THIRD WAY

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Why the Military Should Use Sustainable Aviation Fuel

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Takeaways

- A proposed pilot program in the FY 2023 National Defense Authorization Act (NDAA) would help facilitate the military wide adoption of sustainable aviation fuel (SAF) over the coming decades.
- While the military's long-term use of SAF will ultimately be key to fully decarbonizing the aviation sector, DOD also has strategic, operational, and long-term economic incentives to start using SAF now.

- Congress will need to reconcile differences between the House and Senate versions of this pilot program. As they do that, it is essential that they work to align it with the definitions and standards for SAF in the new programs enacted as part of the Inflation Reduction Act (IRA). This will ensure uniformity across federal programs and provide certainty for this emerging industry.

The U.S. Department of Defense (DOD) has long recognized that its reliance on petroleum-based fuels creates significant strategic risks for our armed forces due to the vulnerability and volatility of fuel supplies. [1] In recent years, the Department has also acknowledged the national security implications of climate change and pledged to incorporate climate change mitigation strategies at every level of the DOD enterprise. [2] Sustainable aviation fuel (SAF) will be key to both of these efforts.

SAF is a "drop-in" jet fuel, meaning that it can be used interchangeably and blended with conventional petroleum-based jet fuel without requiring any modifications to an aircraft engine. The commercial aviation sector is working to rapidly scale up SAF production with the help of government incentives as part of an effort to reach net-zero aviation emissions by 2050. The Biden Administration has also made SAF a priority and has set a production goal of 3 billion gallons per year by 2030 – a large step up from the 10-20 million gallons being produced in the U.S. today. While SAF is currently two to four times more expensive than conventional jet fuel, these costs are expected to decrease as the industry achieves economies of scale. [3] DOD may be able to leverage its purchasing power to bring us to that tipping point sooner, but regardless of when it happens, the military will need to be ready to fully integrate SAF into its jet fuel supply chain so that it does not remain tied to conventional petroleum-based jet fuels.

Why the Military Should Use Sustainable Aviation Fuel

Reducing Operational Risk

Around the world, military aircraft need to be able to source fuel supplies wherever they need it, a task that is simplified when the military uses the same fuel as civilian aviation. [4] The commercial aviation sector is making a concerted effort to scale up the use of SAF as soon as it can, and if current trends continue, SAF is likely to be commonplace at major airports around the world during this decade. But while most SAFs certified for use in civil aviation have also been tested and approved for use in most military aircraft, DOD may be hesitant to authorize their widespread use until the Department has had an opportunity to complete additional testing at scale to consider issues such as optimal blending ratios, any maintenance benefits of SAF, or other logistical considerations that could affect military operations around the globe. Taking cost aside, DOD is

understandably cautious when it comes to making policy changes that could affect military readiness, so facilitating the military's deployment of SAF on a limited scale now, such as through a pilot program, will help DOD reduce any uncertainties down the line.

Securing our Energy Independence

As we have learned time and again – from the 1973 oil crisis to Russia's invasion of Ukraine today – the volatility of the global oil market is a gaping strategic vulnerability that we will struggle to mitigate against until we expand production of alternative fuels. Before Russia's invasion of Ukraine, Russian exports met about 8% of U.S. and global oil demand. [5] At various times during the past decade, Saudi Arabia and Venezuela have each accounted for more than 10 percent of U.S. petroleum imports as well. [6] Pivoting away from certain foreign oil supplies has proved to be economically costly for the U.S. and virtually impossible for some of our allies, but it is no less important that we act quickly to reduce our dependence on our adversaries for our energy. Existing oil production capacity and strategic petroleum reserves ensure that the U.S. military will always have access to the fuel it needs, but as the largest institutional user of oil in the world, DOD must work alongside the private sector to assist with our transition toward clean energy independence.

Addressing Climate Change

Extreme weather events have already caused billions of dollars in damage to DOD facilities in recent years – costs that will only increase in the years ahead. [7] Climate change will also test military capability and readiness as sea-level rise threatens coastal military installations, as high temperatures limit mission-essential training in key regions, and as climate change-induced migrations require new disaster relief missions around the globe. [8] DOD has a responsibility to both plan for these outcomes and to reduce its contributions to them. The U.S. military emits more greenhouse gases than many industrialized nations do economy-wide, most of which comes from fuel use. [9] Given the emissions reduction potential of alternative fuels like SAF, the military should be working to incorporate these fuels into its supply chain as soon as possible.

Cutting Long-Term Costs

Although SAF is currently more expensive than conventional fossil jet fuel, DOD has compelling long-term budgetary incentives to ensure that it can use alternative fuels that have the potential to reduce fuel costs or price volatility. In testimony before the U.S. Senate, the Vice Chief of Naval Operations noted that every $1 increase in the price per barrel of fuel results in $31 million in additional costs for the Navy annually—most of which is due to jet fuel usage. [10] SAF does not solve that problem today, though new tax credits will help bring down the cost of SAF in the short-term while the industry works to build economies of scale. In the long-term, the prospect of rising oil prices in the decades ahead – combined with expanded SAF production capacity – could position these fuels as an affordable and less volatile alternative to conventional jet fuel.

Moreover, early research also suggests that SAF has potential to save on maintenance costs because it burns slightly cleaner than conventional fossil fuels. [11] The Air Force and Navy spend billions of dollars annually to maintain their aircraft, so the savings in this area could be substantial. [12] In 2018 for example, the Air Force spent nearly $1.3 billion on maintenance costs for its fleet of 222 C-17 cargo aircraft alone, which represent just a small fraction of the more than 13,000 aircraft in DOD's fleet. [13] More research is needed to determine the degree to which SAF can lower maintenance costs in the long run, but even small improvements in this area could have considerable impacts and help offset any increases in fuel costs due to the currently higher cost of SAF.

A SAF Pilot Program is the Next Step Towards Military Use of SAF

The House-passed National Defense Authorization Act (NDAA) and the latest Senate text both include a new pilot program intended to help scale up the military-wide adoption of SAF. [14] The provision would direct DOD to select at least two geographically diverse Department facilities and develop a plan for those facilities to exclusively use aviation fuel that has been blended to contain at least 10% SAF. The facilities would be required to conduct the pilot program for a five-year period beginning no later than 2028. During this period, DOD would be able to closely examine and report to Congress on any logistical, operational, or infrastructure-related requirements to facilitate the eventual military-wide adoption of SAF.

This pilot program would also give DOD a valuable opportunity to consider how military facilities can leverage their proximity to commercial airports and other jet fuel consumers to increase the military and non-military use of SAF by examining things like innovative financing and shared supply chain infrastructure. In short, regardless of what ends up driving DOD's transition to SAF, this pilot program is key to making that transition a smooth one.

Next Steps: Ironing Out the Differences

The inclusion of this provision in both chambers' versions of the FY23 NDAA is promising. And it's bipartisan: the Senate Armed Services Committee voted 16-10 to include this provision in markup, a testament to both parties' support for SAF, though it will still need to survive a vote in the full chamber. [15] Although it is not yet clear whether there will be a formal conference for this bill, lawmakers will still need to work out the differences between the two provisions over the coming weeks.

There are some important technical differences between the two versions of this program, primarily related to how we certify these fuels, measure their emissions, and align those policies with international standards. At the time these provisions were written, there was no comprehensive framework on SAF within existing US law that policymakers could readily point to. That is no longer the case thanks to the Inflation Reduction Act (IRA). The new blender's tax credit for SAF directs the Treasury Department, in conjunction with the Department of Transportation, to

establish certain definitions, standards and methodologies for SAF that would address many of the differences between the House and Senate versions of the pilot program. [16] This includes determining which agricultural feedstocks are eligible for inclusion, whether SAF that is co-processed with crude oil is eligible, and how to measure the emissions from SAF (including emissions resulting from land-use change) to determine how much cleaner it is than the fossil jet fuel it's replacing. While the departments are still working on implementing the blender's tax credit, Congress should use the same definitions and standards in the pilot program. This would align the new program with existing law, avoid creating dual or competing standards among federal programs, and provide SAF producers and investors with certainty around eligibility.

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ENDNOTES

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14. See Sec. 315 for H.R.7900 and Sec. 319 for S.4543, 117 th Congress.

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16. See Section 13203(d) and (e) of H.R.5376, the Inflation Reduction Act, for the newly enacted language defining sustainable aviation fuel and addressing certification and measuring emissions reduction.