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## Military Seeks Oil Savings

Rising Demand, Supply Risks

Spur Conservation Move

By MASOOD FARIVAR

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Recent energy-market disruptions have added urgency to the U.S. military's efforts to curb its use of oil and other fuels. But the effort faces considerable obstacles, including the difficulty in figuring out how much it spends on energy to begin with.

In the year ended Sept. 30, the Defense Department spent, by its estimate, \$13 billion on fuel amounting to 134 million barrels of oil for the year, up from 107 million barrels of oil in 2000. The wars in Afghanistan and Iraq led to a surge in fuel use in that period, according to the Defense Energy Support Center, a government agency that buys fuel from private-sector companies and supplies it to the armed forces.

The most recent figure is more than the entire nation of Sweden consumed in 2005. (Still, it adds up to less than 2% of daily U.S. consumption.)

As energy prices have surged and volatility has increased in important oil-producing regions, the military is redoubling efforts to rein in consumption through conservation, increased fuel-efficiency measures and greater use of alternative energy. The effort picked up in earnest following the 2005 Atlantic Ocean hurricanes, which devastated the Gulf Coast, lifted prices to records and highlighted the vulnerability of supplies.

"Katrina was a wake-up call," says Michael Aimone, assistant deputy chief of staff of the Air Force who oversees the force's energy-conservation efforts.

The Pentagon is planning to spend more than \$2 billion in the next five years on energy initiatives, which could help spur development of energy sources for use in other sectors. "The contribution [the military's efforts] will make will be in leadership rather than actual conservation," said Rep. Roscoe Bartlett, a Maryland Republican, who last year formed a bipartisan panel called the Defense Energy Working Group to study the issue.

James Woolsey, a former Central Intelligence Agency director who heads the policy panel of one of two Pentagon energy task forces, said the drive to curb energy use is being fueled less by high prices than an increasing awareness about the "vulnerability and insecurity of supplies" world-wide.

The effect of the Pentagon's interest in conservation and alternative energy can be seen from military bases and hangers to the battlefields of Iraq and Afghanistan. In late July, Marine Corps Maj. Gen. Richard Zilmer, commander of U.S. forces in Iraq's insurgent al-Anbar province, asked for a shipment of mobile solar panels and wind turbines to supplement gas-guzzling generators at bases under his command.

Cutting "the military's dependence on fuel for power generation could reduce the number of road-bound convoys" and U.S. casualties resulting from insurgent attacks on U.S. supply convoys, Gen. Zilmer wrote in a memo. **The Army's Rapid Equipping Force, the unit responsible for processing such requests, has contracted SkyBuilt Power of Arlington, Va., to build four hybrid power stations for delivery this spring.**

So far, the impact of the military's efforts has been modest. In the past 20 years, it has cut energy use at facilities 28%. Still, oil accounts for roughly 75% of total energy use. The military's focus has been on saving power -- also a laudable goal, critics say, but not an answer to dependence on oil.

Also, it isn't clear how much energy the military consumes and how much it pays. The 134 million-barrel figure for fuel use is the government's official estimate, as is the dollar amount. Some inside and outside the military think actual consumption is higher partly because the figure doesn't include a lot of unpaid oil and oil contracted to U.S. bases.

"I've looked at all the information that is publicly available and I haven't seen any single number," said Sohbet Karbuz, a former official at the International Energy Agency, the industrialized world's energy watchdog, and an expert on military energy use. "We don't know where much of the oil comes from and how much it exactly costs. If you don't know the number how do you calculate fuel efficiency?"

According to Mr. Karbuz, the wars in Afghanistan and Iraq have increased military fuel use by as much as 56,000 barrels a day. In addition, the military's improved ability to deploy troops to battlefields comes at the cost of increased fuel use: today, more than half of the fuel consumed in combat theaters is used not by front-line soldiers but by supply convoys of the type that worried Gen. Zilmer. Mr. Karbuz estimates the military uses fuel at twice the rate it did in the first Persian Gulf War and four times the rate it did in the Second World War.

The Air Force, which accounts for 53% of military fuel use, has stepped up use of biodiesel fuel -- where vegetable oils are substituted for petroleum -- at bases in the U.S. In December it conducted a test flight of its B-52 strategic bomber using a blend of synthetic fuel and jet fuel on all eight engines and is planning further test flights this year. At a cost of \$23 per gallon compared with \$2 to \$3 per gallon for jet fuel, however, that option isn't considered viable. The B-52 uses 48,000 gallons of fuel in a single mission.

The Air Force also has adopted measures from commercial airliners to save fuel on its three most fuel-guzzling aircraft. It better plans the amount of fuel onboard to reduce

weight, gets overflight clearance from foreign governments to avoid circuitous routes, and more efficiently schedules midair refueling missions.

Mr. Aimone of the Air Force says that the service wants to promote a "culture of conservation" and hopes to build on its success on the facilities side to improve fuel efficiency in operations. He says the Air Force's goal is to reduce fuel use by 10% over the next five years, though "it is too soon to tell" the impact of current efforts.

Other services are exploring similar long-term projects designed to reduce the military's dependence on oil. The Army is studying designs to replace the Humvee with 30% to 40% lighter, more fuel-efficient models. The Navy is studying alternate propulsion systems as well as proposals for an all-nuclear Navy.

Today, almost 9% of the electricity used by military facilities comes from renewable energy sources, and the Pentagon plans to raise that to 25% by 2025. The Air Force has installed modern lighting and replaced Second World War-era buildings with better-insulated structures. Four Air Force bases rely entirely on renewable energy for power, while several others use a combination of solar, wind and land gas production for power.

Similar efforts have been under way at other services, with the Navy installing wind turbines at several overseas bases, including four at Guantanamo Bay in 2005 to supply as much as 25% of the base's electricity needs and cut diesel use by more than 600,000 gallons a year. The Army is developing similar systems for bases in Iraq and Afghanistan.

Critics say these efforts aren't enough. The military has long taken access to fuel for granted, but in a world of dwindling and endangered supplies, "I don't think politically it is possible for the military to stay ahead of the line," said Byron King, a former Navy pilot and geologist who writes frequently on the subject.

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