As the largest energy consumer in the United States, the federal government plays an important role in the country’s energy system. In recent years, a number of factors have led it to reduce fossil fuel dependence through investment in renewable energy and energy efficiency, including supply risks, high and volatile prices, and environmental impacts. The government’s efforts at setting an example in transitioning to advanced energy technologies have been especially notable at the Department of Defense (DoD). Not only is DoD by far the largest energy user within the federal government, but it also faces unique strategic issues associated with energy. A number of DoD analyses over the last decade have cited the military’s traditional energy approach, and its fossil fuel dependence in particular, as a strategic risk and have identified renewable energy and energy efficiency investments as key risk mitigation measures. The shift in military energy strategy requires industry to redouble its work with DoD to accelerate the deployment of advanced energy technologies that improve the military’s ability to fulfill its core mission. This document briefly reviews DoD’s changing energy strategy and provides companies without prior experience working with the military some references for getting started.
Federal Energy Use: A Shift Toward Diverse, Domestic Sources

Under the current energy system, fossil fuels provide over 80 percent of the energy used in the United States, including 94 percent of the energy used in the transportation sector. The U.S. government is the biggest customer within this system, spending billions of dollars on electricity and fuel annually (the total 2008 bill was $24.5 billion). DoD accounts for roughly 80 percent of this government energy consumption. On an annual basis, DoD consumes approximately 125 million barrels of petroleum and 30 million megawatt-hours (MWh) of electricity, which is enough energy to meet the annual needs of about 13 million automobiles and 3 million homes, respectively.

Since the 1970s, successive administrations have noted the dangers of the current energy system, including its reliance on fossil fuels, for the government and country at-large. These administrations have pursued policies designed to reduce the government’s dependence on foreign oil, increase energy supply diversity and security, reduce energy costs, accelerate technology development, and reduce the energy sector’s public health and environmental impacts. Given the scale of the government’s energy consumption and the particular risks inherent in government fossil fuel dependence, these policies have frequently targeted the federal government’s energy use with the goal of establishing leadership by example.

A few recent initiatives serve to highlight the broad direction of federal energy use and strategy. The Energy Policy Act of 2005 (EPACT 2005) requires federal agencies to obtain an increasing share of electricity from renewable energy sources: 3 percent in 2009, increasing to 7.5 percent by 2013. In January 2007, President Bush signed Executive Order 13423 requiring federal agencies to reduce energy intensity by 3 percent annually through 2015 or by 30 percent by 2015, compared to the 2003 level. Later that same year, the Energy Independence and Security Act was signed into law, requiring new federal buildings and major renovations to reduce fossil fuel energy use by 55 percent by 2010 (relative to 2003 usage levels) and to eliminate its usage altogether by 2030. It also required federal agencies to achieve at least a 20 percent reduction in their vehicle fleet’s annual petroleum consumption by 2015 and a 10 percent increase in annual alternative fuel consumption. In 2009, President Obama signed Executive Order 13514, which is aimed at improving the federal government’s environmental sustainability. It set a 28 percent reduction target for government greenhouse gas emissions by 2020 with an estimated energy savings target of $8 billion to $11 billion.
Military Leadership in Renewable Energy and Energy Efficiency

As the government’s largest energy consumer, the military naturally has a prominent role to play in meeting the targets laid out above. More importantly, DoD’s current energy system, and its reliance on fossil fuels in particular (petroleum accounts for nearly 80 percent of DoD energy consumption), present a unique strategic vulnerability.10 Supplying energy to the warfighters at the front lines – from the heavy batteries strapped to soldiers’ packs to liquid fuel that is trucked or even flown in – exacts heavy monetary and human costs. The full cost of fuel can be as high as $400 per gallon by the time it is delivered to a remote Forward Operating Base (FOB) in Afghanistan, and one out of every 50 military fuel resupply convoys in that country sustains a fatality or serious injury.11,12 Fuel supply security further upstream is also a constant strategic concern since a significant portion of the fuel used by the military is shipped through exposed “chokepoints” like the Strait of Hormuz, which separates Iran and Oman by a scant 34 miles at its narrowest point.13

Beyond fuel supply and delivery vulnerabilities, high and volatile energy prices are also a burden. Ray Mabus, Secretary of the Navy, has indicated that every $1 increase in the price of a barrel of oil results in a $31 million increase in the U.S. Navy’s energy costs. As a result, the two-year price range for petroleum of $71-117/barrel from 2009 to 2011 presented a $1.1 billion range in budgeting uncertainty.14 Compounding the strategic risks facing commanders on the front lines is “DoD’s reliance on a fragile commercial grid,” which Dorothy Robyn, Deputy Under Secretary of Defense for Installations and Environment, recently said, “places the continuity of critical missions at risk.”15

Because of these issues, in 2001, a Defense Science Board (DSB) task force issued a report to DoD recommending that energy should be a driving factor behind the department’s strategic initiatives. In 2006, the Under Secretary of Defense for Acquisition, Logistics and Technology asked the DSB to prepare a follow-up report, and two years later, More Fight—Less Fuel, was issued.16 The same year the request was made, Marine Corps Major General Richard Zilmer reportedly sent the first memo from a frontline commander to the Pentagon requesting that renewable energy systems of various power capacities be deployed in Iraq, where he was stationed.17

To address these identified risks, the 2007 National Defense Authorization Act (NDAA 2007) required that DoD produce or procure 25 percent of all energy from renewable sources by 2025.18 The military has in fact, moved beyond this type of broad mandate toward the creation of a new energy strategy with each service branch developing its own energy strategic plan. For example, the U.S. Air Force, the largest consumer of liquid fuels in the military, has a stated goal of acquiring half of its domestic aviation fuel from domestic, synthetic (i.e., non-petroleum) sources by 2016.19 The Navy, which consumes daily approximately 80,000 barrels of oil at sea and 20,000 MWh of electricity on shore, has set a goal of making...
half of its bases net-zero energy facilities by 2020. By 2016, the Navy also plans to sail the “Great Green Fleet,” a carrier strike group composed of nuclear ships, hybrid electric ships running on biofuels, and aircraft flying on biofuels.\footnote{20}

As DoD’s strategic energy planning has become more granular over time with specific initiatives and projects developed and implemented, it has become apparent that the institution is deeply committed to transforming its energy system. As Navy Secretary Ray Mabus explained in a recent speech, “Seeking out some viable energy options isn’t a fad…We’re doing it because we have to do it to be a more effective fighting force. The reasons are strategic, the reasons are tactical and the reasons are essential to our national security.”\footnote{21} And the military is not hesitant about taking a leadership role in the use of new, cutting-edge technologies. Rather, DoD sees a role for itself as an early adopter to help create a market for the next generation of energy technologies needed to support the nation’s infrastructure, just as it did with jet engines, computers and the internet.\footnote{22}

**Partnership Opportunities for the Military and Industry**

In response to a Quadrennial Defense Review recommendation, the NDAA 2009 created a new operational energy leadership position, the Assistant Secretary of Defense for Operational Energy Plans and Programs.\footnote{23,24} This position serves as the counterpart to the existing one focused on fixed assets, the Deputy Under Secretary for Installations and Environment. As a result, the military now develops separate strategies for its two primary (and very different) types of energy use: energy used at permanent military installations in the United States and abroad and energy used by military forces in the execution of their field missions. In fiscal year 2010, DoD spent $4 billion on installation energy and $11 billion on operational energy.\footnote{25}

DoD’s energy needs in both of these contexts present a number of opportunities for renewable energy and energy efficiency companies. DoD’s fixed assets worldwide include over 2.2 billion square feet of building space, and these facilities are home to more than 160,000 vehicles.\footnote{26} Powering these buildings and vehicles with diverse domestic resources drives a variety of procurements. For example, the newly created Army Energy Initiatives Task Force announced in the summer of 2011 that it would issue solicitations to provide...
energy companies free use of its land to build utility-scale solar and wind farms and geothermal power plants as long as the companies provide the power from the resulting projects to military bases and surrounding communities. The goal is to catalyze at least $7 billion in private sector investment over the next decade to build renewable energy power plants capable of producing at least 2.1 million MWh of electricity annually.27

In the operational energy context, the U.S. military consumed more than 5 billion gallons of fuel in 2010 to move and sustain forces, weapons, and equipment for day-to-day operations in theater.28 Mobile renewable power systems are increasingly in demand to provide energy to warfighters on the front lines.29

“In fiscal year 2010, DoD spent $4 billion on installation energy and $11 billion on operational energy”

The armed services have been tasked with bringing procured prototypes into the field for evaluation. For example, after the Marine Corps invited industry in early 2011 to demonstrate how the warfighter could benefit from new technologies—like solar-powered communications, solar blankets, LEDs, renewable generators and advanced battery systems—a Marine Corps battalion successfully tested a number of the technologies in a combat environment.29

Getting Started: How To Get Involved in DoD Procurements

Companies with products or services that could help DoD meet its strategic energy objectives in either the operational or installation energy contexts need to engage in the DoD procurement process. For those not familiar with this process, provided below are some basic resources with which to get started.

The first step is to identify opportunities that are available. The General Services Administration (GSA) is the federal agency that manages FedBizOpps (www.fedbizopps.gov), the single government-wide point-of-entry for federal government procurement opportunities for more than $25,000. Websites administered by DoD and the individual service branches of the military also advertise solicitations and opportunities, and a list of some of the key websites is provided in the Appendix. Contract announcements and other DoD-related news are also available by e-mail subscription via the site: www.defense.gov/news/dodnews.aspx. However, contractors should know that information found on these sites does not replace the official notifications posted to FedBizOpps, which take precedence over notifications found elsewhere. While monitoring these electronic resources is important, companies should also develop relationships within DoD and the broader defense community that will provide companies important information on evolving priorities, goals, and projects.

The DoD Office of Small Business Programs30 (OSBP) advises the Secretary of Defense on all matters related to small business and is committed to maximizing the contributions of small businesses in DoD acquisitions. The OSBP resources page31 provides useful resources aimed at guiding small businesses on marketing to the DoD, contracting and subcontracting, teaming arrangements, and reporting.
For guidance on preparing proposals, there are a number of resources available for contractors. One of the most important is the guide to DoD contracting opportunities produced by the Office of the Under Secretary of Acquisition, Technology and Logistics. Additional resources include the Defense Acquisition Portal (DAP), which provides acquisition information for all DoD service components and serves as the central point of access for all Acquisition, Technology and Logistics resources and information. The Office of the Under Secretary of Defense for Installations and Environment also offers additional information at its Vendor/Service Provider Support web page. Additionally, the Association of Procurement Technical Assistance Centers offers information and resources on government contracting at little or no cost.

Finally, for additional insights into the procurement process, it may also be helpful to review past contracts. A list of contracts valued at $6.5 million or more awarded by the DoD is available at www.defense.gov/contracts/. 
Appendix

Some Websites Containing DoD Solicitations and Opportunities

The list below, while not comprehensive, provides websites for some DoD offices involved in energy procurement.

**Government-wide**
- General Services Administration's (GSA) [www.fedbizopps.gov](http://www.fedbizopps.gov)

**Department of Defense**
- Defense Advanced Research Projects Agency (DARPA) [www.darpa.mil](http://www.darpa.mil)
- Defense Logistics Agency (DLA) [www.dla.mil](http://www.dla.mil)
- Defense Logistics Agency Energy (DLA Energy) [www.desc.dla.mil](http://www.desc.dla.mil)
- Strategic Environmental Research and Development Program (SERDP) / Environmental Security Technology Certification Program (ESTCP) [www.serdp.org](http://www.serdp.org)

**Air Force**

**Army**

**Navy/Marine Corps**
- Acquisition One Source [https://acquisition.navy.mil/rd/a/home/acquisition_one_source/business_opportunities](https://acquisition.navy.mil/rd/a/home/acquisition_one_source/business_opportunities)
- Navy Electronic Commerce Online (NECO) [https://www.neco.navy.mil](https://www.neco.navy.mil)
- Research, Development and Acquisition [https://acquisition.navy.mil/rd/a/content/view/full/187](https://acquisition.navy.mil/rd/a/content/view/full/187)
- SECNAV Green Business Opportunities [https://acquisition.navy.mil/rd/a/home/secnav_green_biz_opps](https://acquisition.navy.mil/rd/a/home/secnav_green_biz_opps)
- Space and Naval Warfare Systems Command (SPAWAR) [www.public.navy.mil/spawar/Pages/default.aspx](http://www.public.navy.mil/spawar/Pages/default.aspx)
Endnotes


6. Assuming 30 miles/gallon and 12,500 miles per year for a “typical” automobile and 10,000 kWh/year for a typical household.


13. Ibid.


