



Solar arrays at Nellis Air Force Base, Las Vegas, Nevada.

Clean Energy for the Wild Blue Yonder

Expanding Renewable Energy and Efficiency in the Air Force

By Alexandra Kougentakis, Tom Kenworthy, and Daniel J. Weiss November 2009



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Introduction and summary

Reliance on foreign energy sources and global warming pose major threats to the United States' security. A report by the Center for American Progress earlier this year determined that "America's dependence on foreign oil transfers U.S. dollars to a number of unfriendly regimes, while robbing the United States of the economic resources it desperately needs for domestic development and American innovation."

The problem is particularly acute for the Department of Defense, which is the world's largest consumer of energy and whose military operations and facilities consume significant amounts of energy. In its 2009 report "Powering America's Defense," the military research organization CNA describes both domestic and overseas defense installations as "dangerously oil dependent, wasteful, and weakened by a fragile electrical grid."

DoD spent \$3.4 billion on worldwide facility energy consumption in fiscal year 2007, \$1.06 billion of which went to Air Force energy needs. These costs included electricity and direct use of fossil fuels such as oil, coal and natural gas, among other sources. Electricity constitutes the bulk of facility energy expenditures. In fiscal year 2007, DoD spent more than \$2.5 billion on nearly 30 million megawatt-hours of electricity. The Air Force's portion was \$700 million. Electricity accounts for 48 percent of total facility energy consumption, but it represents 66 percent of all facility energy expenditures thanks to rising fuel costs.

Spending on petroleum both undermines national security and consumes a large portion of the DoD's energy budget, diverting funds from other potential uses. Within DoD the Air Force is the largest consumer of petroleum, spending on petroleum-based fuels, including more than 3 billion gallons of aviation fuel, in FY 2007. This amounts to 56 percent of DoD expenditures on petroleum-based fuels, and 52 percent of such expenditures by the entire U.S. government.

The Air Force should address the security challenge posed by its massive electricity and petroleum use with a clean-energy strategy focused on deploying renewable energy and energy efficient technologies. Energy efficiency can reduce the risks to American soldiers and the burdens on military budgets, and expanding renewable energy for facility use—particularly on domestic bases in conjunction with the implementation of a national clean-energy smart grid—would bolster national security. The smart grid would replace the current, deteriorating conventional electricity grid with a national network of long-dis-

tance transmission lines that would deliver renewable energy to consumers via electrical substations. A number of important Air Force bases are in areas with ample solar energy resources, making the expansion of solar technologies an attractive option for them.

Nellis Air Force Base in Nevada already has a clean-energy strategy in place and can serve as an example of a starting point for other bases. President Barack Obama visited Nellis AFB to recognize the 100th day after the enactment of the American Recovery and Reinvestment Act. He commended the base for possessing “the largest solar electric plant of its kind in the entire Western Hemisphere.” Nellis AFB proves that solar electricity is a viable alternative to fossil fuel generation, and it demonstrates the significant benefits the Air Force could enjoy from expanding solar energy and energy efficiency, including greater energy security, lower energy bills, and a reduction of greenhouse gas pollution.

This analysis will detail how the Air Force can start using more renewable energy and become more energy efficient while saving taxpayers money. It will first review clean-energy funding and programs already in place within the military and the Air Force, then examine military and private aviation facilities that have shifted to more renewables and efficiency before outlining challenges to a cleaner Air Force and providing recommendations on how to overcome these challenges. The paper also projects the benefits for 11 Air Force bases that have high solar energy potential based on the implementation of a solar energy and efficiency program similar to that at Hangar 25, a private aviation facility in California.

Specifically, this report recommends a pilot program to retrofit a small number of Air Force hangars at a high solar potential base. This pilot would use Hangar 25’s program as a guide and would clearly show the benefits to be had from such a program. Other recommendations for making Air Force hangars more energy efficient include:

- DoD and DOE should collaborate for a “clean-energy task force” to guarantee maximum effectiveness and efficiency in greening projects.
- Invest in state projects that reward clean energy.
- Implement reforms that would speed clean-energy projects.
- Use smart solar financing vehicles that use third-party investments.
- Have small-scale renewable energy projects play a bigger role by providing learning opportunities.

The Center for American Progress is a nonpartisan research and educational institute dedicated to promoting a strong, just and free America that ensures opportunity for all. We believe that Americans are bound together by a common commitment to these values and we aspire to ensure that our national policies reflect these values. We work to find progressive and pragmatic solutions to significant domestic and international problems and develop policy proposals that foster a government that is “of the people, by the people, and for the people.”

