

Remarks by the Honorable Ray Mabus
Secretary of the Navy
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When I learned that Brian [Sager] was introducing me, I read his background, his academic credentials from Stanford, from Harvard, the nine patents that he holds, and I told him on the way in that I was afraid I wasn't going to understand anything he said.

Permit me one short, personal story. I'm from Ackerman, Mississippi. And I went to Ole Miss for undergraduate. And then I went and served in the United States Navy. And when I got out, I went to law school at Harvard. Early in my semester, we were seated alphabetically in a small group. And I was seated next to this guy who became one of my lifelong friends, who lives in Washington now, named [Richard] 'Dick' Meserve. And we were comparing undergraduate experiences. And he said that he had gone to undergraduate at Harvard. And I said, well, what have you been doing in between? He said, well, I went to Stanford and got a Ph.D. in theoretical physics. He said, what about you? I said, well, I went to Ole Miss and spent the last couple of years floating around on a big, gray ship with guns. We had practically nothing in common, but, as I said, have become lifelong friends.

And I do appreciate, Brian, that very generous introduction. And thank all of you for being here today and for inviting me to speak about the Navy and Marine Corps' effort to build a new-energy future for our military and help create a clean-energy economy for our country.

As Brian said, 15 months ago, I issued five pretty ambitious energy goals for the Navy and Marine Corps. Most overarching of those is that no later than 2020, at least half of all the energy that we use, both afloat and ashore, will come from non-fossil fuel sources. Also by 2020, at least half our bases will be net-zero in terms of consumption. And in a lot of cases, we think we'll be returning power to the grid rather than pulling power from it.

As President Obama has so eloquently said, the reasons for changing the way we use, the way we produce and the way we acquire energy are very clear.

Now, there are obvious environmental benefits that come from reducing fossil-fuel emissions and the Department of the Navy's carbon footprint. There are also some very clear economic benefits; a clean-energy economy supports American workers and it creates thousands of new jobs.

And these reasons are incredibly important, and I'm sure they're familiar to everyone in this audience, but I want to focus today on something else - the national security and defense implications of our fossil-fuel dependence.

Simply put, we as a military rely too much on fossil fuels. That dependence creates strategic, operational and tactical vulnerabilities for our forces and makes them susceptible to price and supply shocks caused by either man-made or natural disasters in the volatile areas of the world where most fossil fuels are produced.

We would never allow these regions to produce our ships, our aircraft and our land vehicles. But because of their good fortune in having fossil-fuel reserves, these very same regions get a say in whether our aircraft fly, whether our ships sail and whether our ground vehicles operate.

Now, there are two parts of this energy reform that we're approaching. One is more secure fuels. The other, though, is better energy efficiency in the energy that we do use.

In order to operate our fleet, every few days we have to refuel our ships either at sea or in port. And it's during refueling that our ships are the most vulnerable. We saw this on the COLE 10 years ago. When we pulled into port in Aden, Yemen, it was attacked. It was in Aden to get refueled.

If we can change our engines so that they're more efficient, or change the design of our ships to improve fuel economy, then we can increase those days between refueling which will improve both the security and the combat capability of that ship and give our commanders a more capable unit.

For our aircraft, it's exactly the same. If we can increase the efficiency of our aircraft engines, we extend the range of all our missions.

So at its core, energy reform is about improving the capability and efficiency of the ships, aircraft and weapons systems that we use. It's about making us better warfighters. It's also about ensuring the safety and the lives of our Sailors and Marines.

In Afghanistan, the thing we import the most is gasoline. And if you think about how hard it is to get a gallon of gasoline to a frontline Marine unit - you've got to take it either across the Pacific or the Atlantic; you have to bring it in either through the Northern Distribution Network or through Pakistan; you have to take it up over the Hindu Kush or the Amu Darya [River]; and then you have to get it, once in Afghanistan, to Sangin or Nawa or Marja, or another of our Marine Forward Operating Bases.

It's expensive. It's expensive in a lot of ways. It's expensive in terms of dollars because getting that gallon of gasoline that far in that difficult a terrain is costly. But it's also costly in other ways. It's costly in terms of human lives. We lose Marines guarding fuel convoys. We lose them killed and wounded in action. It also takes Marines away from what they should be doing, what they were sent there to do, which is to fight, to engage, to rebuild.

If we can change the way we produce energy so that we don't have to import, then we have done a lot of things both in terms of financial cost, but also in terms of cost to our Marines and our Sailors on the ground in Afghanistan.

At home, we've seen the cost to our society of oil dependence as a result of last year's tragic explosion of the Deepwater Horizon. When the rig sank, it not only released a flood of oil into the gulf, that oil polluted its waters, tarred its beaches and closed some of its fisheries for months. It also started a chain reaction that dramatically affected the lives and incomes of millions of Americans.

For months with Nancy Sutley, who just spoke to you, I saw the impacts firsthand as I worked on behalf of the President to develop recommendations for long-term ecosystem health and economic recovery.

What happened in the gulf affected all of America and continues to affect the people of the gulf. But it also made clear that we needed to diversify energy sources. And that's critical not just for the gulf, but for the whole country.

And energy security isn't solely an American issue. It affects our allies, in particular, as well. History has taught us that competition for resources has been one of the most fundamental causes of conflict for centuries. Today, competition for energy still provides one of the more likely sources of potential conflict.

Over the last year, I've had the opportunity to visit more than two dozen countries. And in each one of them, as I've sat down with their civilian and their military leadership, they were uniformly concerned about their countries' energy security.

Energy, or more particularly its denial, is a weapon. And it's a weapon just as real as tanks or aircraft. And globally, if you think about it, how many nations out there are dependent on only one or two external sources for all their energy requirements and what that could mean for them in terms of their national sovereignty?

So for the past year-and-a-half, the Navy and Marine Corps have been working really hard to heed these lessons, improve our strategic energy position and enhance our operational effectiveness. The goals I laid out in 2009 charged the Navy and Marine Corps to accelerate the ways that we produce, procure and use energy. And we've made some significant progress.

One of the most visible – and probably one of the most fun steps – was a series of successful F-18 flights we conducted last April on biofuel. We dubbed that plane 'The Green Hornet.' I understand they made a movie about it that came out this week. It flew 1.2 times the speed of sound on camelina.

It was a 50-50 camelina and avgas blend. Now, we would have done it on 100 percent camelina, except biofuels don't quite have the detergent functions we need for the engines yet. And I hope that those of you in the biofuel industry here will take that last statement as a challenge. We would like to run this airplane, and all the other things that we do, on 100 percent biofuels.

Last year, we extended that testing to our MH-60 helicopters and a Riverine command ship. And we did those on an algae-based biofuel blend. And in every case, the engines absolutely could not tell the difference.

I'm really happy with the progress we've made on the fuels we've tested so far because camelina and algae – neither one of them impact the food supply. Camelina can be planted in rotation and algae – well, it's algae.

And I'm also happy that the price continues to go down. Just through the testing and certification process that we did last year - and we didn't buy a whole lot, we bought enough to test - the price has fallen 50 percent. And as more is produced and as our demand signal grows, I'm absolutely confident the price will continue to come down. We can get to a point where it's physically possible, and even advantageous, to buy these advanced fuels at scale. And what I'm doing is, I'm trusting in the technical knowhow and the entrepreneurial spirit of the companies represented here and all across America.

Because by 2020, to meet our goal in the Navy, we'll need about 8 million barrels of biofuel a year. That's a pretty significant market we're bringing to the table. And we're asking you, companies here, companies across America to fill that need.

But I want to be clear – I really don't care what the alternative fuel is, as long as it meets a few basic criteria. It's got to run the engines that we have today because today, we have pretty much the fleet we're going to have in 2020. It takes a long time to build a Navy ship and we tend to keep our ships for 35 to 40 years. And it takes a long time to produce naval aircraft and we tend to keep those for thousands of flight hours.

Secondly, it's got to be done in America; it's got to help American industry. And it's got to have a lower lifecycle carbon footprint than conventional fossil fuels.

And I know that there are folks out there that say, you can't do it, it's not feasible. But I have to tell you, there have always been skeptics to that sort of change. And it's usually been aimed, in terms of the military, at the Navy because the Navy, for at least the last 150 years, has been in the forefront of energy change. Now, just think about that.

We went in the 1850s from sail to coal. We went in the early part of the 20th century from coal to oil. We pioneered the use of nuclear in the 1950s. Every time the Navy did that, every single time, there were folks that'd say, you're trading one form of absolutely certain energy for one that cannot be proven, that you don't know if it's going to work, it's too expensive, it's too exotic. Plus, you don't have the infrastructure.

I mean, imagine the debate that went on. And there was – you can read the report by a group of admirals when we were switching from sail to coal – about how coal would never work and sail had been there for thousands of years.

Same thing when we went from coal to oil. Imagine the investment we had in coaling stations all around the world. In fact, the route of the Great White Fleet in the early part of the 20th century followed those coaling stations.

But in every single case, every single case, the naysayers were proved wrong. And I am absolutely confident that they're going to be proved wrong again this time.

You know, when you look at our ships that we have, we are working on fuel efficiency. And we're putting in hybrid drives – electric drives – to our ships. The ships will use their normal diesel power at speeds over 10 knots and electric drive at speeds under 10 knots.

The first one of these we built – the USS Makin Island, built in my home state, Mississippi – on its maiden voyage around South America to its homeport in San Diego saved almost \$2 million in fuel costs. Over the lifetime of that ship, at current gasoline prices, it will save a quarter of a billion dollars in fuel – that one ship. In today's fiscal environment, that's pretty substantial. Over the next few years, we're going to look at retrofitting, just during normal upkeep, a lot more of our ships with those drives.

And now, I want to talk just for a minute about the United States Marine Corps. Nobody has ever accused the United States Marine Corps of being soft on anything. The Marine Corps is ahead of everybody in terms of looking for energy solutions for its operating forces. They've got two test beds - one at Quantico and one at Camp Pendleton at Twenty-nine Palms in California - experimental Forward Operating Bases looking at different ways of producing energy.

And last fall, 3rd Battalion, 5th Marines deployed to Sangin where the heaviest fighting for the Marines is taking place right now in Afghanistan. And when they deployed, they took a bunch of new energy devices and energy-saving solutions with them. I went to Sangin right before Christmas. And I saw and heard firsthand about how the equipment worked and what didn't work, and how the Marines were using it.

But what is important to note is that the Marines were beginning to use things like solar panels, like portable, roll-up solar power that they could put in their packs. And they were beginning to use it in the midst of the heaviest fighting that the Marines were doing. They have deployed a whole bunch of different fixed, flexible and portable solar-power systems. And sometimes, it's the only power that those Marines have.

And when you combine this with a pilot program that's looking pretty promising, to get Afghan farmers to develop cottonseed-based biofuel using an old cottonseed plant there from locally grown cotton, Marines at Camp Leatherneck – which is our headquarters in Helmand province – looking at reducing fossil fuels by 20 percent. And every gallon that they save saves Marines. They've been able to have a smaller logistical footprint. They've been able to have fewer convoys. And if we can expand this program and get it to scale, it's got the potential to save money, help that vulnerable supply chain, save Marines, get them back into combat and reduce Afghan farmers' reliance on opium production. Not a bad deal for the Marine Corps.

Back here at home, the Department of the Navy has made a real concerted effort to tap into the expertise of other government agencies, of states and of our academic institutions to advance some alternative-energy development. We signed a partnership agreement with the Department of Agriculture to advance biofuel development. And we're working with Agriculture, the Department of Energy and the state of Hawaii, which imports almost all its fuel and which is the most dependent on imported fuels of any state in the country, to develop biofuels in Hawaii that can be used for both military and civilian purposes.

I know we're a seagoing service, but the United States Navy owns 3.3 million acres of land. We have 72,500 buildings. We have a pretty significant presence on shore. At China Lake in California, we've got a geothermal plant that's producing more energy than the base uses and sends some back to the grid. In the Southwest and Hawaii, we've signed contracts for 140 megawatts of solar power. And at Miramar, we're working on a 20-year power purchase to obtain and use landfill gas for power that will generate up to 25 megawatts and will meet about half of that base's needs. At every base, we're building new facilities to at least LEED's silver standards and trying to figure out other ways.

On the efficiency front, I went and visited one of our bases and the commanding officer. It's amazing when the secretary starts talking about one thing because when I first went out and got briefed, when I first stepped to this job, the breakthroughs were great but they were all over the map. Now, first thing they talk about is let me tell you what we're doing on industry. And this commanding officer said, he went and looked at his electric bill and it had one line: 85 percent of all the electricity coming into that base, one line said, line loss. It came in but it didn't go back out. He didn't know where it was being used. He didn't know what buildings were energy efficient or weren't. He didn't know who was using well, who wasn't, what the peak times were, anything.

And so we used some of the stimulus money that the Navy was given and we put smart meters on just about all our bases. So that commander and his cohorts, they're going to know where that electricity is being used. They're going to know who is using power and who's not. They're going to know who's being careful and who's not and where we need to work on things like energy efficiency in buildings and where we don't.

Finally, I've gotten to the point where I want to talk to you directly as to what you do, the clean-tech business community and the venture capital firms. Our role in this whole thing is to help create a market. Now, your job is to fill that market.

Over the last year, in cooperation with SBA [Small Business Administration], we've worked hard to offer military contract opportunities for small businesses on sustainable energy programs and pilots and initiatives. I've talked to a lot of the people in this room on the firms that you represent and I – from those conversations with companies, with venture capital firms, with investment firms - I've learned, and this is probably something I knew already, that working with the military procurement process may not be the easiest thing that anyone's ever done.

But we're trying to make it better. I want to encourage you to visit our Green Biz Opps website. It's hosted on the Navy's research and development and acquisition webpage. Just go

to Google, type in 'Green Biz Opps.' Ours will be third hit that you get. If enough of you go on there it won't be third. So I would encourage you to go on there and let's move this up. It's designed to be the single point of entry into the United States Navy and United States Marine Corps for listing all of our alternative energy products, all of our alternative energy services, energy conservation project and energy technologies that we are buying today.

We want to work with you and I can't stress that enough. We want to work with you to create a better United States Navy, a better United States Marine Corps and one which will, just as we have for the past 235 years since the Navy and Marine Corps formed, lead the United States in technological innovation. That's who we are.

For 235 years, we have grown. For 235 years, we have adapted. And as the needs have changed, we have changed to address the ever-shifting requirements of a much more complex world. And that's what we have to do with this uniform. With your help, adapt, overcome and emerge victorious.

Thank you all very much.