

DoD's Biofuels Program

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Introduction

The U.S. military's dependence on oil poses national security risks – reduced readiness, strategic vulnerabilities, and budgetary strain – from its dependence on a single source of energy. The Department of Defense (DoD) has several initiatives to develop alternative fuels to reduce its exposure to petroleum-based fuels.

The goal is that, by the end of the decade, a significant portion of the U.S. military's transportation fuel will derive from feedstocks other than oil, and obtained at prices cost-competitive to traditional petroleum-based fuels, without any operational disadvantages.

This fact sheet looks at the military's dependence on fossil fuels, the risks generated because of this dependence, and the new initiatives underway to develop alternative sources of energy.

DoD's Energy Use

- The US Department of Defense, taken as a single entity, is **the largest single energy consumer in America.**¹
- In FY 2011, DoD consumed 117 million barrels of oil at a cost of **\$17 billion.**²
- An estimated **75% of DoD's energy use is "operational energy"**, which is defined as "the energy required for training, moving, and sustaining military forces."
- The remaining **25% of energy use is used for "installation energy"**, which refers to energy used on military buildings and bases.
- The **Air Force is the largest consumer of fuel out of all military branches**, accounting for 53% of petroleum use. By comparison, the Navy makes up 28% of total DoD fuel consumption, the Army 18%, and the Marines and Coast Guard less than 1%.



Risks of Oil Dependence

- The military's overreliance on petroleum-based fuel causes operational, strategic, and financial risks.
- The DoD estimates that every 25 cent increase in the price of a gallon of petroleum-based fuel costs the military \$1 billion in additional fuel costs.
- DoD's fuel costs increased 381% from 2005 to 2011, growing from \$4.5 billion to \$17.3 billion. Since fuel consumption actually declined by 4% over this period, the cost surge reflects rising oil prices.
- In the shorter-term, the extreme price volatility of oil makes it very difficult to plan, causing budget shortfalls throughout both the services and combatant commands.
 - For example, in FY2012 U.S. Pacific Command faced a \$200 million budget gap due to unexpected fuel costs. These shortfalls mean that there are fewer resources available to train, equip, and supply the force.
 - Although biofuels or alternative fuels will not immediately solve this problem, fuel competition will reduce price volatility.
- The strategic risks of the American economy's reliance on oil are even more dangerous.
 - It Creates New Missions: Because the American economy relies on an uninterrupted supply of low-cost oil, the U.S. military must defend shipping lanes around the world to ensure the free flow of oil, which some observers estimate leads to an additional \$83 billion in military costs per year.³
 - It Undermines American Foreign Policy: Major oil suppliers hold great leverage over the American economy; they hold the key to price stability. This means that policymakers often prioritize stability over American values, particularly in the Middle East.

Action in Congress

In June, 2012, amendments to the FY2013 National Defense Authorization Act (NDAA) were added in both the House and Senate Committee-passed bills that would have both prohibited DoD from purchasing alternative fuels if they cost more than fossil fuels and restricted the ability of the DoD to invest in the construction of biofuels refineries.

In November, during full Senate consideration of the NDAA, amendments sponsored by Senator Mark Udall and Senator Kay Hagen removed these provisions from the bill.

When signed into law by President Obama on January 2, 2013, the NDAA preserved the ability for the Department of Defense to develop alternative sources of energy

DoD's Alternative Fuels Initiatives

- All fuel, whether alternative or traditional, must meet mission requirements and not hinder operations.
- Therefore alternative fuels must have a "drop-in" capability, which means they are able to be integrated into existing infrastructure without operational drawbacks.
- The different branches have different goals for using alternative sources of fuel.

- **Air Force Goals**

- Certify all aircraft on a 50:50 biofuel blend by 2012.
- Acquire up to 50% of its domestic aviation fuel requirements from alternative fuels by 2016.
- All fuel must be sourced “cost competitively”.

- **Navy Goals**

- By 2020, the Department of the Navy will obtain 50% of the fleet’s liquid fuel from alternative sources.
- Deploy a “Great Green Fleet” to demonstrate operational capability of alternative fuels for global operations by 2016.
- Partner with industry and government agencies to invest in a cost competitive domestic advanced biofuel industry.



Feedstocks

- It is important that there be an adequate and diverse supply of feedstocks for alternative fuel that is sustainable – not ones that might affect food markets.
- Advanced biofuels can be produced from a variety of non-food sources, including algae, biomass, switchgrass, camelina, municipal waste or vegetable oil.⁴

Building A New Industry

- Advanced biofuels are new technologies in an immature industry. Cost has not yet come down to a level that makes them competitive to petroleum-based fuels.
- There is evidence that, with economies of scale, larger production facilities could bring costs down to an appropriate level.
- To create these economies of scale, the Department of Defense plans to invest \$170 million over three years to support advanced biofuels, with matching amounts from both the Department of Agriculture and the Department of Energy.⁵ The DoD and DoE investment, to take place through the Defense Production Act, will be matched with equal amounts of funding from private investment.

The Green Strike Group

- In 2011, the Defense Logistics Agency procured 450,000 gallons of advanced drop-in biofuels from Dynamic Fuels and Solazyme Corp., the largest government procurement of biofuels in history.⁶



- The biofuels were used by the Navy in 2012 RIMPAC exercise, an annual multinational military exercise near Hawaii.
- The RIMPAC exercise successfully demonstrated that an entire carrier battle group and its air wing can operate in an operational environment on a 50:50 blend of “drop-in” advanced biofuels.

Alternative Fuels Can Reduce National Security Risks

- The Defense Department has a long history of catalyzing new industries by driving innovation.
- Drop-in Biofuels are projected to be cost-competitive with petroleum-based fuels as early as 2017. Studies indicate that costs could decline to as low as \$2.32 per gallon over that time-frame.⁷
- Developing large quantities of biofuels will reduce world oil demand, putting downward pressure on prices.⁸
- Alternative fuel sources can replace petroleum-based fuels, acting as a hedge against oil price volatility.
- Freeing the nation’s reliance on unstable parts of the world for oil will allow the U.S. to operate a more independent foreign policy.
- DoD’s biofuels program will generate an estimated \$9.6-\$19.8 billion in economic activity by 2020, while creating as many as 14,000 jobs.⁹
- It is important that the feedstocks used to produce biofuels in industrial quantities are sustainable. Policymakers do not want to replace the problems of oil dependence with problems of land-use or food-price problems.



Conclusion

The U.S. military should diversify its energy sources in order to reduce the national security risks of relying on a single source of fuel for its operations. Early private sector innovation and investments have made initial progress on developing viable “drop-in” fuels from advanced biofuels.

It is appropriate for the government to help this industry because it would reduce energy security risks and help make a better fighting force.

Fully developing cost-competitive biofuels over the next few years will act as a hedge against volatile fossil fuel prices, reduce U.S. vulnerability to supply disruptions, and loosen America’s reliance on vulnerable hotspots around the world.

Further Reading

[“Fueling the Future? Military’s Biofuels Program at Risk”](#) – Andrew Holland

[“Investing in Biofuels: Strengthening Our Military’s Energy Security”](#) – LtGen John Castellaw, USMC (Ret.)

[“Time to Stop the Stranglehold of Oil on Our National Security”](#) – LtGen Don Kerrick, USA (Ret.)

[“Support Biofuels Now or Pay the Price Later”](#) – BGen John Adams, USA (Ret.)

[“The Military’s Dependence on Oil is Putting Our Forces at Risk”](#) – LtGen Norman Seip, USAF (Ret.)

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Endnotes

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2. Unless otherwise noted, all DoD figures on biofuels sourced from: Schwartz, M., Blakeley, K., & O’Rourke, R. (2012). Department of Defense Energy Initiatives: Background Issues for Congress. Washington DC: Congressional Research Service. Summary.
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8. Bartis, J., & Van Bibber, L. (2011). Alternative Fuels for Military Applications. Santa Monica: RAND Corporation. 81.
9. Yudken, J. (2012). The Economic Benefits of Military Biofuels. Arlington: A report prepared by High Road Strategies for Environmental Entrepreneurs. 17-18. <http://www.e2.org/ext/doc/HRS-E2MilitaryBiofuelsReporNov2012.pdf>

Building a New American Arsenal

The American Security Project (ASP) is a nonpartisan initiative to educate the American public about the changing nature of national security in the 21st century.

Gone are the days when a nation's strength could be measured by bombers and battleships. Security in this new era requires a New American Arsenal harnessing all of America's strengths: the force of our diplomacy; the might of our military; the vigor of our economy; and the power of our ideals.

We believe that America must lead other nations in the pursuit of our common goals and shared security. We must confront international challenges with all the tools at our disposal. We must address emerging problems before they become security crises. And to do this, we must forge a new bipartisan consensus at home.

ASP brings together prominent American leaders, current and former members of Congress, retired military officers, and former government officials. Staff direct research on a broad range of issues and engages and empowers the American public by taking its findings directly to them.

We live in a time when the threats to our security are as complex and diverse as terrorism, the spread of weapons of mass destruction, climate change, failed and failing states, disease, and pandemics. The same-old solutions and partisan bickering won't do. America needs an honest dialogue about security that is as robust as it is realistic.

ASP exists to promote that dialogue, to forge consensus, and to spur constructive action so that America meets the challenges to its security while seizing the opportunities the new century offers.



American Security Project

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