

Remarks by the Honorable Ray Mabus
Secretary of the Navy
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GREG DALTON: Welcome to ClimateOne at the Commonwealth Club. I'm Greg Dalton. The BP Deepwater Horizon oil rig plunged into the Gulf of Mexico on April 22nd, the 40th anniversary of Earth Day. Something else happened that day that you probably haven't heard about. The U.S. Navy tested a Green Hornet F/A-18 fighter powered by fuel made from camelina, a hardy, U.S.-grown plant that can thrive even in difficult soil.

Navy Secretary Ray Mabus called the test a milestone in the development of biofuels. Secretary Mabus is here today to discuss the costs and dangers of fossil fuels and the promise of cleaner and more secure energy supplies. Ray Mabus served as a surface warfare officer in the U.S. Navy from 1970 to '72 and then pursued a career in government in Washington, D.C., and his home state of Mississippi. In 1988, he was elected governor of Mississippi.

And in 1994, President Clinton appointed him as an ambassador to Saudi Arabia. In 2009, he became secretary of the U.S. Navy, and this summer, President Obama asked him to develop a long-term plan for the restoration of the Gulf of Mexico. Please welcome Secretary Mabus to ClimateOne.

SECRETARY RAY MABUS: Thank you so much for that introduction and thank you all for being here tonight. I want to talk about energy and I want to talk about the Navy's role in it, but I'd like to start out by doing something I call Navy 101 – Navy and Marine Corps basics – about what we are and what we do.

Today, in the Navy, we have 290 ships in our battle fleet. Over 60 percent of them are at sea tonight. Over 50 percent are forward deployed. We have 3,700 aircraft. We own 3.3 million acres of land and have 72,500 buildings. And most importantly, we have 900,000 Sailors, Marines and civilians working in the Department of the Navy.

We're doing all sorts of things around the world. Today, we have 20,000 Marines in Afghanistan, mainly in the Helmand River Valley in Southern Afghanistan. We also have 14,000 Sailors onshore in the Middle East – more than we have at sea. We fly more than 30 percent of all combat air missions over Afghanistan.

At the same time, the helicopters from the U.S.S. Peleliu, a large-deck amphibious ship, have been delivering aid into Pakistan, into the flooded northern parts of Pakistan. We also have the hospital ship, Mercy, doing Pacific partnership through the islands of the Southern Pacific, doing medical mission work there.

We have ships in the Africa Partnership Station circumnavigating Africa, providing training for local navies and coast guards, doing medical, dental, veterinary work and also engaging with the leadership of those countries. We have a taskforce off the Horn of Africa combating piracy. We have submarines at sea providing deterrence.

There is sometimes a question as to why, in today's world of satellites and instant communication, why we need a Navy, a fleet. And the answer that I have is that today, we need a fleet and a global fleet more than ever. Ninety (90) percent of all commerce travels by way of water. And in this day of instant telecommunications, 95 percent of all telecommunications travels under the sea. For one of the few times in history a country has used its dominance of the sea to ensure free passage and free navigation for all countries and not just for itself.

We can respond to almost any kind of situation, whether it is high-end, conventional warfare, irregular warfare requiring Special Forces, hybrid warfare like you're seeing in so many parts of the world today. But we can also do disaster relief and humanitarian assistance. We can do it without taking up one inch of soil of anybody else's country. We come from the sea.

A good example of that was the earthquake in Haiti. Within a week, we had 19 ships and over 12,000 people in Haiti. But perhaps as important, the Marines, when they got there on their amphibious craft, the airport was very damaged and only limited numbers of flights were coming in. The port was completely shut down, so the Marines did what Marines always do - they found a beach and they went ashore. And they began giving aid and rebuilding at the same time that work was proceeding on the airport and the port to allow larger and heavier organizations to get in.

We need a global fleet to reassure allies, to deter potential competitors. And we have one today. In the 290 ships that we have, we cover every ocean on earth, and we are looking toward the future which is part of the climate change discussion that is going on. We have a taskforce called Taskforce Climate Change, because if there is an ice-free Arctic during the summer within the next 25 years, which most people believe that is highly probable, it has big implications for the Navy and for our patrolling duties.

If there's a rise in sea level when 70 percent of the world's population lives within 100 miles of a coast, the potential for disruption, particularly in some less-developed countries, becomes pretty profound and will almost certainly involve naval assets. So we have a big interest in that, which brings me to the main thing I wanted to talk about, which is energy.

America and the Navy rely too much on fossil fuels. From a military standpoint, there are lots of reasons to try to get off of this dependence on fossil fuels. One is strategic. We would not allow countries on earth to build our ships or our aircraft, but yet we are willing to give them a say on whether those ships or aircraft operate because we buy the fuel from them. Our fuel comes from potentially volatile places on earth. It's susceptible to price shocks. It is susceptible to supply interruptions.

And it makes our military, and in this case, the Navy and the Marine Corps, far too vulnerable to some sort of disruption. Our dependence has a tactical aspect too. Think of getting a gallon of gasoline to a front-line unit in Afghanistan, to one of our Marine units there. And the two biggest imports that we bring into Afghanistan are fuel and water. First, you've got to take that fuel across the Pacific. You've got to put it on a convoy. You have to take it up and over the Hindu Kush and then down to one of the Marines' hard operating bases. For every 24 convoys, we lose a Marine or a soldier guarding that convoy.

But we also, when these Marines and soldiers are guarding convoys, they're not doing what they were sent there to do, which is to fight, to engage, to rebuild. By changing the way that we produce and use energy in theater, we make ourselves better war fighters. We free up our Marines and our soldiers to do the jobs that they were sent there to do.

There are other problems with being this dependent on fossil fuels. You mentioned in the introduction the president, in June, asked me to come up with a long-term restoration plan for the Gulf. The blowout of Deepwater Horizon shows some of the risk that we undertake when we continue to have the reliance that we do on fossil fuels – the environmental harm, which is widespread and unclear as to the duration and the economic harm which comes from people losing livelihoods; it comes from loss of tourism revenue; it comes from all sorts of sectors. But it is very real.

And the coast, still not completely recovered from Katrina and Rita, from Ike and Gustav, now sees itself under attack by the oil spewing forth in the Gulf. We have an opportunity with this well to begin to look at what we do and how we use energy and how we get it. Bill Reilly is here, who heads the president's commission on how we can drill safely in deep water.

But I think longer term, both for the people who have lost their livelihoods – and it may be a while until we get them back – and as a country, we have to begin to look at how we begin to shift the economy away from dependence on oil and gas and other fossil fuels and toward cleaner sources of energy.

In the Navy last fall, I put out five goals for the Navy, the most ambitious of which, and one which I am absolutely confident that we can reach, is that within 10 years, the United States Navy will get one half of all its energy needs, both afloat and ashore, from non-fossil fuel sources.

The federal government uses 2 percent of all the fossil fuel energy America uses. The Department of Defense uses 90 percent of the energy the federal government uses. The Navy and Marine Corps use more than a third of the energy used by the Department of Defense. So we use, in the Navy and Marine Corps, almost 1 percent of the energy that America uses.

If we can switch, if we can begin to get this energy from different places and from different sources – now, I think you can flip the line from *Field of Dreams*. If the Navy comes, they will build it. If we provide the market, then I think you'll begin to see the infrastructure

being built. You'll begin to see the price per kilowatt-hour, or however you want to measure it, begin to come down.

We've also got some other goals. One is, we have a fleet of 50,000 non-combat vehicles. They turn over about every five years. We're going to lower the fossil fuel usage in those by half within five years, just by changing what we buy; buying more electric vehicles, buying more flex fuel, buying more hybrid vehicles. And we're saving money almost from the instant we start doing this.

We have a goal, within 10 years, that at least half of our bases will be net zero in energy consumption. We already have one here – China Lake – which is net zero today and puts energy back onto the grid. We're looking at a broad range of things – everything from Smart Grid technology on our bases to geothermal, hydrothermal, solar, wind and the thing that was mentioned in the intro.

We flew an F-18 Hornet on camelina. It's a small, little seed, member of the mustard family. It's not edible. And it can be used in rotation with other crops, so you don't have the problem that you do with corn ethanol, for example, or the first generation of biofuels. The plane flew at Mach 1.2 – almost 1,000 miles an hour. The plane didn't notice the difference. We called it – the F-18 is the Hornet – so we named it the Green Hornet. And for people who laugh, I know how old you are, because the comic book went out of existence a while ago.

But the Green Hornet in the Navy shows the ability to fly using biofuels. We're beginning to test, this summer, on surface fleets. We launched our first hybrid ship – the *USS Makin Island* – last year. It was built in Pascagoula, Mississippi. It went to its new home port – or its home port of San Diego around South America. On that first voyage, because of the hybrid drive, it saved almost \$2 million in fuel cost. It has an electric drive at speeds under 10 knots, a normal gas turbine drive at speeds over 10 knots. Most surface ships do not go that fast much of the time, and you can save tremendous amounts of money doing it.

We're looking at lots of other, less-dramatic things to do that's also saving us a lot of energy. Simply by using navigational tools, you know, we can save almost 10 percent of the energy. It used to be that we would tell our captains, "You're in San Diego. You need to be in Japan. Get there in two weeks." And let them choose the route. Now, by use of navigational tools, by taking into account weather, by taking current and wind direction into account, we can shave 10 percent off our fuel cost.

Same thing with hull coatings, with propeller guards, with things that just make sense, over time. As we buy ships, we are also looking at the total ownership cost for that ship – not just how much it costs to build and buy that ship, but over the 35 to 40 years it is going to be in the fleet, how much will it cost to operate? How big a crew does it have? How much will the energy use be? How much will the maintenance cost for that over time?

Our newest ship is the Littoral Combat Ship. It's shallow-draft, very fast – a good bit over 40 knots – and it has a crew of 40. Now, this is in comparison to my ship in the Navy, a

cruiser, which was about twice as big as the Littoral Combat Ship, had 1,000 men on it. A DDG – a guided-missile destroyer- today, is doing patrols for ballistic missile defense off Europe, in the Middle East, in the Western Pacific, has a crew of almost 300 people on it today. The LCS will have 40.

It will also be a modular ship. You can take one weapons system off and put another one on. You change the mission without changing the hull design. We are very, very serious about the way we use and produce energy and reducing our dependence on fossil fuels.

And the Navy has always led – always – in terms of switching sources of energy. In the 1850s, we went from sail to coal. In the early part of the 20th century, we went from coal to oil. In the '50s, we embraced nuclear power. And now, all our carriers, all our submarines are nuclear.

And every single time we did, every time, there was a group who said, you're trading one very certain means of transportation for one that is unproven. And you're giving up this big infrastructure we've got. In fact, an official Navy panel in the late 1850s said that coal-fired ships would never replace sail because it was too dangerous and too uncertain. When we went to oil, we gave up all those coaling stations set up at various ports around the world that supporting things like the Great White Fleet going around the world in the early part of the 20th century.

Nuclear, it was said, was too dangerous, and you couldn't make it small enough, particularly to go on a submarine. Today, our nuclear submarines are being equipped with life-of-the-hull reactors, which means they never have to be refueled in the 35 years that those ships will sail in our fleet. And this compares to civilian nuclear reactors, which get refueled about every two years. And they're small, and to date, there has never been a nuclear accident in the United States Navy.

Those are some of the things that we're doing. I'm looking forward to our discussion, in terms of what can be done to lessen American dependence on fossil fuels. We have a chance, in the Navy, in the Marine Corps, to lead this country, to lead this country in new ways of producing energy, to lead this country in new ways of conserving energy. And it will make us better, in terms of national security, in terms of national defense. It will also immeasurably aid this planet, which we call home. Thank you very much.

MR. DALTON: Our thanks to Ray Mabus, secretary of the U.S. Navy, for his comments here today at ClimateOne. I'm Greg Dalton and welcome, Secretary Mabus. You mentioned Pakistan. Let's also talk about, there's fires in Russia; there's some landslides in China. Scientists say that these are the kinds of extreme weather events that models suggest will occur with increased intensity and frequency in the future. Do you agree? And if so, what is the Navy doing to plan or anticipate for these kinds of extreme events?

SEC. MABUS: Well, as I said in my remarks, we have a taskforce, Taskforce Climate Change, to look at what the potential impacts of climate change will be. One that's very obvious is an ice-free Arctic, and what that means for both our surface and our sub-surface Navy and our

patrolling responsibilities. If you have commerce going through that, the Navy has got to be there.

Secondly is if you have the rise in sea level – one of the reasons, not the only reason, certainly - but one of the reasons that we do partnership stations around South America or around Africa, throughout the Pacific, going into ports, dealing with countries that are in the early stages of development, is to build a relationship with those countries. There's a saying that you can surge people, you can surge equipment, but you cannot surge trust. You have to be there over and over again.

And our model is that you go in, you stay for a set amount of time. You work on things like training their militaries. You work on things like engaging the population. Many times, those Sailors and Marines are the only Americans these folks will ever meet. And so they put a face on America. They build schools. They do dental, medical work. They do veterinary work. And it's not only for today, but it's also against the day that, because of climate change, instability hits the region, so that we are a known quantity, so that we are a helpful and trusted ally, instead of some stranger coming in only when instability occurs.

MR. DALTON: So for, say, an ice-free Arctic, does that mean the U.S. will need more ships, because they're going to be covering more territory? Is that going to change the dynamics with Arctic countries, such as Russia, which I believe is already doing the Northwestern Passage?

SEC. MABUS: Well, for one thing, there's all sorts of potential riches underneath – on the seabed and underneath the seabed in the Arctic. There will be, I'm sure, interesting discussions, because various countries – Canada, Russia, us – claim various parts of the Arctic because of coastline –

MR. DALTON: And oil and gas.

SEC. MABUS: – along the Arctic, yes. Well, it's not only oil and gas; it's other minerals and things like that. The Navy – and we have been pretty specific about this – we need a fleet of at least 313 ships to do the job that we have today. We have 290. But we are on the path to reach 320 ships by the early 2020s – the five-year plan that we put in last year that the president's budget put in last year.

We're going to build an average of 10 ships a year over the next five years, and over the next 10 years, we will reach that goal. We will have more ships coming online than we do being retired. So yes, the short answer is, we need a bigger fleet to do what we do today, but if you have things like an ice-free Arctic, you will need additional ships to make sure that you do that correctly.

MR. DALTON: And in Pakistan – there's 1,000 Marines in Pakistan now; you mentioned the ship. Do you think that the Navy and Marines will be called increasingly on humanitarian missions if the scientists are correct, if these kinds of extreme events increase?

SEC. MABUS: We're the nation's first responders to humanitarian disasters, and we've been called very frequently in the last few years, whether it's the tsunami in Indonesia, Malaysia, Thailand; whether it is to flooding in Samoa; whether it is to Haiti; whether it is to Pakistan, where the Peleliu amphibious ship, with its Marines – and our amphibious ready groups – the three amphibious ships with their embarked Marines – are one of our most flexible forces that we have.

They can go into a Pakistan and, with their helicopters, with their air assets, deliver aid. They can also go in and help rebuild. They have the largest medical facilities on an amphibious ship that we have, outside of a hospital ship. So we have impressive medical facilities on each one of these ships.

And they can do that mission while on a completely different, combat-oriented mission. They can pivot instantly from antipiracy, for example, to doing humanitarian relief. And it's that flexibility, it's that multi-use that makes a platform like that and a capacity like that so necessary for this country. And it has been today and I'm confident it will be in the future.

MR. DALTON: An estimated 20 million people are affected by the flooding in Pakistan. I saw a movie recently, *Climate Refugees*, which claimed that there are 50 million people who are affected by – people who are climate refugees. So when you look at the potential for disruption, or creation of failed states, or trans-border migration of people, as a destabilizing force, is that an issue in your scenario planning, looking forward for risk scenarios?

SEC. MABUS: That was part of what I was talking about, in terms of, if places become fragile – or that, because of climate change or because of rising sea level, because of tsunamis, because of flooding, because of some natural disaster, it exacerbates a political issue or exacerbates economic issues and causes, particularly, countries in early development phases, to become less stable.

And whenever you have a crisis with stability, whenever you have a country that moves from being stable to being unstable, then you do have a concern for not only the Navy and the Marine Corps, but you've got a concern for the world and for America, and for how we deal with that.

MR. DALTON: What are the spots that concern you most?

SEC. MABUS: Well, obviously, I think a lot about Afghanistan because of the 20,000 Marines and several thousand Sailors that we have there. The first thing that I read every morning are the casualty reports coming out of there. I think we're on the right path now. I think we've got a strategy that can move Afghanistan into a stable, self-sustaining state.

But I think that more than worrying about a specific place, I worry about making sure we have the capability to deal with whatever comes over the horizon – that we are flexible enough that we are nimble enough, that we, if required, are lethal enough to meet anything that may

come our way. Because no matter how bright we are – and we have very bright people in the Pentagon working on possible scenarios for all sorts of places in the world – almost certainly, something’s going to come that nobody’s thought of.

Because if you had looked ahead in 1989 – if you’d looked ahead 20 years to today, before the wall went down, you would not have figured out what we were going to be faced with today. If you’d done it in 2001, before the attack on the World Trade Center, you would not have thought we were going to be in the situation we’re in today.

And so no matter how much transparency we think we have, no matter how much thought and effort we put into trying to figure out what the next crisis is going to be, we’re almost certainly going to have something that comes along that we’re not expecting. And for that reason, I’m concerned that we have the capabilities to meet whatever that next thing is. And I think that in the Navy and the Marine Corps, in particular, we do.

MR. DALTON: I’m Greg Dalton. And my guest at ClimateOne today is Ray Mabus, secretary of the U.S. Navy. Let’s talk about your ambitious energy plan because I think this is something that’s quite striking - by 2020, to have half of the energy consumption, ashore and afloat, from renewable sources. How are you going to scale that fast? Are you going to use existing technology? Does that require new technology? Because just the sheer magnitude of that sounds quite daunting.

SEC. MABUS: Well, for one thing, in terms of our fleet, we’ve got most of the ships we’re going to have in 2020, so we know what we have to do to change that. And we know that we have to use existing platforms, so that it’s not a question of inventing new platforms. We know what we’re going to have.

We can do things like retrofit ships with hybrid drives, but mainly, it’s going to be changing the fuel that we put through those ships. Now on shore, it’s a different matter because on shore you can look at a whole lot of different technologies. And we, I think, are not only investing today in technologies that already exist.

We’re funding research on new technologies. We’re working with the Department of Energy and the Department of Agriculture to look at second- and third-generation biofuels, for example – biofuels from algae, biofuels from waste, biofuels from any sort of cellular substance – a cellulosic ethanol – that are going to be the second and third generation of biofuels.

But onshore, we also have the ability to look at things like solar, and we’re increasing our solar twenty-fold over the next couple of years. We’re looking at wind. We’re looking at geothermal, hydrothermal, wave action. But we are funding some research that some of these things may be met by technologies that we do not have today.

MR. DALTON: But a lot of those things – putting in a wind turbine or some solar plants – require a big, up-front capital investment. So are you putting up a bunch of capital and hoping it will amortize over time?

SEC. MABUS: I'll agree with the first half of that statement. We're putting up capital. But we know it will amortize over a fairly quick payback. And it will continue to pay back dividends for us. I mean, if you put up – if you look at China Lake here in California, it's a geothermal energy source. It's going to be a geothermal energy source as far as we can see in the future.

If you put up solar panels or wind turbines, if you do hydrothermal or wave-action energy, once you make the up-front investment and the cost to sustain it, which is usually not that much, you begin to get savings pretty immediately and you – those savings go on and on, long after you've recovered the amount of your initial investment. We're also doing some less-spectacular things, just by putting in smart meters. Most of our bases today, or before we began putting in the smart meters, could not tell you where their power was going.

MR. DALTON: Most companies, most households can't.

SEC. MABUS: Well, one base commander showed me his electric bill and 15 percent of the energy coming onto the base was itemized. The other 85 percent said "line loss," which meant it was going somewhere, but nobody knew exactly where. Once we have retrofitted and done some of these smart meters, we'll know what the peak hours are, what buildings are using it and what aren't, what facilities we can change.

Every new building being built in the Navy today meets at least silver LEED standards and from henceforth, for our budget this year forward, we're going to meet gold LEED standards. So we're beginning to make some of those investments, which will, again, repay many times over that initial investment.

MR. DALTON: Are you ahead or behind the other branches in this green effort?

SEC. MABUS: Oh, we're so far ahead.

MR. DALTON: Yeah, I figured.

SEC. MABUS: No, in fairness to them, the Air Force is doing a lot with their bases, particularly on solar. The Army is doing a lot of research in terms of things like transportation. And all of the services, all of DOD, is looking very seriously at this. I do think the Navy-Marine Corps are ahead, but I think the whole Department of Defense is very serious about this.

MR. DALTON: How much is U.S. technology and how much is foreign technology? There's a lot of concern about Asian countries being ahead in, say, the battery race, those sorts of things, and the U.S. is not leading or developing the technologies that even Detroit needs for cars.

SEC. MABUS: Well, one of the things that I think we can do in the military is create some of those markets so that we don't lag in that technology, because it's crucial that we stay at

least even, and preferably ahead, in these new technologies, whether it's storage, like batteries, whether it's the way we produce energy, whether it's efficiency measures and how we use energy.

If we lag in that, it has profound national security implications, but it also has profound economic implications in terms of jobs, in terms of how our economy works. And oh by the way, it also has the climate implications.

MR. DALTON: So right now, you're saying that you're finding what you need from U.S. suppliers?

SEC. MABUS: Yes.

MR. DALTON: Okay. I'd like to read a quote from Kevin Parker, who is global head of Deutsche Asset Management, which manages \$700 billion in capital, including \$7 billion devoted to climate change products. This is via Reuters.

"The U.S. is asleep at the wheel on climate change, asleep at the wheel on job growth, asleep at the wheel on this industrial revolution taking place in the energy industry." He says, "Deutsche Bank will put capital in places with more steady, certain and transparent policies, such as Italy, Spain and China." Now, there's global capital saying it's going to go somewhere else because the U.S. doesn't have its policy act together, and doesn't have the opportunities.

SEC. MABUS: Well, I'd disagree with him on almost all of that. Number one, this administration, this president, has been very clear on the policy that he is pursuing and that he thinks that the United States should pursue, in terms of creating this new economy, of creating green jobs, of beginning the transformation away from fossil fuels.

Secondly, I'll make a big argument that the United States has - in terms of rule of law, in terms of transparency, in terms of certainty - as good a system as there is in the world, in terms of investing your funds. But it does go to show - goes to show - that we cannot stop or even be hesitant about the rate of change that's going to have to occur.

A lot of times, when technology changes, the U.S. military has led the way. You only have to look at things like GPS or flatscreen TVs. Those were military applications long before they were in the civilian world. I think you'll see the same thing, in terms of energy, because right now, there are two hurdles to alternate energy. One is cost of that energy and two is the infrastructure for it.

If the military creates a market for both of those, the cost will inevitably come down. Infrastructure will begin to be developed, first around military bases, but then it's easily scalable into, first, the surrounding areas and then to the rest of the country.

MR. DALTON: Other people cite jet propulsion as well as digital electronics and semiconductors as areas where the military bought down the price of electronics that then were

commercialized. But I think the person from Deutsche Bank was also talking about policy and the U.S. does not have as integrated policy on climate change and clean energy as some European countries have, as China. I would agree with you on transparency and governance, but China's going full-bore on clean energy in a way the U.S. is not, because the Congress has still not come together around an energy policy. Does that affect what you're doing?

SEC. MABUS: Well, number one, this administration does have a coherent energy policy and I will say that again, that while there has not been an umbrella energy bill – but the bill that came out of the House and went to the Senate mainly dealt with cap-and-trade, instead of a broader-based thing that I think you and the head of Deutsche Bank were talking about.

In terms of how it affects the Navy or the Marine Corps, we can do these things within the existing authorities that we have. We can do these things simply because, under our statutory authorities, under our responsibilities, is to be the best war fighters that we can be. And this change in power, in the sources of power and the uses of power, or energy, makes us better war fighters.

And it, in the long run, will save us – we can take money that we're today using for energy and put it – in Secretary Gates' words, move it from tail to tooth – move it into more weapons systems, move it into different sorts of things that help the people right at the end of the spear.

MR. DALTON: Ray Mabus is secretary of the U.S. Navy and he's our guest today at ClimateOne. I'm Greg Dalton. I'd like to invite you up to the microphone if you'd like to ask a question and I will just ask one more question, which is, in your role as the leader of the Gulf restoration, what can you tell us about what's going to happen there? And how quickly will the people affected there – you know, any insight you can give us to what your recommendations of what the president and the U.S. should do in the Gulf to get it back up?

SEC. MABUS: In terms of the environment, there's a lot of research that's already been done. There are projects that have all the permits, that have all the environmental impact statements already done, that have all the engineering already done, that have simply been waiting for funding.

And I think that some of those, we can advance and begin to do relatively quickly. But I also think we've got to look long-term, in terms of coastal environmental restoration, and also in terms of economic restoration, and beginning to think about how we make that transition, particularly on the coasts, to a different kind of energy economy.

MR. DALTON: But do you think drilling should continue until we figure that out?

SEC. MABUS: Well, yes, I do. I mean, I think that Bill Reilly and his commission, in terms of putting in safeguards for that energy, for that deepwater drilling – and I think this administration has shown that it believes drilling should continue. On April 18th, the day the

Green Hornet flew and the day that the well blew out, the president announced that this administration would support opening more areas for deepwater, outer-Continental Shelf drilling.

And I think that, given the correct safeguards to make sure that we're doing whatever is necessary, in terms of making sure that a Deepwater Horizon is far less likely to occur, and beginning to do some research, not only on drilling, but on what happens if there is a mistake like this – I mean, we were using '50s, '60s, '70s technology to try to stem this. And while the drilling research has gone on, the things around it has not. But I've got a lot of faith in this commission that they're going to come back with some very strong recommendations there.

MR. DALTON: Okay. Yes, sir, brief question, please.

Q: Secretary, thank you very much for your remarks. My name is Peter Giselle (sp). For 30 years, I've been interested in a youth energy corps with the spirit of the Marine Corps, as a way to alleviate these concerns about the Persian Gulf and climate change. Unfortunately, environmentalists like Mr. Dalton don't agree with this approach. And I was wondering – the only letter I've gotten from the Pentagon was on behalf of President Reagan asking the director of manpower services to respond.

MR. DALTON: Your question, please?

Q: I would like to share this information with the policymakers that you oversee, and hopefully, can get some written feedback from them.

SEC. MABUS: I would love to get that, and we've got some folks in the audience that, if you get it to, will give you some feedback.

Q: Thank you.

MR. DALTON: Do you have any specific views on the liability cap? That's been a point of contention. For oil companies, what the liability – you're a former governor of a Gulf State. So what should the liability cap be for oil companies drilling in the Gulf?

SEC. MABUS: Well, obviously, the cap that was placed on it, which was \$70 million, I think, did not anticipate anything remotely like this incident. This was, by far, the biggest, most widespread that we've ever seen. And again, obviously, it was not contemplated. Now, BP has said that it's not going to be held to that liability cap. In fact, they were already, through the president, pledged \$20 billion into an escrow fund to go against lost wages, lost income, lost profits from individuals and businesses.

So I do think that another look needs to be taken at things that were put into place, particularly, right after Exxon-Valdez, with the notion that, that was the biggest spill we could imagine. But 20 years have passed, and also, this shows that there are much larger catastrophes that are possible. And so I think that the legal structure, as is the case a lot of times, needs to be updated to take into account realities as they exist today.

MR. DALTON: So in the billions? Fair to say it would be in the billions, the cap?

SEC. MABUS: I'm not sure there needs to be a cap. I mean, BP has said that, that \$20 billion – the president said and they said that, that is not a ceiling, that if more money is required, more money will be forthcoming. And you're only talking too about a very narrow thing, here. It's legal liability. I mean, there's also – there are also legal mechanisms for cleanup work.

There is restoration work under the National Resources Damages Assessment Act – NRDA – that will be coming into play. There are fines under the Clean Water Act that can range from, I think, a low of \$1,100 a barrel to a high of \$4,300 a barrel for any oil that escapes. So you're talking about one specific part of it, but there are other mechanisms that don't have a similar cap.

MR. DALTON: But with no cap, wouldn't the industry say that, that's too expensive, that their costs of doing business and their insurance would go up, that, that would be hurtful to energy exploration?

SEC. MABUS: Well, I'm not sure that, in this situation, for example, BP sees a cap, because they certainly have, in their public statements, have not indicated that they're viewing anything as a cap, that they're committed, through this \$20 billion escrow fund and things like that, to making sure that all restoration that needs to be done, making sure that, in terms of making people whole for lost income, for lost wages, for economic harm, is taken care of, regardless of what that is. And the president made that very clear when that escrow account was announced.

MR. DALTON: We've also heard reports of people saying that, yes, BP says that they'll pay all claims, but a lot of people have expressed a dissatisfaction with how long and how difficult it actually gets to get those claims processed, to get to the shrimp fishermen and the resort people on the Gulf Coast – your former constituents.

SEC. MABUS: Well, there are two processes. One is the one BP's got set up now; the other one is this escrow account that Ken Feinberg is going to be running, which is independent. It's not run by either BP or the government. Mr. Feinberg is an independent agent. And it is imperative that, that process get up and running as quickly as possible so you can speed up some of those payments.

Because some of these folks – fishermen and people that own hotels or restaurants, sometimes for generations in both industries, both tourism and fishing, they've been hit by these hurricanes – Katrina. The devastation was unimaginable from Katrina and the ones that followed – the ones that did not get as much publicity, but also damage.

They had made it through that and were – and then the recession hit. And so you've got a drop in tourism, a drop in things like house rentals or purchases. They were beginning to climb out of that and then here comes the oil spill. And a lot of places – I mean, I was in Panama City

with the president in mid-August, which, the water is great. The beaches are great. But the perception is that there's a real problem and so people are staying away.

And the president and his family went down. The president and his youngest daughter went swimming. And there was absolutely no hint of oil. There was no problem with doing that. But that's not the view that you get if you just watch the media, listen to the reports going on. And some of these folks aren't going to make it through one more season. They make 75, 80 percent of their money from –

MR. DALTON: Two months, yeah.

SEC. MABUS: Well, Memorial Day to Labor Day. And if this process isn't speedy enough and isn't adequate, they may not be there for Memorial Day next year. And that's why it is crucial that we get that going and then hopefully we can start doing some more long-term things to rebuild the environment to the way it was before the spill and to help the economy.

MR. DALTON: Secretary Ray Mabus is secretary of the U.S. Navy and he's our guest here at ClimateOne at the Commonwealth Club. I'd like to talk about – you mentioned R&D, and there's one piece of research that I found fascinating. And that is a potential for a microbial fuel cell, which was described by someone as a battery that runs on mud. So I'm interested in some of the breakthrough technologies that you might be working on that you think could really be a game-changer for the Navy and perhaps for commercial technology.

SEC. MABUS: Well, you're talking to an English major here so in terms of the technical aspects of some of these things, we've got some very bright people working on it. The Department of Naval Research funds pure science and they've won a lot of Nobel Prizes, just looking at the pure things in science that will then, eventually, sometimes, make its way into commercial applications or into military applications. And you never know what those things are going to be.

But I've got a lot of confidence in things like the Department of Naval Research, things like DARPA, that do cutting-edge technology, cutting-edge research, that are beginning – and are focusing – on these sorts of things. I mean, one of the most limiting factors – you've mentioned it twice, now – are batteries. You can produce all the power you want to, if you can't store it – the lights in this room right now were produced a few seconds ago. That electricity wasn't stored; it's produced when the demand is there.

And looking at the storage possibilities in batteries and other technologies to store things – I know you mentioned Spain and they're looking at storing energy in molten salt. Other companies and countries are looking at storing it in other ways, on a massive scale. And we've got to overcome that storage-capacity issue.

You know, the Navy has done a remarkable job on miniaturizing nuclear power and I know that a lot of work is being done, not only in the military, but also around the country, in terms of potential future uses of much smaller-scale nuclear things.

MR. DALTON: Do you think that – do you believe in peak oil – that the oil prices will be more expensive in the future and they might drive this transition to non-fossil sources?

SEC. MABUS: Well, I think what I believe in is that oil prices are almost always going to be volatile; that whether you reach peak oil or not, you're going to have supply shocks and price shocks with oil. So much of it is produced in volatile places on earth that are susceptible to supply interruptions, that are susceptible to price shocks that can reverberate through the global economy.

And so regardless of whether we're at peak oil or not, I think it's important that we begin to move toward other sources of fuel that are more stable, in terms of pricing, more stable, in terms of supply and more controllable, in terms of national defense.

MR. DALTON: A lot of people make that argument about, sort of, fossil fuels coming from unstable or less friendly places. Afghanistan, which you mentioned, was recently referred to as the "Saudi Arabia of lithium," because there was this huge discovery of lithium there – potentially trillions of dollars of mineral deposits, of lithium and other resources. Gen. Petraeus called it "of stunning potential."

So is it possible that we go from – and obviously, lithium is the main ingredient in batteries that we've been talking about – is it possible we go from needing oil from Saudi Arabia to being dependent on lithium from Afghanistan?

SEC. MABUS: Well, I think it also proves the point that we've got to look at a whole lot of ways to produce energy, that we're not dependent – regardless of what the material is, that we are much more self-sufficient, in terms of our energy production.

I mean, it doesn't – I won't use lithium, but it doesn't make any sense to trade dependence on foreign oil for dependence on foreign solar technology, for example, equally susceptible to problems in supply. We have to develop that economy here, not only for those security reasons that I talked about, but also for the jobs and for transforming the American economy toward a greener economy, which is the future in every way that you can look at it.

MR. DALTON: Oil is volatile; food is also a commodity. We've seen wheat prices surge recently because of the Russian fires, which, some climate scientists would say we can expect more of those kinds of things in the future. So when you look at volatility, is food on your radar at all, in terms of a risk for destabilizing states?

SEC. MABUS: Well, again, because so many people live so close to the ocean, so close to the littoral zones, you have to look at climate change, whether it's rising sea levels, whether it's more natural disasters, as being potential destabilizing sources. And again, I don't think it's as much looking at specific ways countries can be destabilized as it is preparing for the eventuality that it could happen and responding adequately to it.

MR. DALTON: We've come to the end of our time, here. I'd like to thank Secretary Ray Mabus, secretary of the U.S. Navy, for his comments here at ClimateOne at the Commonwealth Club. I'm Greg Dalton. Thank you all for coming.