The Big Military Biofuels Build-Up, Part 1

By WILL ROGERS, Consumer Energy Report

The recent debate over the role of the military in investing in renewable energy technologies, energy efficiency and conservation programs and alternative biofuels has included many voices that sometimes conflate the linked but distinct efforts by defense officials to address energy concerns. The rationale behind the military's energy programs can be broken down into two efforts:

1. Adapting to operational energy requirements and security challenges in Afghanistan and other combat theatres;
2. Hedging against future uncertainty in the global petroleum market.

Adapting to Operational Energy Challenges

Military leaders have become increasingly worried about operational energy challenges in Afghanistan and other theatres where U.S. soldiers, sailors and airmen are deployed and are working to reduce the demand for energy that must be transported across volatile terrain.

To date, part of the military's effort to reduce operational energy requirements includes:

1. prioritizing energy efficiency in the acquisitions process for new combat platforms;
2. fielding micro-grid technology to more efficiently manage traditional power distribution systems that waste energy;
3. replacing — where possible — diesel-fuelled generators with solar panels and other renewable energy sources;
4. equipping soldiers with advanced batteries that stay charged longer to help keep them in the fight;
5. and increasing awareness among all U.S. military personnel about energy use to help promote conservation practices.

There are clear operational advantages to reducing the fuel required by military personnel in theater. In particular, reducing fuel consumption also curbs the demand for petroleum that has to be trucked across dangerous territory where the fuel and the soldiers and contractors transporting it are vulnerable to insurgent attack.

According to a 2009 Army Environmental Policy Institute study, for every 24 fuel convoys deployed in Afghanistan, one U.S soldier is wounded or killed [1]. Those

casualty counts are even more striking in the aggregate: the most recent estimates from the Department of Defense found that between 2003 and 2007, more than 3,000 Army personnel and private contractors were wounded or killed by insurgents attacking fuel and water convoys in Iraq and Afghanistan [2].

And besides the need to reduce unnecessary causalities, curbing the amount of fuel that has to be transported into a combat zone can act as a force multiplier, enabling soldiers that would otherwise be guarding convoys to reenter the fight.

There are also financial advantages to reducing operational energy requirements that are becoming increasingly relevant in a fiscally constrained budget environment. In general, reducing total energy consumption can help insulate the Department of Defense from dramatic energy price spikes. The Department of Defense estimates that every $1 increase in a barrel of oil adds approximately $130 million to the military's energy bill.

Moreover, fuel consumed in combat zones is by its nature more expensive due to the fully burdened cost of fuel — that is, the total cost from acquiring the fuel from a supplier to delivering it to troops at the tactical edge in countries like Afghanistan. The personnel and transportation costs of delivering fuel by jet, truck or helicopter add to the initial $2 a gallon cost of fuel. Although the fully burdened cost of fuel has been suggested by some to top $400 a gallon, the Marine Energy Assessment Team, or MEAT, offers a more conservative assessment [3]. According to the findings from a 2009 visit to Afghanistan, DOD's Defense Energy Support Center paid $2.19 per gallon for fuel. When the fuel was delivered to the operational level — a forward operating base — in Afghanistan, the price increased to $6.39 a gallon. The MEAT then estimated that it cost $11.70 per gallon at the tactical edge — for those military units deployed outside the wire, presumably at remote outposts.

(Read More: The Navy's Biofuels Program and the Great Green Fleet – Opportunities and Risks [4]**)**

The uniqueness of each war often makes it difficult for defense planners to develop lessons learned from one conflict and apply them directly to the next one — except when it comes to operational energy. The experiences of fueling the force during the wars in Iraq and Afghanistan have revealed a critical choke point that the U.S. military can address: the delivery of fuel to troops in combat. The Department of Defense is leading efforts today to reduce fuel requirements and — where possible — plug in renewable energy technologies in lieu of diesel generators and other systems requiring loads of fuel, enabling the U.S. military to be more effective war fighters by managing the risks of delivering fuel in conflict. At the end of the day it is about reducing the amount of petroleum needed to fuel the force.

Hedging Against Strategic Uncertainty in the Global Energy Market

On the other side of the military energy coin are the efforts underway at the Department of Defense to research, develop and test alternative fuels, such as algae-based biofuel, and by the Navy to cooperate with the Departments of Agriculture and Energy in public-private sector ventures to develop refineries and

scale up commercially available biofuel. Although these efforts are related to the work being done by DOD officials to assuage operational energy concerns, the military's broad investments in biofuels have a different goal in mind: preparing to fuel the force using non-petroleum fuels.

Critics charge military leaders and administration officials with promoting a green agenda — using war fighters to combat climate change instead of violent extremists. But that is not it at all. Although being environmentally sustainable and promoting security are not mutually exclusive, the investments in alternative energy are first and foremost about ensuring that U.S. soldiers, sailors and airmen have access to the fuel they need to conduct their operations and protect U.S. interests decades from now.

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