

Panel Remarks
Defense Energy Security Caucus
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Introduction

Thank you for that kind introduction. I appreciate the opportunity to share with you what the Air Force is doing to address energy security and the role of alternative fuels.

Energy is a common thread that runs through every mission in the Department of Defense and each of us brings different capabilities to this challenge, but our overarching mission is the same: protect the security of our nation.

However, we can't do this without having assured access to reliable supplies of energy and the ability to protect and deliver sufficient fuel to meet operational needs.

The Fuel Challenge

The Air Force's mission is to fly, fight, and win in air, space, and cyberspace. Energy is the corner stone for our ability to maintain global vigilance, reach, and power at home and abroad.

Without fuel and electricity, we would not be able to fly our aircraft, drive our vehicles, operate our equipment, or power our installations.

For this reason, the Air Force is focused on the need to assure we have a robust, resilient, and ready energy posture to ensure we have the energy we need when and where the mission requires.

Not only do we view energy through an operational perspective, but also through a financial lens. Last year, the Air Force alone spent over 8 billion dollars for energy, and liquid fuels constituted nearly ninety percent of that. This represents more than fifty percent of DoD's fuel bill. Further affecting this is that the price of fuel and electricity can be volatile and unpredictable.

For example, this past June our standard price for jet fuel increased from \$3.03 to \$3.95 per gallon. This increase of nearly 1 dollar per gallon translates to a 2.5 billion dollar bill to the Air Force.

The Air Force's Response

Our dependency on oil is a strategic risk to our nation's interests. World supplies can be compromised by regional instability, terrorism, accidents, and natural disasters, which can influence global markets and affect our freedom of action. Much like the 2020 inflection point states, we need a mix of solutions to fill our energy gaps.

To address this challenge, we have developed an Energy Plan that has three pillars: reduce demand, increase supply, and change our culture.

Reduce Demand

From the standpoint of reducing demand, we look first to the biggest fuel user – our aircraft.

Eighty four percent of our energy costs come from aviation and one of the biggest consumers is Air Mobility Command—or AMC—which provides airlift, aerial refueling, and aeromedical evacuation. They fly some of our largest aircraft, over 900 flights per day all over the world and use a lot of fuel.

To help reduce its fuel consumption, AMC has implemented initiatives such as advanced cleaning of aircraft engines to allow our aircraft to fly at cooler, more fuel-efficient temperatures; optimizing the center of gravity on our aircraft and reducing load by removing non-essential items. While these may appear small, all of these translate into real reductions in fuel consumption.

Since 2006, the cost to move 1 ton of cargo 1 mile, is down 21 percent. And by putting our efficiencies in place, AMC was able to save 165 million dollars in FY 2009 and FY 2010 alone. AMC's ongoing fuel efficiency projects are expected to save 325 million dollars over the coming years.

In addition to being more efficient in our operations, the Air Force is also looking at emerging technologies in aircraft engines. One example of this effort is the ADaptive Versatile ENgine Technology – or ADVENT - program.

Current aircraft engines usually provide high performance with low fuel efficiency - like many of our fighter jet engines - or high fuel efficiency with limited performance range - like many commercial jet engines. The ADVENT program looks to bridge that gap by developing an efficient variable cycle engine for next generation military aircraft that provides both high performance and high fuel efficiency.

Beyond aviation, we are also looking to reduce our demand for fuel in our vehicle fleet. We are doing this by taking a hard look at exactly where we can reduce the number of trips we take and at the types of vehicles we have in our fleet.

For example, next year Los Angeles Air Force Base will become the first federal facility to replace 100 percent of the eligible vehicles in its general-purpose fleet with plug-in electric, plug-in hybrid electric, and extended range electric vehicles. The “general purpose” fleet we are talking about ranges from passenger sedans to two-ton trucks and shuttle buses.

To make this happen, we are partnering with a broad range of public and private entities. This includes the utility company - California Edison, national labs, academia, and of course, the companies that make the electric vehicles, charging stations and other equipment that are all necessary for the program’s success.

Increase Supply

While we work hard to reduce demand, we are also focused on increasing and diversifying the supply side of the equation to improve our energy security. The Air Force sees energy security as a strategic imperative and alternative fuels are key.

To demonstrate our commitment to this effort, we set a very ambitious goal to be prepared by 2016 to meet half of our domestic jet fuel needs via an alternative fuel blend by ensuring our aircraft can fly on commercially available fuels. These blends must be drop-in fuels that are cost competitive with traditional petroleum-based jet fuels and meet our environmental and technical specifications. To get there, we are certifying our aircraft to fly on three different alternative fuel blends. All three blends are half traditional petroleum-based JP-8 fuel and half alternative fuel.

- 1) The first alternative uses the Fischer-Tropsch process to transform a range of fuel stocks - including biomass, coal, and natural gas – into a viable synthetic fuel. All testing on this blend is complete and one hundred percent certification is expected within the next few months.
- 2) The second alternative fuel is Hydrotreated Renewable Jet – or HRJ – fuel that is produced from plant oils or animal fats. We have completed ninety percent of planned testing of HRJ fuel and expect to complete certification next year.
- 3) The third alternative is an Alcohol-to-Jet fuel blend that is derived from cellulosic materials like wood chips or other organic waste. We just purchased 11,000 gallons of a fuel developed from wood chips and we plan to begin testing this alternative next year.

By preparing for a variety of alternatives, we are ensuring we will be ready for whatever private industry is able to bring to market. We also give ourselves the flexibility to use different fuels in different areas of the country or world, depending on the availability of fuel stocks and refining capability.

In order to get to this point, we accomplished a number of “firsts”. The Air Force flew the *first* transcontinental flight, the *first* supersonic flight, and conducted the *first* aerial refueling using a synthetic fuel blend.

We were the *first* to fly an aircraft solely on a biofuel blend when our A-10 took off from Eglin Air Force Base in March 2010. And just last May, the Air Force Thunderbirds, our aerial demonstration team, showcased biofuel's capability in their performance at Joint Base Andrews - the *first* time any Service aerial demonstration team has used an alternative fuel.

Promising market opportunities and testing of these fuels in the field are positive steps, however we recognize that to achieve our ambitious goal, we need to be involved directly with the private sector to share lessons learned, establish standards, and support the development of these fuels through our unique role as a large independent consumer.

We do this as an active member of the Commercial Aviation Alternative Fuels Initiative – or CAAFI. CAAFI includes other government entities like the Federal Aviation Administration, along with airlines, airports, aircraft and engine manufacturers, energy producers, researchers, and international participants. Together, we developed a repeatable process to certify fuels in a way that helps both commercial aviation and the military.

This process led to both the Fischer-Tropsch and HRJ blends being certified for commercial use and just recently, both United and Alaskan Airlines initiated flying specific routes using an HRJ blend. These collaborative efforts are helping bring alternative aviation fuel products to commercial scale.

Together we are making a difference to be ready for 2020, 2030 and beyond. We have seen the price of these fuels drop significantly over the past three years to approximately fifteen dollars a gallon for HRJ blended fuel.

Change the Culture

The final pillar we are focused on is to foster an energy aware culture. Our challenge is to infuse energy awareness throughout the Air Force all year long. We want energy efficiency to be on par with safety where awareness translates into actions.

To facilitate this culture change, we are reaching out directly to Airmen. Providing tools for all Airmen that will educate them on the importance of energy security, and provide tips on energy efficient practices - including fuel consumption considerations.

Across the Air Force, our Airmen are the most powerful change agents that we have. They support every component of the Air Force mission and bring creative solutions and commitment to the Air Force's energy goals. We can't reach our goals without buy-in from them and their efforts are being nationally recognized. In October, the Air Force was recognized by the Department of Energy with seven Federal Energy Management Program awards – more than any other Federal agency.

Partnership

Looking at our three pillars – reducing demand, increasing supply, and changing our culture – you begin to see that we can't accomplish these goals on our own.

Whether we talk about research into new engine technology, enabling a base to shift to electric vehicles, developing synthetic jet fuel blends or fostering an energy aware culture - it is only through partnerships that we will achieve these goals.

Today's development of tomorrow's clean energy solutions really is the key to becoming energy secure and defending our national interests. To power the force and fuel the fight – we must meet our energy goals and ensure we have the energy when and where we need it.

Since we started our certification initiative in 2006, we have purchased over 1.1 million gallons of alternatives fuels. But that is not even close to where we want to be.

We will meet our 2016 goal – we will be ready and willing to purchase alternative aviation fuels that meet our requirements. But we can't take the next step alone – we need industry to be producing those fuels and producing them cost competitively.

We use about 1.2 billion gallons of fuel for domestic aviation operations each year and our ultimate goal for fifty percent of that consumption to be alternative aviation fuel blends. This translates to about 600 million gallons of fuel annually...not an insignificant amount.

Getting there will take partnerships across industry, academia, and government – bringing together the broad spectrum of expertise and innovation to develop and deploy the game changing technologies that will contribute to our energy and national security goals.

Thank you for providing me with the opportunity to share the Air Force's approach to energy and some of our accomplishments with you today.