

Remarks by the Honorable Ray Mabus
Secretary of the Navy
Naval Energy Forum
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Admiral Carr, thank you for your introduction and thank you all for being here. General Williams, Admiral Loose, our energy partners from the Navy, Marine Corps, academia, industry, and the media, I am honored to be with you. Energy reform is one of three areas – along with acquisition reform and unmanned systems – where I have focused and will continue to focus my attention during my tenure as Secretary of the Navy. Changing the way we do business, looking to an energy-secure Navy and Marine Corps of the future, and leading the federal government in energy initiatives is what we must do. Energy reform is a strategic imperative.

The stakes are high. As a nation and as a Navy and Marine Corps we simply rely too much on a finite and depleting stock of fossil fuels that will most likely continue to rise in cost over the next decades. You know the statistics better than I do:

- The United States consumes 25 percent of the world's oil but controls the production of only 3 percent.
- National governments or state-run oil companies control 77 percent of world production and 16 of the top 25 oil companies are state-run.
- Over 20 percent of the world's oil transits the Strait of Hormuz and 3.3 million barrels a day go through the Gulf of Aden.

- And oil, just last year, approached \$150 a barrel.

We know oil is a limited resource. We buy from volatile areas of the world. Over time, the price keeps going up. The use of oil creates harmful environmental effects. And to a certain extent we have ceded a strategic resource – one that is difficult to guarantee – to other nations. We have ceded this to other nations who are allowed to exert disproportionate influence as a result. This creates an obvious vulnerability to our energy security, and to our national security, and to our future on this planet.

Moving from strategic to operational and tactical concerns, fossil fuel consumption has a deep impact upon our forces and our force structure, both in terms of the resources required to get fuel and to move it to the ships, tanks, aircraft, and equipment that need it, and in the Sailors and Marines whose duty it is to protect the ships or convoys moving the gas. We do not have operational independence and we are tied to a vulnerable logistics tail. The Commandant of the Marine Corps, General Conway said it best during the Marine Corps energy summit a few weeks ago when he described the fully burdened cost of a gallon of gasoline delivered to a piece of equipment in Afghanistan. It turns out that when you factor in the cost of transportation to a coastal facility in Pakistan – or airlifting it to Kandahar – and then you add the cost of putting it in a truck, guarding it, delivering it to the battlefield, and then transferring that one gallon into a piece of equipment that needs it – in extreme cases that gallon of gasoline could cost up to \$400.

In the drive for energy reform – and this is critical – in the drive for energy reform the goal has got to be increased warfighting capability. Too many of our platforms and

too many of our systems are gas hogs. Of the top ten battlefield consumers of gasoline, only two are attack platforms. We also continue to make investments and acquisition decisions to build and procure increasingly complex systems that demand ever-increasing amounts of energy to power. In order to lower our reliance on fossil fuels, we need to improve the efficiencies of our systems and develop platforms that operate as a system of systems, are integrated together, and reduce our tactical vulnerability.

The stakes of the status quo extend even further, beyond the military, and cause second and third order effects on the environment. The carbon that's emitted from our ships, aircraft, and vehicles is a contributor to global warming and climate change. According to the projections endorsed by our own Task Force on Climate Change, global warming could result in an Arctic Ocean free of summer ice within 25 years. The security implications of this are dramatic. In short, we have not acted as very responsible stewards of our environment.

I do not seek to chastise anyone or to repent on procurement decisions made over the last decades when the dangers of fossil fuels and their effect upon the environment were not as well understood or as fully recognized. Nor am I naïve enough to believe that we can simply flip a switch and go off fossil fuels overnight. But I believe the Navy and Marine Corps have an obligation to do something now about our impact on the environment, and that we can take substantive measures to improve our core warfighting capabilities while improving our energy footprint.

The President has framed the argument for us and set the federal government on a path to reduce consumption of fuel and water, as well as reduce overall greenhouse gas

emissions. His leadership is a springboard for the Navy and Marine Corps to do more, to go farther, and to take up leadership across DoD, across the federal government, and across the broader United States in developing and using alternative sources of fuel. You may have heard this statistic – but it is striking to me; the Department of Defense uses more than 90 percent of all energy used by the federal government and 2 percent of all the energy used in the United States of America. Altering the Department of the Navy’s consumption patterns WILL have a broad, noticeable effect and will serve as an example for the rest of our country. The technologies we sponsor, the technologies that we fund, and the technologies that we develop to viability will be those that the United States and the world will use in decades to come.

Leading change is not new for the Department of the Navy. We have done so repeatedly in the adoption of new technologies to power our ships. And resistance to change is not new either. In the middle of the nineteenth century the Navy traded wind for steam and the ability to maneuver in any direction at will. Naysayers swore at that point that the Navy was giving up a sure means of propulsion in favor of uncertain, dangerous, and probably infernal machines. The naysayers were wrong. The new technology of steam was proven to deadly effect upon the sailing ships during the Civil War.

Forty years later, the Liquid Fuel Board recommended that the Navy shift from coal to oil, which has twice as much thermal content and granted the ability to produce higher speeds in ships crewed by fewer Sailors. Once again, traditionalists argued against adoption because the late-nineteenth century American Navy already had a network of coaling stations around the world and an established infrastructure built

around coal. Again, they were wrong. The Navy persevered. The Navy commissioned the destroyer *PAULDING* in 1910 and the battleship *NEVADA* in 1911, both powered by oil. Oil created a tactical advantage – it allowed ships to stay at sea longer, replenish themselves underway from oilers rather than inport from coal bunkers, and oil reduced the need for ships to maintain huge divisions of stokers.

We are a better Navy and a better Marine Corps for innovation; we have led the world in the adoption of new energy strategies in the past. This is our legacy. Resistance to new energy sources has always happened – but in every case adoption of new technologies improved the strategic position of our nation through improvements in the tactical and operational capabilities of our forces.

So what are we going to do about it now? Well, the Navy and Marine Corps are doing great things already. We've already taken measures to make energy reform a way of doing business, we've put a down-payment on energy into our budget, and these measures are yielding a return on investment in both combat capability and resource allocation.

Just yesterday, Roger Natsuhara, the Acting Assistant Secretary for Installations and Environment, and RADM Cullom, our Task Force Energy lead, went down to Pax River for the first test of an F/A-18 engine run on biofuels. This fuel will power our very own Green Hornet, and that plane is going to fly within 3 years. And although the cost of the fuel used in that engine is high right now – it is still cheaper than putting gas into a generator on the battlefield in Afghanistan. And that cost will fall as the scale of

production is increased. And if the Navy and Marine Corps are part of the demand, we will help boost that production and cause the price to fall faster.

At the same time, improvements to F/A-18 engines – traditional engines - that will be in service by 2015 will improve the efficiency of each aircraft by 3 percent. These improvements not only allow those aircraft to fly longer, faster, or farther on the same tank of fuel, but could save us 127,000 barrels of fuel per plane per year, amounting to \$15 million per plane per year at today's fuel prices. That means for every 7 planes we put these new engines on, we'll be able to buy an additional F/A-18 E/F with the savings. If you believe the cost of fuel will go higher, as almost everyone does, the savings will only increase.

Just two months ago, the *MAKIN ISLAND*, our hybrid of the seas that uses an electric motor to power the ship at low speeds, went from where it was built in Pascagoula around to its homeport in San Diego. During that initial voyage alone, she saved close to \$2 million in fuel costs. NAVSEA estimates at today's fuel prices the *MAKIN ISLAND* will save \$250 million over the lifetime of that ship, and it doesn't include reduced maintenance costs because we're not stressing the gas turbines as much. We're placing hybrid electric systems like that on *MAKIN ISLAND* on 12 DDGs, and we're going to save almost \$1 million per ship per year. Soon, you'll see all our new surface combatants built from the ground up with efficient systems installed during construction.

But it's not just about big systems, we're making small adjustments as well, like the new anti-fouling coating that's being tested in the fleet. We estimate the paint on the

hulls of our ships will save up to \$180,000 per year per ship in fuel costs due to reduced drag from barnacles and marine growth. Once implemented fleet-wide, in combination with other measures like installation of stern flaps on our amphibious ships that increase fuel efficiency, an aggressive energy conservation program with strong incentives and the use of new voyage planning tools, for an additional investment of only \$550 million, we'll get about \$400 million savings per year. We will pay ourselves back in less than a year and a half, and we will continue to reap the benefits of the savings for the lifetime of the ships.

And we're seeing similar innovation and similar savings in our shore infrastructure. Solar power projects like those just awarded through Recovery Act funding at Miramar and Camp Pendleton will increase our solar capacity by 500 percent and will be the equivalent of providing power to 13,000 homes. All told, we have the opportunity to improve our energy generation ashore over the next ten years by almost 370 MW, enough energy to power 250,000 homes – or all the households in a city the size of Boston.

What the Navy and Marine Corps are doing now is great, but I am here to encourage you and us to go farther – to dream what might be rather than to simply accept what is. When President Roosevelt sent the Great White Fleet around the world over 100 years ago, he sent them without the funding to get them all the whole way back – but he was confident that Congress would want the fleet back and that the money would come, and it did. When President Kennedy said in 1961 we would go to the moon and return within that decade, most of the technology required was not even invented. Bold steps are in our nature as Americans and what make us a great nation; no one has ever gotten

anything big done by being timid. I'm here to commit the Navy and Marine Corps to meet bold and ambitious goals in energy. I mean this about being bold and ambitious, and so I'm going to announce five energy targets today that the department will meet over the course of the next decade.

First: we are going to change the way the Navy and Marine Corps awards contracts. The lifetime energy cost of a building or a system, and the fully burdened cost of fuel in powering those, will be a mandatory evaluation factor used when awarding contracts. We are going to hold industry contractually accountable for meeting energy targets and system efficiency requirements. And we're going to do more. We will also use the overall energy efficiency and the energy footprint of a competing company as an additional factor in acquisition decisions. We want industry to partner with us and take steps not just to provide us with more energy efficient products, but to produce those products in energy efficient ways.

Second: The Navy will demonstrate in local operations by 2012 a Green Strike Group composed of nuclear vessels and ships powered by biofuel. And by 2016, we will sail that Strike Group as a Great Green Fleet composed of nuclear ships, surface combatants equipped with hybrid electric alternative power systems running biofuel, and aircraft flying only biofuels – and we will deploy it.

Third: the Department of the Navy will by 2015 reduce petroleum use in our 50,000 strong commercial fleet in half - by 50 percent. We'll do this by replacing our current fleet, as they go out of service, with a new composite fleet of flex fuel vehicles, hybrid electric vehicles, and neighborhood electric vehicles. Moving to biofuels and

electric vehicles will benefit the local communities where our bases are located and will spur adoption of similar vehicles in those neighborhoods.

Fourth: the Department of the Navy will by 2020 produce at least half of our shore-based energy requirements on our installations from alternative sources. We will boost our usage of renewable energy and in some cases we will supply power *to* the grid from solar, wind, ocean, or geothermal sources generated by the base. We're already doing this at China Lake, where our on-base systems generate 20 times the load of the base.

Lastly, and maybe most importantly, I am asking all of us to meet a very ambitious goal. Today, about 17 percent of our total energy consumption comes from alternative sources. By 2020, half of our total energy consumption for ships, aircraft, tanks, vehicles, and shore installations will come from alternative sources. Right now I'm told 40 percent is a more realistic goal and even that remains difficult because of the cost and logistics.

But you know, our Navy and Marine Corps has never backed away from a challenge. With hard work and innovation from everyone in this room, as well as our researchers, scientists, and every Sailor and Marine that we have – we can get there. To paraphrase the movie *Field of Dreams*: if the Navy comes, they will build it.

Protecting our nation, preserving our security, and promoting freedom around the world requires the Navy and Marine Corps to always be forward deployed. We go where we are needed and we decisively accomplish our mission, whatever that might be. We must be no less bold in our thinking when it comes to energy reform, no less willing to

embrace risk. I am not asking you or the navy or the Marine Corps to do the impossible. I am asking you to let the reach of your imagination match the reach of the United States Navy and Marine Corps. I am asking you to make the future a more secure and better place. Thank you and Godspeed to all of you.