The Big Military Biofuels Build-Up, Part 2

This is part two of a two-part piece. Part one can be found here *[1].*

By WILL ROGERS, Consumer Energy Report

There is a lot of uncertainty in the future petroleum market that is stirring anxieties about assured access to energy. Although technological breakthroughs in hydraulic fracturing (or “fracking”), ultradeep water offshore oil drilling and other techniques are unlocking new petroleum reserves in the western hemisphere to augment Middle East reserves [2], demand for energy could still outpace supply by mid-century, largely as a result of demand from major developing economies like China, Brazil, India and Turkey. As a result, petroleum supplies could become increasingly tight.

The Department of Defense increasingly faces concerns about assured access to energy resources necessary to power the military. Major supply disruptions stemming from conflict in the Persian Gulf that could close (even if only temporarily) the Strait of Hormuz, or a natural disaster that takes U.S. domestic petroleum refineries offline pose major challenges for the U.S. military and its dependence on petroleum. And even though legislation gives the Department of Defense priority access to U.S. domestic petroleum reserves, some policymakers share concerns that a long-term disruption could exhaust those supplies and put at risk the U.S. military’s ability to conduct its missions.

U.S. military investments in alternative biofuels are driven largely by this uncertainty in the global petroleum market and the need to reduce reliance on petroleum, which provides nearly 80 percent of all DOD energy. Diversification is the aim of the game. While energy conservation and efficiency programs and electrification of non-combat vehicles help hedge against this uncertainty by reducing the overall demand for energy, liquid fuels remain the real albatross for the military. Purchasing, producing and testing advanced biofuels that can serve as a *drop-in* replacement to conventional gasoline decades from now help diversify the liquid fuel sources and reduce the vulnerability of being tethered to only one source of fuel. The emphasis on drop-in replacement fuels is important: DOD is procuring aircraft, ships and vehicles today that will be in service for many decades and, as such, new liquid fuels must be chemically equivalent to work in engines being designed today.

Although current biofuels are not cost competitive with petroleum, the Department of Defense cannot wait for a petroleum supply disruption before it tests and evaluates new fuels in its combat equipment. Making investments in advanced biofuels today will drive the development so that these fuels (if and when they are needed) are standardized for military use. This will help the U.S. military hedge against a future where petroleum resources may be scarcer, requiring the military

to rely on drop-in replacements. While critics will argue against this plausible but seemingly remote future, the military must be prepared for a range of contingencies, especially high-threat but low-probability ones.

(Read More: Current and Projected Costs for Biofuels from Algae and Pyrolysis [3]**)**

Finally, DOD's motivation to invest in *clean* biofuels such as hydro-treated algae fuel versus *dirty* alternative fuels derived from coal-to-liquid technologies is in part a response to the changing regulatory environment in the United States and abroad that is demanding the use of less-carbon intensive energy sources. President Barack Obama issued an Executive Order in October 2009 that charged federal agencies to measure and reduce their greenhouse gas emissions, providing military leaders with guidance on renewable energy investments. Additionally, many U.S. states like California have instituted renewable energy regulations that compel compliance by the U.S. military active in those states. Moreover, foreign countries in Europe and elsewhere have increased their environmental standards, including regulations on greenhouse gas emissions from fuels. The Department of Defense must be prepared to adapt to these emerging environmental regulations in order to guarantee the U.S. military's freedom of access to foreign ports and territories.

Conclusion

Defense officials and military leaders overseeing DOD energy programs are promoting two linked but distinct efforts to address energy concerns.

The operational energy challenges that the United States faces today in Afghanistan and other countries threatens both blood and treasure. Military investments in energy efficiency and conservation programs, including renewable technologies that can displace the demand for petroleum, will help logisticians adapt to the challenges of fueling the force in a combat zone by reducing the total energy requirement and managing more efficiently the energy the military does consume.

Finally, given the strategic uncertainty of the global petroleum market, defense officials are helping lead the effort to research, develop, test and evaluate advanced biofuels that can serve as a drop-in replacement to conventional fuels.

Continuing these efforts will help the Department of Defense ensure it its prepared to adapt to a future where petroleum resources are increasingly scarce (even if that scenario seems remote), and, more importantly, ensure that its platforms will operate just as well on drop-in fuels.

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