be a racket of a market. It has to be a free and fair market in which the costs of a product are in the price of a product. Otherwise it is just picking winners and losers.

Mr. BOOKER. For us then to take the innovators that are trying to invest the money and the resources to keep America on the cutting edge of alternative fuels to be denied any kind of flexibility, and for the Senator illustrating earlier what is happening at a local level as the money interests from fossil fuel firms that get involved in legislatures that are trying to do things to create a level playing field, to me that should be something we

should all say no to. It should stop completely.

Mr. WHITEHOUSE. Here are two families. Here are two families who paid a price. That wasn't built into the price of fossil fuels, but they sure as heck paid it and they just didn't pay it in the wrecked front of a building and entirely ruined their little house there. They paid it also in the loss of all the memories of all the summers where they grew up back when this was their summer home. That is a real price. People paid a lot when this happened. And to write that off as if it is nothing, and have the polluters just keep going at it—no, that is not right.

I yield the floor.

Senator SCHATZ, I know you have some remarks you would like to make, and let me take another opportunity to thank you again for your leadership in bringing us together.

The PRESIDING OFFICER. The Senator from Hawaii.

Mr. SCHATZ. I thank the Senator from Rhode Island and the Senator from New Jersey for engaging in such an energetic dialogue about these issues.

Allow me to brag about Hawaii a little bit. I would like to speak about the incredible work Hawaii has done in energy transformation. We have taken a problem—high energy prices, no in-state fossil fuel resources—and turned it into an opportunity to transition the State to clean energy. Hawaii, like Alaska and the territories, is geographically isolated from the rest of the country. This relative isolation presents unique challenges.

Hawaii has some of the highest energy costs in the country. Our energy mix is heavily reliant on oil and our multiple islands mean we have multiple electric grids. This challenging picture also presents unparalleled opportunity because the high cost of energy makes renewables not only competitive but often the low-cost option. We have abundant natural resources in solar, wind, geothermal, and ocean energy. But that doesn't make a transition to clean energy easy. Current policies, entrenched modes of thinking, longstanding business models, along with high upfront costs for capital for clean energy mean we need to aggressively encourage market transformation using a variety of policy tools. Thankfully, farsighted and committed policymakers have helped Hawaii to develop and implement some of the most aggressive clean energy and efficiency goals in the country.

This effort began in earnest in 2008 with a unique partnership between Hawaii and the U.S. Department of Energy that became the Hawaii Clean Energy Initiative. Hawaii Clean Energy Initiative, or HCEI, is a partnership between the state, the Federal Government, the not-for-profit and the private sectors. It helped to lay out a roadmap for Hawaii to achieve our aggressive clean energy goals.

Our job is far from done, but as a result of this effort I am optimistic about Hawaii's energy future and our ability to reduce carbon pollution. I strongly believe that despite Hawaii's unique characteristics, opportunities exist for other States and regions to replicate the successes we have had. Already energy regulators and policymakers from other parts of the country and the world are coming to Hawaii to learn what we are doing. I say that with great appreciation for the enormous work others are doing to transition to a clean energy future. I do not claim Hawaii has all the answers, but I do think we have discovered some of them.

Let's start with a brief overview of the energy sector. We are the most geographically isolated major population center in the world and we are also internally separated, with seven different populated islands. We are the most oil-dependent State in the Nation.

In 2010, 75 percent of the State's electricity came from foreign petroleum. This reliance leads to both high and volatile energy costs. Hawaii's electricity rates are the highest in the Nation at around 37 to 40 cents per kilowatt hour. This is three times the national average and twice as high as Alaska's rate, the country's second highest. Hawaii's multiple islands mean multiple grids that all must be managed independently.

Looking forward, the State is considering an undersea transmission cable as one of the key possibilities for sharing renewable energy and reducing rates throughout the islands. A major consequence of our geography is that the best clean energy resources are not located in the same places as our demand center.

Oahu is by far the most populated island with the highest electricity demand, with Waikiki and the Pacific Command, and yet technical analysis has shown that Oahu may only be able to realistically generate 30 percent of its own energy. Hawaii has been unable to take advantage of the mainland's natural gas, while our State continues to pursue its clean energy goals. Various groups have begun to explore bringing low-cost LNG to Oahu to further transition away from our dependence of low sulphur fuel oil for electricity.

So back up to 2008 with high energy costs and the desire for greater energy security and the pressing need to get serious about reducing carbon solutions. It was clear we needed to do something. HCEI was founded on a memorandum of understanding signed between the State of Hawaii and the U.S. DOE in 2008. This partnership resulted in an ambitious plan to reduce energy consumption by 30 percent and increase electrical generation from renewables to 40 percent of the total mix by the end of 2030. These renewable and efficiency goals are now law. But such goals, even enshrined in law, need a suite of policy tools to help implement them, and they need the political will to relentlessly see them through.

One of the key policy tools aiding compliance with the State's RPS, and especially the efficiency standards, is the decoupling of the electric utility's income from fluctuations in sales and revenue. This is crucial in a place such as Hawaii where distributed generation is playing an important role in meeting our goals. This way we can ensure that the utility receives financial incentives for increasing renewable production from independent power producers and decreasing total energy use. Hawaii's decoupling policy began in 2011 and allowed the State utility to be compensated through revenue-balancing rate adjustments approved by the PUC. Like many other States, Hawaii supplements Federal tax incentives to deploy greater technology such as wind, solar, and geothermal. Our incentives create tax incentives for producers at every level for commercial and resident.

In June of last year Hawaii passed legislation to establish a green infrastructure financing program. The Green Energy Market Securitization Program, which we call GEM, creates an integrative financing model that will help low-to-moderate-income households, including renters, to take advantage of clean energy improvements and energy efficiency. It aims to address the financial barriers of investing in and installing energy cost-savings products.

The heart of the program is an on-bill financing structure backed by state issue rate reduction bonds that allow customers to overcome the high upfront costs of clean energy products. What does that mean? It does this by allowing customers to pay for clean energy investments over time via surcharge on their electricity bill. In other words, you can simply sign up for clean energy. Some of the savings go to the company that is providing you the clean energy, and some of the savings go to you, and all of it gets taken care of by the electric utility on your bill. On-bill financing is a wave of the future whether it is in electricity generation or in energy efficiency. This program will begin by targeting distributed solar, but will quickly expand to other technologies.

HCEI also works to promote Hawaii as an attractive place to invest in commercial production of clean energy technologies and serve as a test bed for demonstrating and proving out cutting-edge ideas and energy management practices. Outside groups have looked at Hawaii, especially when it comes to smart grid development.

In May of 2011, Japan-based New Energy and Industrial Technology Development Organization, NEITDO, contributed $37 million as a partner to our Maui smart grid project. This is a demonstration project to reduce peak loads through demand response to integrate intermittent energy sources, to incorporate grid scale battery storage technology.

What does that mean? It means on the island of Maui we have lots and

lots of wind energy and yet we are lacking in the ability to actually utilize all of that energy at the same time. So we are looking at using distributed electric vehicles to take that energy off of the grid and be stored in electric vehicles. Hitachi Corporation, NEITDO, the U.S. DOE, our Natural Energy Lab, they are all very interested in trying to figure out how to make our grid more intelligent and more efficient. Hawaii's high levels of renewable energy penetration, especially on our neighbor islands, make it an excellent place for utilities on the mainland to come and observe grid operators manage the grid under demanding circumstances. What we are hearing from grid operators across the continental United States is they come to Hawaii to understand the kinds of pressures their grid is going to be under in 3 to 5 to 7 to 10 years depending on where they are from.

Public investment and early-stage technology companies continue to play a key role. In September of 2013, the Office of Naval Research provided $30 million to support an energy accelerator startup program. This program has already invested in projects that are attracting private investment including from the local utility. So far it has helped 17 energy companies bring their product to market. These products have subsequently been able to raise over $38 million in follow-on funding. Let's take a quick look at how Hawaii's energy sector has fared in the years since HCEI began.

In 2012 Hawaii reached an important new milestone by generating almost 14 percent of its electricity from renewable resources. We are close to our stated goal of 15 percent by 2015, which means we are on track to reach our interim target of 25 percent by the year 2020.

In terms of distributed generation—primarily rooftop solar—2012 saw installations more than double from over 5,000 in 2011 to more than 12,000 in 2012. At the end of 2012 the cumulative number of systems sold statewide totaled 22,000, with a total capacity of 138 megawatts.

In energy efficiency, Hawaii had reduced consumption by 14.5 percent as of 2012. One of the questions people ask when you make good progress in energy efficiency is whether it is simply tracking the economy. In other words, generally speaking, when the economy goes down, so does energy consumption. But our energy efficiency gains have been made whether or not our economy has been growing or shrinking. They have been extraordinarily strong over the last 5 years because we have a great and aggressive energy conservation program that is really groundbreaking. Rapidly improving energy efficiency efforts, along with increased renewables, have contributed to decreasing energy costs in Hawaii.

From 2008 to 2012 electricity use has declined while the State GDP grew by 9 percent. Hawaii's transformation to a clean energy economy has helped to create many of the State's 14,000-plus green jobs. Hawaii ranked third in clean energy job growth nationally.

The implementation of HCEI goals has not come without challenges. One of the biggest challenges has been integrating intermittent renewable energy sources into our various grids—grids that are often quite small in scale.

Making things even more challenging, much of our renewable energy is distributed, which means that our utility companies don't even know whether they are coming or going. They have no visibility into what is happening with rooftop solar. They are trying to develop technologies to understand what is happening with the grid. For example, wind farms on Maui were recently forced to spill about 28 percent of their energy production due to lack of demand on the island. In other words, 28 percent of our wind energy was actually wasted.

Here is a real success story of learning by doing. This fall the Maui Electric Company announced recent operational changes to bring that number down to 9 percent. That is a huge achievement. We didn't have to install any additional wind turbines, but we are now able to use more clean energy on the grid because of technological improvements.

In Hawaii we are particularly concerned with ensuring that every citizen can participate in the clean energy economy and benefit from the competitive cost of renewables. I am confident that the State's GEMS Program will be a groundbreaking State-level policy that will make clean energy and efficiency investments available to all.

Finally, we need to keep the momentum going in the face of a changing State legislature, State administration, and evolving Federal policies—the latter of which is perhaps the biggest challenge. The recent expiration of the production tax credit and a host of energy efficiency and biofuel incentives have had a profound effect on economics of clean energy technologies. These incentives must be renewed, and Congress must and should act to ensure continued growth of the clean energy sector.

I am particularly grateful to the chairman of the Finance Committee for joining the task force tonight in calling for action on climate change and greatly appreciate his leadership on these issues.

Many, if not most, States and territories are doing excellent work to encourage clean energy, and I am sure Hawaii has a lot to learn from those States. But the HCEI model can be an effective tool for States, the Federal Government, and for other countries. It is profoundly difficult to get all or even some of the interests in the energy sector to agree. HCEI, especially at the beginning, provided a forum for Hawaii's different groups to come together and find common ground and then move forward. At its core, HCEI is designed to be a collaborative effort between all citizens of Hawaii to leverage their respective strength in achieving a clean energy future. Without the participation and cooperation of all of the key players involved and the support of the general public, HCEI would not succeed.

I also can't stress enough the importance of the partnership we have with the U.S. DOE. DOE offers a unique ability to act as convener, facilitator, and an active, long-term partner in HCEI. DOE continues to serve as a conduit between Hawaii and other entities, such as the national labs, Federal programs, R&D groups, other Federal agencies, and national organizations that support the strategic planning process and contribute to the execution of core activities. DOE provides assistance to the State for producing technical and economic tools and analysis necessary to realize the goals of initiatives as well as the implementation of pilot projects. If the States are truly the laboratories of democracy, then we in Congress should provide them with the tools they need to experiment and innovate.

The United States faces the same energy and environmental challenges as the State of Hawaii. A majority of energy assets in this country are ready for retirement or replacement, and decisions made today will have lasting impacts. The energy sector faces a wave of new technology, new regulations, and rapidly evolving market and business conditions. These uncertainties will impact investment decisions, policy formulations, and ultimately economic growth.

We must meet the challenge of climate change head-on. We have more frequent and intense extreme weather events, and we need to reduce localized pollutants and address the increasing number of cyber and physical attacks on our energy infrastructure. These challenges are not physically constrained by State boundaries, jurisdictions, or even our international borders. Recent blackouts and regional fuel shortages have highlighted the interconnected nature of U.S. energy systems, with energy disruptions starting in one State and extending to neighboring States and regions. This fundamental property of U.S. energy systems means that preparing for uncertainty and threats in a robust and effective manner will require regional and national strategies and plans if we are going to successfully address the challenges we face in the coming years.

I yield the floor.

The PRESIDING OFFICER (Mr. WHITEHOUSE). I welcome and recognize the Senator from Connecticut.

Mr. MURPHY. Mr. President, I would like to offer my grateful thanks to the Presiding Officer and Senator SCHATZ and Senator BOXER, who I know was down here earlier. All of you are true heroes, as well as some of our other colleagues who have manned the quiet hours of the overnight. I know Senator

HEINRICH and Senator BOOKER spent long hours on the floor arguing with great voracity and passion about the cause that brings us here today. I am humbled to pick up where many of my friends have left off and thankful for the bringing of all of us here today.

In thinking about this event and thinking about how to frame this debate, I asked some of my friends in Connecticut how they were thinking about this issue of climate change. I received a number of different responses—one that maybe didn't actually stand out but was emblematic about the way my State of Connecticut thinks about climate change—a State that has most of its population right along the shoreline.

All of our economic assets essentially buffer the State from the rising coastal levels. Our State has now gone through—as the Presiding Officer's has—four record and once-in-a-lifetime storms in a period of a handful of years. This is a State that has been called to action.

A rabbi in the greater New Haven area wrote me a very simple note. He became an activist on the issue of climate change after Superstorm Sandy. Senator BOOKER was down here, and clearly his State was hit with the worst of it, but Connecticut was hit hard too. We were hit hard in a physical sense and economic sense, but we were also hit hard in a psychological sense. A lot of people who believed in climate change in Connecticut decided to stand up and do something about it when Sandy hit.

Rabbi Ratner remembers that night when Sandy hit. He said: The winds were so ferocious that my family feared our house would be torn apart by the trees on our property. My wife and I grabbed our three little children and we brought them into our room for safety. Throughout that long night we huddled together, blocking the windows and praying that we would make it through. The experience and the sense of paralysis and powerlessness reverberated with me and my family for a long time. As a parent, it is not something I am content to let happen again and again.

This rabbi has become an activist on the issue of climate. For him, it comes from this experience of that evening in Connecticut.

I don't live in the extreme coastal parts of Connecticut, but I remember that after the lights had gone out that night, the only connection I still had to what was happening along the coastline, as the worst of that storm came in—predicted to be at the level of historic tidal high tides along the Connecticut shoreline—was my smartphone. I was trying to keep up via Twitter as to what was happening in places such as Greenwich, Bridgeport, and Norwalk. What I started to see in the moments before I finally lost battery power was what appeared to be a coming apocalypse. Thanks to lucky coincidence, the worst-case scenario did not happen. In fact, in Connecticut the historic high tide and the worst of the surge did not actually hit at the same moment as predicted. Lives were spared, and the economic costs were only in the hundreds of millions of dollars rather than in the tens of billions of dollars.

But for Rabbi Ratner and thousands of others in Connecticut, this was the last straw. This was another once-in-a-lifetime storm happening once again and putting their families, their communities, and our economy at risk. What Rabbi Ratner talks about is this sense of paralysis he felt that night. There is a sense of powerlessness as you are huddled and holding your children in your home wondering if the walls will still stand up to yet another historic storm as a consequence of changing climate. And what the rabbi figured out is that he actually was not powerless. That night all he could do was really hunker down and hope they would survive, but the next morning he could go out and do something about it.

The problem is that moment is fleeting. There are only so many hours left before the trendlines that have developed—shown so well by Senator WHITEHOUSE in chart after chart—are very hard to turn around. If I have some time later on, I will talk about some of the most insidious trendlines that come not from carbon dioxide emissions but from what we call fast-acting pollutants, such as methane, HFCs, and black carbon. Once they get into the air, it is very hard to turn back around.

You are kind of reminded about the parable of the boiling frog. If you put a frog into a pot of boiling water, he will jump right out, but if you put him into a pot of cold water and you just gradually turn up the temperature, he will die because he won't recognize over the course of those minutes that the water is heating up to an intensity that he can't survive.

There are only a handful of moments when that frog can choose to jump out before the die is cast because his future is written and his death is guaranteed. That is the moment we are in. We can sort of sit back and say: Well, it does not seem half bad today. Now we have these storms that are bigger, and crops are vanishing, and species seem to be migrating, but, you know, the water around us is not boiling yet. We only have a matter of minutes for the frog to jump out before it is too late. We are in that period of time in which if we do not make some decisions, pollutants will be so locked into the atmosphere, and the trend lines will be heading so clearly in one way, that there is no way to turn around.

But this is the moment, as Rabbi Ratner shows, where we have power to do something. I do not want to overstate this analogy because there is no reason to equate anyone with the heroism of people like JOHN LEWIS and ELEANOR HOLMES NORTON. But I went with them this past weekend down to Mississippi and Alabama to commemorate what is this year the 49th anniversary of the Selma march that resulted in Bloody Sunday, that eventually inspired LBJ to introduce the 1965 Civil Rights Act, what many people see as a fulcrum point in the civil rights movement.

Of course, the idea that had been perpetuated upon African Americans in the South was an idea that, one, it is not that bad. Yes, you have to go to separate facilities, and, yes, your schools are not the same as our schools, but we treat you really nice, and we still allow you to drink from the water fountain, just not our water fountain. We still allow you to go to schools, just not the same schools as we do. And there is the sense of powerlessness, that you really cannot do anything about it.

As we recreated this march across the Edmund Pettus Bridge with Congressman LEWIS, I got the chance to march next to one of the foot soldiers in the civil rights movement. Searese Crawford was not a figure that made any headlines, and Searese is not anybody that you will find if you Google her name in the civil rights movement. But Searese has a story to tell. She was there in Birmingham when the hoses mowed down hundreds of protesters and the dogs were let out to chew up the ankles and knees and legs of those who dared to confront the white power structure. She went to jail at 18 years old for 5 days, which has to be a harrowing affair, and then she marched on Washington at 19 years old, traveling all the way up here to be a part of that moment.

I asked her, I said: Searese, why did you do it?

She kind of looked at me with a funny look on her face as if it was a silly question. She said: Well, who else was going to do it?

I said: So all of your friends did it?

She said: No, none of my other friends did it.

I said: Did you tell your parents?

She said: No, I didn't tell my parents. I just did it because I knew it was the right thing to do.

She knew that the situation was not OK. She knew that she was not powerless, that she could do something about it. That is why I feel inspired tonight to be down here with all of the other Senators—not because I am trying to equate this small act of civil disobedience with those of the civil rights movement, but because this is an attempt, as the presiding officer has said over and over in his soliloquies on the Senate floor, to wake up to this issue and to the idea that what is happening today is real, that it is almost irreversible, and that we are not powerless to do something about it.

So I want to talk for just a little while this morning about my State of Connecticut, which as I mentioned is particularly impacted by climate change. I want to talk a little bit about that dual discussion, about how we recognize that this is a real problem, not

one that can be papered over by the oil companies and by the fossil fuel companies and by the Koch brothers and everyone else who would try to perpetuate this mythology across this country that we do not have to pay attention to the issue of climate change, not unlike the white power structure in the South perpetuated the mythology that African Americans really did not have to worry about the way in which they were being treated. Then I also wish to talk a little bit about the path forward and how hopeful it is.

I thought the presiding officer's comments were spot-on—in response to a very apt parable and story from Senator BOOKER—in which the presiding officer sort of challenged this idea that there is really any danger in lurching into all of the things necessary to fix the problem of climate change.

In fact, there is enormous opportunity, not just moral opportunity because we are doing the right thing. That is, of course, probably our first charge as Members of the most powerful legislative body in the world, but also there is enormous economic potential in the ability for this country to capture literally millions of jobs that some nation across the world is going to have as we try to combat climate change.

So let me first tell you about what climate change means to us in Connecticut. Here is an example of what it means to the Nation as well through the lens of one company in Connecticut, and that is Electric Boat. Electric Boat is a company that employs a lot of folks in both the presiding officer's State and my State. For those of you who do not know what Electric Boat does, they make submarines. They, along with a company in Virginia, make every single submarine that goes out across this world in order to protect the people of this country. There is maybe no more important defense asset to the United States today than the submarines which provide a multisystemic platform with which to protect this country. We do reconnaissance and surveillance off of them. We use them in times of war to launch attacks to defend our homeland, for charting the maneuvers and operation of other navies across the world.

The reality is that you cannot make submarines inland. It probably goes without saying, but you have to make submarines right next to the water because these suckers are big. When you finish making them, you have to deliver them right into the water. So we make them in Groton, CT. Since the inception the submarine building program in Groton, we have lost 100 feet of coastline in Groton at Electric Boat.

Now, 100 feet of coastline, that is a lot of coastline anywhere. But maybe you can manage that if you are in a residential area or in an area of marshland; maybe you can figure out ways to adjust. But when you have a multibillion dollar presence sitting right on the water, when you have literally hundreds of millions of dollars of machinery and equipment and training resources right on Long Island Sound, the loss of 100 feet of coastline jeopardizes the ability to make submarines.

With sea levels rising at 4 millimeters a year, it is not long before the entirety of our submarine building industry is compromised by rising sea levels. Every day, Electric Boat, a for-profit private company that protects this Nation, is thinking about ways to try to force the water back out of their facility so that they can continue to make boats that protect this country.

I know the presiding officer has talked already about the effect on local agriculture. People do not think about Connecticut as an ag State, but we are. We have already seen the impact of these changing climates on Connecticut. I will just give one example. Cranberry Hill Farm is a specialty crop producer in Ashford, CT. They produce heirloom vegetables. They produce heritage breeds of chickens. They produce a lot of firewood for the community, and they produce maple syrup.

The owner of Cranberry Hill Farm is adapting to managing a farm in a wildly unpredictable climate. In April of 2012, Connecticut faced a 90-degree heat wave for a week. We are used to heat waves in the Northeast, but we are certainly not used to the number of extended periods of high-level temperatures that we are having today as a result of climate change. So this heat wave caused the strawberry crop at Cranberry Hill to bloom early. Then, when the temperatures dropped back down to average-April levels, the strawberry crop did not survive. Strawberry crops cannot survive a 90-degree heat wave in April. They are not built for that. So Cranberry Hill Farm lost the entirety of their strawberry crop for that season.

I wish that was the exception to the rule. But that story can be repeated over and over across Connecticut. Farmers, especially small farmers in Connecticut, that is what we have. We have a lot of farmers. We have a growing number of farms, frankly. We have more and more people going into farming. But they farm pretty small plots of land, and they cannot be, with small acreage, terribly diversified. So when a farm like Cranberry Hill loses a strawberry crop, that jeopardizes their whole operation. There just is not the resiliency in New England farming because of the small size and limited scope that you may not have in other places.

But at least when it comes to something like strawberries or other specialty crops, they can hope that they are going to be able to do better next year. But for their maple syrup operations, which is a big deal in Connecticut and across the Northeast, the prospects are pretty seriously dire. As Connecticut summers get hotter and they got longer, what we are seeing is a receding sugar bush tree line. The sugar bush is a temperate tree and the hot summers are driving those trees farther northward. So with record-breaking heat waves hitting my State every single summer, Connecticut's maple syrup industry may not survive at all.

In Connecticut, that is a big deal. That is an industry that employs a lot of people. I just personally would panic if I did not have my Connecticut maple syrup. But what we have seen is that the hotter temperatures are moving industries further north. Senator KING maybe told this story earlier tonight if he was on the floor. I have heard him tell it before. He talks about the temporary benefit that Maine has received because our Nation's lobsters are moving.

As the temperature of the water on the Atlantic coastline grows hotter and hotter, the lobsters are pretty quickly figuring that out. They are not as dumb as you may think. They are retreating north. So for the time being, Maine is having a bounty because they have all of Connecticut's lobsters. That, however, has been disastrous for States like ours. In places like Connecticut and Rhode Island, we have seen the wholesale evisceration of the fishing industry, especially those lobstermen in Connecticut who were once a defining feature of our landscape and of our economy.

They had to move or just shut down operations because the temperature of the water, in part, is forcing the lobsters to move to a different place. So whether it is maple syrup or strawberries or lobsters, Connecticut's maritime industry and our agricultural sector have already been fundamentally transformed.

Let's talk about two other things that really matter to us in Connecticut. I heard the presiding officer reference one of these subjects a little bit earlier. We have a pretty big tourist industry in Connecticut. One of the reasons for that is that over the course of the fall, we get hundreds of thousands of people, certainly at least tens of thousands of people, who drive through the beautiful stretches of northwestern Connecticut and eastern Connecticut in which the fall foliage just lights up New England like a Christmas tree.

Those tourists bring with them to Connecticut their wallets, their pocketbooks, and they deposit a little bit of money with us in what we colloquially will call leaf-peeping season. It is a big deal to our State.

Climate change is having today and will continue to have an effect on fall foliage. For a lot of people that sounds like maybe a small, minor consequence, that leaves in Connecticut will look a different color, but in Connecticut it is a big part of our fall industry.

Climate change is making our summers much hotter, making there be more 90-degree days and this, in turn, will affect these brilliant fall colors on the trees. Many of those trees will migrate north or die out, and the timing

of that transition from summer to fall fundamentally changes in a lot of ways. Many of these tree species which present the most vibrant colors may completely be gone.

Skiing is another industry that matters to us in Connecticut. We don't have the big mountains Vermont and New Hampshire and Maine have, and I know our friends out in the Midwest don't even accept what we have to offer in the northeast qualifies as big mountains, but in New England, of course, skiing is a very big deal and it is a major industry. We are having trouble, as we speak, keeping Connecticut slopes open.

We have had one, I guess it is a hill—not a mountain—that brings in millions of dollars to Connecticut's economy called Powder Ridge not far from my home in Cheshire, CT. It has been an off-and-on prospect with families and operators starting it up, stopping it, starting it up and stopping it, because they are on a year-to-year lifeline due to the fact that there is less snow and less people coming onto the slopes.

Estimates suggest that over the course of the next half a century, the skiing industry is likely to vanish in Connecticut.

This is a multimillion dollar industry in places such as Ski Sundown, Mohawk Mountain, and others that are in small towns in places such as northwestern Connecticut. Those small-town economies will essentially collapse if they don't have the central organizing principle of their winters, which are the ski mountain, the ski lodge, and the thousands of families who come from all over Connecticut and all over New England to ski there. Our ski industry in Connecticut already is in jeopardy, but it is going to get worse if we don't do something about it.

Maybe what is scariest, though, is what is happening with these storms along the coastline. I mentioned this a little bit in the story of the rabbi who sheltered his family, but we are not unlike most other States across the Atlantic in that we were initially, as a State, a maritime community, so we built up our State along our waterways. To us, that was essentially Long Island Sound and the Connecticut River. Today, if you track development, it has migrated outside of those corridors. It is still basically centralized along the Connecticut River, which now is not coincidental to Interstate 95 and the Long Island Sound which is not coincidental to both Interstate 95 and the Amtrak line.

What is most troubling is the fact that these storms attacking us with increasing ferocity and severity are no longer a nuisance. They present a catastrophic potential for Connecticut's entire economy.

I will give us one example of how close we came during Superstorm Sandy to an absolutely economy-ravaging disruption of our rail lines. The Amtrak line runs down Connecticut's coastline. If we take a little kayak down across the Long Island Sound—which I will do virtually every summer—there are long stretches of that kayak ride in which we can see the Amtrak line lying literally on top of the wetlands that shelter the land from the sea or within just a handful of yards. Now whether that was a smart decision, in retrospect, I can't tell you. But we built up our main rail line, which provides billions of dollars of economic benefit to the entirety of the Northeast corridor in Connecticut right on the shoreline. This is a line that obviously millions of Connecticut consumers use but connects Boston to New York and to Washington, DC. It is the vital life link between some of the biggest economic centers in the entire world.

When Superstorm Sandy hit, it completely obliterated a sand dune near Rocky Neck State Park that essentially took the bullet for a rail bridge that was just feet behind it. We were fortunate at this sort of point of exposure to have an enormous sand dune that was standing right next to the rail bridge. All of our ecologists and all of our disaster experts tell us that if that sand dune wasn't there, then that bridge would have been obliterated.

If you lose just a stretch of track, you can probably rebuild that in a handful of days or weeks. But if you lose a bridge along the Amtrak line, that is a disruption that will likely take you months to recover from. That is a disruption that will be, as I said, catastrophic to the entire northeastern corridor. If you lose the ability to move people by rail from New York to Boston, that kills thousands, tens of thousands, of jobs. If you can no longer take a train from Rhode Island to Washington, DC, that eliminates commerce. That kills jobs.

That sand dune is gone. So if there is another storm, then all that is left to protect the rest of Connecticut from that storm surge is that rail bridge, and it is likely to come down.

We are going to do the hard work of rebuilding that sand dune, but that is not the only place along the Connecticut shoreline in which the Amtrak line is in harm's way. As we talk on the floor about the rising sea level tides we have, it is just a matter of time before there is no sand dune that is big enough to withstand the storm surge that will hit the Amtrak line and knock it out of service potentially for weeks and for months.

Our beaches are part of our economy as well. The estimate with respect to Hammonasset Beach State Park—which is a beautiful beach that tens of thousands of Connecticut residents go to—but people from all across the country and all across the world flock to every year—frankly, I am lucky enough to spend a good part of my summer down on the Connecticut shoreline. My family has had a little beach house in Old Lyme that I get to go to, which is essentially right next to the Hammonasset Beach State Park. I can't tell the number of license plates we see from Canada, Quebec, and Ontario, that are coming down to spend their summers on the Connecticut beaches. They rent a little house or they park their RV or they camp out on the campground surrounding both Rocky Neck State Park and Hammonasset Beach State Park. They spend thousands of dollars, each family, over the course of August or the several weeks that they come down in the local part of the economy. So much of that part of the State is built up over beach tourism that comes into Hammonasset Beach State Park and to Rocky Neck State Park.

The Department of Energy & Environmental Protection tells us that by the end of this century—and it could come faster if the worst-case scenarios come true—Hammonasset Beach State Park will be gone. It just won't exist any longer. The scope of the tides and the water will be such that our economy-driving, dollar-generating State park—which is a beautiful place to go and which brings joy to thousands of families—will not exist any longer.

While I don't have the estimate for Rocky Neck, I know the geography and it would suggest to me that if Hammonasset is going to be gone by the end of this century, then Rocky Neck is probably not far behind.

The insurance industry is not located along our shorelines, but it employs thousands of people. We are the insurance State, Hartford, CT. We are the insurance capital of the world. If our friends on the Republican side of the aisle don't believe the scientists, then hopefully they may believe the market. Our Republican friends tell us that they take their cues from the private market. The private market is very quickly having to adjust to the reality of climate change because, as storm after storm hits the northeast and as storms ravage the gulf coast and more severe weather—often in the form of tornados—hits the Midwest, it is the insurance companies that in most cases ride to the rescue. They ride to the rescue with billions of dollars that they have to pay out. The only way they adjust is by raising premiums on all the rest of us. Companies such as Travelers and The Hartford, some of the biggest property casualty insurers in the world, which are headquartered in Hartford, CT, will tell us their models are fundamentally changing because they know climate change to be a reality.

They aren't budgeting premiums in the future on the belief that these are just freak temporary occurrences. The biggest insurance companies in the country—indeed, in the world—are making economic decisions based upon their rock-solid belief that the 99 percent of climate scientists that are referred to on the floor are telling the truth. So rates are increasing. The exposure for Connecticut's insurance industry is expanding.

I think about the expansion of flood plain zones. Today, about 11 percent of New York City is in a flood-risk zone. Within the next several decades, the estimates from the insurance industry are that 34 percent of New York City is going to be in flood-risk zones. If you are in one of these zones, you obviously pay a severe premium when it comes to your insurance cost. Now while maybe in some way, shape, or form I am glad that part of that money will migrate to Connecticut's insurance companies, it gets sucked out of millions of businesses all across this country. They are having to pay the insurance premiums because the insurance companies are planning on climate change.

The insurance companies are planning on this body doing absolutely nothing about it, resulting in billions of dollars more in premiums from small companies, big companies, mom-and-pop stores, and homeowners all across this country.

We are going to become a sicker State as well, and that comes with costs too. Lyme disease—named after a particularly beautiful part of the world, Lyme, CT, and Old Lyme, CT—absolutely ravages tens of thousands of people in Connecticut. If someone knows anyone with Lyme disease, they know how insidious a disease it is because it initially presents with systems that are a little hard to detect that are masked by other illnesses. It is still sometimes very troublesome and tricky to treat. Often antibiotic treatments will zap Lyme disease within the first couple of days or months, but there are people across the State of Connecticut with what we refer to as chronic Lyme disease and who don't respond to antibiotic treatment. It is life changing. It really is life changing and it forces many people to be bedridden, out of the workforce, and living fundamentally different lives than they had planned.

With warmer and wetter conditions in Connecticut, our epidemiologists and our disease scientists tell us we are going to see an increase in the deer tick. We are going to see, as we have already, an increase in the diagnosis of Lyme disease. And the mosquito-borne diseases, such as eastern equine encephalitis virus, along with Nile virus, which impacts people but also livestock—horses—and wild birds, are going to become more prevalent as well.

As you sort of figure out what the consequence of this is, the story just gets worse and worse. So as you have wetter and warmer conditions, as we have today, and the mosquitoes and the deer ticks start to infest, especially in our coastal areas, then you have to engage in mosquito-control measures, and that historically has involved draining or ditching wetlands, which has enormous environmental consequences for those areas. That further erodes a lot of our maritime industries that depend in part on those wetlands staying healthy and happy.

The other way you deal with mosquitoes is you spray aerially. After decades of bad history with pesticides and aerial spraying, we know how careful you have to be about that. The reality is that you are going to see a mist floating down on tens of thousands of homes and neighborhoods and kids as we try to stamp out the increasing numbers of mosquitoes that come to places such as Connecticut as climate change guarantees warmer and wetter climates.

So we lose jobs, we increase costs, we see entire industries evaporate from Connecticut, and we become a more expensive and a sicker place. But the folks I got to spend some time with this last weekend in places such as Selma and Jackson, and tiny little towns in the Mississippi Delta, such as Money and Ruleville, saw a better day. They saw the ability to change their circumstances.

On the other side of that fight an epic battle that, not unlike the fight we have here today, combined individual decisions people had to make to change their lives and the way they treated people, small testaments of courage by people such as Sarah C. Crawford, but it also involved a fight here in the Senate that eventually culminated in the Civil Rights Act. They recognized that the path to justice for African Americans didn't actually come with much pain at all, that the path to economic and racial justice for Blacks across this country lifted up everybody.

And if you talk to a lot of White Mississippians or White citizens of Alabama, they will tell you that they felt as if there was a psychological and mental weight lifted from them, and they saw the economies of their States improve.

I don't know all of the history, but many people suggest that in the years following World War II, Birmingham, AL, was poised to become the economic crossroads of the South, that it could have become an economic powerhouse rivaling cities of today such as Atlanta in the South, but it didn't because of the fact that racial injustice held it back. Once they figured out that was both a moral stain on that State and an economic stain, they changed their ways.

Again, not to overstate the comparison—it is just in my brain because I was there this last weekend—so goes the story for the fight against climate change in the sense that the pathway to addressing this issue runs through the creation of millions of jobs in this country as well as cleaner air to breathe and cleaner water to drink for all of our citizens and kids across the country. So if I could, I would like to run through a handful of examples of how this could matter to my State as well.

Connecticut has built a pretty serious and I think pretty impressive fuel cell industry. Fuel cells aren't renewable resources in the sense that they use a small amount of gas that mixes together with elements inside the fuel cell to produce what is essentially an ultra-clean source of energy. There is virtually no pollutant coming out of fuel cells, so there is almost no contribution to global warming from these fuel cells. They are changing the climate, but they are also creating a lot of jobs in Connecticut.

On December 20, 2013, Connecticut opened its first utility-scale fuel cell farm in Bridgeport, CT. It was manufactured and built by a company in Connecticut that employs hundreds of people—the world's biggest fuel cell company, Fuel Cell Energy. It is located on a former brownfield. It is the first powerplant like this of fuel cells in North America, and at 15 megawatts it is producing enough power to supply power to 15,000 homes. It is a serious facility, and it is creating hundreds of jobs in places such as Danbury and Torrington, CT.

The problem, though, is this fuel cell farm in Bridgeport, CT, is the exception rather than the rule. Fuel Cell Energy is selling most of its products in Asia. It is selling most of its products in Korea. Over the years the Korean Government has kind of figured out what the gig is, that its main seller of fuel cells is creating jobs in the United States while they are selling product into Korea. So Korea has essentially said to Fuel Cell Energy: Your time is up. We will continue to buy a handful of these fuel cells from you over the coming years, but by the end of this decade we want to produce all of those fuel cells in Korea, and we want you to transfer the technology and transfer the jobs to us.

Fuel Cell Energy doesn't have any choice in this matter because if Korea decides they do not want to buy from them, they will buy from somebody else. So they have to essentially do an agreement in which they transfer that technology and transfer those jobs. Those are hundreds of jobs today in Connecticut but potentially thousands of jobs in the future as we power up fuel cells all across the country.

The reason they are not selling fuel cells in this country is because we don't have a renewable energy strategy to really advantage those sources, which, admittedly, today costs a little bit more than purchasing energy from a grid powered by things such as coal and by oil. But when you weigh the jobs that can be created in the fuel cell industry against the slightly marginally higher cost of getting that energy from a fuel cell rather than getting that energy from a coal-fired powerplant or an oil-fired powerplant, there is a pretty darn good argument that you should invest in fuel cells.

So, to Connecticut, this is a matter of jobs, especially in the fuel cell industry.

Greenskies Renewable Energy is a company in Middletown, CT, and they design and install big solar arrays. They do not manufacture the equipment, but they design these big solar

arrays and they install them. It was started in 2008 by a former Peace Corps volunteer in Mali. The company doesn't charge customers any upfront costs for solar power. Instead, they typically sign customers to long-term contracts, and Greenskies purchases the solar energy they are producing on their buildings. Greenskies has installed over 70,000 solar panels across the country, and they have offset 15 million pounds of $CO_2$. That is the equivalent of 763,000 gallons of gasoline being burned.

In 2012 they got their biggest contract yet. They won a contract to build solar arrays on 27 Walmart stores in Massachusetts. That is a $30 million contract.

In 2013 they announced plans to build a 43-acre solar farm in East Lyme that is going to be 16,000 solar panels. That solar farm alone in East Lyme will be able to power 6,300 homes. That is pretty significant in terms of the amount of power it is going to be able to put on the grid, but it is also significant in terms of the number of jobs that will be created. Today Greenskies may be employing dozens of people, but they are going to be hiring hundreds and thousands of people as they install all of these solar arrays in Connecticut and Massachusetts and for clients all across the Northeast.

Another company playing in the solar space is a company called Apollo Solar. It is based in Bethel, CT. It is a small company. Today it only employs about 10 people. But they manufacture the electronic equipment that filters power from a solar cell and allows it to be stored in a battery. That is really the future, the idea that every individual home is going to be a small powerplant where you can put solar panels on your roof, then take the power that is being produced by the solar panel, store it in a battery, and then use it at the moment at which prices on the grid are the highest or, if you want, sell it back to the grid at the moment at which you can get the most return for this little stored amount of energy you have created by the solar panels on your roof.

Today, Apollo Solar has become a significant supplier for cell phone towers in the developing world, especially in Africa. Countries in Africa just don't have the electric grids we have, so if they want cell towers to be able to provide lifesaving cell coverage to their residents, then they have to essentially power these cell towers on an individual tower-by-tower basis. And if you don't do it with solar arrays, then you have to do it with diesel generators, which produce enormous amounts of black carbon. That makes the air very difficult to breathe, and it is also much more expensive.

Apollo Solar has produced this technology for cell towers. Right now it is being used in places such as Africa, but eventually this technology can be used in millions of homes all across Connecticut and all across the country, and that is going to fundamentally change the way in which we engage with the electric grid.

We think Apollo Solar is poised to become an industry leader on this issue. Today it is only a handful of people, but this is one example of thousands of companies all across Connecticut and all across this country that are poised to explode in growth if we do the smart thing and decide we are going to create a renewable energy market here in the United States.

It is important to say that neither Greenskies nor Apollo Solar is making those solar panels because much of that work is being done in other countries—countries that do have domestic markets for renewable energy, countries such as Germany and China. So despite the successes of companies that install these big solar arrays and successes of companies such as Apollo Solar that create the attendant technology attached to the solar panels, there is so much more we could do if we had that domestic market here.

The point is that we have an enormous opportunity to create millions of jobs in this country based on this technology. The imperative should be one surrounding the public health effects of climate, the imperative should be around the life-changing catastrophic consequences of rising sea levels, the added cost to our economy that comes with entire industries such as those in Connecticut—the maple syrup industry, the fall tourism industry, the skiing industry, and the lobster industry—evaporating and disappearing before our eyes. That should be the imperative.

Being a country that has only 5 percent of the world's population but 25 percent of the world's pollution in carbon emissions, we more than any other nation in the world have to play a role in this global economic and environmental imperative. But beyond that, there are enormous job gains to come if we make the right decision.

Lastly, before I turn it back over to the Senator from Hawaii for some remarks—and I will stay on the floor because I would like to maybe talk a little about short-lived climate pollutants, if I have the time—New England is an example of a place that has figured out how to do this the right way. The Regional Greenhouse Gas Initiative—we call it RGGI—is the first market-based regulatory program in the United States to reduce greenhouse gas emissions. It is a cooperative effort amongst Northeastern States to cap and reduce carbon dioxide emissions from the power sector. It is essentially just a miniversion of legislation which we have debated here in Congress. We essentially set a cap for how much carbon we are going to produce in the northeast. We allow emitters of pollution to trade credits and decide for themselves what cost point-source polluters are willing to pay for the ability to send carbon dioxide into the air.

We have heard over and over the horror stories coming from our friends on the Republican side. As a member of the Energy and Commerce Committee in the House of Representatives, when we debated the Waxman-Markey bill, we heard over and over that electricity prices were going to dramatically spike; and, yes, you are going to have the benefit to the environment from reducing carbon dioxide, but you are going to have catastrophic consequences for the economy because everybody is going to have to pay for it.

I guess I can understand how people would believe that if there wasn't any empirical evidence to test their theory. Luckily, New England has just that evidence. New England has tested this idea. Frankly, the whole world has tested this idea because we have reduced ozone-depleting pollutants based on a similar protocol. But in New England we have taken on this issue.

RGGI has been an unqualified success. Our carbon-reducing plan in New England has prevented the release of 2.3 million tons of carbon dioxide into the atmosphere, the equivalent of taking 435,000 cars off the road for a year. The program will offset 8.5 million megawatt hours of electricity generation and avoid the release of 8 million tons of $CO_2$. The program is going to generate $1.6 billion in net economic benefit regionwide, and it is putting $1.1 billion in electricity bill savings into the pockets of consumers in the region over the next decade. That is maybe the most important number.

In addition to preventing the release of 2.3 million tons of $CO_2$ pollution, it is reducing the energy bills for New England consumers by over $1 billion. Wow. How does that happen? How do you restrict emissions and then reduce pollution? We take all the money we glean in people buying the credits necessary to pollute and we put it right back into energy efficiency. We put it right back into programs which actually allow consumers to use less electricity, to make their homes more efficient, to transfer over to furnaces which will use less energy. All of these energy efficiency investments cancel out and override the price to the energy producers of having to comply with the new requirements.

It is pretty simple calculus, but it works for us in New England. We have taken the equivalent of two coal-fired powerplants offline, and we have returned $1 billion in savings to rate payers. We have done something about the scourge of climate change that people have been talking about overnight and we have saved people a whole boat load of money.

I guess this is why the Presiding Officer and Senator SCHATZ decided to engage in this exceptional exercise, to come down to the floor of the Senate tonight because we just don't understand how people don't see this.

If this were really a fight as some people make it, between the quality of our air and the quality of our economy, then let's have at it. Let's come down and have that debate. But it is not, and

we have proved that in Connecticut. This isn't just guesswork. This isn't estimation. This isn't conjecture. In Connecticut we have proved we can make significant gains to reduce climate pollutants, create jobs, and save people money.

This is a triple whammy. We get a cleaner environment, become a global leader, create a whole bunch of jobs and save a whole bunch of people money. Why on earth wouldn't you do that? Unless this debate has been hijacked by the very small number of people today who make money off the status quo. I don't have the exact quote. I should have brought it down here. We probably shouldn't look to Machiavelli for political advice. He, before anybody else, painted for us a picture of the challenge presented to the reformer. The reformer's job, he said, is the toughest job in the world, because those who will benefit from the new order have trouble seeing it today, but those who will be harmed by the new order, those who exist in the status quo, see the peril in the most acute sense and fight the hardest to preserve it.

So, yes, there are people who face a perilous future, but they are a very small number of people, and they are people who run the old-line energy businesses which are clinging to the status quo today, who are flooding this debate with millions of dollars to try to affect it. But as even they will find, there are even bigger, brighter opportunities on the other side. I imagine even the Koch brothers are industrious enough and innovative enough to figure out how to make a whole mess of money off of the renewable energy economy. I argue they will make even more money.

So I thank Senator SCHATZ, Senator BOXER, and the Presiding Officer for leading this effort. I will stick around on the floor to engage in discussion, but this is a triple win: Combat climate change, create jobs, and save people money. It is time for the Senate and time for the Congress to wake up.

I yield the floor.

The PRESIDING OFFICER. The senior Senator from Connecticut.

Mr. BLUMENTHAL. Mr. President, I am honored to follow my colleague and very good friend, the Senator from Connecticut, and to join him, the Presiding Officer, the Senator from Rhode Island; the Senator from Hawaii, Senator SCHATZ; and Senator BOXER, the Senator from California, in this really very inspiring and exciting occasion.

I was driving to the Capitol early this morning and I saw in the black sky the beautiful dome which words can barely capture in its beauty. Many have tried. But I felt so fortunate to be here as a spokesperson and an advocate for this cause which truly is about the rest of this century, the rest of this planet's life, our children and their children, and to be part of a debate which has reached through the night. But in fact it is night only here. In many parts of the world already it is day.

If we think globally, we realize the planet truly never sleeps. It is awake for the night here. Someplace in the world there is daylight. Hopefully, during this debate we have shed light at a time of darkness on a debate which is so critical to the future of our Nation.

We are only a few Members of the Senate here, but I cannot help recalling what the famous scientist and conservationist Margaret Mead said about this cause and the importance of people in this cause: Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has.

Around the world where it is daylight or still dark, there are groups of committed people willing to put their lives and their voices on the line to save this planet from climate disruption. We are not talking about climate change. We are talking about disruption—planet disruption. We are not talking about small consequences which may alter the quality of life a bit here and there. We are talking about horrendous, gargantuan changes because they are incremental and they accumulate one by one, bit by bit, until they alter our shoreline in Connecticut, our vegetation, our produce, our recreation industry, all of what makes Connecticut the great State it is in its scenic and natural beauty, and all of what makes America the great country it is—not only in its beauty but in its economic strength and its vision for the future.

I thank Senators WHITEHOUSE, BOXER, and SCHATZ for bringing us together, all of my colleagues for joining in this debate, and all who worked through the night—whether it is the guards or the pages or all who tirelessly gave us the opportunity to really make the case, much as we would in court—whether it is a closing argument or an opening statement—for the need that all of us unite in this critical cause.

The gravity of climate disruption cannot be denied. There are people who deny it. No question that there are deniers. But the science is irrefutable. The facts are there. And as Ronald Reagan said, facts are a stubborn thing. We can't change them by rhetoric in this body, and we can't make them go away in storytelling. We can read our children's books, Dr. Seuss or others, about the wonderful things which happen in fantasy or nightmares which may occur to people also in their dreams.

But in the real world, the science is well established. The science tells us climate disruption is happening as we speak, relentlessly and tirelessly. This is why we are here today.

The compassion that we as legislators demonstrate indicates we care about the people who occupy this planet now, but also about the many others who will follow us. We are here to break the culture of indifference in a busy world which is awake all the time, is so global in its reach, and is digitally connected at all moments. There is a tendency to move forward and forget about what is fundamental and important, and that is climate disruption.

To break this culture of indifference toward pollution and climate disruption, we must reverse the practices and policies which accelerate this dramatic and destructive trend in our world.

In Connecticut we have already seen firsthand the effects of climate disruption. Severe weather events used to occur once in a generation. They are now becoming the new norm. These monstrous storms—whatever they are called, Irene or Sandy—they are the new norm. In just the time I began serving in the Senate, since January 2011, Connecticut has experienced four major storms claiming lives and costing millions of dollars in damage, culminating in the unprecedented Superstorm Sandy. Now we can call Sandy a hurricane or superstorm or whatever you will. We can call these weather events inevitable or surprising, but they are becoming the new normal because of climate disruption. In February 2011 a snowstorm cost the State $20 million, and the leadership of our Governor was exemplary, but remedying the effects of the storm does not prevent them, and even preparing for them does not forestall them, because the weather is bigger than any action of man, and man can control it only by fundamental changes in the way he or she lives. The snowfall in February 2011 was followed by tropical storm Irene that wreaked $546 million in damages. The people of Connecticut had barely any time to recover before a freak October snowstorm brought an additional $614 million of devastation to the State.

Hurricane Sandy struck a year later, causing record-breaking damage and devastation to Connecticut as well as the states of New Jersey, New York, and Rhode Island when the storm cleared. When all this destruction was tallied, Connecticut found itself facing damage of $770 million as well as incalculable harm to houses, beaches, and other places along the coast. I toured the coast. I saw the damage. The ferocity and fury of that storm could be comprehended only by seeing that damage or being in the midst of it, which I was for a short period at the very start when I went to tour the energy operations center in places such as Norwalk and Greenwich, along the coast where preparation was beginning for that storm. Driving back on I–95 as the storm gathered in its ferocity and fury, I was frightened in a way that all of us should now share as we see the prospect of that fury and ferocity of nature, destructively impacting our entire planet, our world, and our children's world.

We must heed Hurricane Sandy's warning as well as the alarms sounded by other storms and take steps to stop climate destruction and global warming. The evidence beyond the anecdotal

facts that we all see is irrefutable scientific evidence. Climate disruption impacts our ocean and atmosphere, disrupting actual temperature cycles and variations in climate, leading to an increasing number of severe weather events, snowstorms as well as hurricanes, cold and rain, as well as heat and drought across the country.

Severe storms and other things such as floods and tornadoes and drought are happening at a rate four times greater than the average 30 years ago. These storms are costing us. They are costing our families, local communities, and taxpayers more and more of their hard-earned dollars, and Connecticut families and our people are impacted severely. So Washington has an obligation and opportunity to act. This body must face the responsibility at hand and act in the interests of the American people. Climate change is a real and present and urgent danger. The threat is now. We should face this with a sense of immediacy just as we would a house burning or a storm coming, much as we did the coming of Sandy when the brave first responders, our firemen and police, braved the storm but did the right thing knowing they must act to protect our people.

The sense of urgency this issue requires and, indeed, demands is lacking today, which is why we are here, to break the culture of indifference and despair. Outside the insularity of Washington, outside of repeated recalcitrance and political stagnation—dysfunction I think is the word most often used—which has paralyzed our politics, the American public is understanding. The American public gets it. They understand that climate disruption is happening. It is happening in their everyday lives. It is affecting their homes near rivers and oceans, affecting their drinking water supplies and the crops we need for food. They understand that if nothing is done this problem will only get worse. Communities in the Midwest know why they are experiencing some of the worst drought in decades. Families in California know why their water supply is dwindling dangerously lower and lower. Lobstermen in Connecticut, Long Island Sound, dwindling in number, understand why lobster numbers are shrinking. Surviving lobster populations are moving farther north. The lobsters are our modern-day canary in the coal mine. From Montana to Arizona to New Mexico people see why clearly the wildfire season is starting earlier in the year and lasting later into the fall. We have seen the pictures here on the floor of some of those wildfires that have devastated our forests. The American people understand why our forests are burning, and the American people get it, but Congress still does not.

We have reached the time where we must do the job we were elected to do. It is time to fight for a remedy, fight for relief, to firefighters, to farmers, to lobstermen, to ordinary American people, who want to take their families to the shore and see it as they knew it when they were children.

Every generation in this Nation makes a covenant. Every generation has an obligation to leave this Nation better than when we found it. We are in danger of leaving a lesser America in so many ways, most important in what matters to everyday life, our climate, our weather, our soil and trees, what we see when we wake in the morning and before we go to bed, the natural world that is essential to our survival, not to mention our thriving.

In my home State of Connecticut the people are not waiting for answers from Washington. We have waited long enough in Connecticut, because Congress has not fully awakened. Indeed, it is still asleep. As my colleague Senator WHITEHOUSE has said time after time, just a few feet from me, America and the world must wake up. The failure to do so, waiting and watching as disaster develops, could spell devastation for America and for our climate. That is why Connecticut is taking steps to address climate change effects like rising sea levels and storms. State officials are researching areas especially along our coast and along our waterways that are vulnerable to storm surges and inland flooding, and figuring out how best to protect infrastructure that is at risk.

I know the citizens of Senator SCHATZ's State of Hawaii are doing the same, taking an issue and implementing policy to rein in solutions, taking steps on their own, voting with their feet, not just their voices but their actions. And that is what the citizens of Rhode Island are doing as well, seeking to do whatever they can as individuals. They are a small group of intelligent and dedicated people, but they are seeking to change the world for the better, because a small group seeking to do so is the only thing that ever has, as Margaret Meade has said. The citizens and states from California, in the Northwest and all the way to New England, are joining in this effort. This citizens' movement to save the planet from climate disruption eventually will prevail. Eventually there will be action. But will it be in time?

I want to read an article in the Hartford Courant on January 27, 2014, just a few weeks ago. It captures how people of Connecticut are paying attention to the growing threat upon them and how they are taking steps to address it. I am quoting:

The changing climate is expected to make Connecticut a different place with more extreme weather, hotter summers and more precipitation, disrupting the natural world around us and testing our ability to respond and adapt.

Some changes will be volatile and abrupt while others will be more nuanced.

For example, maple syrup production could decline while grape growing improves which would bode well for Connecticut's wine industry.

At the end of the century Connecticut summer heat is expected to feel more like the sticky dog days of Washington, DC or perhaps, Savannah.

A warmer summer could seem rather pleasant on its face if Connecticut were to have a summer more like those in the south, but the changes come with greater volatility.

''As the climate gets warmer, you put more moisture into the atmosphere, and it just gets a little more violent,'' said Richard Houghton, president of the Woods Hole Research Center in Falmouth, MA, a nonprofit research organization that focuses on environmental sciences.

''There's a lot more energy around. . . . that comes out in unexpected ways, generally not to the betterment of gardens and forests and so on,'' Houghton said.

The changes have been studied and monitored by universities, state and federal agencies and others who have combed for decades of data on everything from changes in trees' growth rings to lobster habitat in Long Island Sound. Extensive collections of scientific data have been the source of documents for metaanalyses saying, in effect, that big changes are underway disrupting a mostly climatological period of thousands of years.

Perhaps more worrisome is the likelihood of severe weather events such as floods.

Quoting here:

''Even if you had the same amount of rain, it is going to be delivered in these more punctuated, very intense rain events, which are more likely to wash out bridges, roads, cause damage to people's basements, flooding, things like that that cost more,'' said Brenda Ekwurzel, senior climate scientist with the Union of Concerned Scientists, an organization started in Massachusetts Institute of Technology in 1969, and which is now an alliance of more than 400,000 citizens and scientists.

''We haven't designed our infrastructure, especially the aging infrastructure of the Northeast to handle these times of drainage needs.''

In 2007, the Northeast Climate Impacts Assessment was conducted by scientists at more than a dozen universities, including Harvard and Princeton, in addition to experts at the U.S. Geological Survey, the National Oceanic and Atmospheric Administration and the U.S. Department of Agriculture.

In 2009, several Federal agencies that are part of the U.S. Global Research Program released another large report with specifics about what will change and what will happen to the northeast and Connecticut as a result of climate change.

Here are some highlights of the two reports: The northeast could see 20 to 30 percent more winter precipitation and more of that could be rain rather than snow, assuming a greater level of heat-trapping emissions from human activities.

The higher emission scenario assumes a continued heavy reliance on fossil fuels while a lower emission scenario assumes a shift to cleaner energy by the middle of the century. Heavy downpours of rain have increased across the Northeast in recent decades causing intense spring flooding in 2006, 2007, and 2010.

Cities that experienced only a few 100-degree days each summer might average 20 such days per summer while others, including Hartford, would average nearly 30 days at 100 degrees or hotter.

Large portions of the Northeast could be unsuitable for growing popular varieties of apples, blueberries, and cranberries in a higher emission

scenario. Heat stress could reduce milk production in dairy cows. However, the longer growing period could be better for gardeners and farmers so long as they can adapt to the likelihood of summer droughts and flooding rains in the spring.

Hotter weather is expected to shift growth range for maple, beech, and birch forests to the north, disrupting the maple sugar industry and shifting the food sources for animals that rely on those forests, such as migratory song birds, such as the Baltimore oriole. Long-lived trees might endure, but they would be vulnerable to stresses of competition, bugs, and disease. Some parts of northern Connecticut will retain those hardwoods.

Sea levels are expected to rise 10 inches to 2 feet by the end of the century, and those projections do not account for recent observed melting of the world's major ice sheets, which means the estimates could be too conservative.

What is now considered a once-in-a-century coastal flooding in New London and Groton along the Thames River could occur as frequently as every 17 years. Several experts agree that modeling sea-level rise is more difficult than predicting other effects of climate change because there are so many variables related to the ocean. In any scenario, the seas are expected to rise.

Houghton, the head of the Woods Hole Research Center, said that what happens to the climate depends on a multitude of factors around the globe—from deforestation in tropical areas to the burning of fossil fuels for energy. One important distinction is that weather and climate are different. Climate future does not predict when and where it will rain. Instead, it predicts patterns, such as overall warmer temperatures or the greater likelihood for violent floods, such as tornadoes or floods. For climate change, it is more about general trends and extreme changes as a result of global warming.

As more erratic and extreme weather becomes more likely, property owners, town governments, cities, States, and the Federal Government will be put to new tests of their responses and adaptability.

Dr. Ekwurzel said that maybe 30 years down the road we will have gotten better at dealing with those extreme events because they are going to become the new normal. I would say in the next decade—15 or 20 years—we are going to have some hard lessons as to how to deal with this.

The work of responding and adapting is already underway and has been for years, though there is renewed concern after power outages and widespread property damage during Tropical Storm Irene and the October storm of 2011 and Superstorm Sandy in 2012. ''They were clearly wake-up calls,'' said Jessica Stratton, director of policy in charge of climate issues at the State Department of Energy and Environmental Protection.

Connecticut has a wide-ranging climate strategy that ranges from buying energy that produces less carbon which causes further warming and a less predictable climate to better preparation for greater extremes. In terms of preparing for higher sea levels and inland flooding from harsh rain, there are three priorities, according to Jessica Stratton.

First, Connecticut is researching areas vulnerable to rising sea levels and storm surges and inland flooding. Second, the State is looking to critical infrastructure, facilities, and property at risk in those high-hazard areas. Third, the State, and other parties, will work to develop best practices to protect infrastructure and habitat and to mitigate or reduce risk to the greatest extent possible. The last measure will involve assisting residents, State, and local government.

In 2010 a committee of scientists, engineers, farmers, policymakers, public health officials, and business owners published a 195-page document called ''The Impacts of Climate Change on Connecticut Agriculture, Infrastructure, Natural Resources and Public Health.''

''We think it is highly probable that we are going to experience these kinds of events more frequently,'' Stratton said of recent storms and flooding.

She continued:

> And because of that, I don't want to sit here and just say, ''OK. We'll take it. We'll pick up the pieces afterward.'' Let us do what we can to lessen the negative impacts, and those are human, those are property, those are business losses. There are a whole bunch of things. So, let us take whatever steps we can to enable our society as it currently is to function as well as it can and to get back to normal as quickly as it can.

I have quoted so extensively from this article in the Courant because it summarizes many of the facts that cannot be denied. Those facts are stubborn. Those facts presage a disaster that we have the power to ignore, but we also have the power to act and to deal with it and to take advantage of the immense opportunity that lies ahead. This is an opportunity that could actually create jobs and economic growth, and that is the key point.

The problem of climate disruption is also a tremendous opportunity. It is an opportunity not only to change mindsets and culture—the culture of indifference—it is an opportunity to change the way we live, create jobs, a new lifestyle, and economic growth.

The real and serious health impact of climate change impacting millions of Americans should be enough to force Congress to act, but if that is not enough evidence, let us look to the economic impact of inaction. Take the asthma rates—just one example of climate change impact on health costs.

According to the American Academy of Allergy, Asthma, and Immunology, the United States spends approximately $3,300 per person with asthma per year. In the 5-year period between 2002 and 2007, asthma costs grew 6 percent, from $53 billion to $56 billion.

NOAA, the National Climate Data Center, estimates that the extreme weather events that occurred across the country in 2012 alone, which included tornadoes in the Plains States and the South, the wildfires in the West, and the Midwest drought and Hurricane Sandy, cost the American economy $1 billion in rebuilding and lost economic productivity. That estimate is no doubt low and conservative.

A rocket scientist is not needed to understand the effects that rising sea levels will have on our coastal communities, which include many of America's large cities and population centers. America's cities will be underwater, and we will have to rebuild their defenses at great cost.

There is another side of this situation. There is a different side of this coin of climate disruption. Yes, climate disruption can be devastating to our economy; indeed, it has already begun to be so, but it also offers the hope and opportunity of spurring new technology, reducing our dependence on oil, and thus driving down greenhouse gas emissions in a way that will empower and drive economic growth.

The U.S. Economic and Statistics Administration reports that the country's 2010 trade deficit in petroleum-related products was $265 billion or approximately $855 per American citizen. The EPA and the DOT—the Environmental Protection Agency and the Department of Transportation—estimate that the corporate average fuel economy standards that require vehicles to be more fuel efficient and emit less $CO_2$ by 2025 save $8,000 per vehicle over each car's lifetime. Upgrading and retrofitting buildings to be more energy efficient and creating jobs by creating new technologies and training workers to develop skills to execute the retrofit and to work in burgeoning alternative energy industries will generate tremendous return for our economy.

The bipartisan Shaheen-Portman Energy Savings and Industrial Competitive Act, which I was proud to sponsor, is waiting in the wings for congressional action. It would create over 190,000 jobs and save $16 billion a year for consumers by 2030. We must make the Shaheen-Portman bill law. It is only one example of what the Senate can and must do to help stop climate disruption. It is a small measure—modest in its impact—but it is a start. If we do nothing else as a result of this debate tonight, let it lead us to bring back the Shaheen-Portman bill.

So even if—unlike the overwhelming majority of scientists—you have doubts about the science of climate change, remember that the economic benefits of addressing it, even if you think it is a dream, a nightmare or some fantasy supporting renewable energy, promoting greater efficiency in motor vehicles and buildings will save

money, add jobs, make for stronger buildings and better vehicles. Most important, it will save wasteful energy use. That argument ought to be enough to convince anyone that these investments are smart for America.

So whatever your reasons may be, whether you are motivated by the need to ensure a livable climate for future generations, whether you are moved to action by Americans suffering by millions from health problems, exacerbated by a more polluted environment, whether you understand the threat to the U.S. economy that is created by not only the more intense weather events but a more efficient energy landscape—whatever your motivation, whether it is fear or anxiety, apprehension about the future or simply a desire to save money from wasteful use of energy, the intense weather events are becoming more intense and they are becoming the new normal. Inefficiency in energy is becoming a norm as more people around the globe use energy, and we can lead by example in the United States. The Nation must wake up. Congress must awaken, and now is the time to act.

I wish to close by reading some letters from the people of Connecticut because I think they speak eloquently to the reason we are here and the reason the people of Connecticut are taking this kind of action.

They are letters to me from constituents in all walks of life expressing their personal feelings about this issue. Patricia Wallace of New Haven wrote:

As the director of elderly services for the City of New Haven last year when we had 34 inches of snow, I heard from seniors who could not get out of their front or back doors and had no way to move that much snow, who could not get fuel delivered, who could not get food. I have a husband who uses a wheelchair to get to work. It was nearly impossible for us to move the snow that city plows pushed up on the side of the street so that he could get on the lift of the van to get to work.

A few years back, many senior housing complexes lost power during Sandy and had no generators. When they were built, we did not face the frequent severe weather that is now routine. Two non-profit nursing homes have generators, but they are not built for the length of time we have had to operate during these severe weather storms.

Another Connecticut resident named Diane Taber-Markiewicz told me:

The global warming of our planet is now creating a push back from the environment that is causing millions of people around the world to lose their way of life. This affects us all and results in a loss of people and other valuable resources needed to sustain and progress our species. Personally, we deal with severe weather events regularly; power outages that cause us to lose work and cost us in wasted food that spoils during outages. Our local, regional, national infrastructure is dangerous in its deteriorated state and our tax dollars go to assisting the very companies and politicians who support our demise.

Lenore Lewis-Foreman of Bridgeport wrote me to say:

I have a nerve disorder. Because of this, the weather plays a significant part of my day-to-day activities. Some days I am okay enough to get out of bed and participate in society while being productive. There are days the pains are so bad that my eyes blur and I cannot move. The past season has made it increasingly difficult for me to even motivate myself enough to get out of bed. I have many family and relatives who have been affected by climate change. Some have passed on or moved to another State. A few have decided to stay here in the northeast and stick it out.

Countless Connecticut residents, in other words, countless members of our communities across our State have written to me with their positions and concerns. Like these three writers whose letters I shared with you, many Connecticut citizens fear that climate change will disproportionately affect the most vulnerable among our population: the elderly, the ill, and people without financial resources. People understand that climate change will have consequences, not only for their personal lives but for our food and water, our way of life. People are already bearing the burden of climate change and disruption every day. They know that if nothing is done, it will only get worse for them and for future generations. Again, the time for action is now. America must wake up.

Let me close by reading a small part of a book that was quoted earlier in this debate by my colleague from the State of Oregon, Senator MERKLEY, who cited the ''Lorax'' book by Dr. Seuss. It says in part:

Now I'll tell you, he says, with his teeth sounding gray, how the Lorax got lifted and taken away. It all started way back, such a long time back, way back in the days when the grass was still green and the pond was still wet and the clouds were still clean.

It goes on to describe the degradation and the tree cutting and the disregard for that environment. I know Senator MERKLEY has quoted it at length so I will not do so. But it closes with a very poignant and dramatic observation that maybe others, maybe many in this body have read to their children.

I worried about it with all of my heart, but now says the Once-ler, now that you are here, the word of the Lorax seems perfectly clear. Unless someone like you cares a whole awful lot, nothing is going to get better, it's not. So Catch! Calls the Once-ler. He lets something fall. It's a Truffula Seed. It's the last one of all. You're in charge of the last of the Truffula Seeds. And Trufulla Trees are what everyone needs. Plant a new Trufulla. Treat it with care. Give it clean water. And feed it fresh air. Grow a forest. Protect it from axes that hack. Then the Lorax and all of his friends may come back.

In a certain sense, the stories we read our children have a message they understand. Our children understand in many ways better than we do, because they understand what it means to play in the snow or have sunny skies or a day that is not filled with superstorms. They understand what it means to act individually, to take care of the environment and our planet. I would like to think it is because we have read them the stories of environmental heroes who championed the right causes, who cared enough to act. I would like to think the leadership of some in this body, their leadership by example and countless others across the Nation, who take stands, stand up, speak out against climate disruption, against the emissions that threaten the very existence of our planet, provide those young people with leadership by example. I would like to think they are learning from some of us and the stories we tell them and read to them from Dr. Seuss or others.

The story from Dr. Seuss is not about games, about fantasies. It may seem like a fantasy and it may be spoken as a story, but it carries a message that the trees are what everyone needs; we need to plant them. Fresh air is what everyone needs, and we must preserve it. We need to protect this planet from the axes that will hack at them, as climate change most assuredly will do.

Climate disruption—call it climate change, global warming, whatever you will—is a threat that we have the opportunity and obligation to counter. We are taking baby steps. We need great strides. America must wake up and so must the world.

I yield the floor.

The PRESIDING OFFICER (Mr. MURPHY). The Senator from Rhode Island.

Mr. WHITEHOUSE. May I inquire through the Presiding Officer if the Senator from Connecticut would be willing to engage in a brief colloquy. If the answer to that is yes, I would propound the following question:

I know the senior Senator from Connecticut to be a very deeply believing patriot. He spoke in his remarks about how each American generation takes upon itself a covenant. I also know the senior Senator from Connecticut serves on the Armed Services Committee and has to consider, as part of his responsibilities in the Senate, the power that America projects around the world, which is sometimes military power, but also sometimes the soft power that comes from our role.

I know also, as a student of history, Senator BLUMENTHAL knows that President Lincoln described the United States of America as the ''last best hope of earth'' and that Thomas Jefferson, in his first inaugural, described this American government as the ''world's best hope.''

Finally, I heard the Senator say that climate change will have consequences. I wonder if he would care to comment on what a failure to address climate change by the United States of America, knowing the information we know, would mean in terms of the kind of hope America is to the world, in terms of the kind of credibility America needs to project its soft power. Is there a consequence the Senator could foresee in our foreign policy and in our national security from fumbling and dropping this ball at this time?

Mr. BLUMENTHAL. If I may respond to the Senator, my colleague and friend from Rhode Island, with a question that summarizes one of the key reasons we are here today. I see we

have been joined by the senior Senator from Rhode Island who is senior to me on the Armed Services Committee and so knows better than I probably some of the answers that can be made to the question posed by the Senator from Rhode Island. But let me say at the outset, the military understands, in some ways better than America, the crisis of energy waste and climate disruption this Nation and the world faces. Indeed, the military has taken steps to be greener in its energy use, to use fuel cells and other renewable sources of power, because it knows the cost of excessive energy consumption, particularly oil dependence and energy reliance on powers that will do us no good and mean us harm.

Energy dependence cannot be good for America's strategic interest or American defense. That is one of the reasons why our military is seeking to lead by example. I thank them for doing so. The Secretary of the Navy, for example, has spoken to me at great length, Secretary Mabus, about the use of new sources and renewable sources of power on the ships that take the navy to the farthest corners of the globe. So the American military is leading by example. But America can lead by example. Thomas Jefferson and our Founders thought America would be the best hope for the world in its example of leadership. Thomas Jefferson said, ''The world belongs to the living.'' Let us resolve that the living have a world that is worthy of that covenant we make as Americans to leave this Nation better and stronger than it was when we took over.

Let's not have failed on our watch. America can be a shining example in what it does, inspiring the world by that example, not by its mandates or its military, but by its peaceful use of energy in a way that preserves the planet. We can use renewables. In fact, in Connecticut, we make fuel cells that can power the world in a much more energy-efficient and environmentally friendly world. Fuel cells are our future. They are made in Danbury and Torrington and the Hartford area by companies that are growing, another example of jobs creation and economic boom that can result from addressing the opportunities as well as the obligation of climate change.

I have spoken on the floor about those companies, as well as about the Connecticut climate action plan launched in 2005, the main goal of which is to substantially cut the amount of greenhouse gases being produced within our State. In Connecticut, we are moving ahead, just as the Nation must move ahead with these kinds of initiatives.

The Connecticut Sea Grant College Program, another example, understands the opportunity and the obligation of this time in our history. We can translate climate disruption into a positive through these kinds of measures we use to show the world that there are profoundly important gains at hand.

The regional cooperation Connecticut has helped to lead in the Connecticut Energy Finance and Investment Authority, the RGGI program. That kind of initiative is, in a microcosm, what America can do for the world.

So the question posed by the Senator from Rhode Island, who has helped to lead this debate, goes to the heart of what we are as Americans, as leaders in providing the world an example of energy savings, respect for our planet, addressing the problem that exists for us now, and denying the deniers their sway in this debate.

I have heard from others on the floor about how it is all a product of our imagination, but, as Ronald Reagan said, facts are stubborn things, and the facts show, regrettably and tragically, that climate disruption is destructive, implacable, relentless, and only we can stop it.

I yield the floor.

The PRESIDING OFFICER (Mr. BLUMENTHAL). The Senator from Rhode Island.

Mr. REED. Mr. President, I rise this morning to join my colleagues in calling for action to address climate change. This is a global challenge that has far-reaching consequences for our economy, our public health, and our national security.

I begin by thanking my colleague Senator SCHATZ, who is with us; Senator WHITEHOUSE, my colleague from Rhode Island; Senator BOXER; and members of the Senate Climate Action Task Force for their leadership and for bringing so many of our colleagues to the floor last evening and through the early hours of this morning to call attention to the critical issue of climate change.

This issue is daunting and difficult. One reason it is so daunting and difficult is that it is a slow-moving crisis. We are often faulted for not responding to critical issues before us, but we are certainly faulted for not responding to those that have evolved over many months and many years—the nature of our political process, the nature of our attention span, and the fact that other issues crowd out these longer term issues. But what we have seen as we look back is a clear path of evidence suggesting that our climate is changing. Our climate is changing in ways that are going to disadvantage us—disadvantage us in terms of our economic productivity, our national security, and it is going to disadvantage us in terms of things that we take for granted.

Senator BLUMENTHAL, Senator MURPHY, Senator WHITEHOUSE, and I grew up along the New England coast. I am a little older than my colleagues, but in the 1950s and 1960s those coasts had wide beaches and homes built along those beaches for middle-class workers. All of that has literally eroded over the last several years—particularly these superstorms that have come up our coast. Now we are seeing that places we saw as our summer ideal, beautiful places, have literally been lost. Homes have been upended by storms. Areas that were frequently places for summer relaxation are now gone because of rising seas and because of changing climates around oceans, bays, and our estuaries. This is only one example. I could go on and on. This evidence is so clear-cut, so condemning, and so convincing that we have to take steps now.

Across the globe, these issues are also increasingly important. It is not simply a localized issue. This is an issue which is impacting every person across every part of the globe. We see temperatures increasing, seasons shifting, sea levels rising, extreme water events becoming more frequent, and heat-related illnesses and diseases on the rise.

As I said before, these changes are being felt everywhere—they are being felt in Rhode Island, Connecticut, Hawaii, and all across this country. California has been enduring a crippling drought, and in other parts of the world we have seen unusually large rains. All of these weather patterns suggest that there is a changing dynamic that has consequences. We have to deal with these consequences.

There are some who would argue that we should take no action to mitigate these impacts because there is a cost of addressing these issues, a cost to our economy. In fact, there have been proposals introduced in Congress that would greatly restrict the U.S. EPA, for example. Their position is: See no evil. Hear no evil. Do nothing.

That approach is only going to make this problem worse. That approach is going to make the cost for us but also, more profoundly, for our children and the next generation of Americans, much more severe. We have to act wisely now. We have to move forward wisely now.

I think we have to do so with the notion—which I think is quite obvious and true—that sound environmental protection is not in contradiction to economic growth. In fact, they work together hand in hand. We have to have the long-term combination of sound environmental policy to encourage sustainable, economic growth. A healthy environment is essential for our economy and for our quality of life. Indeed, the strength of the economy depends on the health and resilience of our people, our critical infrastructure, and our natural resources. The cost of inaction, as I have suggested, is substantial, and it will be paid.

We talked today about rising seas, and as we look at most of our major cities, many of them are clustered on the ocean. They started there. They were ports. They were points of entry into the United States. They are the economic engines that drove this country from its founding until today.

But as our seas rise, critical infrastructure is jeopardized. There have been discussions in New York City, for

example, of building walls in certain low-lying areas of Manhattan. That whole process is likely a multimillion-dollar process, and it might well have to be taken—certainly, if we do nothing—because the rise of these tides seems inevitable. But if we act now, it might be mitigated or lessened or, through different techniques, avoided. But it takes action now. That is why my colleagues have tried to galvanize us into this session to underscore the need to act and the need to act promptly.

According to the U.S. Global Change Research Program, economic losses from weather-related events, including floods, droughts, and storms, have been significant and have been increasing. That is sort of the dynamic we are seeing. Not only are we seeing an increase in these weather incidents, but we are seeing them in a larger scale and it seems to be an accelerating process—more and larger weather incidents creating more damage.

We in Rhode Island and our sister States, Connecticut and Massachusetts, saw significant damage from Sandy, but we did not receive the brunt of the storm. However, that was a factor that could have altered, indeed, hours before the storm hit. We were concerned it would come straight, pouring down on Rhode Island with catastrophic effects.

Fortunately we missed the worst of it, but that was not the fortune of New Jersey and New York. They suffered billions of dollars in damage. They are still trying to restore communities, and they are still trying to restore services. We have had some effects, too, that we are dealing with.

But what we have seen is these storms coming repeatedly. My sort of vague history of hurricanes in Rhode Island—it was the 1938 hurricane that came roaring through. I was not there, but that was a devastating event. Then there was the 1954 hurricane, Hurricane Carol, and that was a devastating event. But there was, it seemed to me at least—and this is anecdotal more than analytical—a decade or more, 15 years, almost 20 years between storms. In the interim the storms were the old-fashioned nor'easters. They would come and go, and there would be a little damage but nothing significant. But that pattern and intensity of storms seem to have increased in their repetitiveness and their nearness of time. What we are seeing is a barrage, really, of economic events—huge environmental events—that have huge economic costs.

According to data from the National Oceanic and Atmospheric Administration, since 1980 the United States has sustained 151 weather-related disasters where overall damages reached or exceeded $1 billion. The total cost of these events tops $1 trillion. In 2012 Superstorm Sandy, the prolonged Midwest drought, and the nine other weather-related disasters led to damages in excess of $110 billion, making 2012 the second costliest year for disasters.

Let's stop and think. These disasters—that is $110 billion or so for Superstorm Sandy and some of the other incidents that took place in 2012—if they were avoided or mitigated, could allow public resources to be used for other things. That is one of the facts we have to face. This is not free to us.

If this prolonged drought in the West produces more forest fires—and there is a rough correlation between those two—we will pay for that. We will have to fight those fires. That is a huge amount of Federal spending before $1 goes to an Indian health care center or $1 goes to a Federal program to support higher education. Before $1 goes anywhere, we have to respond to those fire crises. That is only one example that is coming from the conditions established by a drought.

When we look at the coastal storms that are bearing down on us, we have to fix the infrastructure, we have to fix the shattered roads that line the coastlines, and we have to fix the sewer systems that have been shattered by these storms. It is not avoidable. So these costs keep accumulating.

Then there is another cost; that is, the opportunity cost of not being able to invest more in schools, invest more in other infrastructure, invest more in lowering the cost of energy—all of these things. We have to recognize that. As I said before, my State has been impacted, along with every other State, by these different weather phenomenon. The Sandy storm—mercifully we missed the brunt, but we still sustained significant damages.

Our coastline is increasingly vulnerable. That is the other factor. These storms weaken our coastlines and our barrier beaches. So when the next storm comes, the damage is even more severe, and when the next storm comes, it is worse. This cumulative effect is accelerating so rapidly that these damages are making us more and more vulnerable to storms.

In fact, it goes back to the frequency and the intensity of these storms. There used to be—at least anecdotally—a period of time where literally the coast could recover. There was a decade or so where, instead of severe storms every summer or fall, we had a period of accumulation of beach sand, of the ocean depositing sand, not ripping it away in a storm. That doesn't seem to be happening. We have to recognize that.

We also have to recognize that we have a Federal perspective, but the States are also spending a huge amount of money on responding to the effects of the storm, and that also diverts their efforts from education, from health care, and from all of the things States have to do.

This is not only a national issue. This is not only a regional issue. This is, as everyone has said on this floor, a global issue. Because of the global characteristics, it touches on interests of national security, which my colleague the Presiding Officer from Connecticut spoke about.

Rising waters—and they are rising for a very simple reason: As the water temperature increases, water expands. That is just simple thermodynamics. It is science. Simple thermodynamics is all I remember from West Point. As the water expands, sea levels rise, and that is going to keep happening.

If we mention the temperatures in the waters around New England over the past 20 or 30 years, they have gone up. And the water levels have also gone up. There is no sinister force out there. There is no whirling machine that is driving the water. There is no high-level combination of winds coming together. That might happen; that is the nature of a storm. But water keeps rising because molecules keep getting farther and farther apart as they heat up.

That water rise is significant to us in Rhode Island, but it is catastrophic to other places. Bangladesh is a country that is essentially on the water, and many parts of it are close to being underwater. If the sea waters rise there you have a situation of a relatively poor country that has had problems with its neighbors, and just to seek shelter people will be forced to move in and to put pressure on the boundaries. It could cause tremendous problems. That is just one example.

In Pakistan, we have invested a huge amount of money to work with the government of Pakistan to provide assistance as they battle the Taliban, to provide assistance as we move supplies through there to our forces in Afghanistan. The floods, the seasonal droughts, the chaotic weather they have seen there weakens an already weak government. This is repeated time and time again around the globe.

So this is, again, not just an issue about whether we are going to preserve our beaches, preserve our coasts or save money here in the United States to devote to more meaningful reasons. It could pose a serious national security threat as people are forced together with political issues already and now are under the threat of environmental catastrophe. They are changing borders, migrating, moving in conflict, and creating huge problems, undermining the weak governments that already exist in these areas of the world and providing further pressure on these governments. The result is chaotic situations which are the breeding ground for much of the terror and much of the carnage we see across the globe. This is related and we have to recognize that.

There is another part of this, too, that is often neglected. It is a challenge, yes, and a serious challenge, but also it is an opportunity. It is an opportunity to create jobs to deal with this evolving problem. Frankly, in the American spirit, one of our greatest characteristics is when we have seen a challenge, we also saw opportunity. Other nations just saw a challenge.

They didn't roll up their sleeves and deal with some of the issues as we did, as our predecessors did, as our parents did. Now it is our turn. Will we roll up our sleeves, look at this as a real serious challenge, and not ignore it but deal with it?

If we do that, we can create good jobs. We can create jobs that will reward people and contribute to an improved environment. Weatherization, for example, supports thousands of highly skilled workers and additional jobs in related businesses, materials suppliers, vendors, manufacturers, et cetera. This is a very straightforward way to deal with the issue of climate change. When we make homes more weather tight and better insulated, when we don't waste energy, when we don't have to use as much, when we cut down demand and don't have to generate as much and put as much pollution into the atmosphere, and we do these things on a widespread basis, we put a lot of people to work. These are the types of jobs that many people have the skills to do and that are rewarding. They can do them, and we save ourselves energy. We save the pollution, we save the warming that comes from just spewing excess emissions into the environment, and we put people to work.

This is a low-cost, effective way to deal with employment and with energy. We have to do more of these things. It is not, as they say, rocket science. This is no fabulous, new, high-tech application that we need to develop. This is giving people and communities the resources and the support to go out there and to put better insulation in buildings, to try to use more alternate energy sources, to put better windows in and better doors to hold the heat. This is just straightforward but very powerful. It can help curb energy consumption. Particularly for low-income people, it can reduce the cost of energy.

One of the problems, again and I see my New England colleagues around that we face in New England is our energy costs are much higher than the rest of the country. One is because we have a poor distribution system; and two, we have a system also where we are paying for some of the pollution in the Midwest that comes out of stacks and is taken at high altitudes and then it descends into New England and the Northeast. So we have to compensate not only for our pollution but also for other areas of the country. So all these factors come together.

My point is we can do a lot collectively across the country. It is not just a challenge, it is a huge opportunity, and that means getting our public policies here in Washington right. That means investing in better energy, investing in better distribution systems, investing in improving those systems that exist.

One of our problems in terms of the natural gas distribution in New England is not only that it is old and inefficient in terms of delivering gas, but it leaks methane, which is not a very good environmental component to release.

So we have these challenges before us, and we want to go ahead and deal with these challenges. We see around the globe increases in precipitation, increases in sea level rise, storm surges becoming greater, and all of these are putting to the test every system we have.

Our road systems—I haven't seen the roads as poor in the Northeast in my life. Highways—I–95, there are potholes everywhere. Why? We have had so many storms over the last 2 years, so much plowing, and so little dollars to do the repairs. The roads now leave you bouncing along on the highway like you are not in the United States of America but in some second or Third World country. That is a consequence—indirect, but a consequence—of the weather and our inability to marshal the resources to deal with the weather. Not just clearing the snow, but then going in and repaving the roads. We see that everywhere. But we have to do more.

This is a threat to our fisheries. It is a threat to our drinking water. It is a threat to our quality of life. Again, growing up in Rhode Island, we took for granted in the 1950s and 1960s that short ride to a beautiful beach—a big, broad, beautiful beach—swimming in the water and not worrying about the beach being closed because of environmental conditions, toxic conditions in the water. Some of that has changed, and we have to go back and reestablish that quality, that lifestyle. It is not just all about dollars and cents. It is also about the quality of our lives.

As I said before, and let me conclude, this is not just an issue of domestic policy, localized issues. This touches upon our national security. Ironically, we debate budgets of billions and billions of dollars about platforms, about what kinds of systems we will have in the air, on the sea, under the sea; what types and sizes of units we will have on the ground and what their training is like. But ironically, one of the things that is likely to trigger the engagement of our forces is this growing environmental crisis throughout the world.

Someone, I think it was one of the defense ministers in Nigeria, said one of the greatest problems the east faces, with the rise of these bands of radicalized young people, is the fact that because of desiccation of parts of his country, traditional farming, traditional aspects of economic growth and jobs and livelihood have been taken away, and so young people can get a gun and that is their new job. I think we have to be very serious about the national security consequences. So as we are moving forward, I hope we will recognize that these environmental challenges are also national security challenges.

There is one thing that was very revealing to me, and that was a few years ago when the Navy announced the Arctic Ocean would be able to be commercially transited during certain parts of the year. Again, growing up in the 1950s, 1960s and 1970s, if someone had told me the Arctic Ocean was going to be a commercial highway for ships, I would have said that is preposterous. It is frozen. It is always frozen. It will always be frozen. Well, that is not the case. Last year, Arctic sea ice reached an all-time low, and as climate change accelerates, the melting of sea ice will invariably make that a source of navigation.

It will create new opportunities, such as shipping routes, but also new challenges. Who will patrol those seas? Will we have to create not only a Pacific fleet but an Arctic fleet? That costs money. Who owns the rights? Who has access to that area?

So we are looking at huge problems that even 10 years ago we thought were fanciful.

That underscores the final point I want to make. We see this climate process, this climate change coming, and it doesn't seem to be affecting us minute by minute, so there is this tendency to be rather cavalier about it. Beyond the people who out-and-out deny it, which I think ignores the facts of science, even people who do tend to recognize it think, yes, well, we have time. But what we are seeing is not just the intensity of these incidents; we are seeing them accelerating, and the consequences of accelerating with such rapidity is that what we thought might be a huge problem 2 or 3 years from now might occur in half that time. So we have to act.

I want to conclude by thanking my colleagues, Senator BOXER, Senator WHITEHOUSE, and Senator SCHATZ because they have called us to come forward and to recognize this issue—to seize the challenge but also to seize the opportunity. In doing so, they have done remarkable work for the Senate and for this country.

With that, Mr. President, I yield the floor.

The PRESIDING OFFICER. The Senator from Rhode Island.

Mr. WHITEHOUSE. Mr. President, before I yield the floor to Senator UDALL of New Mexico, this may be my last chance to speak before the all-night session comes to its end, because I am about to relieve the Presiding Officer. In fact, I am overdue for that.

But I did want to take this moment to say a few thank-yous. As one of the instigators of this episode, I thank my staff in particular for all the work that went into this. I thank the parliamentarians and the Senate clerk staff, who had a long night with us, and I appreciate it very, very much. There is only one page I see on the floor remaining—no, there is another one. I want to thank all the pages. Many of them stayed here through the night, and it was a very long night for them, and I appreciate very much their effort. Then throughout the building, because

the Senate had to be kept open, there were people who were kept here—the Capitol police and others—and it is much appreciated.

One of the things about the Senate is when we are in session, the light on the top of the Capitol stays on. So all night last night, people across the city could look and see that the light on the Capitol stayed on. I hope that wasn't the only light that was shed last night, but at least it is an example, and I just express my appreciation to all of the people who we have inconvenienced in order to make this point.

Mrs. BOXER. Will the Senator yield before we hear from my good friend.

The PRESIDING OFFICER. The Senator from California.

Mrs. BOXER. Mr. President, I thank also everyone who made this evening possible, and I want to say to my cochair of the Climate Action Task Force, Senator WHITEHOUSE, what a privilege it is to work with him, as his passion on this runs deep; to Senator SCHATZ, who, from Hawaii, is witnessing climate change in real time, just as so many of us are who are from coastal States.

I am so looking forward to hearing Senator TOM UDALL, and I am not going to quote him but I hope he will say what he said in front of the environment committee when he was a new Member. He called attention to what is happening in the West, and all one has to do is read the papers to see the suffering that is going on.

So I also want to say, because time is wasting here, that this was something that I think has caught on, that has caught the attention of people. I can tell you that well over 100,000 people—well over that—have signed various petitions calling on Congress to wake up.

I am under no illusions that our colleagues on the Republican side watched us. So let's be clear. Senator INHOFE said before he left: You are talking to yourselves, and I took great offense at that because the vast majority of the American people understand climate change is real. There is no doubt about it, no more doubt than people have that cigarettes don't cause cancer. We know this is a fact. And for us to close our eyes to this fact is closing our eyes to the people we represent and about whom we care.

Again, my deepest thanks to all the staff in the entire building. To all my colleagues, Senator WHITEHOUSE informed me we are about to hear from the 30th Senator. That is incredible. Thirty percent of the Senate is participating.

I yield back my time, again, with my deepest thanks. There is more to come from the Climate Action Task Force. We are just getting started. We will have lots more. The next time we do something, we will engage a lot of other folks as well.

The PRESIDING OFFICER (Mr. WHITEHOUSE). The Senator from New Mexico.

Mr. UDALL of New Mexico. Mr. President, I thank Senator BOXER for her very kind words. She is the chairman of the committee which deals with climate change legislation and has been ever present in terms of trying to see if we can come up with a bipartisan solution and get legislation. I was very proud to serve on her committee when the Obama administration came in and the Senate sat down to work and was trying to do something about climate change. Unfortunately, we ran out of time.

But as we can see by the number of Senators who have spoken—we are up to 30 now—we still have incredible passion about this issue. We know it is a serious problem, the American people know it is a serious problem, and we want something done.

What have we learned? I have watched my colleagues over the night. I am No. 30 and I have watched what they have been talking about. The tradition here in the Senate is normally if we are talking like this and our colleagues on the Republican side of the aisle want to come down and exchange with us, they can do that. That is our tradition, to say we speak and then they speak. What we have ended up seeing is one Republican Senator show up in this 12-plus-hour period is my understanding. I think I am right. This is what was reported on NPR this morning. To me, this is tremendously sad, because in the glory days of the Senate in the 1960s and 1970s major environmental legislation, major conservation organization legislation—remember the Wilderness Act, the Clean Water Act, Clean Air, Endangered Species—was passed with significant bipartisan support. We don't see that effort today. It makes me very sad. We are here all night trying to engage and say: This is something the American people believe is serious, and we need to engage on this issue.

Today I am going to talk a little bit about New Mexico, and how New Mexico and the Southwest are at the bull's-eye when it comes to climate change.

What do I mean by that? If New Mexico is at one temperature and we compare it with the rest of the country—let's say in the rest of the country we have a 1-percent rise—New Mexico is going to be 2 percent, so there is a doubling effect in the Southwest. This is a map of New Mexico, but we are talking the Southwest.

First let me talk a little bit about the drought we have had. Here we are from June 2011 to the present, a drought of epic proportions. The U.S. drought monitor shows more than 90 percent of New Mexico is in extreme drought. Northern and western New Mexico got some precipitation last year, but several other areas of the State remain mostly dry. We can see this is extreme; the other is moderate. Added together, it is a significant impact. These are the kinds of challenges we are going to face with climate change.

To talk a little bit more about these impacts, I would now like to go to chart 2 and look at the snowpack in the northern New Mexico and southern Colorado watersheds. They only range from one-half to three-quarters of what normally would be there.

This is a winter picture. Normally in northern New Mexico at this time of year we would see a massive snowpack. Why is that important? Because in the summer when we start using the water, we start irrigating, the farmers start doing things, they recharge the aquifer. So if we don't have a snowpack, we don't have that kind of recharge and we don't have the storage levels of drinking water.

Just to pick one of our communities, Santa Fe, NM, gets 40 percent of its water from the ground and it gets another big chunk of the water from reservoirs. Those reservoirs are fed when we have a snowpack and when the ground gets recharged and it flows off and flows into those reservoirs, so this is something which makes a huge impact when we don't have a snowpack and when we have a decreasing amount of precipitation. We are going to see more and more of this as we move down the road, when we look at the modeling which has been done by the experts who are working on this issue.

This next slide is particularly disturbing in terms of water. I remember it being roughly at this place on the Rio Grande just last year in the middle of the summer. This photo is showing a very meager amount of water. When I was there last summer, there was no water. It was completely dry. So here, the river which flows the whole length of the State of New Mexico down to southern New Mexico—El Paso, TX, relies on it; Mexico, our neighbor to the south, relies on it—there was no water to be seen. Once again, it dramatically shows the impacts of climate change and the impacts as we see this move down the road.

One experience with ranchers and farmers I think really brings this home in terms of water. There was a flood control project in Tucumcari, NM, created in the middle of the Great Depression. Everybody in the community invested in it. The Federal Government invested in it. These projects have a dual purpose. One is, if there is a big flood, to try to control the flood. The second thing is to hold the water, so when we get to the irrigation season we can have irrigated farmland. They did this in the 1930s. I think about 600 or 700 farmers and ranchers rely on this project and have been relying on this project since the 1930s.

I visited this community recently and learned from the people who run the project and from the farmers and ranchers, in the last couple of years, zero water. No water at all. They had never seen this since the 1930s, even though when we went through very serious conditions in the 1950s it was thought to be one of the biggest droughts and no water. The last 10 or 12 years, this particular project, the same thing: very, very little water.

What ends up happening as a result? Farmers and ranchers cannot plant. Ranchers sell off their herds. Just to show how dramatic it is, in New Mexico we saw 50 percent of our cattle herds sold off this last year. People are hurting so badly in terms of this drought, they are unable to keep their livestock on the land and they end up having to pull the livestock off. This has a devastating impact to people who live closest to the ground.

I have been out on the land in New Mexico with conservationists and scientists and talked to them about climate change. One of the things I try to describe in what I have learned—and I think this is what Chairman BOXER is talking about—when I made a presentation in one of the committees, is if we take the modeling which has been done on climate change in the Southwest, and particularly focusing on New Mexico, what we do with that modeling is ask ourselves: Where are we going to be 50 years down the line?

We just had a study at Los Alamos National Laboratory which says by 2050—in less than 50 years—we are not going to have any forests in New Mexico. So much of this area of northern New Mexico and down here, the forests throughout this area, they are saying it looks like no forests and much less water, as I have just talked about. If we don't get snowpack, we can't charge the system back.

The most dramatic description to me is what happens here 50 years from now. These are conservative numbers. These aren't the ones many of the scientists nowadays are saying we have. We are taking conservative numbers, and many scientists are saying it is happening quicker, it is moving faster.

What they tell us is—imagine on a computer screen how we can drag things. New Mexico is over 300 miles. If we click on New Mexico and drag it 300 miles to the south—so we are moving the top of New Mexico down 300 miles to the south—what do we get? We are in the middle of the Chihuahuan desert in Mexico. So what was a dramatic forested area, what was an area which was very acceptable to farming and ranching: Devastating impacts.

So those are the kinds of things. I could go on and on here. But the thing about the impacts—and we could talk about how one of our reservoirs at Elephant Butte has the lowest level in 40 years. This is a great recreational lake which people used. This is a picture of the reservoir in June of 1994. Here is the picture today—dramatically different.

I wish to highlight as I close here—because I know we are trying to wrap up after we have been going for many hours—New Mexico has been focusing on solutions. One of the solutions sitting right in front of us is renewable energy. We know we are going to have to deal with this problem one way or another. It is much better to deal with it earlier. In New Mexico we are doing everything we can to foster the solar power industry. This slide shows solar power to beat coal prices in New Mexico. Right now, the solar installations going up are very competitive in terms of coal.

Wind power. Once again, in New Mexico we have installed wind capacity of 778 megawatts. New Mexico ranks 19th for the total megawatts installed. So all over New Mexico, up on our mesas, as we can see here, we have wind turbines collecting the energy from the wind. The number of wind turbines: 575. New Mexico ranks 17th for the number of utility-scale wind turbines. Current wind generation in New Mexico is 6.1 percent.

Just a few years ago when we put in place a renewable electricity standard, we had a lower level and we have been pushing that up. This is one of the things we need to do at the national level. My cousin and I worked in the House of Representatives before we were in the Senate to get a national renewable electricity standard. This is something we have to do which is a solution.

As I laid out all of the things earlier, the devastating impacts, one of the things we should realize is there are solutions; they are here today; the technology is perfected; and we are able to put those into place.

The final area of renewable energy I wish to talk about and we have huge potential here in the Southwest is called advanced biofuels. I have been to this facility and seen the experimentation they are doing. They have taken land and are farming algae. What eventually happens with this algae is it is refined and the algae becomes a very good fuel. So this is something which is, once again, a solution to this problem.

We shouldn't despair when we look at the impact of climate change and when we look in the future as to what people are going to predict, because we know we have the ability to cultivate solutions.

I am very proud of my State and how we have really worked to cultivate these sources of renewable energy, and we are moving it up with our renewable electricity standard higher and higher every year. I am very proud to have been a part of this effort, the 30th Senator to stand and speak about this. I guess we have been going about 13 hours, 14 hours.

Once again, I can't close without mentioning I wish we had our friends and colleagues on the Republican side of the aisle down here to engage us. I don't know what to conclude but that either they don't care about this or don't want to engage with us. We only had one Republican Senator in this 14-hour period show up. This sure isn't like the glory days of the Senate when so many Republicans participated with Democrats to tackle the big problems which faced our country. This is a problem which faces the entire world, so we need the U.S. Senate and the entire world working together in a cooperative way to solve this.

I thank the Presiding Officer, who was a key person in terms of organizing this, Senator WHITEHOUSE from Rhode Island, and I yield for my good friend from Massachusetts.

The PRESIDING OFFICER. The senior Senator from Massachusetts.

Ms. WARREN. Mr. President, I thank Senator UDALL.

I am proud to join with my colleagues in speaking on climate change. Senators have been speaking on this issue since yesterday, all through the night, to add their voices to the millions of voices around the country who are committed to fighting climate change.

The level of commitment we have seen from these Senators is extraordinary, and we will need an extraordinary commitment here in Congress, around the country, and around the world to address this issue. We will need that commitment because we are on the cusp of climate crisis, a point of no return, which will threaten our health, our economy, and our world.

We are also on the cusp of innovation in clean energy and energy efficiency which has the possibility of transforming energy production and consumption. In other words, we are at a moment of great danger and great opportunity, a moment where we must make choices about whether we will go boldly into the future, investing in innovation, establishing serious and smart regulations, and committing to address the climate crisis or whether we will continue to subsidize fossil fuels of the past and ignore the risks to our future. It is up to us.

Doing something new is hard, because when it comes to environmental and energy issues in this country, powerful, entrenched, deep-pocketed corporations are lined up to fight any change from the status quo. These powerful corporations defend policies which poison our air and foul our water with little regard for the well-being of future generations. These powerful interests work hard to tilt the playing field so energy entrepreneurs and innovators have a hard time getting a foothold in the market. These powerful interests too often have a stranglehold on our political system, blocking not only bold change, but even conservative, market-based reforms.

When it comes to environmental and energy policy, the system is rigged—it is rigged against our families and it is rigged against our future. Let me give one example.

In 2012, the five biggest oil companies—ExxonMobil, Shell, Chevron, BP, and ConocoPhillips—made combined profits of $118 billion. At the same time, they sucked down billions of dollars in tax subsidies from the American people. Over 10 years, oil and gas companies will receive $40 billion in taxpayer subsidies. And if the Republicans have their way, these companies will get even bigger breaks in their taxes.

Think about what $40 billion could mean for our future: a serious investment in research to figure out the

problem of energy storage and to develop better incentives for wind and solar installation; certainty and predictability for investors and entrepreneurs who have a big idea in green energy or energy efficiency and want to build a new business. And here is the point to underline: We can invest in research and develop new markets without spending any new money, if we just shift our priorities from old fossil fuel energy to new clean energy.

A tax policy which protects these powerful interests of the past is a tax policy which is rigged against the entrepreneurs, small businesses, and innovators of the future. It is rigged against families who want their children to live in a world where they can drink the water and breathe the air.

In preparation for the speech I am giving this morning, I asked Americans to write in and talk about how their lives will be affected if we do not get serious about climate change. My question was a simple one: If we don't do anything at all to stop climate change, what do you think the world will look like 25 years from now?

I would like to read some of the responses for the record. These are just a few of the more than 5,000 letters I received on this issue. It is obvious to me the people of Massachusetts and the people of our great Nation are worried about this problem. So let me read from some of their letters.

Blake Cady of Brookline, MA, writes:

I served on a US Navy icebreaker in the Arctic from 1959–1961 and saw th[at] relatively pristine region with intact permafrost and heavy sea ice well into the summer off Baffin Island and further north. Now, much of the Arctic Ocean ice cover is disappearing and is predicted to be entirely gone by the end of the 2030 summer season. . . .

Currently there is open water across the Northwest Passage in the summer, and shipping has become routine, [which is] a profound change already. There will be untold alterations—from the warming Arctic Ocean to accompany the rapidly melting Greenland ice cap—which have the potential to change global currents and further escalate global warming trends.

There is still a narrow time window to address this looming climate disaster, but action must be forceful and rapid to escape its worst aspects. I fear for my children's and grandchildren's future.

A letter from Susan Timberlake of Florence, MA:

I used to be a clinical chemist. We made up ''buffers'' as part of our tools that kept a solution at the pH [that is, relative acidity] that you desired even as you added things that would upset the pH.

Really good buffers have really good capacity. $CO_2$ dissolved in water as a bicarbonate has pretty good buffering capability. Once all the buffering capacity is used up the pH change is precipitous. The pH shifts radically and directly as anything else is added to the solution. You lose any control you had over the chemical reaction(s).

And here is where she makes the connection.

The oceans are where much of our excess $CO_2$ is going. . . . So far the oceans have been absorbing the $CO_2$. . . . But the coral reefs and the starfish on the west coast of America don't lie. We have no idea . . . how much buffering capacity is left (or not). If we keep this up we will have a well carbonated, acidic—and quite dead—ocean.

[That's] [n]ot something I can bear leaving for my children and grandchildren. (And I am a registered Republican—[a] conservationist in the real sense.)

A letter from Nilan M. MacDonald of Scituate, MA:

I live in Scituate, MA, on Boston's South Shore. We are about two miles from the coast. In 25 years we could be flooded out. Also, storms are worsening, and we have been left without power for days at a time, which has endangered our health ([and] we are seniors).

In 25 years, populations who live at sea level will become climate refugees as sea levels rise. This will affect people worldwide. Crops will be threatened by droughts and floods. Diseases now in check will become rampant as the planet warms. Mosquitos are the deadliest animal vector for human diseases—and their numbers and range will greatly increase with climate change.

Dorothy Bagley of Hudson, MA writes:

If folks think that this has been a bad winter in New England and weird all over the world, [consider] how much worse it will be in 25 years. Areas of concern to me [are]: weather changes affecting crops, water supplies, flooding, etc. Our whole style of life is in danger . . .

I am a retired Chemistry Teacher and I know what the effect of temperature is on chemical reactions. Our World is one big chemistry experiment . . . with so many variables which compound the problems.

We can take steps, however small they may seem, like lessening pollution due to carbon-containing fuels, lower speed limits, increase[d] use of alternative fuels, chang[ing] the Nation's attitude about recycling . . . chang[ing] our transportation by . . . mak[ing} our cars more efficient, etc.

Education and focus are the keys. People need to know that they can effect a change both positively and negatively. Unless citizens' attitudes change toward any of the above, nothing will help to minimize what will be in 25 years.

A letter from Mon Cochran of Orleans, MA, who writes:

Dear Elizabeth,

I am 72 years old and living on Cape Cod, where I grew up. When I was a kid back in the 1940s my parents and other very old people used to tell scary stories about the Hurricane of 1938, and how it knocked down all the trees and blew the roofs off houses. We saw pictures of boats smashed on the shore or carried up into the streets by the flood tides.

As I grew up in Orleans, we experienced a series of hurricanes, starting with Carol in 1954 and then Diana the next year. Each time our parents remember 1938—and each time I remember being very, very scared as the storms barreled across the bay like furious freight trains while we cowered in the basement. In 1960 Donna came through, and even though I was 18 years old by then the fear that the house would be destroyed brought nightmares.

Now I am a grandfather, and know much more about what causes hurricanes and why they can be so destructive than my parents did back then. For the past twenty years or so we have been lucky on the Cape—most of the really bad storms have been confined to the Caribbean or turned inland before reaching us.

My grandchildren Tom and Kay and I have been learning about global warming together, and we have noticed, in particular, how our bay, and the ocean it connects to seems to be warmer every year. The ocean water over at Nauset Bay is so warm in the summer that we can boogie board indefinitely without getting cold. What we have been reading about hurricanes is that the warmer the water is, the more energy that is available to the storm and the stronger it becomes.

Kay and Tom were very scared by the pictures of Superstorm Sandy they saw on TV and were worried that a storm like that, or worse, might hit us here in South Orleans. As for me, I think it is just a matter of time, but I don't tell them that. They live in Boston and have visions of a great wall of water roaring into Boston Harbor, knocking down all the buildings in the waterfront and surging up into the neighborhood where they live in Roslindale.

From what I have been learning, we have already pumped so much extra carbon into the air, that these much more extreme storms are likely to occur no matter what we do. If we redouble our effort to switch to clean energy—solar, wind, hydro, tidal, geothermal, and biofuels—the way they are doing now in Europe, and even in countries such as China and India, then 25 years from now Tom and Kay will know that a sustainable lifestyle is possible and their children can look forward to a much safer and more secure second half of the 20th century.

From Ken Marien of Westminster, MA:

[I expect to see] [m]ore severe weather patterns, colder colds, warmer warms, dryer days, wetter floods, bigger storms, higher winds, more dust, more mud, loss of marginal growth plant and animal life.

I have many more letters. As I said, I received more than 5,000 letters from people in Massachusetts and across the country. I wish I could read every one of them. I don't kid myself. We are up against an army of lobbyists, and we will not win all the fights ahead. But here in the Senate we have leaders who will fight as hard as we can to protect our environmental future.

The Senator from Rhode Island, Mr. WHITEHOUSE, has shown dedication to addressing climate change and his commitment to ocean issues and the coastline has been visionary.

My colleague from Massachusetts, Senator MARKEY, has committed his long career to protecting and preserving the environment.

Senator BOXER, from California, who chairs the Environment and Public Works Committee in the Senate has been a force to fight to protect our environment. Senator SCHATZ, from Hawaii, organized Senators to speak through the night on this issue and is quickly distinguishing himself as a leader in the fight against climate change.

In a few minutes, Senator CARDIN will come forward and continue this important discussion.

I am proud to stand shoulder to shoulder with such dedicated public servants and with all of the Senators who have held the floor for so many hours to draw attention to our urgent need for climate change.

We are on the cusp of a climate crisis, a point of no return. We can continue to subsidize polluters and ignore

the warnings all around us or we can invest in a future that can create jobs, a future that can strengthen our national security and, most of all, a future that can save our planet.

This is our moment in history. We can act, we must act, and we will act.

I yield the floor.

The PRESIDING OFFICER (Mr. UDALL of New Mexico). The Senator from Maryland.

Mr. CARDIN. Mr. President, first, I wish to compliment and thank Senator WARREN for her comments. Senator WARREN has brought up a lot of issues that I can relate to because our States share the Atlantic Ocean. We talk about climate refugees around the world, and we are starting to see those in our own States. As sea levels are rising, we see dead zones in the oceans and in our bays. We need to take action in order to protect our people.

In my State of Maryland, you can see firsthand the effects of the rising sea-level. One example is Smith Island. Smith Island is a habitable island in the Chesapeake Bay that is home to many of our watermen who have been practicing their professions for many years. They are at risk.

You need a boat to get from one of the towns to the other. Smith Island only has a couple of hundred remaining residents, but they are losing their land daily as they fight to counter the rising sea level change—I think that is a very visible sign of what we are up against—and the urgency of dealing with climate change.

I am so proud to be identified with the Climate Action Task force. Many of the leaders have been mentioned, and I thank Senator SCHATZ and Senator WHITEHOUSE for organizing this opportunity for us to put a spotlight on climate change and the need for urgent action. I thank Senator BOXER, the chair of the Environment and Public Works Committee, for her extraordinary leadership.

Throughout last night and into this morning, we have highlighted the science, which is indisputable, as to the fact that over millions of years we have seen catastrophic changes on our own planet. Because of our activities and what we are doing on Earth, within a very short period of time—just hundreds of years, and less than that now—we are causing a catastrophic impact on our climate. It is urgent. We have seen firsthand the impacts of climate change.

I was in Beijing, China, last year. I was there 3 days. There wasn't a cloud in the sky, but I never saw the Sun because of the pollution that was in the air—their carbon emissions. We have seen the costs of climate change in lives and in dollars we spend to try to adapt to the new realities of extreme weather conditions.

I will use the few moments I have to talk about the issues that are closer to home in my own State of Maryland. Seventy percent of Maryland's population lives in coastal zones. It is now predicted by the Maryland Climate Change Commission that we will see a 1.4-foot increase in the sea level by 2050 and 3.7 feet by the end of this century. That is going to have a dramatic impact on many Marylanders who live in the coastal area.

I can give another example. Ocean City, MD, is a popular place for Marylanders and people from outside our State to enjoy the beautiful beaches. I must say that I am very proud that this Congress has appropriated millions of dollars for beach renourishment. Those dollars have returned multiple times because they prevent the full force of these nor'easter storms that are more frequent and more severe in Maryland and along the Maryland coast. There is a limit as to what we can do if we don't take action to deal with the sources of climate change. We want to protect our property owners, and the best way to protect our property owners is to do something about the causes of climate change.

We saw the impact of Sandy along the east coast of the United States. I know that the most severe impact was in New Jersey and New York, but in Maryland we saw in Crisfield, MD, the full effect of Sandy. The people there know they are at risk because of the severe storms that are becoming more frequent and more severe.

The Chesapeake Bay itself is at risk. I have talked on the floor many times about the importance of the Chesapeake Bay, and how it is a national treasure. It is important just by the fact that it is the largest estuary in our hemisphere. It is important because of its coastline and its impact. It is also important because of its impact on our economy. The blue crabs and oysters are critically important to Maryland. Yet they are at risk.

The blue crab is a little complicated, but we know one of the factors that is affecting the blue crabs is the ability of juvenile crabs to be able to survive in seagrasses. Yet the seagrass population is declining because of temperature rise in the Chesapeake Bay. That is just one example of the challenges we have because of climate change. It is affecting the economy of my State, and it is affecting the economy of our country.

The Port of Baltimore is the largest single economic factor creating jobs in our community, and the Port of Baltimore depends upon a stable coastal climate.

The tourism industry is directly affected by climate change. People love to come to our State to hunt and fish. One of the most valuable assets we have along the bay is the Blackwater National Wildlife Refuge.

The Presiding Officer has heard me talk about that frequently in the Environment and Public Works Committee. The bald eagles have returned to Blackwater. It is an incredible sight. People go there just to see the beauty of nature and to visit our wildlife and our waterfowl.

Blackwater is at risk. It is important for tourism, and it is important for our environment. It is also the land in which Harriet Tubman conducted the underground railroad, so it has a lot of significance. Yet, between 1938 and 2006, we lost 5,000 acres of marshland to open water, and that is accelerating. It is not slowing down. If we don't reverse the impacts of climate change, we are going to see a more dramatic impact on those types of treasures in Maryland and nationally.

I will also mention the fact that, of course, this is a Federal legislature, and we should be concerned about the Federal facilities as well. In Maryland we have Pax River, which does incredibly important work for our Navy so they can do their research and flight testing on the coast of our State, and that is at risk by the rising sea-level.

I serve on the Board of Visitors at the Naval Academy, and I can tell you I have visited the Naval Academy when it has been flooded because of storms. It is a little below sea level at some of its locations. The rising sea level jeopardizes that iconic institution that is so important to our national defense.

The Aberdeen Proving Grounds is also located on our coast and does critical work in national security. All of these facilities are being jeopardized because of the climate change that is occurring in our community.

I will talk a little bit about some good news. We can reverse what has happened. We can slow down the effects. We can change the course that we are on. We have already done a significant amount. I congratulate President Obama and his policies because he has taken on the major areas that deal with climate change.

The United States has to lead internationally, but it starts with action right here in the United States. We have to lead by example. Other countries are far ahead of us. We have to join with other countries to produce a strategy that works because our environment does not end at our borders. We have to work internationally, but first we have to work at home.

What has President Obama done? He has taken on the transportation sector, which is one of the greatest uses of carbon fuels, with our CAFE standards—our efficiency of our automobiles. We now have standards that would lead to having an automobile get 54½ miles per gallon by 2025. That is ambitious. They said we couldn't do it before, but we did it. We met those standards, and we will meet these standards. We will significantly reduce the amount of fuels that we need to fuel our transportation in this country.

We are investing in transit facilities, and that reduces our carbon footprint. High-speed rail reduces our carbon footprint. We are committed to those types of solutions that are common sense to help our environment.

The Obama administration is moving ahead on the regulation of carbon pollution under the Clean Air Act. They

recognize that the energy sector can help reduce our carbon footprint substantially.

Senator WARREN was absolutely correct when she said that we don't have a level playing field today. We subsidize the fossil fuels, but we don't with the renewable fuels. We can expand our renewable energy sources.

Quite frankly, we are showing innovation among all of our stakeholders. Buildings use a lot of energy and generate a lot of carbon. The Federal Government is leading in the LEED certification, as is the private sector, in doing things that are much more energy efficient in the building sector.

Therefore, we have seen progress in transportation and buildings and the generation of electricity. We have been reducing our carbon footprint, which will help the people on Smith Island by reducing the sea level changes.

The Presiding Officer and I saw firsthand the impact of the glacier melts when we were in Greenland. I thank Senator BOXER for arranging that opportunity. We saw very visually the glacier melts and how much has occurred in a very short period of time. We can reverse that by showing leadership in transportation and the way we use our buildings and the way we generate electricity. We can work together with the international community.

The good news is that the solutions for dealing with climate change will help our national security by consuming less fossil fuels. We want to get to zero as far as our need for imported energy in this country.

We can get that. We now know the threats that are made from Russia to Ukraine to the Middle East. We can eliminate that threat to our national security. We can create more jobs. Green energy will give us more jobs in the fossil fuel industry. We need good-paying jobs. We can leave our children and grandchildren a cleaner planet and a better future. That is what is at stake. That is why we have taken this time. I am proud to be identified with so many who have spoken on this issue.

I yield the floor.

The PRESIDING OFFICER. The Senator from Washington.

Ms. CANTWELL. Mr. President, I thank my colleague from Maryland. I thank him for all his work on the Chesapeake and so many important issues as it relates to this issue and for being here up all night with my colleagues on this important climate issue.

I thank Senators BOXER and WHITEHOUSE and SCHATZ for organizing this endeavor and for everybody participating. Obviously we are here to talk about climate change, but like my colleagues we know climate change is actually impacting jobs now because it is impacting our climate now. So while we are here to talk about what might happen in the future, I am here right now to specifically talk about what is happening to our economy and why we need to take action because ocean acidification is an economic issue and it affects so many different people in our economy in the Pacific Northwest.

It affects our shellfish growers, which is a major industry. We have three and four generations of shellfish growers who are threatened now by the impact of carbon in our oceans and the warming of our oceans. So when you talk about climate and you talk about acidification of our oceans, you are talking about an industry that is key to the Northwest that is being affected today.

Also, our crab fishermen are being affected today, which is an important part of our fishing industry all the way to the Bering Sea. A lot of people do not realize that the Alaska crab fishermen are based in Alaska and in Washington State. They very much depend on making sure we deal with this issue in the future if we want to protect these jobs and the important industry that is there.

Sea levels are rising and forcing communities to deal with this issue. We want to help ticket these jobs, even jobs for the salmon fisherman. A lot of people watch ''Deadliest Catch'' and understand the seafood industry, but they may not understand that even salmon depend on a food source that is affected by ocean acidification, that it is not just killing oysters and shellfish, but it is also killing these pteropod that the salmon industry depends on too.

You can see I am here to talk in relation to jobs because commercial fishing in Washington State is a $30 billion coastal economy with 42,000 jobs and contributes about $1.7 billion to our gross economic product. So for us this is the impact of climate that is being felt today, not in the future. It is being felt today. It threatens a key industry. Not only is that industry important to Washington State, it is also important to the Nation. It contributes $70 billion to the U.S. economy and supports over 1 million fishing jobs. So our inaction in Congress, deciding not to do something, basically threatens those 1 million jobs because the climate is impacting our oceans and our oceans are impacting the food supply these fishermen harvest.

If we do not do something about this, we are going to have severe problems in the future. Why is this? The key point—if we could have just one chart today played over and over, I would have this chart—is our oceans absorb 25 percent of the $CO_2$ emissions. That is right. All of the $CO_2$ emissions, 25 percent of them basically sink into the ocean. So that means carbon emissions from fossil fuels are being absorbed into the ocean. That basically creates a very corrosive environment in our waters.

So the notion that people think we can continue doing what we are doing and not make the change, I guarantee you the problems we are causing for our oceans is a serious threat. This graph shows you the kind of acidification that is happening in our sea water. That ocean acidification has increased 30 percent over the last 200 years. Oceans are on track to be 150 percent more acidic by the end of the century. The current rate of acidification is 10 times faster than anything Earth has experienced in the last 50 million years.

As you can see, this increase of carbon and an increase of the acidity level in water, an increase in acidification, is what is causing this problem for us. Again, my colleagues on the other side of the aisle who think this is just something that we do not have to deal with are ignoring the real science and the state of our oceans.

What does that acidification cause? I guess if there was another chart here I would make this chart also the star of the show, because this is not a science experiment, this is the current state of oyster larvae. Last night I was at a restaurant here in town and they offered Washington oysters, shellfish on the menu. That is great to see.

But this is a picture of actual larvae, the beginning stages of these shellfish that are being impacted. You can see here that this is what acidification is doing to that larvae. It is not able to form. We saw in 2005 when shellfish production plummeted on the West Coast, it seemed like a freak accident, but then it happened again in 2006 and in 2007. Then in 2008, more than 80 percent of the oysters at Whiskey Creek Shellfish Hatchery died before they could be planted into the shellfish farm. In total, billions of shellfish died because of that acidification. These images from Oregon State University show ocean acidification, what it does to the larvae because that acidification erodes and becomes corrosive and actually kills the oysters.

As I said, these are third- and fourth-generation jobs in my State. It is very important that we protect them. They have been a big driving part of our economy. But when corrosive sea water increases and then you have a 60-percent decrease in production, you are talking about hundreds of jobs in Washington State that are being impacted. We need to do something right now to act.

It does not just affect the larvae of oysters, acidification destroys other shellfish. This again is another example of a pteropod, which just happens to be the food source for salmon. Some of these shellfish are what salmon feed off of for a protein source. Yet these same shells are not being able to form. Over 30 percent of the marine life in Puget Sound is a calcifier. So these calcifiers basically are species that are a calcium carbonate shell, just like the oysters and the shellfish, that needs to form. That is 30 percent of our marine life, of our food source.

So if we do not do something about ocean acidification, these shells are not forming, and we are going to have an even more serious impact to our salmon industry in Washington State.

My constituents know these are big issues. In fact, the Seattle Times ran a

groundbreaking series called ''Sea Change,'' the highlighting of the impact of carbon to the oceans because it could—as this article details—cause a collapse of that huge Alaska crab fishing industry—a collapse. I know my colleagues from the Northeast are here. They understand what a collapse to a fishing industry means. They understand it means a lot of people without jobs, it means a lot of people who depend on the fishing industry as ancillary or related jobs end up without jobs. They understand that a collapse of the fishing industry means a collapse to the economy overall in their region.

So if we do not do something to address acidification, we are talking about climate change impacting a key jobs sector and causing huge job losses. That is what this chart shows. Basically it shows how the crab harvest industry is being impacted by ocean acidification and that it could cause a very precipitous decline.

We cannot afford that. I will show you why we cannot afford that. We just recently—people might have caught it on the west coast. You might think what I just showed you is about oysters and about the pteropod for a salmon source, but scallops, we just had I think 1 week ago a massive die-off, another canary in the coal mine. Basically it shows that 10 million scallops died off the coast of British Colombia. Acidification was to blame. So acidic water was blamed for west coast scallop die-off.

It shut down a processing plant and one-third of its workforce. You can see these things basically are killing jobs. So ocean acidification kills jobs. Us doing nothing about ocean acidification or about $CO_2$ in the atmosphere is going to cause us economic problems.

I urge my colleagues on the other side of the aisle to make sure we support measures that will allow us to mitigate now the impact of this and plan for the future because we cannot have what is happening now.

We have a buoy system that we have deployed all across the United States. That buoy system helps us identify acidification levels and helps the fishermen come up with alternative strategies about when to do their planting. Let's just say it this way: They figure out when is a perfect moment to actually have the seeding. If you have too much $CO_2$ and a warming of the oceans, then figuring out that very moment where it might not be so acidic or challenging and then actually doing the planting is giving us some problems.

But these are high-risk tactics. We actually have to reduce the level of $CO_2$. We are here this morning to talk about how this issue impacts the industry in my State. But this last chart shows a picture that is irrefutable. This is ocean acidification's effects on coral. Here is healthy coral. You can see it is vibrant, colorful. If you have ever been off our coast or walking on the beaches, you can see the shell life that exists in a healthy coral reef.

This is the same coral reef years later with an unhealthy effect. We are here this morning to talk about jobs, to talk about climate and its impact on our economy today. It is important that we address this issue. I have sponsored bipartisan legislation with my colleague on the other side of the aisle called the CLEAR Act. It is just one idea, but the premise of that is that we have to not only reduce greenhouse gases now, we have to mitigate the impact and plan for a more diverse energy source in the future.

That is what we are talking about. We are talking about trying to save jobs in the United States of America by doing a better job of planning on this important issue.

I yield the floor.

The PRESIDING OFFICER. The Senator from New Hampshire.

Mrs. SHAHEEN. Mr. President, I wish to agree with Senator CANTWELL, our colleague from Washington State, because in New Hampshire we are also seeing the impact of climate change on our traditional industries. It is contributing to sea level rise, it imperils businesses and homes in coastal communities such as Portsmouth. New Hampshire's very popular Hampton Beach is experiencing greater storm surges and beach erosion. The outdoor recreation community is facing shorter winters, less snow, and that results in fewer tourism dollars.

Wildlife and public health are becoming increasingly vulnerable to diseases. In New Hampshire, tourism is our State's second largest industry. It accounts for $9.3 billion in the State's economy. It provides jobs and economic growth throughout the State, but climate change could put some of New Hampshire's best attractions in jeopardy. The fall foliage in New Hampshire is a main draw for visitors from around the world who spend millions annually to see our beautiful landscape. As climate change continues, those warmer temperatures are causing dulling and browning of climate-stressed unhealthy trees.

Another driver of tourism in New Hampshire is our State's outdoor recreation activities, such as downhill and cross-country skiing, snowshoeing, and snowmobiling. As temperatures increase due to climate change, the ski industry has to make more snow, and that increases their expenses. In fact, the EPA has predicted that by the end of the century, summers in New Hampshire could be as warm as summers in North Carolina, which would drastically shorten fall foliage without cooler temperatures starting in September. We are already seeing it in terms of fewer snow days in New Hampshire and earlier ice out on our lakes.

Maple sugar production is being affected. It depends on prolonged cold temperatures with freezing nights and warm daytime temperatures to create the optimal sugar content and sap production. With warming underway, maple sugar producers in New Hampshire tell me they are already seeing an impact on production. According to a report by the New Hampshire Citizens for a Responsible Energy Policy, ''Current modeling forecasts predict that maple sugar trees eventually will be completely eliminated as a regionally important species in the northeastern United States''—that is, if we fail to act on climate change.

New Hampshire's seacoast is facing rising sea levels along our 18 miles of shoreline. The coastline is one of the most developed parts of the State, and flooding could devastate coastal towns and their economies. Ted Diers, who is the administrator of the Watershed Management Bureau of the NH Department of Environmental Services, recently said:

> Sea level has been rising at 6 to 8 inches a century. What we're seeing right now is a tripling of that.

Climate change is expected to cause widespread tree deaths, which could cause extensive wildfires. We are already seeing that in the West. There are large increases in pest and pathogen outbreaks and a lag in the establishment of new forests for several decades. It is also a threat to animals and their habitats.

The moose population in New Hampshire is declining due to warming trends in winter and summer. The fact is that New Hampshire's moose population is down 40 percent this year, and it is the result of ticks. We have not had winters that are cold enough to cause those ticks to die off, and so we are seeing that across our wildlife population.

What is happening in New Hampshire is happening around the world. We must take action now to slow these harmful trends, and we can make progress. We should be looking at all kinds of ways to make progress, to address what is happening to our environment.

I look forward to working with my colleagues in the Senate to find smart and sensible solutions because New Hampshire's economy, the health of our citizens, the U.S. economy, the world's economy, and our health all depend on it.

I yield the floor.

The PRESIDING OFFICER. The Senator from Florida is recognized.

Mr. NELSON. Mr. President, I want the 31 colleagues who have been on the floor to know how proud I am. As I have watched throughout the evening and this morning, I have seen our colleagues continue to hold this floor to try to bring attention to climate change. I am very proud of them.

I have the privilege of being the cleanup hitter in this session that has gone on for hours and hours. I want to speak from the perspective of the part of the United States that is going to be and is most affected by sea level rise, which is a consequence of climate change; that is, the State of Florida. I also want to speak from the perspective of outer space.

When someone looks back at the planet through the window of a spacecraft—which I had the privilege of doing 28 years ago in the early part of the space shuttle program, the space shuttle *Columbia*, which was piloted by now-retired Marine Gen. Charlie Bolden, who is the head of NASA and has been for the past 5 years—when we look back at our home, we see this incredible creation that is so colorful suspended in the midst of nothing. Space is nothing. Space is an airless vacuum that goes on and on for billions of light years, and there is our home and it is so beautiful, yet it looks so fragile from that perspective of miles and miles away. What the naked eye can see from that altitude as we orbit the Earth at 17,500 miles an hour is incredible in the detail we can see, but some of that detail is quite disturbing.

For example, coming across the Amazon I could see the color contrast. I could see the destruction of the rain forest. Then I could look to the east coast of Brazil at the mouth of the Amazon. I could see the silt that discolored the waters of the Atlantic for hundreds of miles, the extra silt coming off the destruction of the trees upriver.

On the other side of the globe, for example, coming across Madagascar 28 years ago when they were cutting down all of their trees for fuel, for fires, and as a result there was no vegetation, and when the rains came, the water ran down the hills, the silt came into the rivers, and we could see for miles and miles at the mouths of the rivers from Madagascar—flying 203 miles above the surface of the Earth, we could see the effects. We could see those kinds of effects in the midst of that God-given beauty, that the Earth is so fragile.

We could look at the rim of the Earth and see this thin film. It went into a blue band that then went into the blackness of space, and we could see what sustains all of life—the atmosphere. As a result, I certainly became more of an environmentalist because I saw in its entirety how fragile this ecosystem is.

We could see the effects of storms. We were up in January, so we saw a hurricane in the Southern Hemisphere going clockwise, not counterclockwise as in the Northern Hemisphere. For hundreds of miles, there was this storm in the Indian Ocean. We could see from that perspective of the window of a spacecraft the delicacy of this God-created ecological balance.

What we have done, as we burn more fuel and carbon dioxide goes into the air, instead of what was created where the Earth's rays come in and hit the surface—where the Sun's rays come in through the atmosphere and hit the Earth's surface and reflect back into space, suddenly the excess gases in the atmosphere create a kind of greenhouse effect, which then traps the heat. The heat, as it reflects off of the Earth's surfaces and bounces as it radiates back into space, can't get out and the Earth continues to heat.

The Intergovernmental Panel on Climate Change projects that the globe could warm 1.5 to 4.5 degrees Celsius by the end of the century. It also estimated that sea levels could rise from 1 foot to 3 feet over the same period.

Since we are talking about inches, degrees, and hundreds of years, now I want to go from space to my home in my native State of Florida, which is ground zero for the sea level rise. What will Florida look like in the year 2100? Florida has a population closing in on 20 million people. We are surpassing New York as the third-largest State. About 14 million of those people live along the coast, and that number is going to double by the year 2100. In those coastal cities and towns, there are homes, schools, powerplants, water treatment plants, roads, and bridges which could be underwater as the sea level rises. This isn't only hypothetical; this is real. Florida's Atlantic University, one of our great State universities, indicates that Florida has recorded 5 to 8 inches of sea level rise in the last half century. This rate is a rate of 1 foot per century, and it is about 8 times the average rate over the past 2,500 years. Today at high tide we can see for ourselves the flooded roads. They are a regular occurrence. We can see the flooded neighborhoods. We can see what happens when the infrastructure is flooded.

If we just take a few years further in this century, 2060, we are going to see close to 1 to 2 feet of sea level rise. According to the National Research Council, by 2100 that number could be as much as 3 feet. Do you want to see what 3 feet is? Three feet of sea level rise—look at the heavy population of southeast Florida. Look at all of these portions of the Everglades. Look at the Florida Keys—gone, under water. Look at the Fort Myers area, the Caloosahatchee River, Charlotte Bay, and look at Tampa Bay. Look where our space shuttle launched from pad 39A, Cape Canaveral—under water. Look at all of the coast of Florida, look over here at the tremendous Apalachicola oyster estuary—under water, and so forth and so on. That is what prominent scientific organizations have estimated at the end of this century: a 3-foot rise in the sea and 14 million people—a population that over the course of the next few decades will double; 28 million people living on the coast of Florida—are going to be under water. Why aren't people paying attention?

Before I came to the Senate, I had one of the toughest jobs I had ever had in elected public service. I was the elected insurance commissioner in Florida. The task fell to me in the aftermath of the monster storm Hurricane Andrew to resuscitate the insurance marketplace back to life.

Back then, in the early 1990s, we could see monster storms meant warming of the climate, warmer ocean temperatures, more frequency and ferocity of storms. So as the then-insurance commissioner, I tried to go to the insurance companies to try to start getting them interested in protecting the investments they insured, and they kept their heads in the sand. We couldn't get it.

So you can see that 75 percent of the State's population on the coast makes up 80 percent of the State's total income. Because we have more beaches than any other State, we have more coastline than any other State, save for Alaska, and a warmer climate, we have a great tourism industry—a tourism industry that attracts 37,000 companies to Florida—businesses related to the coast, from boating, to fishing, to lodging, to leisure recreation, all told employing a quarter of a million people.

This 1,350 miles of coastline is a magnet for visitors. They come and they enjoy the beaches. They fish for red snapper in Destin, up here. They look for red snapper off of Panama City. Maybe they go for scallops off of Cedar Key. Maybe they go to see the spring training games in Tampa. Maybe they watch the sunsets from the Florida Keys. Well, you can see what is happening. The most recent data from the State indicates that in 2011 tourists spent $67 billion in Florida and contributed $4 billion to our State treasury.

So while a lot of people have their heads in the sand, some local leaders, happily some local elected leaders are starting to do something about it. The city of Miami Beach already experiences flooding and drainage problems due to the high tides. They are planning to spend $200 million to purchase more pump stations, raise seawalls, and upgrade stormwater storage. Do you know whom we are talking to? Holland, the Netherlands. We are trying to learn about large-scale dikes and engineering fixes and how the Dutch have kept their lands dry. Miami Beach is taking the initiative so that homes and businesses will continue to thrive.

The higher sea levels—get this—also threaten the water supply. Do you know why? Because Florida is basically land on top of a vast limestone honeycomb. Like a sponge, it holds freshwater deep underground, but when the sea level rises, the saltwater moves in and replaces the freshwater, so those aquifers become too salty or brackish. You can't drink that. That is happening, and it is happening in a little town on the southeast coast of Florida called Hallandale Beach. Their local officials are spending right now $16 million to upgrade their stormwater system and move the city's drinking water system to the west side of the city, further away from the coast.

So local leaders are making the tough decisions to prepare for the future, and that is one reason I have the privilege of having the support of Senator ROCKEFELLER, the chairman of the commerce committee, and we are going to take a commerce committee field hearing during the April recess down to South Florida, to Miami Beach, and we

are going to hear what local governments, businesses, and even reinsurance companies are doing in the wake of the sea level rise.

One additional thing. I described what $CO_2$ does, going into the air and creating the greenhouse effect, which stops the radiating of the Sun's heat back out into space. But there is another thing it does. Because carbon dioxide in the atmosphere is making our oceans more acidic, it threatens the coral reefs and all of the creatures in the ocean, from lobsters to clams.

This is a picture of a healthy coral reef.

This is not.

The coral reef system in Florida is responsible for bringing in $3.5 billion in sales and income, and off of the coast of South Florida it supports 36,000 jobs. More acidic water means oysters, crabs, and lobsters are threatened. Biologists tell us that when shelled organisms are at risk, the entire food web may also be at risk because the reefs provide the core reproductive and feeding habitat for the marine life.

So I come to the end of my comments, Mr. President. Whether you look at it from the perspective of the Senator from Florida, whose State is severely threatened at this moment, or from the perspective of the window of a spacecraft, looking back at this creation we call home, planet Earth, we are in severe jeopardy, and it is time for us to get out of our lethargy and recognize the problem happening in front of our very eyes.

I am so proud of my colleagues. Before the Senators came in, I said that I had been watching on C–SPAN during the course of last evening and this morning, and I am so proud of you for what you have done in bringing attention to this issue.

HAWAII TRAVEL AND TOURISM

Mr. SCHATZ. Mr. President, as you have heard here tonight, climate change is real, it is caused by humans, it is happening now, it is solvable, and it is time for Congress to wake up and take action.

I want to talk now about an important sector of the U.S. economy and how it is specifically impacted by climate change.

I am talking about travel and tourism. It is a major economic driver in this country, representing almost 3 percent of the gross domestic product. It generates nearly $1.5 trillion in economic output and supports nearly 8 million jobs.

This sector is critical to my home state of Hawai'i but as chairman of the commerce committee's tourism subcommittee, I am also concerned about the economic impacts climate change could have on this critical industry for the entire Nation.

The U.S. welcomed nearly 70 million international arrivals in 2012 who spent almost $130 billion on hotels, restaurants, airline tickets, shopping, attractions, and more. This is significant.

As the United States works to meet our national goal of welcoming 100 million international visitors annually by 2021, we must think of how climate change factors into the equation for this economic sector as well as how the industry itself contributes to climate change.

Travel and tourism is responsible for about 5 percent of global $CO_2$ emissions. Transportation generates three quarters of these emissions with the majority coming from air travel.

In addition to transportation, the hospitality sector also consumes significant amounts of water for bathrooms, landscaping, laundries, and kitchens, and consumes sizeable quantities of electricity for lighting, heating and cooling systems and elevator and other equipment.

Changes in extreme weather caused by climate change will impact this industry and the experience our visitors have while exploring our States and territories by potentially damaging travel and tourism-related infrastructure, increasing the required investment in emergency preparedness to prepare coastal tourism communities for disasters, increasing operating expenses to do business in challenging and uncertain conditions; and discouraging travel to affected areas.

As we certainly know here in Washington, DC, the United States has experienced an extreme winter season this year, with record cold temperatures and plenty of snow. As extreme weather events continue to occur, made more frequent by a changing climate, the travel and tourism industry will continue to feel the impact.

To put this into real terms, economists estimate that the cancellation of one domestic flight for weather-related reasons costs over $31,000 in passengers' lost economic activity or $3.5 billion in 2013.

The travel and tourism industry is a major economic driver in Hawaii. It is the biggest generator of jobs. More than eight million visitors came to Hawaii in 2013 and spent $14.5 billion in Hawaii. Damage to our visitor industry will cost us jobs and threaten our economic prosperity.

If we don't act now, climate change over the next several decades could have a negative impact on Hawaii's visitor industry. Climate change affects the quantity and quality of Hawaii's tourism assets, including our beaches, coral reefs, and tropical ecosystems.

Extreme weather and natural disasters, like droughts and hurricanes, are also made worse and more severe by climate change and impact residents and visitors alike.

But it is not enough to just recognize the impacts of climate change on tourism. One of the themes here tonight is that climate change is solvable.

We have a responsibility as policymakers to strike a sensible balance between the positive and negative aspects of travel and tourism and ensure that it is conducted in an environmentally sustainable way.

According to the United Nations World Tourism Organization, ''There is now a wide recognition of the urgent need for the tourism industry, national governments, and international organizations to develop and implement strategies to face the changing climate conditions and to take preventive actions for future effects, as well as to mitigate tourism's environmental impacts contributing to climate change.''

The U.S. travel and tourism industry recognizes its impacts and is stepping up to the challenge of mitigating its contribution to climate change.

The US Travel Association says that, ''the [U.S.] travel community as a whole and its sectors individually are committed to taking actions to reduce greenhouse gas emissions and explore mitigation measures needed to address climate change impacts.''

In my home State, Hawaiian Airlines is working to reduce its emissions. It was awarded the first ever aviation-based carbon credit in 2012 for its use of the EcoPower engine wash system, which reduces fuel consumption—saving the company money at the same time.

One of our biotech companies is working on producing advanced biofuels for aviation and has signed a deal to produce green fuel for Alaska Airlines, perhaps as soon as 2018.

Hotels have gone far beyond simply asking guests to reuse towels and close lanai doors to save on water and energy. They have invested in technology to improve lighting efficiency, manage energy use in unoccupied spaces and improve the efficiency of building equipment to decrease energy and water use while not impacting guest services. And they are continuing to look for more ways to operate efficiently, including technology such as seawater air conditioning.

We can solve the problem through reductions in our energy use by improving energy efficiency, increasing the use of renewable energy, changing how we conduct business, and adopting policies that promote sustainable tourism.

We need to work together to implement policies that support the continued growth of this important sector to support jobs and economic prosperity. We need to protect the natural resources that bring visitors from around the world to our beautiful country and to my home state of Hawaii.

It is time for Congress to act.

ASIA PACIFIC

Mr. President. We have heard from many colleagues tonight about the challenges of climate change and the need for urgent action. Left unaddressed it has the potential to impact the lives and livelihoods of nearly everyone on the planet.

As Secretary of State John Kerry cautioned recently in a speech in Jakarta, climate change is akin to many other global challenges that ''know no borders,'' like terrorism, disease, poverty and nuclear proliferation.

''The reality is that climate change ranks right up there with every single

one of them,'' he said. I could not agree more.

But with every challenge comes an opportunity. And just as the world has come together to confront the crises of pandemic disease and the proliferation of weapons of mass destruction, climate change too holds the potential for collective action.

So I would like to spend some time tonight discussing climate change in a different way—not just as a problem to be solved, but as an opportunity for the U.S. to exercise its leadership in the world; an opportunity for the U.S. to develop long-lasting and effective partnerships with the international community.

Regardless of whether all Americans believe global climate change should be a top priority and an issue worthy of immediate Congressional attention, I believe that we all can agree this issue should be a part of our diplomatic and development efforts with countries facing the gravest and most immediate climate change impacts.

Nowhere is this more true than in the Asia-Pacific region, where America's partners and allies face acute and imminent risks associated with climate change, such as sea-level rise, extreme weather, flooding, and environmental degradation.

According to the U.N.'s Environmental Program:

Asia-Pacific is one of the most vulnerable regions to climate change and impacts are likely to become more intense in the future. Rising temperatures and extreme weather events have contributed to loss of crop yield in many countries. Crop yields are projected to decline by a further 10 percent by 2020.

Sea-level rise is likely to result in significant losses of coastal ecosystems and put nearly a million people along the coasts of South and Southeast Asia at risk. Diarrheal disease primarily associated with climatic changes will also put many lives at risk in South and Southeast Asia. In addition, the greenhouse gas emissions of a number of Asia-Pacific countries are large and will grow significantly in future if actions are not taken to curb emissions.''

The Obama administration's foreign policy rebalance to the Asia Pacific has been well-covered in recent months. With nearly a third of the Earth's population and one quarter of global GDP, ''America's future prosperity and security are intertwined with the East Asia Pacific region.'' What America's rebalance to the region will mean for U.S. military engagement and U.S. traditional diplomacy in the region has been widely discussed. Yet, issues such as the region's huge proportion of the planet's biodiversity vulnerable to climate change have gone largely unnoticed in the discussions.

To strengthen our existing relationships and to develop new partnerships, we must bring our engagement with Asia-Pacific countries on global climate change issues to the forefront of diplomatic and development efforts. This includes promoting efforts to help countries adapt to their most vulnerable risks. By developing a robust global climate change engagement plan, we are also countering the naysayers who claim that the United States rebalance to the Asia Pacific is only about projecting military power in the region.

In fact, promoting climate change mitigation and adaptation strategies as part of our foreign policy toolkit would serve to deescalate military tensions in the region by demonstrating that our realignment to the region is more than military power. I would like to spend the next few minutes detailing several avenues for addressing climate change in the region, with some specific examples of how we and our partners are already engaging on the issue.

First, I will discuss our traditional diplomatic efforts and the importance of developing and enhancing bilateral and multilateral agreements and partnerships.

Second, I will highlight how climate change mitigation has become an integral part of our development and foreign aid packages. Finally, I will advocate for a cross-sector approach that brings together private sector investments, non-governmental organizations, and educational and scientific partners.

It is important for the United States to collaborate in ways that, first and foremost, promote America's interests. However, we must also recognize that we can learn valuable lessons from our partners and allies as well. As a recent progress report on President Obama's Climate Action Plan states: ''Just as no country is immune from the impacts of climate change, no country can meet this challenge alone.''

In that light, we have much to learn from other countries confronting the crisis of climate change, just as much as we have to share about our efforts to manage the challenge ourselves.

In June 2013, President Obama presented his Climate Action Plan, which laid out the case for action on climate change and the steps his administration will take to address it. The Climate Action Plan includes measures to lead international efforts to address global climate change.

It is particularly important that we expand bilateral cooperation on climate change with the major emerging economies in the Asia-Pacific region, China and India, and the President's plan has started to do that.

Climate change was a central theme of the United States-China Strategic and Economic Dialogue in July 2013. The United States-China Working Group on Climate Change launched five focus areas to deepen bilateral efforts to address greenhouse gas emissions: reducing heavy-duty vehicle emissions; smart grids; carbon capture, utilization, and storage; collecting and managing greenhouse gas data; and energy efficiency in buildings and industry.

In December, during Vice President BIDEN's visit to China, the United States and China committed to reviewing their fossil fuel subsidies under the G20 process. In addition, China committed to implement aggressive low sulfur fuel and motor vehicle emissions standards. These standards can pave the way toward the adoption of more fuel efficient technologies, and ultimately lower greenhouse gas emissions. The United States is also working with China to combat short-lived climate pollutants.

During Indian Prime Minister Singh's visit to Washington in October 2013, the United States and India launched a new large-scale off-grid clean energy initiative to help bring clean energy to those under-served by the electricity grid, as well as an initiative to help India deploy advanced space cooling technology.

We must also continue to engage in the region through multilateral organizations like the United Nations, the Association of Southeast Asian Nations, ASEAN, and the Asia Pacific Economic Cooperation, APEC. ASEAN members are also attempting to tackle climate change issues in the region. Several countries have announced voluntary mitigation targets, including Indonesia, Malaysia, the Philippines, and Singapore. ASEAN has also developed a Socio-Cultural Community Blueprint, an innovative strategy to ''enhance regional and international cooperation to address the issue of climate change and its impacts on socio-economic development, health and the environment in ASEAN Member States through implementation of mitigation and adaptation measures, based on the principles of equity, flexibility, effectiveness, common but differentiated responsibilities, respective capabilities, as well as reflecting on different social and economic conditions.''

On the economic and energy front, APEC leaders have:

proposed a regional goal to reduce energy intensity by at least 45 percent by 2035. To this end, APEC Ministers determined to improve energy efficiency and support the use of cleaner and more efficient energy technologies by setting individual goals and action plans; collaborating with the International Energy Agency to develop energy efficiency indicators; sharing information on energy efficiency policies and measures; and encouraging APEC economies to contribute to and utilize the APEC Energy Standards Information System. Economies are held accountable through the APEC Peer Review Mechanism on Energy Efficiency.

This peer review is also a vehicle for economies to share their respective policies, experiences, information and ultimately to improve energy efficiency.

United States development assistance is also rising to meet the challenges of climate change in the Asia-Pacific region. Three projects are particularly noteworthy:

The United States Agency for International Development is investing $7.3 million in the Indonesia Forestry and Climate Support program, which works with the Indonesian government, the private sector, and communities to improve forest governance and planning

at the district level; promote sustainable forest management in target landscapes; and increase sustainable development of local economies by engaging private sector partners who can provide financing and technical expertise;

The United States Agency for International Development is investing $2.9 million in the Asia-Pacific Climate Change Adaptation Support Facility, known as ADAPT. ADAPT will work with governments in the Asia-Pacific region to support training on the preparation of financeable adaptation projects, and provide assistance for analysis and financial review of selected project proposals. The program will link climate fund managers with representatives of government adaptation projects to identify adaptation investment opportunities and facilitate access to climate funds. A regional knowledge platform will also broadly disseminate best practices, climate fund eligibility requirements, and application procedures;

The United States Agency for International Development is investing $2 million in the Maldives Program to Enhance Climate Resiliency and Water Security. The United States Agency for International Development will partner with the Maldives Ministry of Housing and Environment, provincial utility service providers, and Island Councils and residents on two northern islands to assess long-term climate vulnerability and develop cost-effective adaptation strategies. The program will support innovative solutions to the growing problem of water scarcity, which is made worse by climate change and sea level rise. The program will assist the Government's goal of developing the standards and criteria for a ''climate resilient island'' model program that can be replicated throughout the country, and potentially in other small island developing states.

As a Senator from the island State of Hawaii, I have a particular interest in this last project. Hawaii stands in the center of the Asia-Pacific region.

The people of Hawaii—including native Hawaiians who have lived on our islands for millennia—and Hawai'i-based institutions such as the East-West Center provide a unique cultural and geographic perspective on global climate change and stand ready to serve as ambassadors for climate change issues in the region.

In Hawaii, I have been involved with the Asia Pacific Disaster Risk Reduction and Resilience, APDR3, initiative, which was launched at the Asia-Pacific Economic Cooperation meetings in Honolulu in 2011. APDR3 recognizes that ''there are steps we can take to mitigate the impact of natural disasters, but we must work together across all sectors of society in order to maximize our effectiveness.

The APDR3 network, hosted by the University of Hawaii Foundation, is a collaborative initiative, which works across six sectors of society—academia, business, government, military, non-profit organizations and civil society, and philanthropy. The network believes that by working together through a 'whole of society' approach, we can enhance our ability to reduce risks from disasters and build more resilient communities and economies in the Asia-Pacific region.

Government and international organization efforts to mitigate climate change are important, but the public sector cannot do it alone. If we are to truly make significant progress, the APDR3's cross-sector approach must be replicated on a much wider scale. Innovative solutions are being developed in think-tanks, universities and other non-profit institutions across the United States.

To cite just one example, International Food Policy Research Institute fellow Mark Rosegrant has published findings that climate change could cause the production of irrigated and rain-fed staple crops—rice and wheat in Asia, and taro, sweet potatoes, and cassava in the Pacific—to decline by as much as 25 percent by 2050.

According to Rosegrant, ''this will have a direct effect on nutrition, increasing the number of malnourished children in the area by an additional 9 to 11 million.'' However, Rosegrant proposes solutions to the worst scenarios. Through ''targeted, aggressive investment in agricultural research, rural roads, and irrigation,'' Rosegrant believes we cut the increase in childhood malnutrition due to climate change significantly. This type of investment, however, hinges on ''regional cooperation on research'' and ''non-agricultural investments for clean water and maternal education.''

''In addition to these increased investments, Rosegrant's other recommendations include establishing regional centers of excellence in the Pacific countries to link national and international research centers; forming integrated data management, monitoring, and evaluation systems for a wide range of market and climate information; opening the global agricultural trading regime to share risk and increase resilience; and revitalizing extension systems to include local participation and effectively coordinate public, private, and NGO providers.''

Many of these ideas would help countries in the region mitigate other potential effects of climate change as well. It is crucial that governments utilize studies and recommendations such as these when developing policies on climate change.

I close with this reminder: climate change is not merely a complicated problem to be solved; it is an opportunity for the United States to demonstrate forward-thinking leadership and positive engagement with the world community. Climate change diplomacy, especially in the Asia Pacific, has the potential to transform our relationship with present and future partners and strategic allies for years to come.

It must serve as cornerstone of our rebalance to the region. Let us seize that opportunity.

NATIONAL SECURITY

Mr. President. One of the themes that we have heard tonight is that climate change is a challenge that affects all Americans—from small businesses and local farmers to major corporations and agricultural communities. But there is one community that I would like to focus specific attention on because the consequences of climate change fall on its shoulders in unique ways: the U.S. military.

In an interview last year, ADM Samuel J. Locklear III, commander of the United States Pacific Command in my home State of Hawaii, argued that climate change is the greatest long-term security challenge in the Asia-Pacific region. Upheaval and political instability from climate change he said ''is probably the most likely thing that is going to happen . . . that will cripple the security environment, probably more likely than the other scenarios we all often talk about.''

His comments echoed those of 11 retired 3-star and 4-star admirals and generals who, in 2007, unequivocally stated that climate change is a ''significant national security challenge'' that can serve as a ''threat multiplier for instability in some of the most volatile regions of the world.'' Their comments are not without a sense of urgency.

As Admiral Locklear explained last year, ''I'm into the consequence management side of it. I'm not a scientist.'' When he testified before the Senate Armed Services Committee last April, Admiral Locklear made his point clearer when he explained the urgency for preventive action. He said:

> We are also seeing—if you go to USAID and you ask the numbers for my PACOM AOR how many people died due to natural disasters from 2008 to 2012, it was about 280,000 people died. Now, they weren't all climate change or weather-related, but a lot of them were due to that. About 800,000 people were displaced and there was about $500 billion of lost productivity.

Admiral Locklear's comments and those of his former colleagues before him are not out of the ordinary. They reflect the growing consensus within the Department of Defense and the broader national security community that climate change is real and already shaping the global security environment in new and profound ways.

The Department of Defense is focused on two areas in particular.

First, climate change is shaping the U.S. military's strategic operating environment, forcing the Department of Defense to grapple with new mission requirements that it generally did not anticipate a decade ago.

In its 2010 strategic planning document, the Quadrennial Defense Review, the Department of Defense for the first time concluded that, ''While climate change alone does not cause conflict, it may act as an accelerant of instability

or conflict, placing a burden to respond on civilian institutions and militaries around the world.''

Simply put, the drivers of instability that fragile States already confront—drought, food shortages, water scarcity, and pandemic disease—may be made worse as a consequence of climate change. These stresses could break the backs of weak central governments and institutions in countries around the world where the United States has enduring interests—places such as Burma and Pakistan, to name a few.

Last week, the Department of Defense confirmed its initial conclusions when it published its 2014 Quadrennial Defense Review, noting that:

> The pressures caused by climate change will influence resource competition while placing additional burdens on economies, societies, and governance institutions around the world. These effects are threat multipliers that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions—conditions that can enable terrorist activity and other forms of violence.

The more pressing concern for the U.S. military, perhaps, might be with those countries that are most vulnerable to extreme weather events and least capable of responding to them. Like drought, food shortages and other environmental grievances, natural disasters can overwhelm weak governments, contributing to the conditions that lead to instability and violence.

With each passing day, as we pump more carbon dioxide into the atmosphere, we know that we are increasing our chances of extreme weather events that carry with them dangerous consequences.

The Asia-Pacific region is particularly at risk of extreme weather events that may become more frequent and severe as a result of climate change. The National Intelligence Council cautioned last year that, ''Asian cities are vulnerable to the severe weather connected to climate change, which amplifies storm surges and flooding of low-lying areas.''

The tragic typhoon that struck the Philippines last November, while not directly attributable to climate change, is a stark reminder of the kinds of natural catastrophes that the U.S. military gets called on to respond to.

As Secretary of Defense Chuck Hagel noted not long after this awful event:

> Typhoon Haiyan in the Philippines is a reminder of humanitarian disaster brought on by nature. And climatologists warn us of the increased probability of more destructive storms to come.

The Department of Defense recognizes that it has a role to play in supporting humanitarian assistance and disaster relief missions. And like many first responders, the men and women of the U.S. Armed Forces have an obligation to respond when called on because the U.S. military is often the only organization with the capability and personnel necessary to support those most in need, including fixed- and rotary-wing aircraft that can bring relief supplies to communities otherwise cutoff from the outside world.

But we should not be resigned to be the world's 911 first responder—crouched in a reactive posture to respond to the next climate-related disaster. As the Department of Defense has already noted and planned for, ''Proactive engagement with these countries can help build their capability to respond to such events.''

And as Admiral Locklear stated, U.S. Pacific Command can play an important role in helping our partners and allies build their capacities to respond to natural disasters, building their civil defense forces so that they can mobilize ahead of an impending storm. The U.S. military can work with them to professionalize their air forces, training them to be more efficient users of search and rescue aircraft and other capabilities so that they can do more with less.

Next month, Hawaii will host the inaugural United States-ASEAN Defense Forum in Honolulu, convening 10 of the defense ministers from the Association of Southeast Asia Nations to discuss challenges that our countries face in the region. I hope that leaders use this forum in part as an opportunity to discuss the urgency of climate change and an opportunity for proactive engagement to weather any climate-related impacts in the future.

Proactive engagement is cost-effective and can serve as a force multiplier for U.S. military forces in the future by helping our partners and allies develop the resources and skills they need to help themselves; freeing our soldiers, sailors, airmen, marines and coastguardsmen to defend our interests elsewhere, responding only when absolutely necessary.

The simple fact though is that the U.S. has treaty obligations and agreements with many of these vulnerable states. But regardless of those commitments, we also have a moral obligation to help those countries most in need. When the next disaster strikes, the U.S. military will be called on to provide relief. And that will force defense planners to make tradeoffs somewhere else. But if we can reduce the number of military assets and personnel required to support natural disaster relief by making it possible for other countries to help themselves then we should do that.

In an increasingly lean budget environment, we owe it to the U.S. military to make wiser investments where possible. Preventive engagement is a smart solution. Such a commitment of our time and resources would recognize an age-old truism that an ounce of prevention is worth a pound of cure.

Besides the prospect of more frequent humanitarian assistance and disaster relief missions, the Department of Defense is also facing new mission requirements as a result of a new theater of operations that until recently has largely been quiet—the Arctic.

Rapid environmental change at the top of the world is quickly making the Arctic one of the most accessible maritime domains on the planet. Secretary Hagel declared last November that, ''Climate change is shifting the landscape in the Arctic more rapidly than anywhere else in the world.''

What is striking is how quickly the region is changing. Chief of Naval Operations ADM Anthony Greenert wrote recently in the U.S. Navy's updated Arctic Roadmap that ''ice conditions in the Arctic Ocean are changing more rapidly than first anticipated.''

The pace of change in the region compelled the Department of Defense to develop its first-ever arctic strategy to provide for a ''secure and stable Arctic,'' which Secretary Hagel presented last November to an international security forum in Halifax, NS.

To achieve the strategic aims that he laid out for the Department, Secretary Hagel presented eight simple objectives, to include ''[evolving] Arctic infrastructure and capabilities at a pace consistent with changing conditions.''

Simply put, the U.S. military will likely face new mission requirements in the Arctic as a result of climate change, and those requirements might develop sooner than we may expect.

These new mission requirements did not come out of the blue, of course. The U.S. military operated in the Arctic during the cold war, and there had been growing acceptance that as climate change continues to take its toll on the region it would operate in High North once again.

The Defense Science Board concluded in 2011, for example, that ''Climate change is currently having a major impact on the demands of military operations in the Arctic,'' and that the military would need ''additional capabilities to meet the demands of the expanded Arctic mission.''

What sets today's Arctic apart from yesterday's is the mission that the U.S. military is likely to confront. During the cold war, the U.S. Navy largely stayed under the ice. But many suspect that with the ice disappearing, the U.S. Navy's surface fleet could play an ever increasing role in the region.

The need for additional capabilities in the Arctic may also require the U.S. Navy to think anew about whether its tried and tested capabilities are well calibrated for a changing operating environment.

There is new evidence to suggest, for example, that climate change could have direct and indirect effects on the Navy's operating environment, particularly in the Arctic.

A study by one national security think tank found that, ''ice melt will change water densities, as an infusion of fresh water lowers the density of high-latitude northern waters, while increased evaporation from a warmer atmosphere increases the density of tropical waters.''

The study cites one example when, ''In 1999, the Sturgeon-class nuclear-

powered attack submarine, USS *Hawkbill*, noted how changes in water salinity—attributed to polar ice melt—made it harder for the captain to maintain neutral buoyancy''—essentially, making it difficult for the submarine not to sink or rise.

The same study found that:

Water density affects not only submarine mobility but also sonar . . . Sonar detection is especially crucial in arctic regions, where it is necessary for detecting underwater ice ridges. Accurate detection will be critical in the coming years, as submarine operators have to contend with the continued break up of major ice sheets, which can drive ice ridges deeper under water. In the 1999, aforementioned expedition by the USS *Hawkbill*, the crew noted risks associated with detecting ice ridges.

Outside the Arctic, the Department of Defense must confront other operational challenges that could result from climate change. This is the second area of concern that bears mentioning, and one where the Department of Defense has focused considerable time and resources.

The Department of Defense has warned that climate change is likely to impact the U.S. military's facilities and capabilities. In particular, America's military installations may be particularly vulnerable to climate change.

According to a 2008 National Intelligence Council finding, ''more than 30 U.S. military installations were already facing elevated levels of risk from rising sea levels.''

The Department of Defense's recent Quadrennial Defense Review acknowledged that the U.S. military's ''operational readiness hinges on continued access to land, air, and sea training and test space,'' which means ensuring that climate change does not prevent the military from accessing these critical training and range areas.

Following the 2010 Quadrennial Defense Review, the Department of Defense began working in earnest to map out its vulnerabilities, with offices like the Strategic Environmental Research and Development Program helping installation planners develop the tools they need to plan accordingly.

Last year, the Department of Defense released its climate change adaptation roadmap which lays out in greater detail a plan of action for managing the short- and long-term consequences of climate change. Referencing the 2010 findings from the Quadrennial Defense Review, the adaptation roadmap concluded that, ''The military is potentially vulnerable to climate change in many of the same ways as the rest of society, and in ways that are unique due to its operations and mission.''

There is still much work that the Department of Defense must do to assess its vulnerabilities at the regional and installation level, including where to best prioritize adaptation efforts at each of the most vulnerable bases.

The Department of Defense committed itself in its 2014 Quadrennial Defense Review to ''complete a comprehensive assessment of all installations to assess the potential impacts of climate change on our missions and operational resiliency, and develop and implement plans to adapt as required.''

Although these assessments are ongoing, the last several years have nevertheless witnessed a groundswell of support in an effort to better understand the specific mission vulnerabilities that the U.S. military may face as a consequence of climate change.

These vulnerabilities are not specific, but they can better frame the risks that the Department of Defense faces so that we in Congress can ensure that they have the resources they need to plan accordingly.

These risks include the potential for: increased occurrence of test/training limitations due to high heat days; reduced land carrying capacity for vehicle maneuvers; increased maintenance cost for roads, utilities, and runways; limits on low-level rotary wing flight operations; temporary or prolonged disruption of military operations or test and training activities due to intense storms and resulting storm damage; inundation of and damage to coastal infrastructure; degradation or loss of coastal areas and infrastructure; increased cost of infrastructure reinforcement to withstand increased storm intensities; and ''coastal installation vulnerability.

These potential vulnerabilities are particularly worrying in my home State of Hawaii, where U.S. Navy and Marine Corps installations like Pearl Harbor Naval Base and Marine Corps Base Kaneohe Bay are literally on the water's edge. I am glad that the Department of Defense is assessing these risks now and making short- and long-term plans to adapt where it needs to.

Hawaii is America's anchor for the strategic rebalance to the Asia-Pacific region. A cornerstone of that rebalance rests on ensuring that America's military presence in Hawaii and the region can cope with the turbulence of more frequent and severe weather events, operate under those conditions, and help America's partners and allies do the same.

I have focused on the U.S. military because of the unique ways in which the men and women of the Armed Forces are and will continue to shoulder the burden of managing the challenges of climate change.

But to say that climate change is a challenge that can only be managed by the U.S. military would be wrong and undermine the serious efforts underway within the broader foreign policy and national security communities to confront this issue.

The men and women of our diplomatic corps and consul services are invaluable to facilitating cooperation between our partners and allies, and will continue to play an important role in ensuring that we are providing the resources they need to plan for the future. Aid workers with the U.S. Agency for International Development have the expertise that is necessary for designing and deploying toolkits that can help vulnerable communities improve their resiliency to natural disasters and other environmental crises.

The Department of Defense has an important role to play in helping the United States manage the challenges of climate change. But in many ways it is other agencies, not the U.S. military, which must lead on our climate engagement abroad.

What the Department of Defense's efforts to date show is that climate change is no longer solely the purview of conservationists concerned about protecting endangered species, or of environmentalists concerned about preserving the Earth for future generations.

Climate change is an urgent national security challenge.

Secretary of State John Kerry put it well when he said recently that among the global challenges that ''know no borders . . . terrorism, epidemics, poverty, the proliferation of weapons of mass destruction . . . the reality is that climate change ranks right up there with every single one of them.'' Secretary Kerry went on to add that the United States cannot confront this challenge alone. That like the challenge of confronting nuclear weapons proliferation, we must come together as a global community and take collective action to confront the challenge together.

The consequences of inaction are too real. For ''in a sense,'' Secretary Kerry said, ''climate change can now be considered another weapon of mass destruction, perhaps the world's most fearsome weapon of mass destruction.'' We must attack the challenge with the same fierceness and urgency that we would nuclear weapons proliferation, because the consequences are no less real.

Congress can begin by giving climate change the rightful attention that it deserves, rather than ignore its responsibility of dealing with the hard choices of managing one of the greatest challenges a generation of Americans faces.

ENERGY SECTOR

Mr. President, I will discuss the role of the power sector in the United States. Modern sources of fossil energy have been a tremendous force for good, but they also come with a cost—pollution—requiring us to quickly and decisively transition to cleaner sources of energy.

The effects of pollution are both local and global, and as many of my colleagues have discussed here tonight climate change, caused by the burning of fossil fuels, is one of the greatest threats to the future prosperity and health of the human race.

As we look for ways to combat climate change, we must redouble our efforts to transition away from fossil fuels, reduce energy use, and build an energy sector based on renewable and low-carbon power.

Humanity has been using fossil fuels for centuries. It was not until the industrial revolution of the late 1700s and

early 1800s that its use really began to take off. The first U.S. commercial coal mine opened in Virginia in the 1740s, and as the industrial revolution came to the U.S. in the 1800s, coal was the driving energy source behind steamships, railroads, and factories.

From 1800 to 2000, the world saw total energy use increase 80 to 90 times over. Fossil fuels drove almost all of that growth and today account for three quarters of global energy use.

As coal, then oil and natural gas grew in availability, humanity found new ways to use these new energy resources, driving even further development in energy hungry industries. The widespread adoption of fossil fuels during this time contributed to unprecedented global population growth and urbanization.

There is no doubt this explosion of fossil fuels and the multiple opportunities it presented for use was a major driver of American and global economic growth. And this had enormous benefits for humanity. It helped increase efficiencies in agriculture, improved human health, created increased opportunities for trade, and improved standards of living for many people in the world.

I say all of this to make it clear that when I call for a transition away from fossil fuels—it is not because of some inherent dislike for them, or some capricious judgment of those who make a living in that industry. But as their use increases, the downside of fossil fuels—pollution, and a dramatically changing climate—is too big an issue to ignore.

Global pollutants—greenhouse gasses that contribute to the warming and changing climate on the entire planet, and chemicals that threaten the earth's protective ozone layer—are causing global pollution. And global pollution requires global solutions. No one country can solve the problem alone—but let me be clear here—any solution will require bold leadership by the United States.

My colleagues and I have stressed the following points all evening: Climate is real, and it is caused by burning fossil fuels. Analysis of peer-reviewed scientific studies finds that over 99 percent of actively publishing climate scientists are firmly convinced that climate change is real, that human activities are a significant cause, and it will increase if we continue to burn fossil fuels.

The most recent United Nations International Panel on Climate Change report calls evidence that the earth is warming ''unequivocal'' and plainly states many of the changes to the climate we see today are ''unprecedented over decades to millennia.''

And at the risk of repeating myself this evening, it is important to note the IPCC report shows that the biggest driver to the changing climate is ''the increase in the atmospheric concentration of $CO_2$ since 1750.'' This is a key point, because humanity's use of fossil fuels for energy, heat, and transportation—is responsible for close to two-thirds of global greenhouse gas emissions each year.

The U.S. electricity sector is the largest user of fossil fuels in the country. In 2012 we used coal to generate 37 percent of our electricity and natural gas to generate almost 30 percent. Nuclear power, which emits little to no greenhouse gases, was almost 20 percent of the mix, with renewable energy from wind, solar, geothermal, and hydropower contributing just under 13 percent of the Nation's electricity.

This overreliance on fossil fuels is exactly why I support President Obama's Climate Action Plan to set carbon pollution limits for new and existing power plants, and to continue to push the transportation industry towards advanced vehicle technologies, advanced biofuels, and greater fuel efficiency standards. President Obama's plan is a good one, but there is only so much he can do. Without decisive legislative action, Congress is choosing to hold American innovation and leadership in check.

We must do more to transition energy to renewables, reduce emissions, and improve efficiency. The world has made tremendous strides in developing and improving renewable energy technologies, and the United States has benefited. Between 2008 and 2013 total U.S. renewable energy generation, not including hydropower, almost doubled. 2014 will likely be the first year generation from hydropower is overtaken by generation from other renewable energy technologies.

Prices, one of the major barriers to renewable energy deployment, have dropped dramatically. Solar module prices have declined by 99 percent since 1976 and a stunning 80 percent in the last 6 years. Wind power costs have also declined markedly to the point where wind is often the low-cost option. For example, a utility in Michigan decided to lower its customers' rates 6.5 percent for 2014, and one of the major factors it cited in the decision was its ability to provide low-cost wind power.

Solar power is growing by leaps and bounds both at the utility and distributed scales, as homeowners in some parts of the country are finding that putting solar panels on their roofs can lower their energy costs. My home State of Hawaii is a prime example of this. Distributed energy installations have skyrocketed in recent years, with the total number of annual installations doubling from 2011 to 2012. At the end of 2012, Hawaii had a total capacity of 138 MW in distributed generation—most of it coming from solar power.

Wind energy has been an incredible success story in America. Aided by important tax incentives and State renewable energy goals, wind power in 2012 was the number one source of new U.S. generation capacity for the first time in history. This represented a $25 billion investment in the United States. Wind energy is also a great story for American jobs. Over 70 percent of the content of wind turbines is made right here in the United States.

Globally, investment in clean energy has been strong, hitting an all-time high of $318 billion in 2011 following the great recession. But in order to successfully drive down costs and accelerate deployment, investment in clean energy must increase, and Congress can help.

In order to help the United States do its part in avoiding the most extreme effects of climate change, Congress must double, triple, or perhaps quadruple-down on current policies to drive down costs of clean energy technologies and accelerate widespread adoption.

Reauthorizing and extending important tax credits for wind, geothermal, marine and hydrokinetic power, efficiency improvements, and advanced biofuels should be a number one priority. There is no excuse for the on-again off-again policies of Congress which create false boom-and-bust cycles for crucial industries. I applaud the new Chairman of the Finance Committee for making an extension of these incentives his first order of business.

Congress must also encourage technologies which help with the transition to renewable energy. I am proud to be a cosponsor of a bill that would create incentives for energy storage, which can help with grid management, especially as we move towards intermittent resources.

The United States and Europe have done incredible work improving energy efficiency over the last several decades. As recently as the early 1990s, electricity sales in the United States were growing by over 2 percent per year.

According to a new study by the American Council for an Energy Efficient Economy, growth in electricity sales has stopped. In fact, retail sales in 2012 were almost 2 percent lower than in 2007. This study finds that the drop in economic activity due to the great recession cannot fully explain this decline in electricity demand. Rather, energy efficiency in the residential and commercial sectors plays a critical role. The last several years have been the first in which energy use and economic growth have moved in opposite directions—a highly encouraging sign for a leaner and meaner American economy.

I wish to highlight energy efficiency as an important part of the solution to reducing carbon pollution. By being able to do more with less power, we reduce the need to burn additional fossil fuels in the short term, and we save ourselves money by having to build less new power generation capacity in the future.

At the commercial and utility level, innovative financing mechanisms and business models are driving energy efficiency. Energy Savings Performance Contracts allow building owners to

work with efficiency experts that reduce their clients' energy bills and get paid through a portion of the savings.

As the largest energy user in the country, the Federal Government continues to expand its use of these contracts—a goal specifically highlighted by President Obama in his Climate Action Plan. I have introduced a bipartisan bill which would offer the government even more choice in executing these energy savings contracts. It is an excellent example of a commonsense small step we can take immediately to save money and energy.

I would be remiss here without mentioning the important work done by Senators SHAHEEN and PORTMAN on their pragmatic bipartisan energy efficiency legislation. It is another commonsense piece of legislation that deserves immediate consideration by the full Senate.

I wish to turn now to discuss the incredible government support enjoyed by the fossil fuel industry over the decades, and make the argument that renewable energy technologies deserve a similar commitment.

Because of their importance to U.S. and global economic growth, fossil fuels began to receive government subsidies early in their commercial development. From 1916 to 1970, Federal energy tax policy focused exclusively on promoting oil and gas production. In addition, government-funded research into fossil fuel production helped to create the technologies that today drive one of the biggest energy booms the world has ever seen. This sustained and ongoing Federal support has provided unbelievable certainty for the fossil fuel industry.

The energy crisis of the 1970s showed just how dependent on foreign energy the United States is, and spurred an additional focus on efficiency and alternative sources of transportation fuels. After a brief dalliance with renewable energy incentives in the late 1970s and early 1980s, Congress enacted incentives for wind and biomass electricity generation in the early 1990s. This credit was sparingly used, however. It wasn't until 2005—not even 10 year ago—Congress finally began to show real commitment to incentives for renewable energy and energy efficiency.

And in just that short time, with stop and start policies in recent years; look at the success of renewable energy in America. We are on the verge of full-fledged, competitive domestic industries in wind, solar, advanced biofuels and geothermal, but if we stop now and don't nurture these industries, we may lose them to other countries. We cannot go backwards.

Congress should seriously examine, and consider repealing, tax incentives for fossil fuels. The billions of dollars spent per year to subsidize one of the most mature and profitable industries in the world is not money well spent. Nor is there sufficient evidence these subsidies result in lower fuel prices for Americans.

Rather, we should use this money to invest in innovative federal financing programs for cutting-edge technologies and incentives to help deploy more renewable energy systems.

Let me be clear, fossil fuels have done a lot for humanity. They have, in a very real sense, reshaped our civilization. But if we continue to rely on them, they will reshape our world once again, and this time not for the better.

We know we cannot switch completely to low or zero emissions sources of energy overnight—especially in a sector which makes long-term, capital-intensive investments. This will take a sustained commitment from individuals, States, and the Federal Government. The best thing Congress can do to unleash innovation in the private sector is to send a clear message to the private sector by crafting policies that encourage renewable energy technologies, reward efficiencies, invest in our national infrastructure, and remove hundred-year-old subsidies for already mature industries. We need to give our energy sector the tools to reshape itself, and we need to do it now. The world will not wait.

INSURANCE INDUSTRY

Mr. President, I wish now to speak about how the insurance industry is dealing with climate change today and preparing for it in the future.

Insurers are risk experts—it is not their job to care about the environment. Their job is to look at the facts to calculate value and the odds of loss—and then put a price tag on insuring the value. As hardnosed folks who work from spreadsheets and calculators, they keep their personal politics out of the equation. And they say the risks are real.

In 2009, Lloyd's of London issued its assessment: ''Climate Change and Security: Risks and Opportunities for Business.'' The report recognizes the uncertainty of the exact timeline for climate change, and instead focuses on a simple message—to be successful, businesses must adapt:

> As climate change takes hold, few businesses will be able to escape the impact of greater competition for resources. As nations become more protective of their assets, and markets become more volatile, it can no longer be business as usual.

Lloyd's of London is not alone. Major players like Allianz, Swiss Re, and Munich Re have all published their own reports on climate change to urge businesses to start planning now.

Their motivation is simple: protect the bottom line. With billions and trillions of dollars in play, risk experts like Lloyd's are making the high stakes risk projections to protect their own business models. Those projections are telling them the risks are increasing, and so outreach to industry is part of their pro-active plan to manage their own risk.

To understand other ways insurers are adapting to climate change, the Government Accountability Office issued a report in 2007 examining the substantial climate related risks to insurers in coming decades. The general findings should come as no surprise: the insurance industry has concluded that climate change is real, that it is happening, and that it will have an enormous effect.

Their projections are telling them the risks are increasing, and so they are acting to reduce their exposure to catastrophic events in reinsurance and primary insurance coverage along the gulf coast and the east coast.

Part of ''reducing exposure'' means the outreach and education I just discussed, but it also means raising insurance premiums in coastal States.

Even these pro-active measures may not be enough. According to a Congressional Research Service report, there is serious concern both within the insurance industry and among policymakers about the ability of the insurance industry to pay for extremely large disasters or multiple catastrophic events that happen within a short period of time.

The report says that, and I quote:

> Insuring increasingly vulnerable residential private property risks will likely require a substantial increase in risk transfer capacity that is currently beyond the existing property and casualty insurance industry's total claims paying capacity.

In other words: the increasing intensity of many natural disasters means increasing risk of catastrophic loss—and one day, we may reach the point where the insurance industry will be unable to cover our losses.

When disaster strikes, insurers and reinsurers bear the initial costs of reconstruction. Those costs get passed on to the public in the form of: increased insurance rates; reduced coverage; withdrawal of insurers from some high risk locations; and increased demands on government-run insurance programs.

This is already happening because some extreme weather events are happening more frequently, as the reinsurance industry has testified before Congress. For the risk experts the facts are clear: the rate of major natural catastrophic events increased both globally and in the U.S. between 1980 and 2012.

Frank Nutter, President of the Reinsurance Association, has spoken out to Congress. Last year, Mr. Nutter testified on climate change before the Senate Environment and Public Works Committee. In his testimony, he quoted the reinsurance industry giant, SwissRe which said:

> Today, global warming is a fact. Since the beginning of industrialization and the rapid growth of world population, man's activities—along with natural variability—have contributed to a change of climate manifesting itself as a considerable increase in global temperature . . . the financial services industry can help guide society towards an effective response.
>
> However, the industry can only be effective in this role if the regulatory and legislative framework establishes the right incentives for emissions reduction and adaptation . . .

Mr. Nutter's testimony is not an empty pledge. Hartford, one of the oldest insurance companies in the U.S., agrees with this analysis and is acting:

The Hartford Financial Services Group recognizes the clear consensus in the scientific community that climate change is of real and increasing concern.

As an insurer, investor, employer, property owner and responsible corporate citizen, Hartford is committed to understanding, managing and mitigating the risks associated with climate change.

Suiting actions to words, Hartford has engaged in an effort to promote energy efficiency and reduce waste and emissions. By 2012, the company reduced its own greenhouse gas emissions by 42% from their 2007 base year. It has also worked with the American Insurance Association to advocate for land use planning and building codes that reflect risk exposure. Raising premiums is also part of the response, and so they have warned that ''proper pricing will send appropriate risk signals to the most vulnerable areas.''

Hartford is not alone. Allianz is an integrated financial services and insurance company that is over 120 years old and has over 80 million customers worldwide. Here is what it says about climate change:

Human-induced global warming threatens to radically change our climate. This poses a major risk to the global economy, and for a global insurance company like Allianz, could have a severe impact on our business. In recognition of this, we have been implementing a group-wide strategy covering climate-related risks and opportunities for our business and our clients.

As an integrated financial services provider, we are well aware that climate change could result in a range of compound risks and opportunities that affect our entire business. As a result, we are committed to supporting the development of a low-carbon economy, and see this as not just a sustainability priority—it is a viable business and investment case.

Insurance and re-insurance companies are risk experts. They measure risk, they are seeing risk all around them from climate change. And they are speaking up and acting to protect their bottom lines.

As a Congress, we need to support their efforts by establishing incentives for industry to incorporate the risks from climate change into their business plans.

AGRICULTURE

Mr. President, I want to discuss how climate change potentially hurts our farms. Agriculture is profoundly affected by climate change, and we must take action now to ensure that we are able to protect crop diversity, yields, and food security in coming decades for a growing population.

Farmers and ranchers occupy an important cultural part of the American psyche, even if recent decades have seen a consolidation of the farming sector. Concepts of ample subsistence, self-reliance, and the virtues of farming pepper early-American literature.

More than anyone else, Thomas Jefferson articulated the notion of a country founded on agriculture. In 1785, he wrote, ''Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, and they are tied to their country and wedded to its liberty and interests by the most lasting bands.''

During World War I and World War II victory gardens became an effective way to relieve the pressure on the food supply, as well as a symbol of patriotism—farming became a civic duty.

Today, amidst incredible changes in global agriculture and an increasingly scientific and mechanized approach to farming, a noticeable trend towards organic farming, local agricultural economies, and crop diversity has reinvigorated the cultural importance of farming in the United States. Farmers markets have become an increasingly visible sight, especially in urban areas.

Agriculture is an extremely important part of the American economy and contributes at least $200 billion to the economy each year. U.S. farmers are the most productive in the history of the world, and food is more affordable here than in any other developed country.

Climate change could have an enormous impact on farming worldwide, and this could come at a time when the world's producers must prepare to grow even more. Today the world population stands at 7.2 billion people. By 2050 the world will be home to more than 9.6 billion people. The World Bank estimates that agricultural production must increase by 70 percent during that time in order to feed the population.

One of the myths that climate deniers spread is that climate change will mean longer growing seasons and more carbon dioxide for plants, which will translate into increased yields and abundant food resources. That does not align with what our scientists say. While slightly warmer temperatures could bring some benefits, climate change brings much more than rising temperatures and increased carbon dioxide. Both observation and modeling estimate that by midcentury and beyond, any $CO_2$-related benefits to crops may be outweighed by the downsides of global temperature increases. For example, scientists have projected that for each degree Celsius of warming, yields of corn in the United States and Africa, as well as yields of wheat in India, could drop by 5 to 15 percent. As yields fall, farmers must deal with increasing threats. They currently spend over $11 billion per year dealing just with weeds. Warming means that crop pests, weeds, and plant diseases will expand in both geographic range and frequency, potentially affecting crop yields and increasing the need for pesticides and fungicides.

As shortages become more common, prices could go up, especially as the population grows, and increasing extreme weather events may further threaten crops.

This future is not far off. A 2013 Department of Agricultural report found that within 40 years, climate change might have a negative effect on both farming and ranching in the United States. This will have an economic cost for both the private sector and the Federal Government. A GAO report that studied crop insurance and climate change found that the three biggest causes of loss to crops were ''drought, excess moisture, and hail.'' It is worth repeating that scientists agree that climate change will mean more extremes: wet places get wetter and dry places get drier, meaning that it is possible that crop insurance claims—and government costs—will increase.

We need to do the big things necessary to fight climate change but in the meantime, we are taking small steps.

I am proud to have supported the 2014 farm bill and appreciate the leadership of the chairwoman of the Agriculture Committee. This bill authorizes almost $900 million in mandatory funding for energy, which includes important programs for advanced biofuels like biodiesel. It also supports the Rural Energy for America Program, which is a major source of funding for renewable energy systems in rural America. Importantly, these programs are available to small businesses and non-profits in rural America, not only to farmers.

The farm bill's conservation programs also deserve mention.

Perhaps the most important achievement is the linkage between crop insurance assistance and basic conservation practices, which requires that farmers take common sense steps to conserve soil health in return for crop insurance assistance.

But we can and must do more—both to fight climate change and to adapt to its effects. Farming is a practice that knows no political boundaries. Farmers and ranchers might feel the effects in red and blue States alike, and if they don't have the resources to be able to adapt, in the long-term their production and income could suffer, which means that every American might pay more for fruits, vegetables, bread, and milk.

There is a representative in Congress from every single part of the country, As a body that must balance both local and national interests, Congress should be acutely aware of the need for action on climate change. It may have real economic consequences on our farmers and ranchers in the coming years. And those consequences threaten a part of our culture with deep roots in the history of our Nation. We must act to preserve that culture and come to the aid of those farmers who ''are tied to their country and wedded to its liberty and interests by the most lasting bands.''

TRANSPORTATION

Mr. President, I will take some time now to talk about climate change, transportation, and infrastructure. Every day millions of Americans rely on cars, trucks, transit, trains, ships,

and planes to get to work, visit relatives, and go to the doctor. Transportation is vital to the continued success and growth of our economy. But we know that our transportation system is a major driver of climate change, and if we are to tackle this problem, we will need to reduce this sector's contribution to global greenhouse gas pollution.

Thankfully, we have solutions—solutions that are creating jobs and improving the ease and efficiency of moving people and goods. We are on the right track, but we need to continue in this direction by making our vehicles more efficient, building resilient infrastructure, and making smarter decisions about how we get around. This will take a strong commitment from government, business, and the American people.

Transportation accounts for more than 30 percent of greenhouse gas emissions in the United States. In Hawaii, this is even more pronounced, where transportation accounts for approximately 50 percent of total greenhouse gas emissions. We all face different challenges, but regardless of where we are from, we can't tackle climate change without addressing the emissions generated by getting people and goods from point A to point B.

In the United States transportation grew as a contributor to climate change through economic and population growth—our more affluent population takes more trips on planes, trains, and by car. Demand for consumer goods has increased, and sprawling development patterns have increased auto travel. We are seeing some of these trends across the world. Currently, the transportation sector accounts for 15 percent of worldwide emissions. But in many countries, this trend is expected to grow. In China, for example, energy consumption and $CO_2$ emissions are expected to increase almost fourfold in 2030 compared to 2005.

Even as transportation is contributing to climate change, severe weather is threatening our critical national infrastructure—our roads, bridges, ports, and airports. Severe weather can wipe out our infrastructure connections quickly and catastrophically. We saw this with the tragic Superstorm Sandy, which devastated the Northeast when it made landfall in October 2012, washing away roads and bridges and flooding the subway system and two major rail tunnels under the Hudson River.

These Hudson River tunnels—critical access points on the busiest commuter corridor in the nation—were flooded with more than 3 million gallons of water, halting all Amtrak Northeast corridor and New Jersey Transit service into Manhattan for roughly 5 days. Let me repeat that. Commuter and subway tunnels in New York City were flooded with more than 3 million gallons of water. That is not a projection; that is a fact. This impacted nearly 600,000 daily riders and caused significant economic disruption.

Former Transportation Secretary Ray LaHood highlighted the importance of building our infrastructure to withstand storms:

> Hurricane Sandy exposed the risks of relying solely on a system of century-old tunnels for rail access into New York City. We were fortunate that these tunnels were not destroyed during the hurricane, and providing Amtrak with funds to preserve its ability to build a second tunnel will provide much-needed resiliency to the Northeast Corridor in case of future disasters.

I am glad Congress directed emergency funding to be used to harden and rebuild our infrastructure. But we need to invest much more.

Continued weather fluctuations will amplify issues we face today. For example, derailments during extremely hot days are safety hazards, and hundreds of thousands of rail commuters are inconvenienced by slower travel times. Air traffic disruptions due to severe weather have already cost airlines and passengers $5.8 billion this year, according to a recent study.

We also need to plan for the longer term impacts of climate change, which will wear down our infrastructure even faster. Transportation infrastructure is expensive and built to be long-lived. Studies show that climate change impacts will shorten that infrastructure life. Temperature fluctuations continue to degrade our pavement and bridges while severe flooding damages low-lying infrastructure, imposing significant costs to drain and rebuild.

Water temperatures are expected to affect the volume and rates of water flows throughout our marine highways, threatening to reduce shipping access to docks. All this translates into higher maintenance and construction costs for a system that already has significant needs—the American Society of Civil Engineers estimates the United States will need to invest approximately $2 trillion by 2020 to maintain and expand our transportation infrastructure.

In Hawaii, we can't escape the reality that climate change is threatening the way we move our people and our goods. It affects all aspects of transportation infrastructure—our ports, airports, roads, bridges, and transit systems. On Maui, we need a new bus storage facility because the current facility is now in the flood plain. By 2100, all of our most critical transportation assets—our harbors, airports, and roads—will be highly vulnerable to sea level rises, storm surges, or high intensity rainfall.

We don't even yet know how much it will cost to protect against climate change. As an island State, we are more vulnerable to the disruption of transportation infrastructure than most. First, 90 percent of Hawaii's goods are imported into the State, which means that if severe weather or environmental change disrupts transportation, we lose access to food and other necessities.

That makes Hawaii especially vulnerable to maritime disruptions—but also to disruption of truck and rail transport to west coast ports. We can't afford to have our transportation system disrupted; we need to invest now in resiliency.

Recent estimates put the minimum cost of hardening our infrastructure in the tens of billions of dollars each year. For example, annual costs for strengthening our bridges alone are estimated at around $2 billion between now and 2090. The full costs—which also include rebuilding and restoring services after extreme events and maintaining and making design changes for the full range of critical infrastructure—could easily rise to hundreds of billions of dollars each year.

Building in resilience is common sense management to protect our infrastructure investments, but simply hardening existing infrastructure will not solve our problems because the costs of this approach will grow over time.

In order to build true resilience we need a combination of traditional mitigation measures and forward-looking approaches that find resilience in other ways—from green infrastructure, to growing our own energy and food independence.

At the national level, the U.S. Department of Transportation is already working to integrate climate change impacts and adaptation into future planning and operations. But we need to do much more to help our States and cities address the costs of climate change. This includes smarter, integrated planning, prioritization, and funding.

We also need to make our transportation sector cleaner and more efficient. The good news is that the United States can lead by example. We have already begun implementing a number of solutions developed by industry with public sector support that are cutting into transportation-related greenhouse gas emissions. New technologies are being developed for all modes of transportation that are cleaner and more efficient.

U.S. automobile manufacturers are working hard to increase fuel efficiency and develop vehicles that run on alternative energy such as fuel cell, hybrid, and electric vehicles. They have paired with our universities and research institutions to advance biofuel development and alternatives to oil.

These investments promote research and manufacturing jobs and save money for consumers at the pump. In turn, they have more in their pockets to spend in the U.S. economy.

Many of these advances are part of the President's Climate Action Plan. CAFE standards are helping to improve fuel economy. In 2013, more than 400 models that achieve 30 miles per gallon or better were on our Nation's highways. And we will continue to see improvements in fuel efficiency of our light-duty fleet. I applaud President Obama's recent call for new fuel efficiency and greenhouse gas emissions

standards for medium and heavy-duty trucks by 2016.

Focusing on these trucks will get us more bang for our buck—20 percent of the transportation-related emissions in this country are from heavy-duty trucks, even though they make up only 4 percent of vehicles on the road.

Across the country our universities and industry are working together to develop ideas and solutions to decrease transportation-related greenhouse gas emissions. In my home State of Hawaii, a number of innovative state and private sector initiatives are leading the country in the areas of bioenergy and other alternative fuels and vehicles. For example, Hawaii BioEnergy, a consortium of three of Hawaii's largest landowners as well as partners in the venture capital community, is planning to use locally grown feedstocks to produce biofuels. Last year, Hawaii BioEnergy announced a deal to supply Alaska Air with sustainable biofuel for their aircrafts possibly as soon as 2018. Pacific Bio-Diesel is producing diesel from recycled cooking oil that is used in public transit buses and other vehicles. Hawaii is home to a number of demonstration projects, including the sustainable hydrogen project at Joint Base Pearl Harbor-Hickam that demonstrated the use of hydrogen produced by solar and wind in aircraft towing vehicles, trucks, small buses, and cars made by General Motors. General Motors has also deployed fuel cell cars in Hawaii, and the Department of Energy has funded a project on Hawaii Island to demonstrate the use of buses powered by hydrogen produced with geothermal energy that would otherwise have been curtailed. The State of Hawaii used stimulus funds to deploy the Hawaii E V Ready Program—a network of electric vehicle charging stations to encourage early adoption of this exciting technology. The Maui Smart Grid Project now includes fast chargers as part of an initiative to demonstrate the use of electric vehicles as part of an electric grid management project.

It is important to note that many of the exciting projects my State is working on extend past improving efficiency for our trucks and cars. We are committed to making travel by sea and sky more efficient and cost-effective.

Our consumers and businesses don't want the instability of the wild fluctuations in the oil market. This is especially important in Hawaii, where we are so dependent on air travel, and I am proud that Hawaiian Airlines is one of the Nation's most fuel efficient airlines.

As a nation we are investing billions of dollars in Next Generation Air Transportation System upgrades, which will help to make air travel more safe, productive, and sustainable. Through improving efficiency and easing congestion in our skies, NextGen will improve air quality and limit aircraft emissions. The FAA predicts net reductions of the climate impact from all aviation emissions over the long term by 2050.

We need to continue to support critical clean energy research and development to further these types of advances. In addition, we need to act now to extend important tax credits for advanced biofuels and advanced vehicle technologies.

In the same way that we look at increasing fuel economy for our trucks and planes, we can improve the efficiency of our transportation systems by making smarter choices about how we build our communities. By providing American workers and families options other than driving to get to where they need to go, we can help to reduce greenhouse gas emissions, increase mobility, and improve the quality of life for all Americans.

In Hawaii, we recognize that in addition to making our vehicles more fuel efficient, improving reliable transportation options is a critical part of reducing our impact on climate change. This is one of the reasons why I have been such a staunch supporter of the Honolulu Rail Transit Project. Electrically powered rail transit will not only ease traffic congestion in Honolulu, but it will also advance Hawaii's goal of 70 percent clean energy by 2030.

As noted by the National Resources Defense Council, ''By investing in transit we can give people real transportation choices so people aren't forced to burn a gallon of gas every time they need to pick up groceries or get to work. Along with other solutions—like charging stations for electric cars, smart traffic technology, or communities where people can walk or bike to shops, schools and work—transit can help break our addiction to oil. Laying the groundwork for a 21st Century transportation system that makes our communities more productive and efficient will free us from constantly worrying about prices at the pump while boosting our economy, safeguarding our environment, and improving our quality of life.''

Major transit investments, like Honolulu Rail, have the added benefit of attracting development around stations. Transit-oriented development, or building neighborhoods with homes and businesses close together and accessible to transit, allows residents to choose to make at least some trips without a car, reducing emissions. The market is showing that more and more Americans want these options, and for good reason.

Transportation is the second largest item in the average American household budget, and more options can shorten commutes and save money. Families can save on gas or forego that second car and the payments that come along with it. When communities become livable and walkable, property values skyrocket. And when our children and seniors can walk and bike to school, community centers, and shopping destinations, we see health benefits. Building our communities with housing and transportation near jobs, schools, stores, and restaurants can help support local economies while protecting the environment.

I am working hard to find ways to support these types of commonsense options at the Federal level. One of those commonsense solutions I have championed is my Military Installations Enhancement Act of 2013, which was included in the 2013 defense authorization. Commanders now have more authority to make smart, cost-saving choices about how we use space on facilities. Using less space is more efficient.

It is also about improving quality of life on bases, connecting our military families housing to jobs, the commissary, and the rest of the community.

In Hawaii we are already moving on this. Honolulu is in the process of building our rail system, and the military is working with the local transit authority to situate two stations next to Pearl Harbor-Hickam.

Though the Department of Defense has been looking at these benefits primarily to promote defense readiness, they also help address climate change by making bases more sustainable over the long term. With destinations closer together, people who work on or visit the base can choose to walk, bike, take transit, or drive. Having these options means less air pollution and less traffic on roads.

Biking and walking are great ways to take zero emissions trips, but taking that trip isn't an option if it means you risk your life to do it. I recently introduced the Safe Streets Act of 2014 with my colleague, Senator BEGICH. The Safe Streets Act would require complete streets policies in all States, meaning that roads would be built to be safe for all of the people who use them, including bikers and walkers. This is especially important in Hawaii, where we have some of the most dangerous roads in the Nation for seniors.

AARP highlighted how important this bill is: ''Safe mobility options are . . . essential to the independence and well-being of mid-life and older Americans. Fully one-fifth of persons ages 65 and above does not drive. Yet almost half of respondents to an AARP survey of persons age 50 and above said they cannot safely cross the main roads in their neighborhoods . . . AARP supports Safe Streets legislation because it would ensure that federal transportation infrastructure investments provide safe travel for all-whether driving, bicycling, walking, or taking public transportation.

These improvements that allow older adults to travel by foot will benefit younger road users as well. Your bill will help ensure that all users are safe, that scarce transportation dollars are spent wisely, and that Americans have choices in how they move around their neighborhood.''

Smarter transportation choices improve mobility, save money, and reduce emissions. We have an opportunity in

the next surface transportation authorization to ensure that we continue Federal support for transit, biking, walking, and smart development.

All these innovations in the transportation sector to reduce carbon pollution have benefits beyond climate change. The research, design, development, and production of fuel efficient vehicles and airplanes help to create new high paying jobs. Such innovations will help America reduce its dependence on foreign oil and shield consumers from the volatility of fluctuating foreign oil prices. Moreover, high-quality public transportation surrounded by mixed-use developments will increase mobility and expand job opportunities for all Americans. Overall, this is a win-win for businesses, consumers, and the environment.

It is time for Congress to wake up to the realities of climate change and take action to reduce our consumption of fossil fuels, but we can make real and lasting changes to our transportation sector and infrastructure without climate change being our primary motivation. Reducing our dependence on oil just makes long-term economic sense. It is a pragmatic decision that will have dramatic impacts to our economy, our health, and our way of life.

WATER RESOURCES

Mr. President, without water, life on Earth would not exist. Water sustains our ability to grow crops and raise livestock. It quenches. It cleans. It provides habitat for plants and animals and produces electricity. It is perhaps the world's most valuable resource. Yet many of us in the United States take water for granted on a daily basis when we turn on our faucets, flush our toilets, water our plants, cook our food, and drink from our cups. Others around the globe do not have that luxury. The World Bank estimates that 1.6 billion people live in countries or regions with ''absolute water scarcity'' and that number is expected to rise to 2.8 billion people by 2025.

Growing up in Hawaii and now representing my State in the Senate, I know the value and scarcity of our planet's water resources, especially as we confront the effects of climate-driven changes to our environment.

As stated by the Center for Island Climate Adaptation and Policy, ''Hawaii water experts have recognized that alterations in rainfall, temperature, wind, or other climate phenomena have the potential to devastate natural resources and human communities'' on our islands. Our freshwater resources are particularly at risk.

Water resource issues are by no means confined to my State. Most of the other 49 are also facing or may soon face water-related problems, such as changes in precipitation and runoff patterns, drought, flooding, and sea level rise, that have the potential to be catastrophic. From California, through the American Southwest and Midwest, down to Florida and up the east coast, our cities, farms, and communities are at risk.

I will begin tonight by stating the facts. Climate change is real, and it is perhaps most real in its effects on the water patterns of the planet. Countries around the world, including the United States, have always been afflicted by some degree of variability. Droughts have stricken portions of North America for thousands of years. Floods have been commonplace on our major rivers and tributaries. But never before has this variability been caused by humans.

Scientists predict that warmer temperatures have three major effects on the planet's water: increased evaporation, increased precipitation, and a rise in sea levels.

These in turn may drastically affect our water resources. Increased evaporation, caused by higher temperatures, heightens our risk for longer and more severe droughts—what scholars have termed ''megadroughts''—especially in our already vulnerable drought-prone areas. Changes in precipitation and runoff patterns leave areas near rivers, lakes, and streams much more susceptible to devastating floods. And sea level rise endangers the homes and infrastructure in our coastal communities and can taint their drinking water.

When it comes to these water resource issues, the future is now. The effects of climate change on our water resources are already upon us.

Drought is among the earliest documented events related to climate and has been a part of human history much longer. Evidence even exists to suggest that a megadrought in Africa more than 100,000 years ago may have caused the migration of our ancestors out of the continent.

A report by the Congressional Research Service notes that precolonial North America was subject to ''severe, long-lasting droughts'' that ''may have been a factor in the disintegration of Pueblo society in the Southwest during the 13th century, and in the demise of central and lower Mississippi Valley societies in the 14th through 16th centuries.''

More recently, ''droughts in the 1930s Dust Bowl era and 1950s were particularly severe and widespread. In 1934, 65 percent of the contiguous United States was affected by severe to extreme drought, resulting in widespread economic disruption and displacement of populations from the U.S. heartland—many relocating to California's Central Valley—and revealing shortcomings in agricultural and land use practices.''

The CRS report states that in the past 50 years, human-induced climate change has caused scientists to question whether we are entering a ''new megadrought era'' akin to the worst megadrought periods of the past, which are believed to have been caused by a warming climate. Large areas of the United States, such as the American Southwest and California, would be particularly susceptible to megadroughts.

In California, the snowpack in the Sierra Mountains as of February 2014 was, according to the CRS report, ''well below normal, and water levels in multi-year reservoirs were below average conditions for that time of year.'' This follows 2013, which was California's driest year on record. Now I want to be clear: We still cannot connect any single weather event or drought directly to human-caused climate change, but we can use these extreme weather events as examples of what future climates might look like. We know firsthand the economic consequences of major weather events.

Looking to examples in our history will help illuminate the future. Islands like Hawaii with small land masses and limited water resources also face difficult times ahead if global temperatures continue to rise due to greenhouse gases. Recent studies have shown that most of the Hawaii islands have experienced a steady decline in rainfall over the past 20 years, which has had an enormous effect on our ranching industry.

I am pleased that Governor Abercrombie and the Hawaii Department of Agriculture are working to improve our State's irrigation systems and to develop long-term solutions to help the farmers of Hawaii deal with the effects of climate change.

To quote Scott Enright of the Hawaii Department of Agriculture, ''We know we will experience climate change in Hawaii and the department has been putting through legislation to help us with that.'' Such efforts at the State level are crucial to helping the agricultural sector adapt.

Like droughts, floods have been a scourge to humanity since the beginning of civilization. Climate science predicts that severe floods may result from global warming.

According to the National Resources Defense Council, ''Climate change has contributed to a rise in extreme weather events.'' These events ''will increase the frequency of heavy rainstorms, putting many communities at risk for devastation from floods. Flooding can cause a range of health impacts and risks, including: death and injury, contaminated drinking water, hazardous material spills, increased populations of disease-carrying insects and rodents, moldy houses, and community disruption and displacement. As rains become heavier, streams, rivers, and lakes can overflow, increasing the risk of waterborne pathogens flowing into drinking water sources. Downpours can also damage critical infrastructure like sewer and solid waste systems, triggering sewage overflows that can spread into local waters.''

I turn now to the issue of sea level rise, which, as National Geographic has noted, can have ''devastating effects on coastal habitats. As seawater reaches

farther inland, it can cause destructive erosion, flooding of wetlands, contamination of drinking water and agricultural soils, and lost habitat for fish, birds, and plants.''

Like drought and floods, sea level rise due to climate change is already upon us. A recent joint report from the National Academy of Sciences and the British Royal Society shows that since 1901, global sea level rose by about 8 inches, with a large percentage of that rise coming in the past two decades.

If greenhouse gases continue to increase on their current trajectories, it is projected that sea level may rise by as much as 3 feet by the end of the 21st century. And ''rising sea levels will not stop in 2100; sea levels will be much higher in the following centuries as the sea continues to take up heat and glaciers continue to retreat.''

Eight inches of sea level rise might not sound like a big deal, but it is.

Even very small increases in sea level, such as those seen already, can have devastating impacts, one of which is saltwater intrusion into freshwater sources, which is a fancy way of saying that drinking water along some coasts will become salty and undrinkable.

''Rising sea levels are causing saltwater to flow into the Ganges, India's biggest river, threatening its ecosystem and turning vast farmlands barren in the country's east,'' according to a Reuters article from several years ago. In the United States, the Fort Lauderdale Sun-Sentinel reports that Florida aquifers, which provide much of the freshwater to communities throughout the State, are in danger of oversalinization.

More than half of freshwater used in Florida is from underground sources like the Biscayne Aquifer. The consequences of climate change induced sea level rise are dire for some low-lying coastal areas.

The combination of sea level rise and a growing population are putting strains on freshwater sources in Florida. A local natural resources official noted in the Sun-Sentinel article that ''potable water supply is obviously a major concern long-term.'' One possible solution proposed by the Southeast Florida Utility Council is reengineering stormwater runoff to drain into the aquifers, instead of flowing back out to sea. This would beat back the saltwater intrusion and replenish freshwater.

Saltwater intrusion also poses problems in low-lying parts of my State and many other Pacific island nations and U.S. territories with limited freshwater supplies. If sea levels continue to rise, these areas could quickly become uninhabitable.

The United Nations reports that rising sea levels have left and are leaving salt deposits in the soil and contaminants in the groundwater supply. Both of these have adverse impacts on agriculture, food, and water security. Many small Pacific nations face the risk of saltwater intrusion of their freshwater supplies.

Allow me to share with you a few words from the Honorable Enele S. Sopoaga, Prime Minister of Tuvalu, who spoke at the United Nations Framework Convention on Climate Change in 2013: ''Some have suggested that the people of Tuvalu can move elsewhere. Let me say in direct terms. We do not want to move. Such suggestions are offensive to the people of Tuvalu. Our lives and culture are based on our continued existence on the islands of Tuvalu. We will survive.'' It is our duty as a pacific nation to help the people of Tuvalu and other island communities do just that—survive.

Let me end on a positive note and describe some of the additional ways that I have supported protecting our water resources through legislation at the national level.

As chairman of the Energy and Natural Resources Subcommittee on Water and Power, I have introduced the SECURE Water Amendments Act of 2014 to conserve water resources and promote sustainability.

As part of the SECURE Water Amendments Act, I am fighting for funding for a national water inventory. In its last major report on water use in the United States in 2005, the U.S. Geological Survey reported that over 400,000 million gallons of water are withdrawn every day. However, we also need to know how much water we have and where we have it so that we can better prepare for the effects of climate change on our water resources.

Finally, I support the National Integrated Drought Information System Reauthorization Act, which President Obama signed into law on March 6. As the White House noted in its official statement, ''This bipartisan legislation ensures that the federal government can continue to provide timely, effective drought warning forecasts and vital support to communities that are vulnerable to drought. States, cities, towns, farmers, and businesses rely on tools and data from the National Integrated Drought Information System to make informed decisions about water use, crop planting, wildfire response, and other critical areas.''

Mr. President, I am joined tonight by many of my colleagues, who also understand what is happening to our planet and what will continue to happen if we do not address the causes and effects of climate change. As I conclude, however, let me speak not just as a Member of Congress but as a father. Every parent worries about the future that their children face, and I am particularly troubled about the planet we are leaving for our children.

Several decades from tonight, when my son and daughter are the same age I am now, will they have adequate water resources? And if they have chosen to live in Hawaii or any of the other communities in the United Sates with water resource issues, will there even be any useable water left at all?

Despite my worries, I am hopeful that this scenario will not play out. It has been said that water seeks its own level. I see this as true both literally and figuratively. Those who are convinced that climate change is real and who also have real solutions are seeking each other out. And someday, in the not too distant future, I am confident we will reach that critical mass of people who firmly believe that we can no longer sit idly by in the face of climate change and that the time to act is not tomorrow but now.

EMERGENCY MANAGEMENT

Mr. President. I now will use some time to discuss the impact of climate change on our Nation's security and resiliency.

The effects of climate change will require additional investments in our communities in order to protect our most critical infrastructure, such as our roads, bridges, and powerplants. As extreme weather events become more frequent and severe, there will be a need for increased disaster assistance and mitigation efforts.

These events will have a direct impact on our economy. One need only look at the $1 trillion dollars in damages that the United States has accumulated since 1980 due to extreme weather events, which scientists know are becoming more frequent and severe. This is one of many reasons why Congress must wake up and take action now to address climate change.

We know we cannot attribute any one event to climate change, but what science is telling us is that with each passing day, as we pump more carbon dioxide into the atmosphere, we are increasing our chances of extreme weather events that carry with them dangerous consequences.

Global average temperatures have risen by more than 2 degrees in the last 50 years. Climate scientists caution that this warming increases the chances of more intense and frequent droughts and heat waves. Rising temperatures in various parts of the country could also increase the severity and frequency of wildfires.

Precipitation levels have increased by an average of 5 percent and heaviest downpours have increased by 20 percent over the last 50 years. These higher levels of precipitation can lead to more flood events throughout the country.

A changing climate could cause hurricanes to become more intense and severe. And this is particularly worrisome in the Pacific, where hurricanes have increased in strength since the 1980s. Moreover, sea levels have risen in the past 50 years along our coastlines and will continue to do so as the Earth warms. As a result, our coastal areas are becoming increasingly vulnerable to flooding, erosion, and damage caused by storms. The combination of sea level rise and increased strength of hurricanes amplify the destructive force of Mother Nature by putting more coastal communities at risk of dangerous storm surge.

My home State of Hawaii is expected to experience worsening severe weather. Last year, researchers at the University of Hawaii found that warming temperatures and changing storm patterns will lead to fewer but stronger tropical cyclones that will track more toward Hawaii in the future.

Across the country, we are seeing an increasing number of disasters. The number of Presidential disaster declarations has increased from 65 in 2004 to 98 in 2011.

During that time, FEMA provided more than $80 billion in disaster assistance. As the severity and frequency of weather-related disasters continues to increase, FEMA will need to spend more to help communities respond to and recover from disasters. For instance, disaster assistance for Hurricane Sandy totaled around $60 billion.

In addition, due to the increasing potential of flood related events, more funding will be needed for the National Flood Insurance Program. This program is currently $24 billion in debt due to increasing costs and payouts because of extreme weather events.

Last year, the Government Accountability Office added managing climate change risks to its high risk list. According to GAO, ''Climate change creates significant financial risk for the federal government, which . . . provides emergency aid in response to natural disasters.'' Overall, the fiscal impact of climate change on the United States economy could top more than $1 trillion by the year 2050. Emergency managers at all levels of government would have to stretch their budgets even further to prepare for and respond to such devastating events.

We know how severe weather-related events can endanger our communities and put lives at risk. But these events also threaten our critical infrastructure. Last month, the Department of Homeland Security's Office of Infrastructure Protection testified before the Senate Homeland Security Committee that ''higher temperatures and more intense storms may damage or disrupt telecommunications and power systems, creating challenges for telecommunications infrastructure, emergency communications, and the availability of cyber systems.''

Many of our roads, bridges, water systems, and electrical grids are already very old and in need of repair. According to GAO, ''Infrastructure is typically designed to withstand and operate within historic climate patterns. However, according to the National Research Council, as the climate changes and historical patterns—in particular, those related to extreme weather events—no longer provide reliable predictions of the future, infrastructure designs may underestimate the climate-related impacts to infrastructure over its design life, which can range as long as 50 to 100 years. These impacts can increase the operating and maintenance costs of infrastructure or decrease its life span, or both, leading to social, economic, and environmental impacts.''

Additional funding will be needed to spend on adaptation, which is the process of adjusting systems to possible climate risks. This is to ensure that businesses and communities are protected against changes in the climate.

FEMA has already established an Agency-wide directive to integrate adaptation planning into its policies and operations. Federal agencies are working to develop guidelines that incorporate climate change into risk-based analysis to ensure that infrastructure is more resilient.

Emergency managers will be required to better coordinate with all levels of government for better mitigation, preparation, response, and recovery. Federal emergency managers are trying to mitigate the impact of climate change by raising awareness. But it is important that Congress promote these policies too.

We need a unified national approach to encourage investments in making our infrastructure more resilient to extreme weather events brought on by climate change. We need to promote weather-ready planning and ensure that funding is available to emergency managers to effectively prepare for these types of events. We also need to equip individuals to be prepared by increasing their awareness.

Congress needs to wake up and act now. Failure to do so puts our Nation at risk.

INTERNATIONAL ACTION

Mr. President, the only place where people continue to debate whether climate change is real is right here in Congress. But while Congress is paralyzed by inaction, the rest of the world is acting.

People around the world are concerned about what the science is telling them. A Pew Research Center poll published last year found that a majority of publics in many of the countries surveyed said that global climate change is one the greatest challenges facing their countries. Concerned communities spanned from Latin America and Europe, to Sub-Saharan Africa and the Asian-Pacific.

Not surprisingly, leaders in these countries are already acting to confront climate change with the sense of urgency it deserves. Some of them have focused on efforts to mitigate climate change by placing caps on their greenhouse gas emissions; others have focused on efforts to adapt to climate change with targeted investments in coastal defense and other programs that will make them more resilient in the face of climate uncertainty in the future.

The steps that these representatives have taken to confront climate change are proof of what is possible when we cast aside partisanship and decide to act on the science.

Just across the Atlantic, our allies in the United Kingdom have demonstrated what is possible. In 2008, leaders in London made the United Kingdom the first country in the world to adopt legally binding targets that required the country to reduce greenhouse gas emissions and the first country to require businesses to report their carbon emissions. The 2008 Climate Change Act was a seminal piece of legislation that has put the United Kingdom on track to confront its contribution to climate change, with a goal of reducing greenhouse gas emissions at least 80 percent from its 1990 levels by 2050 below the nation's projected baseline.

In 2012, Mexico followed in the United Kingdom's footsteps, becoming only the second country in the world to set legally binding reductions on greenhouse gas emissions. The landmark bill signed into law that year committed Mexico to cutting its greenhouse gas emissions 30 percent by 2020 and by 50 percent by 2050.

What is most remarkable about the legally binding targets that the United Kingdom and Mexico enacted and have continued to advance is that it proves that both developed and developing countries are both capable of cutting carbon pollution.

While greenhouse gas targets are important, that is only one activity that countries across the world are undertaking to address climate change. Given that climate change is already happening, many countries are being forced to take matters into their own hands and adapt to the reality around them.

We have heard numerous accounts tonight about how one of the most pernicious impacts of climate change is sea level rise.

Sea level is expected to rise nearly one meter by 2100. This seems like a distant challenge. But with each passing year, as the seas inch higher, tides grow more threatening and storm surges more dangerous. Even slight changes in sea level rise pose serious dangers to coastal communities, from the Pacific Island nation of Kiribati to the mangrove villages along the Bay of Bengal in eastern India.

The Netherlands is wasting no time in preparing for sea level rise. The seawall of the Netherlands is 42 feet high and 50 yards thick at its base. The people have raised the wall several times since 1976, when it stood half as tall. Over the next 100 years, the Netherlands plans to invest $25 billion in strengthening existing sea defenses. With $2.5 trillion worth of existing infrastructure, the seawall is vital to the Netherlands's future.

The Netherlands is just one dramatic example of how countries are working to adapt to the challenges of climate change.

In addition to leading the world in crafting national greenhouse gas legislation, the United Kingdom is working to assess its climate vulnerabilities. In order to better examine the risks that climate change poses to its communities, the government has produced its

first Climate Change Risk Assessment and plans to release an updated assessment every 5 years, informed by the best available science.

Denmark has, in recent years, increased wind power to generate over 30 percent of its electricity and aims to be 100 percent fossil fuel free by 2050. While these efforts are in part to help the country reduce its greenhouse gas emissions, its embrace of renewables is also likely to make it more resilient to climate change in the future by diversifying their energy portfolio. It is no wonder that Denmark is, according to the Climate Change Performance Index, No. 1 in taking actions against climate change.

Efforts to confront climate change head on are not unique to developed countries either.

In 2013, Kenya launched its National Climate Action Plan, which outlined options for low carbon emissions, climate resilient development, and ways to mitigate greenhouse gas emissions. Like most developing nations, Kenya's greenhouse gas emissions are low compared to those of developed nations. However, Kenya feels the effects of climate change and is planning for increased uncertainty in the future. Indeed, leaders in Nairobi know too well that climate change will disproportionately impact the world's poorest, and they need to be prepared.

Developing countries have long understood the risks of a warming planet, even though the world community has continued to debate who, precisely, is responsible. In the 1990s, the government of the African state Seychelles prepared its own Environmental Management Plan.

The purpose of the plan was to conform to the United Nations Convention on Climate Change. Part of the plan was dedicated to sustainable development of the islands, to ensure that proper environmental protections were taking place throughout the country's development.

Leaders in the Seychelles, which at the time had a population of only 70,000, took it upon themselves to make sure they took the necessary steps to protect their home. Today, Seychelles, comprised of 115 granite and coral islands, is at risk from sea level rise. Seychelles has been dumping granite boulders on sand beaches to prevent them from washing away.

Ronald Jemeau, Seychelles' Ambassador to the United Nations and the United States, offered these sobering remarks in 2010 that are worth repeating at length:

> We're having the problems of the coral reefs. And coral reefs are central to our economy, central to our culture, central to our way of life. What many people don't realize about coral reefs is not—it's not that they're just beautiful for diving and, as we call them, the rainforests of the ocean. But coral reefs are where many of the deep sea fishes spawn and grow up. It's a nursery for small fish. So if coral reefs die, you are affecting fish in the deep seas, which we use for—which we fish. Also, coral reefs are the first defense—natural defense of violence against ocean waves. When the coral reefs die because of—after they're bleached, they break down, and they allow the waves to hit the shore.
>
> For some time now, our islands are being—have been eroded away, islands actually changing shape because of the problem of—on the one hand, the dying reefs. On the other, you have much more serious, much more intense storm events, higher tides, very strong tides which have been really eroding our beaches. And the only defense we've been able to do—we have a lot of granite. We are the oldest oceanic islands because we have a lot of granite. And we've been dumping granite boulders on our sand beaches to prevent them from being swept away. That's not exactly the reason tourists come to Seychelles. They come to see beaches with white sand, not beaches strewn with boulders.

Mr. President, I want to take a moment to address opponents of action who say: Well, China is the biggest polluter of them all, and they aren't doing anything, so even if the United States does act, it wouldn't mean a thing.

By the way, notice how that argument implicitly accepts the realities of climate change. It is no longer a scientific argument; it is a collective action argument.

Well if that is all that is holding some Americans back from taking action, then I have news. China is working to fight pollution and climate change. The United States is the laggard.

Last week at the opening of China's annual meeting of Parliament, the Chinese Premier said that China will ''declare war on pollution'' in the coming years. China faces the twofold challenge of extreme local pollution and the effects of climate change and recognizes that transitioning to clean sources of energy is a decision that has enormous implications for its economic and political stability.

In January, the Executive Secretary of the United Nations Framework Convention on Climate Change said that China is ''doing it right'' as it begins to tackle climate change. She continued to say that the Chinese are ''not doing this because they want to save the planet. They're doing it because it's in their national interest.'' Regardless of their motivations, the Chinese are acting.

So what exactly is China doing? Last September, the Chinese State Council released its Atmospheric Pollution Prevention Action Plan, which called for a reduction in the construction of new coal-fired powerplants and a goal of generating 13 percent of its electricity from renewable sources by 2017.

In 2013, China installed 12 to 14 gigawatts of solar panels and expects to do it again this year. Prior to 2013, no country has ever added more than 8 gigawatts of solar in a single year. A price guarantee for utility-scale solar projects known as a feed-in-tariff, as well as low-cost panels, drove this dramatic growth.

The argument that the United States shouldn't act until China acts doesn't fly anymore because China is taking action.

Chinese officials have announced that they plan to institute a tax on carbon pollution in 2015 or 2016. Certain regions have also started to implement pilot cap-and-trade programs and are beginning to develop plans to create a national carbon market by 2020.

How about current investments? In 2012 the United States spent about $35 billion on renewable energy, while China spent $64 billion.

The overwhelming buzz of climate action that we hear coming from capitals around the world is a stark contrast to the deafening silence here in Washington.

I worry about the message that Congress's inaction sends to the rest of the world, that while so many countries are going to great pains to confront climate change, too many Members of Congress would deny that change exists at all.

Many of these world leaders are looking for American leadership. They want American leadership. European Commission President Jose Manuel Barroso acknowledged this ahead of the 2007 United Nations Climate Change Conference in Bali when he said, ''We can succeed only if we have the United States with us.'' We must meet our partners on this issue. We risk conceding our credibility on this issue to others who are rising to the occasion.

I am grateful that we have a true champion on climate change in President Obama and Secretary of State John Kerry. Despite our neglect here in Congress, Secretary Kerry has been America's ambassador to the world on climate change, working hard to preserve our leadership position on this crucial issue.

Secretary Kerry has thoughtfully said before that ''those who deny the science or choose excuses over action are playing with fire.'' I have no doubt that leaders in these countries know, through their dialogue with him, that he is committed to tackling climate change and, through him, America's commitment is real. I have no doubt that despite Congress's stubbornness, America understands the challenge.

Washington might be paralyzed, but the rest of the world is not. Once you get outside of Washington, outside the grip of special interests, the rest of America is further ahead in confronting climate change.

Take my home State of Hawaii.

Besides being on the cutting edge of climate science research, policymakers in Hawaii have shown incredible leadership in adopting pragmatic and principled legislation to confront the challenge of climate change.

In 2007, Hawaii became only the second State in the country to adopt binding targets for greenhouse gas emissions. The bipartisan Global Warming Solutions Act committed Hawaii to an aggressive goal of reducing its greenhouse gas emissions to 1990 levels by 2020.

At the time, skeptics of the legislation thought that the legislation would doom Hawaii given the State's outsized reliance on fossil fuels for electricity. But, in fact, it is working in concert with the aggressive greenhouse gas targets that legislators adopted that year with a burgeoning partnership between Hawaii and the Department of Energy that became the Hawaii Clean Energy Initiative.

The Hawaii Clean Energy Initiative has been perhaps one of the most successful partnerships between the State, Federal Government, nonprofit, and private sector. It helped lay out a road map for Hawaii to achieve its aggressive greenhouse gas emissions goals with clean energy as the means for doing it. Our job is far from done, but as a result of this effort I am optimistic about Hawaii's energy future and our ability to reduce carbon pollution.

Hawaii is just one example of the many efforts under way outside of Washington to confront climate change. All across the country, cities, counties, and State representatives are waking up to the reality of climate change, just as international leaders already have.

The only people who are asleep on this issue are here, right here in Congress. It is time for them to wake up.

OCEAN ACIDIFICATION

Mr. President. I will now address another impact of rising carbon dioxide: ocean acidification, or OA. The ocean absorbs $CO_2$ gas from the atmosphere based on its concentration level: the higher the levels of $CO_2$, the more the oceans will absorb. When this happens, the $CO_2$ reacts with water to become more acidic.

Although acidity levels vary from place to place, NOAA scientists estimate that since the beginning of the Industrial Revolution, the acidity of surface ocean waters has risen approximately 30 percent.

Future predictions indicate that the oceans will continue to absorb carbon dioxide and become even more acidic. Estimates of future carbon dioxide levels, based on business as usual emission scenarios, indicate that by the end of this century the surface waters of the ocean could be nearly 150 percent more acidic, resulting in acidity levels that the oceans haven't experienced for more than 20 million years.

Scientists have been studying rising $CO_2$ levels and ocean acidification for years, and I am proud to report that Hawai'i in particular has been at the forefront. Our Mauna Loa observatory sits at an elevation of over 11,000 feet above sea level on the island of Hawai'i, and has been recording $CO_2$ levels since the mid-1950s, making it the oldest continuous $CO_2$ measurement station in the world. As such, it is the primary global benchmark site for monitoring the increase of this gas that contributes to both global warming and ocean acidification.

In addition to watching $CO_2$ levels at Mauna Loa, Hawai'i has also kept track of ocean chemistry at Station ALOHA, just north of Hawai'i where the University of Hawai'i monitors a variety of oceanographic conditions in a project known as HOT—the Hawai'i Ocean Time-series. With continuous observations of ocean waters at Station Aloha since October 1988, scientists have learned that the surface ocean grew more acidic at exactly the rate expected from rising levels of $CO_2$ in the atmosphere. Their research indicated the need for further inquiry, however, because the year-to-year rate of change varied considerably.

For marine animals, ocean acidity is similar to humans living with air pollution: the increased acidity can cause health issues—particularly for shellfish and coral. Most species of coral, oysters, clams, and mussels experience slower shell and skeleton growth as the waters become more acidic, which will have significant impacts on coastal communities and their economies.

The stakes from ocean acidification are high. According to NOAA: In 2009, U.S. shellfish accounted for about half of the Nation's estimated annual seafood revenue of $3.9 billion. Coral reefs provide habitat for an estimated 1 million species, and offer food, income, and coastal protection for about 500 million people globally.

Unfortunately, the negative impacts of OA are not speculative. The shellfish industry has already started to feel the effects of OA along the Pacific Northwest, where failures at oyster hatcheries beginning in 2007 have been confirmed as a result of the growing acidity of coastal waters.

To get a sense of the impacts, consider this: NOAA estimates that Washington's seafood industry is estimated to contribute over 42,000 jobs and at least $1.7 billion to the gross State product through profits and employment at businesses such as restaurants, distributors, and retailers.

This is not an abstract, theoretical problem, so to illustrate, I would like to highlight the efforts of several firms that are finding ways to adapt to adversity brought on by the changing climate.

Penn Cove Shellfish, Coast Seafoods, Taylor Shellfish and Goose Point Oyster Company—among the largest shellfish farms in America—provide sustainably farmed shellfish products to customers nationally and across the world: as seed mussels, clams, and oysters for other farmers to grow out, and as fully grown shellfish, ready to eat.

After their hard work to develop their businesses, I can only imagine the panic they must have felt when suddenly, some of their mainland shellfish hatcheries started to see production rates declining sharply, and it appeared that something was affecting the health of the larvae.

Working with scientists and researchers, the problems were diagnosed as being caused by ocean acidification. The researchers found that as more and more atmospheric $CO_2$ was absorbed by the ocean, the special form of calcium used by shellfish to create their shells—known as aragonite—declined. This lack of aragonite prevented the shellfish larvae from creating their protective shells, and so many of them died as a result.

Fortunately, research on ocean acidification is not just science for science's sake, so when the shellfish industry's hatchery problems were definitively linked to ocean acidification, Federal science agencies like NOAA found ways for businesses to adapt to increasing $CO_2$ conditions. Together, scientists from NOAA, academia, and the shellfish industry formed a strong partnership to help industry to adapt.

Here's how NOAA described the team's efforts:

> Together these researchers determined that acidification was threatening oyster production and offered an approach to address it. They installed carbon chemistry monitoring equipment at shellfish hatcheries. Real-time data from offshore buoys now serves as an early warning system for shellfish hatcheries; these buoys are capable of signaling the approach of cold, acidified seawater 1–2 days before it arrives in the sensitive coastal waters where larvae are produced. The data have enabled hatchery managers to schedule production when water quality is good and avoid wasting valuable energy and other resources when water quality is poor.

These efforts solved the immediate problem, but the experience set them thinking about long-term environmental risk to their businesses.

First, they recognized that based on the best available science, ocean acidity levels can vary greatly—so to find a way to insulate themselves from changes to the waters in coastal Washington, they figured they should look to a different State altogether.

That State wound up being my own home: Hawai'i. It happens that we had existing infrastructure at the Natural Energy Lab of Hawaii; NELHA, to support shellfish aquaculture in Kona on Hawai'i Island, and so Penn Cove and Coast Seafoods negotiated and moved in at Kona Coast Shellfish, and Taylor Shellfish followed suit with a separate hatchery at the same facility. More recently, the Goose Point Oyster Company has developed a new hatchery known as Hawaiian Shellfish near Hilo. Now, in addition to having more security for their supply chain, the increased production has allowed them all to expand sales to reach new North American and Asian markets, and grow their business.

Their case is an object lesson on how adaptation can create economic opportunity, and I am grateful they chose Hawai'i to locate their backup facilities! But it's also a stark reminder of how changes in ocean chemistry have already disrupted the ability of shellfish to live in their native habitats and why there is so much urgency to act now.

Hawai'i is also connected to the other side of ocean acidification: its effects on coral reefs. Unfortunately,

ocean acidification is not the only pressure on coral reefs.

Warming ocean waters, pollution and sedimentation from the land, and overfishing all reduce coral growth and vitality, making it harder and harder for reefs to survive into the future. Like the impacts on shellfish, the threat to corals from ocean acidification is invisible—unless you work with them on a daily basis, like coral scientists do. However, considering that coral reefs provide the habitat for an estimated 1 million species, and offer food, income, and coastal protection for about 500 million people globally, it is a problem that everyone should care about.

Because it's their daily bread, coral scientists at the University of Hawai'i see vividly how ocean acidification is changing our reefs and they are doubling down to refine scientific understanding of corals and to find solutions. For others, like Dr. Bob Richmond, it's about maintaining strength in science, while reaching out to elected officials, community leaders, and members of the public to share what researchers have learned.

The Honolulu Star Advertiser recently recognized Dr. Richmond's efforts:

Ocean scientists were urged . . . to go beyond their own scientific research and inject themselves into the political realm to give politicians and decision-makers the information they need to make the best policy decisions.

Robert Richmond, director of the University of Hawai'i's Kewalo Marine Laboratory, used his own research on coral reefs to illustrate how it can be done in a speech before hundreds of scientists from around the world at the 2014 Ocean Sciences Meeting at the Hawai'i Convention Center.

Richmond, president of the International Society for Reef Studies, said there's a need to teach scientists to be better communicators.

In discussing his own research, Richmond described talking to chiefs in Palau, community members in Guam and Pohnpei and to the U.S. Army Corps of Engineers in East Honolulu to accomplish successes in support of coral reefs on the local level.

He urged the scientists to work with local organizations, elected and traditional leaders, and stakeholders to effect change. ''It requires partnerships. I've worked with groups I never intended to, from economists to cultural practitioners.''

Dr. Richmond's approach to bridge science and policy led him to work with colleagues to develop a Consensus Statement on Climate Change and Coral Reefs, which has been signed by over 3,000 coral reef scientists from all over the world.

The consensus statement expresses the shared conclusions of the science community about the impacts of greenhouse gases on the world's coral reefs, along with their best predictions about the future. The statement is intended to assist people like us—government officials—to make decisions with a firm foundation of objectively verifiable science.

The science presented in the consensus statement is clear and sobering: If $CO_2$ emissions continue at the current rate, the combination of warming and acidification of ocean waters will reach levels that have not occurred since 55 million years ago. At that time, there was a ''coral reef crisis'' where environmental conditions caused a dramatic reduction in reef development, and scientists fear that we will face a similar situation in our lifetimes.

The situation is grave, but the consensus statement also details the science-based steps we can take to improve the outlook for our corals.

The topline item, however, is one that my colleagues here tonight and I have long suspected: that we need a dedicated and consistent effort to reduce climate change through reduction in $CO_2$ and other greenhouse gas emissions throughout the world. This is simply the only long-term, comprehensive solution to the problems of climate change.

Scientific research shows that we can also make a difference by taking steps to reduce the damage done by local actions. For example, communities can: Rebuild fish stocks; Reduce runoff and pollutants coming from the land; Rebuild populations of iconic species like turtles, whales, seals, and dolphins; Identify and protect the most resilient reefs; and Promote aquaculture without increasing pollution and runoff.

Unfortunately, these steps alone will not solve the challenge facing coral reefs, but they will empower individuals to claim a role in protecting their reefs.

Another notable Hawai'i coral scientist, Dr. Ruth Gates, who is based at the University of Hawai'i's Hawai'i Institute for Marine Biology, has focused on a different science-based approach: finding resilient corals that can stand up to the pressure of global warming and ocean acidification. Her work was featured in the Honolulu Star Advertiser last week:

''We can confirm that reefs are declining. There's no disputing that,'' Gates said on a recent morning, a cool breeze blowing off a cloudy Kaneohe Bay behind her. ''But it's not all doom and gloom.''

Using the popular Oahu bay's turquoise waters as a laboratory, Gates has spent the past several years scrambling to find the hardiest, strongest coral—the ''professional athletes'' of the bunch—that can endure the warmer and more acidic seas of the future.

The idea is to then take those corals' traits and breed them on a large scale similar to breeding preferred traits in dogs and other animals.

In Hawai'i, a State that has become a flash point in the debate over the use of genetically modified organisms, the Hawai'i Institute of Marine Biology researcher is quick to stress that her concept of selective coral breeding is something entirely different.

''We're looking for the supercorals that already exist'' several feet from a stretch of coral just offshore, Gates explained. The approach would not introduce foreign DNA into coral, as is done in the controversial GMO process.

It's more than just scientists who are working to save reefs in the face of ocean acidification and global warming. Community leaders, cultural practitioners, scientists, and the general public have all come together to designate a National Estuarine Research Reserve in O'ahu's He'eia estuary in Kāne'ohe Bay, and I am doing all I can to support their efforts. When we succeed, the He'eia site will provide a rich base of information from diverse knowledge bases: Native Hawaiian cultural practitioners; The University of Hawai'i's Hawai'i Institute of Marine Biology, which specializes in coral research, and is located on a small island in K?ne ohe Bay; and The local community of Kāne'ohe.

Because the site lies within the footprint of Kāne'ohe town, we can use it to learn how best to live with coral reefs so that we can preserve the economy and the environment at the same time.

As legislators in the national Congress, we have a role to play as well. My distinguished colleague from Florida, BILL NELSON, has developed an impressive reauthorization of the Coral Reef Conservation Act. In addition to continuing the strong efforts already present in the Federal Government, this bill would empower local action and mandate the development of an international strategy for coral conservation. I am a proud cosponsor of his bill.

We can also continue to support the Federal Ocean Acidification Research and Monitoring Act, or FOARAM, which provided the science that helped the shellfish industry. I understand that my friend from Washington State, MARIA CANTWELL, is working hard to develop a reauthorization of this bill. She is a real ocean champion, and I am grateful for her leadership on this important issue. I look forward to supporting her efforts.

Finally, we need to continue to support NOAA's Integrated Ocean Observing System, which provides critical data that coral scientists rely on to understand how the changing acidity of the ocean impacts our reefs.

I was glad to help organize a bipartisan coalition of 15 colleagues from this Chamber to express support of the program to our distinguished colleague, Appropriations Chairwoman BARBARA MIKULSKI.

Friends, the threat of ocean acidification is real and imminent, but we can still take action. Thank you for your time to hear me out on this issue of great national and global significance.

BIG BUSINESS AND ECONOMIC IMPACTS

Mr. President, when the financial crisis hit, global economic output dropped 1.3 percent. It was catastrophic.

The world now faces the risk of another major blow to global GDP—climate change. By some estimates, the impact could be several times the size of what we saw during the financial crisis.

Climate change could be the biggest shock to the global economy we have ever seen.

To put the cost in context, consider what the United States spent trying to recover from the financial crisis. We committed almost $500 billion to stabilize the financial system, and the

Federal Reserve continues to pump trillions of dollars into the economy to stimulate growth. That investment will seem tiny in comparison to what it will cost to deal with the fall-out from climate change.

Climate change is not a new challenge. What is new is that big business is finally starting to pay attention.

Big businesses are vulnerable to changes in our climate—and they know it.

Already, these changes are affecting their bottom lines by driving up the price of inputs, disrupting global supply chains, and introducing uncertainty into their business plans.

Now that we have the attention of multinational corporations, it is time to harness those powerful economic interests to drive solutions to climate change before it is too late. It is time to get the attention of those in Congress who would even deny a problem exists.

The impact of climate change on our global economy will be massive.

Climate change is likely to hurt industries that are sensitive to changes in the environment—such as agriculture, fisheries, forestry, and tourism.

The global economy will also be hit by higher costs as we need to do more to cool our environments. We will spend more to get the water needed for industry and human consumption, and to repair the damage caused by extreme weather, which will continue to disrupt global supply chains. The cost of these disruptions will ripple throughout the world economy.

We can also expect to see negative impacts on capital flows, investment, and savings as a result of lower economic output and uncertainty about the future.

The economic impact of climate change will not just be felt in our markets. We will face rising healthcare costs as a result of the spread of infectious diseases and health problems associated with intense heat waves, droughts, and floods.

So what do we know about the actual cost of climate change? Quite a bit, actually.

Just within America's borders, we have seen how costly extreme weather events can be—Hurricane Katrina and Hurricane Sandy, record droughts on the west coast, wildfires and floods in Colorado, devastating floods in the Midwest, and record heat waves in the Northeast.

The price tag is not just the cost of rescuing people from harms' way, repairing the damage, and rebuilding communities. There is also the cost of higher food prices, lower tourism revenue, and the loss of economic productivity when people can't work.

A recent study was commissioned by 20 governments of countries that are highly vulnerable to climate change. The study estimated that, in 2010, climate change cost the world over $1.2 trillion, or 1.6 percent of global GDP. It also showed that, by 2030, climate change will cut global economic growth by over 3 percent.

The International Monetary Fund is paying close attention to the risk that climate change poses to the world economy. In its view, studies that attempt to estimate the global economic damage of climate change tend to be underestimates.

That is because these studies are based on fairly conservative estimates of changes in global temperatures. And they have a hard time taking into account the multifaceted and far-reaching impact of climate change.

As an example, Lord Nicolas Stern, author of the most respected study on how climate change will impact the economy said the following:

''I got it wrong on climate change—it's far, far worse.''

Keep in mind that his initial study predicted dire economic consequences for the world. And now, just 6 years later, he's saying those predictions were not dire enough.

Americans are taking action. Former Mayor of New York Michael Bloomberg and former Treasury Secretary Hank Paulson teamed up with the founder of a global investment capital firm in a nonpartisan effort to conduct an assessment of the economic risks of climate change to the United States.

In Mayor Bloomberg's words, ''If the United States were run like a business, its board of directors would fire its financial advisers for failing to disclose the significant and material risks associated with unmitigated climate change.''

Big business is finally paying attention.

Unlike Congress, big business has finally woken up to the reality and urgency of climate change.

A recent article in the New York Times ran with the headline ''Industry Awakens to Threat of Climate Change.''

According to the article, senior officials at Coca-Cola and Nike are joining a growing group of American business leaders who see climate change as a major challenge to global economic growth.

A senior official at Coca-Cola listed risks to the company's bottom-line: in his words, those risks include ''increased droughts, more unpredictable variability, [and] hundred-year floods every two years.'' These risks are not hypothetical—Coca-Cola has already seen the effects in real time. In 2004, Coca-Cola lost a major operating license in India because of a serious water shortage.

Likewise, Nike has seen its supply chain disrupted by changes in climate and extreme weather. Floods have shut down Nike's factories in Southeast Asia. Droughts have lowered production of the cotton the company relies on to make its athletic clothes. Nike, like many other corporations, now includes the risks posed by climate change on its financial risk disclosure forms to the Securities and Exchange Commission.

Recently, Chipotle made headlines when its annual financial report disclosed that climate change could have a significant impact on the price or availability of its avocadoes. The company warned that if costs went up too much, it could have to stop serving its much beloved guacamole.

Starbucks also has its eye on how climate change will impact its bottom-line. The company sources nearly two-thirds of its coffee from small-scale producers in Latin America, Africa, and Indonesia. These regions are vulnerable to both droughts and excessive rain. Changes in weather patterns are likely to reduce their coffee yields and hurt the quality of their beans. Extreme weather is also likely to affect the roads that the company relies on to move its goods around the world. These risks are not far-off or theoretical. They affect the company today.?

Some deniers accept the science but say we're better off doing nothing. They should start listening to the business world.

They say it's too expensive: regulations will kill jobs and hurt the economy, driving up prices on everything from gasoline to bread and milk.

We have heard this argument before; many times in fact, and it is always proven wrong. Over and over again, large-scale collective action on environmental problems has helped to grow the economy and improve human health.

For example, a 2011 peer-reviewed EPA study found that programs established by the 1990 Clean Air Act amendments will yield direct benefits to Americans vastly in excess of the costs. In just a couple of decades, the study estimates that the benefits of this legislation will exceed the costs by a margin of 30 to 1—and may even approach 90 to 1.

What kind of benefits am I talking about? The study estimated that in 2011 alone the cleaner air we now enjoy avoided more than 160,000 premature deaths from things like heart attacks. It also avoided millions of cases of acute bronchitis and asthma attacks. These meant 13 million fewer lost workdays and 3.2 million fewer lost schools days.

National vehicle efficiency standards, put in place in 1975—have achieved a major reduction in pollution and significant economic benefits to consumers, despite dogged resistance from opponents. And new standards implemented by President Obama are projected to not only reduce our consumption of gasoline but also yield significant savings.

One study finds the following: ''The standards will save consumers $140 billion in 2030. When compared to a typical vehicle on the road today, a new car buyer will save more than 8,000 dollars over the lifetime of a new 2025 vehicle, even after paying for the more fuel-efficient technology.''

The Department of Energy efficiency standards for appliances are another great example of Federal standards that both reduced pollution and saved consumers money. As a result of the standards under this program, the Department reports that consumers saved close to $40 billion on their utility bills, just in 2010 alone. They estimate that by 2030, total cost savings from these standards will be well over 1½ trillion dollars—and will reduce carbon pollution equivalent to the annual emissions from 1.4 billion cars. And yet still today, members of Congress waste time and effort trying to get rid of efficiency standards for things like light bulbs—standards that the lighting industry itself has requested.

The removal of lead from gasoline has had enormous positive impacts. In the 1960's, scientists began to establish that humans were contributing enough lead to the environment to have an effect on human health. And scientists and doctors were showing that lead pollution was contributing to IQ deficits in children, nerve damage, anemia, and mental retardation.

Industry, as you can imagine, resisted strongly. In 1965, the American Petroleum Institute responded to reports that lead was increasing in the environment with the following quote:

These findings ''have no real bearing on the public health aspects of lead . . . the mass of evidence proves unquestionably that lead isn't a significant factor in air pollution and represents no public health problem in any way.''

It took over 10 years and a major court decision for the EPA to even begin phasing out lead in gasoline, and that's due to outright falsehoods such as this one.

By 1986, studies showed that the health benefit to cost ratio was 10 to 1. Blood levels of lead across the country dropped significantly as soon as the lead phase-out began.

From 1978 to 1991 they dropped 78 percent.

If you remember one statistic from this speech, remember this one. Largely as a result of government regulations, between 1970 and 2011, total air pollution dropped 68 percent, while the U.S. gross domestic product grew 212 percent.

The evidence is overwhelming. Well-designed solutions to environmental problems aren't harmful; they contribute to a healthier and growing economy. A warming planet and changing climate is what will hurt the economy.

For many multinational companies, climate change has moved from a corporate social responsibility issue to a bottom-line issue. They are starting to see the impact of unpredictable and extreme weather and realize that investing in environmental protection means investing in the economy. Climate change affects the supply of key inputs, disrupts factories, demolishes infrastructure, and drives up prices.

The economic calculus has shifted—business as usual will lead to no business at all.

Businesses have woken up to the risks of climate change, and they are calling out for Congress to act. It is time for Congress to wake up.

ASCENT CONFERENCE MINI-SPEECH

Mr. President, finally, I wish to report on activities in my home State of Hawaii that show how our Nation is making progress toward sustainability and adaptation to climate change. Back at home, we see the effects of climate change up close and personal. Our coral reefs, our beaches, and the lush vegetation that greens our landscape—it's all imperiled by climate change, and people are standing to take action.

They recognize that the rhetoric of denial will not hold back rising sea levels. They understand that junk science will not save our coral reefs—or bring back the tradewinds and rain that supplies our water when climate change has traded it for cycles of hurricane and drought.

That is why they have come together to host a first-of-its-kind conference in Hawaii on sustainable development and climate adaptation. From transportation to energy to community development, the conference will bring local and national leaders together to share stories of success, and inspire action for the future. We call it ''Ascent'' to recognize our upward progress, and to challenge ourselves to aim higher and higher.

Our Ascent conference will be held on April 15, 2014, when University of Hawai'i Sea Grant College Program, University of Hawaii Chancellor Tom Apple, and I will hold a 2-day-long conference and Senate field hearing featuring world-renowned experts from across the State and Nation. These experts will address key underlying issues of sustainability, and engage directly with high school and college students who are poised to lead these efforts in the future.

We will be happy to welcome Mr. Nainoa Thompson, president, Polynesian Voyaging Society; Mr. Geoffrey Anderson, president, Smart Growth America; and Mr. Jeff Seabright, vice president, Environment & Water Resources for The Coca Cola Company, among other visionaries at the conference. They will be partnering with State and local experts as well as Hawai'i's youth to examine risks and propose solutions to energy and water resource security, and the complexities of climate change.

That evening, we will also welcome former U.S. Vice President Al Gore, who will present a free public lecture on sustainability and climate at the University of Hawai'i.

The Ascent conference was created because we recognize that the only way to solve a problem is to own it, and act. I respect our colleagues from across the aisle for their work to focus on the fiscal issues our Nation faces. Together we have rolled up our sleeves and found solutions. Now we need to do the same on climate change. Denying the problem and trying to muzzle the opposition will not make environmental change go away. Owning up, and facing it together will.

Ms. MIKULSKI. Mr. President, I rise to join my colleagues to bring attention to the important issue of climate change. It is time to wake up and take action—we owe it to our planet, to our country, and to generations to come. I thank the organizers of this event, Senator BOXER, Senator WHITEHOUSE, and Senator SCHATZ, for their leadership on this issue. This is a problem that must be addressed, and this call to action is long overdue.

Maryland is one of the most vulnerable States to climate change. Our expansive coastline is greatly affected by rapidly rising sea levels that are eroding our shoreline and causing flooding. We are also starting to see the effects of more frequent extreme weather events, such as flooding, heavy precipitation, heat waves, and droughts. This will cause environmental damage to our shoreline, the Chesapeake Bay, and our water and air quality. It could impact our health by increasing respiratory illnesses. And this will cause economic damage by costing our coastal cities billions of dollars in lost tourism, our farmers heavy losses from droughts and heat waves, and many Marylanders property damage from flooding.

Maryland is leading the way in responding to the dire problem of climate change. Maryland has developed a Climate Change Plan that will reduce greenhouse gases 25 percent by 2020, contribute $1.6 billion to Maryland's economy, and create 37,000 jobs. I am very proud of my State for setting an example and tackling this problem head-on.

The Environmental Protection Agency is also moving forward with its efforts to put forth commonsense rules for curbing greenhouse gas emissions. This has included standards to promote a new generation of clean vehicles, which are expected to save more than 6 billion barrels of oil through 2025 and reduce more than 3,100 million metric tons of carbon dioxide emissions. It has also included an effort to limit emissions from new powerplants, and the EPA has pledged to hold listening sessions as it develops rules for existing plants. I support the EPA's actions—they are offering tailored solutions to a complex problem, and working within the Clean Air Act to protect public health.

Even though Congress hasn't been able to agree on a long-term solution to combat climate change, I have worked hard to fund the research that informs us about climate change and will help us develop solutions. As the chairwoman of the Appropriations Committee and the Commerce, Justice, and Science Appropriations Subcommittee, I funded over $3 billion for climate-related research in the Consolidated Appropriations Act of 2014.

This includes $226 million for NOAA, which uses peer-reviewed research initiatives and partnerships with universities to study regional climate data and make climate predictions. It includes $1.85 billion for NASA's Earth Science program, which examines the Earth on a global scale and develops data that is used for climate prediction models. It also includes $958 million for climate-related research at the National Science Foundation within the Geosciences Directorate and the National Center for Atmospheric Research. I commend the employees at these outstanding institutions who are working every day to develop long-term solutions for climate change, and I will continue to fight hard for robust funding for these agencies.

Climate change is an enormous problem, but it is not enough for us to just recognize the problem. When it is a problem of this magnitude, we must truly rise to the occasion. The science is sound, and the reasons to act are numerous. Let's move it on climate change—the time is now.

## ADDITIONAL STATEMENTS

### SCOUTING

• Mr. ALEXANDER. Mr. President, I ask that a copy of my remarks to the Wilson County Friends of Scouting Luncheon in Lebanon, TN be printed in the RECORD.

The remarks follow.

LESSONS FROM SCOUTING

Thank you very much. In a little book I did a few years ago called Lamar Alexander's Little Plaid Book, it has lots of rules in it and one of them is ''If you want a standing ovation, seat a few friends in the front row.'' So, thanks to the front row for that. And, thanks to Rob, my friend, for inviting me here and all of the others of you who did, and for the terrific job you do as aldermen and for your friendship. Jason Flannery, Peter Williston, Chris Crowell, Bobby Kane, Quin Cochran, thank you for your remarks, which will come a little later. Representative Mark Pody is here, and Mayor Hutto and Mayor Craighead and Mayor Jennings all are here. It's exciting to be in Lebanon and to hear about all of the good things that are happening here.

I had a great friend Alex Haley, the author of Roots, who once heard me make a speech and he came up afterwards and said, ''Lamar, may I make a suggestion?'' And I said ''Well, of course, Alex.'' And he said ''Well, if when you start, instead of making a speech you would say 'Let me tell you a story,' people might actually listen to what you have to say.'' So let me tell you a few stories from scouting.

I was about 13 years old. It was in a hot summer over in East Tennessee. But, when you're in scouting and you go up in the Smokies, you learn that it drops about five degrees every thousand feet, so by the time you get to the top of Spence Field Mountain on the Appalachian Trail, it's pretty nice. So, our explorer scout group had gone up there one August day, and we'd loaded up our packs with Bisquick and bacon and all the things that you cook for breakfast because that's when all of the blueberries were ripe on Spence Field and we were going to make blueberry pancakes the next morning.

We stayed in one of the trail shelters along the Appalachian Trail—we'd done that many times before—with our explorer scout leader, Dick Grave, who later was the head of Alcoa in Tennessee, and went to bed that night. At about 3 a.m., I noticed someone rustling around—these trail shelters had an open front—fire out front, and then three sides were closed. I was sleeping down on one end and I noticed some rustling around in the middle around where our packs were. So, I thought it was one of the boys getting up and I looked over there and there was a bear. Well, I woke everybody up, which didn't take long, and we did the only thing you do in a circumstance like that which was, we climbed up on top of our trail shelter with our aluminum pans and our cooking utensils, and we beat the cooking utensils on the aluminum pans and shouted unprintable things at the bear, who took all of our packs, including what we had for breakfast, down to the spring in front of the Spence Field Shelter. I learned a lesson about not sleeping with your breakfast bacon on top of the Smoky Mountains when the bears are around.

That's not the only thing I learned in Boy Scouts. About the same time, about the same age, when the weather was just as hot, we went spelunking in Monroe County in East Tennessee. That means you go down in caves. And if you have been down in caves, you know that they're all about the same temperature—I forget, but it's about 57 degrees, something like that, but it was a hundred degrees outside. I decided, which thirteen-year-old boys will do sometimes, to try something I'd been told I couldn't do, which was to have a chaw of tobacco. So, I took it down into the cave with me, got down in there, and with a couple of other boys, we tried it. Then, we came back up to the top in 103 degree weather, which made us as sick as I have been in my entire life. And so ever since that day, I've never even thought of having a chew of tobacco. I learned that lesson in Boy Scouting as well.

I learned how to go on a snipe hunt in boy scouting. Essentially, you take a bag, and you're told you sit out there all night with the bag open and you'll catch a snipe. I learned a lesson there as well.

I learned a lesson when my father, when I was twelve or thirteen, drove me the day after Christmas with two other explorer scouts not much older, maybe a year or two older, and just dumped us out on Newfound Gap at about 5,000 feet in the Smokies with three feet of snow on the ground and said he'd pick us up in Gatlinburg at the end of the day. The three of us walked up to the top of Mount LeConte, and then down, and we got to Gatlinburg. It wasn't very easy, but we learned a lot about the importance of getting to your destination on that day.

I was at Camp Pellissippi, which was our scout camp nearby Maryville and Knoxville and I learned a little bit about authority. We had a camp director named Kyle Middleton. He must have been 7′10″ tall, at least he looked that tall to us, and we would all assemble in the amphitheater at the first day of Camp Pellissippi, and Mr. Middleton would stand up in front of us. Actually, we all called him ''Kyle,'' I don't know why we would do that, he was so familiar, but I think it was because he told us to, and this is what he'd say. He said, ''Camp is now open, and we have one thing we need to get straight. I think I'm in charge. Does anyone here think I'm not?'' And, of course, none of us did, and we learned a little bit about the importance of authority. I joined the order of the arrow there. I learned about how to make a fire with flint and steel. One of my friends from Maryville, a couple of years older than me, would have been the first person ever to walk the entire Appalachian Trail through my area, from Maine to Georgia, but he made the mistake of getting all the way down to Virginia (he started in Maine), and he called his father in August and his father said he had to come home and go to college. So I learned the importance of education.

And even in Cub Scouts, we learned lots of lessons. One of the most vivid was when we were playing baseball and knocked the ball through the upstairs window of the neighbor's house. And, we all looked at each other wondering what to do until Bill Ernest, I'll remember this until I die, said, ''What we should do is go tell Mr. Smith (or whoever it was) what we did.'' So, we all trooped up to his house and knocked on the door and said, ''Mr. Smith, we just knocked a baseball through your upstairs window.''

For more than 100 years, the Boy Scouts of America have talked about leadership, have taught lessons of community service. There are 110 million scouts in the world in 185 countries, and 2 million Eagles. There are 9 Eagles in the United States Senate. There are a million adult volunteers in the Boy Scout movement. It is the largest and most prominent youth organization in the world. Its job is helping to turn boys into men.

Looking back, I realize how much I took for granted, all the time that our volunteer scout leaders gave to us. I know there are a lot of volunteers here in the room, but we just thought the world was made that way, that Mr. Studley—Joe Studley—and Mr. Miller, that they just had all this time to give to us. And because we grew up at the edge of the Smoky Mountains, close to the great American outdoors, just like you do in Middle Tennessee, we were out there all the time. Almost every weekend or every other weekend, we were hiking or camping or learning about the great outdoors. They taught us to love the Great American Outdoors, and as important, they taught us not to be afraid of the Great American Outdoors.

Today we have fewer parents who take their kids into the Great American Outdoors and I don't think it's because the boys are afraid of the outdoors. I think it's because a lot of the parents never had the chance to be in scouting and to know what to do in the outdoors. I still remember the Scout Law. I imagine most of you can say it: ''trustworthy, loyal, helpful, friendly, courteous, kind, obedient, careful, thrifty, brave, plain, reverent,'' I remember that. And I remember the motto, ''Be Prepared.'' That's a good lesson in life whether you're preparing for a piano concert or whether you're running in a Republican primary. Over the years I've tried to apply those rules to whatever I was doing in life, and I've found it hard to improve on the Boy Scout lessons.

I've put my love of the outdoors to work as a senator, trying to protect the parks, trying to keep the air clean, trying to keep enough open space so that our children and grandchildren can enjoy the outdoors as I did. And I've tried my best to teach my boys and girls, or as Honey likes to say, ''our boys and girls,'' our family about the outdoors and to help teach those grandchildren as well.

Some people say that it's naïve in this tough world that we live in to take the simple Boy Scout lessons, like to walk up and say, ''Mr. Smith, I just knocked a baseball through your window and I take responsibility for it.'' That's the right thing to do but some people say it's naïve in the sophisticated world in which we live.

Well, let me close with a story that suggests it's not naïve at all. Shortly after I graduated from law school, I had the privilege of working in the White House for a man named Bryce Harwell, who had also worked for President Eisenhower. He was President