

Remarks by the Honorable Ray Mabus
Secretary of the Navy
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Good morning. And to Karen Mills, before she leaves – you know, one of the great pleasures I’ve had in this job is getting to know people like the SBA [Small Business Administration] administrator, Karen Mills. I’ve learned so many things about what she does, about what SBA does. She has had a whole history of helping small business and particularly rural small business, and it really struck a chord with me.

I grew up in a town of a thousand people. My dad owned the hardware store. Talk about small business. You know, there were times I really hated small business because I had to sweep the place every Saturday morning. But if you’re looking for a role model, passion for dedication, for enthusiasm, for the work that they are doing, you couldn’t do better than Karen Mills. Thank you so much.

Number one, happy birthday to Navy, 236 years of being the greatest expeditionary fighting force the world has ever known.

And I’m glad to be back here at the Navy Energy Forum. You know, it was exactly two years ago that I stood in front of this group and laid out my five energy goals for the Navy. Karen talked about the broadest one: that by no later than 2020, at least half of all Navy energy, afloat and ashore, would come from non-fossil-fuel sources. We have set some high expectations with those goals. But I’m here to tell you today that we’re making a lot of progress on all the goals.

So what I thought I would do today is number one, go back over why we’re doing this. What’s the reasoning behind all this? Number two, what have we done in the last two years? What have we been up to? And number three, what’s coming? What are the next steps?

If you look back in history – you can look as far back as you want to, but back to World War II, resources and particularly energy resources have been a source of conflict throughout history. You look at Japan’s move into Southeast Asia to get the oil and petroleum resources of Indonesia. You look at Germany’s move into Russia aiming toward the Caucasus and those oil resources. You look at Iraq, moving into Kuwait prior to the First Gulf War. And you can give example after example after example.

Now, while energy can be a boon, it can also be a limitation. You’re hearing from an author, James Hornfischer, the author of “Neptune’s Inferno,” about the U.S. Navy in Guadalcanal. And there’s a sentence in his book where he talks about the new Japanese ships, how powerful they were and how big they were, but the sentence goes on to say, these Japanese ships were more powerful than they had ever been before, but they were effectively tethered to their bases by their insatiable need for fuel.

So the reason we're doing this – you can look historically or you can look to today – we have a vulnerability as a military force, the U.S. Navy, the U.S. Marine Corps, in the way that we get and use fuel. Now, one of the things you'd better do is you look at the vulnerabilities of potential adversaries, but you also should look at your own vulnerabilities. What are the gaps that you need to figure out how to fill?

Energy is a gap. It's a vulnerability. So we're doing this for one reason: to be better war fighters. There are lots of ancillary things that flow from it – more jobs, cleaner environment, better stewards of the earth – but those are all side effects. We are a military organization, and we're doing this so that we can be a better military organization, so that we can fight better, so that we can perform the duties and missions given to us by this country. This isn't trendy, this isn't flavor of the day. We're not just doing this because we want a little pop here and there or because it's somehow what people are talking about today. We're doing it for the Navy. We're doing it for the Marine Corps. We're doing it for the United States of America to become energy independent, and we've got lots of reasons.

We've got strategic reasons. We buy too much fuel from potentially or actually volatile places on earth, those places we would never let build our ships, our aircraft, our ground vehicles, but we give them a say. We gave them a say on whether our ships sail, whether our aircraft fly, whether those ground vehicles operate because we get our fuel from them.

And even if we could get all the fossil fuels from the United States, from inside our borders, it's still a global commodity and subject to price shocks and supply shocks and the price shocks we deal with virtually every day. Every time the price of oil goes up a dollar, it costs the Navy \$31 million in additional fuel costs. So when Libya started having its problems – Libya, which is an oil producer, but it's not that big – the price of oil went up \$30 a barrel. That's a billion dollars and money the Navy's got to come up with for fuel, and there's only one place we have to go to get that, and that's in our operating accounts. So what it means is our ships are going to steam less, our aircraft are going to fly less, we're going to train less to meet that cost of fuel. We can't afford these sorts of price shocks, particularly in this budget environment.

And then we've got tactical reasons. A Navy ship is at its most vulnerable when it is refueling. The Cole, whose anniversary was yesterday – the attack on the Cole – was in Aden, Yemen, to refuel when it got attacked. And if you want to get way more particular and more personal, we import gasoline and water more than anything in Afghanistan for our Marines. For every 50 convoys of gasoline, we lose a Marine, either killed or wounded. That's too expensive; that's too high a price to pay. And just think about getting that gallon of gasoline there. We have to take it across one ocean or the other, the Pacific or Atlantic, and we have to put it on a convoy and either take it up and over the Hindu Kush mountain range or we have to take it down through the Northern Distribution Network, over the Amu Darya River, and then we have to take it through Afghanistan to get it to that Forward Operating Base. It's too expensive in too many ways for us to do business as usual.

And finally, I've heard the argument that what in the world is the Navy doing here? This isn't what you guys do. You sail and fly. This is one of the core competencies of the United States Navy. We pioneered energy use and have almost throughout our entire history: in the

1850s, sail to coal; in the early 20th century, coal to oil; in the 1950s, pioneered the use of nuclear for transportation. And every single time we did, without exception, there were these naysayers that said, you're trading one very proven form of energy we really know how to use and we've got a lot of infrastructure invested in, and we've got sail lofts or we've got coaling stations around the world, or it's too dangerous, in the case of nuclear. And most of the time they were inside the Navy saying this. And every single time – every time, without exception – they've been wrong. And I have absolutely no doubt they're going to be wrong this time too.

This is what we do. We change the way we use and produce energy, and we're doing it again, and we're at the cutting edge, which is where the Navy has always been on energy use.

So what have we been doing in the two years since these goals were announced? Well, we've done a lot of things, and we keep track of these things pretty regularly because you don't want to wake up in 2019 with a 50 percent goal and not be anywhere close to it. You have to be doing things in 2010, 2011, 2012, to get there.

We have tested the F-18 on biofuels, a mixture of avgas and biofuels. We got it up to 1.7 times the speed of sound and the airplane didn't notice the difference. The Blue Angels, every single one of them, the last air show they did, flew on biofuels. Our surface ships, we're beginning to test biofuels there. In April, the President tasked the Department of Agriculture, the Department of Energy and the Department of the Navy, to come up with a nationwide, geographically dispersed, competitive biofuel industry for the United States. The three of us have signed an MOU and we're working toward that goal.

The Navy brings a couple things to this effort. One is we bring the Defense Production Act, which says, if there's an industry that's vital for national defense that we don't have, we can help move that industry along, and we've done it time after time after time under this act. But the second thing that Navy brings, we bring a market. We're going to need 8 million barrels of biofuel a year by 2020 and we can help get ideas from the R&D [research and development] stage across the so-called Valley of Death into competitive production - and it's got to be competitive. Everything we see in biofuels indicates that the technology's there; what's missing is the market. And those of you who've heard me speak before, I reversed a line from *Field of Dreams*, if the Navy comes, they will build it. And we're coming. We are the market.

In short, we're doing a myriad of things. Solar, on the drawing boards we got more than a hundred megawatts of solar getting ready to go. That's enough to power a city the size of Norfolk. We announced a couple months ago a \$500 million project in Hawaii for Navy bases, but also bases of all other services in Hawaii for solar. We're doing geothermal; China Lake in California, net positive to the grid - we're putting more energy into the grid than we're taking off because of geothermal there. In wind, in Guantanamo Bay, we provide 3.8 megawatts of wind from power for that base. You heard Karen Mills talk about the wave. We've got the first wave energy producer at the Marine base in Hawaii connected to the grid now. And we're even making energy out of garbage, and we're doing it in three different places: Camp Pendleton for the Marines; Albany for the Marines, near our air base; landfills, using the methane to energy; in Miramar, it's going to produce half of all the energy that base needs. And so we're pretty well on our way to getting at least half our bases, by no later than 2020, to be net zero to the grid.

And that not only changes energy, it also changes what happens if the grid goes down. What happens if, suddenly, there is no grid? Can our bases be independent? Can we still do the national defense mission that we have to do?

And then we're moving on efficiency. Not just changing the type of energy that we use, but how much energy we use overall. We launched the Makin Island, a big-deck amphibious ship, and this is a big ship. It's got an electric drive for speeds under 12 knots. Thomas Friedman of The New York Times called it the "Prius of the Seas." On its maiden voyage, from my home state of Pascagoula, Mississippi, around South America to San Diego where it's homeported, it saved almost – at prices 18-months ago – \$2 million in fuel costs. At those prices, over the lifetime of this ship, it's going to save about a quarter of a billion dollars in fuel. So we're moving that; we're putting a test on the USS Truxtun, one of our DDG-51s, and we think that that will show a savings of around 8,500 barrels a year and, assuming that is successful – and we believe it will be – we're going to build our new DDGs and begin to retrofit the ones we've got now with hyperdrives.

On shore, in FY 12, which we just got into, we're requiring a LEED Gold option in every building that we build. Next year, FY 13, LEED Gold will be mandatory for every building that we build and by the way, mandatory at no additional cost to the government. You can build a LEED Gold building just as cheaply as you can build one that's far less energy efficient.

We're in the process of installing 27,000 smart meters so that we know where the energy goes on our bases, so that we can be better users of it, so that we can tell what buildings are energy hogs, so that we can tell what bases are doing well and what aren't.

I visited a base in the Pacific Northwest and the base commander, he took a piece of paper and he said, well, when I saw you were coming, I thought I ought to do something about energy or tell you something energy. And he said, so I asked for the electric bill and here it is. And it had a couple of lines of, this building's using this much and this is using that much, and then it had a line, "85 percent line loss." The electricity came into the base; we had no idea where it went. We know we used it. That's what those 27,000 smart meters are going to tell us. We're going to figure out how to do this.

And we're doing some things that aren't very high profile, but really are working. We're doing things like hull coatings and voyage planning. You know, in the days when we did use sails, we paid attention to tides and wind. We're beginning to do that again.

We're working with industry – companies like Maersk who have figured out how to use less fuel to get from one place to – to do voyage planning. We're doing different kind of lighting on our ships; it's amazing how much energy you can save just by changing up the light bulbs and putting LEDs in. And every single thing we're doing unhooks that ship from its source of fuel so that that combat commander has that ship in a less vulnerable position for much longer.

So that's what we've been doing. We've got a lot of people in this room who have been working on it and who have been very dedicated to this process.

So what's coming? Well, on the request for information that we just put out in August on this three-way biofuels initiatives – Agriculture, Energy and us – it closed on the 30th of September and we have received more than a hundred responses from industry across a wide range of innovative processes, everything from small business to some of the biggest names in the business. And that's what we're working through right now, finding those that have the most promise, finding those that will be the biofuel that we can put into a national scale.

We have just completed, two weeks ago, testing not just the F-18 but all our aircraft – fixed-wing, rotary-wing and unmanned – on a biofuel-avgas mixture. So we're there, whether you're flying the Osprey or the Fire Scout unmanned or one of our helicopters. We've tested it, it works.

We have a few very straightforward requirements for biofuels, and so far, they're all meeting it. One is, it's got to be a drop-in fuel. We're not changing the engine. We've got most of the ships we're going to have in our fleet today that we'll have in 2020. We've got a lot of the aircraft that we will have in 2020 today. We don't want to have to tweak those engines. We don't want to have to retrain people on those engines. It's got to just drop in and work.

Second, you can't take any land out of food production.

And third, you've got to have a path to being competitively priced. And in biofuels, just in very small amounts we've been buying for testing, we saw a price come down by half last year and it's on track to come down by half again this year. As the market ramps up, price is coming down.

What else are we going to be doing? We're looking at energy and acquisitions. It's going to be part of everything we do, how we think about our weapon system, how we think about a ship. We're going to keep thinking about traditional stuff like speed and range and payload, but energy is going to be a part from the word go.

And our newest class of amphibious ships, the loading dock ship, the LSD – now the LSD(X), the LSD experimental, but soon to be the LSD that will replace those in the amphibious fleet – it's going to be the first major platform where energy is considered from the design forward. From here on, energy is going to be an important consideration for every weapons platform that we have.

You heard Karen Mills talk about small business. Last year, we introduced the website Green Biz Ops to put all our energy and efficiency contracts and opportunities for procurement in one place. And now, SBA has taken that and done it governmentwide. And we're going to continue to work with small business and any business that does that. And we're going to try to make it easier through things like Green Biz Ops, through one website, so that it can help you through the sometimes labyrinth – always confusing, I think, federal procurement regulations – in one place.

We're changing the culture in the Navy. I just announced the first graduate degree program at the Navy Postgraduate School in energy studies. And we're going to have the Executive Energy Series which is a short program, a few weeks, where we bring in senior military, senior civilians, to talk about, think about work on what we're doing in energy in the Navy.

And we're institutionalizing energy in the way we look at a career. We're going to make energy one of the things promotion boards look at. How have you done in energy? How have you done in efficiency? How have you done in changing energy in terms of getting promoted, of moving up in the Navy?

Every year, every one of our ships, our subs, our aircraft squadrons participates in a year-long evaluation of battle effectiveness. It's the coveted Battle "E." If you've been on a Navy ship or seen one in the harbor, sometimes you'll see these big Es on the side of the sail or the side of the stack, and this is highly regarded and highly sought after. And it's not granted to many people, not granted to many units, not granted to many ships. Starting now, energy is going to be one of the elements of getting the Battle "E."

I have the proud distinction of being the only service secretary who gets to have two services, the Navy and the Marine Corps. And nobody has ever accused the United States Marines of being soft or shy, or they haven't been around very long if they did.

Marines in energy have been leading just like they do in virtually everything else. Last fall, a year ago right now, 1st Marine unit, 3rd Battalion, 5th Marines went into some of the hottest fighting in Afghanistan, in Sangin, Helmand province, taking alternative energy devices with them. And they were sort of given these going out the door. It was, here, give this a try, see if it works.

In the middle of this fight, they tried. They cut their headquarters' fossil fuel usage by 25 percent. They cut some of their Forward Operating Bases and their combat outposts about to 90 percent. And it had some additional advantages. They've got solar – we call them solar blankets, but they're about this big. And you can use them to power radios or GPSs. In the '90s, a Marine company had about 15 radios; today, it's got more than 200. By using these solar blankets, average Marine company saves 700 pounds of batteries they don't have to pump. And it cut them loose from being resupplied. And it saves us about \$50 million a year in resupplying batteries and it cost \$25 million a year; not a bad deal. And it gets Marines away from guarding fuel convoys. It gets Marines away from guarding resupply convoys.

Well, the word got out in the Marine Corps. And at the last Mojave Viper, which is the training exercise that Marines go through on their way to Afghanistan, the Marine unit going into Afghanistan, one of the first requests was, give us those alternative energy devices; we want to take them with us too. And now it's being vetted in that – in Mojave Viper, in the training for every Marine unit that goes.

So we're going from an experimental Forward Operating Base that the Marines set up looking at industry once a year, looking at what's out there, what's available, what can we send

into combat, to, we're doing two a year now, one in Twentynine Palms, California, one at Camp Lejeune, North Carolina. We want to know what you and industry have got. We want to know what the Marines can take into the fight with them. We want to know how we can make energy where we are and be more expeditionary because of it.

And finally, in terms of announcements or things that we're doing, we're sending a SEAL team back into deployment. And that SEAL team is going to be net zero in energy. They're going to produce all the energy and the drinking water that they need. They're going to use flexible generators that are many times more efficient than the generators we're using today. They're using portable solar battery chargers. They're using portable solar rays. They're using highly portable water purification units.

Those SEALs won't have to be resupplied. They can stay out way longer than they've ever been able to before. You hear about our special operators, and they are special. Allowing them to not have to be resupplied with the fuel and water will make them even better at what they do.

And we'll finish up on energy in just a second.

One of the things that I do want to say, you read a lot about our special forces, you read a lot about our SEALs, and I, like everybody else, watch with a whole lot of pride when the world's most wanted terrorist is brought to justice by a SEAL team.

One of the things I want to leave you with is the skill level, the dedication level, the ability level of those SEALs teams are replicated all across our Navy, all across our Marine Corps. We have the best fighting force we have ever had, the best-trained, the best-educated, the highest-skilled, the most dedicated, and we have the most formidable expeditionary fighting force the world has ever known in the Navy and Marine Corps.

Now, if you read books like *Tipping Point* or books on chaos theory, basically, it says systems tend to stay pretty much the same over a long period of time, and they don't change gradually, they just change.

I've seen it happen, like the man who was asked, do you believe in baptism? He said, believe in it? Why, I've seen it done.

When I was appointed ambassador to Saudi Arabia and left the United States to go to Riyadh in early 1994, nobody had a cell phone, or if they did, you know, it was a crude sort of weapon. You know, it looked like a brick. Two years later, my family came back and everybody had a cell phone. Same thing with the Internet. When I went over, the Internet was really in its infancy. Remember those green screens and really slow loading and you'd finally give up. When we came back, it was ubiquitous.

I think we're getting close to that on energy, where you're going along for a long time using energy pretty much the same way, producing energy in pretty much the same way until it

suddenly changes. And I think the U.S. military, particularly the United States Navy and the Marine Corps, are going to be on the edge causing that tip.

So we're going to do in the Navy and Marine Corps what we've always done. We're going to innovate. We're going to adapt. We're going to come out on the other side of victorious.

My favorite recruiting poster for the Navy is one I absolutely believe, "Sometimes, we follow the storm to the shore. Sometimes, we are the storm."

Thank you all very much.