FAA REDAC Subcommittee on Environment and Energy

September 2020 Meeting

Findings and Recommendations

The Environment and Energy (E&E) Subcommittee of the FAA Research, Engineering and Development Advisory Committee (REDAC) conducted its second virtual meeting on September 16 - 17, 2020, due to the challenges that exist because of the COVID-19 pandemic. There was another good turnout of participants on the call.

The subcommittee once again focused on reviewing the R&D portfolio for Environment and Energy that was developed based on the FY20 budget that was enacted on December 20, 2019 and an update on the FY21 budget. During the meeting, the Office of Environment and Energy (AEE) provided updates on all of the major research components of the portfolio. Work on programs such as the Aviation Sustainability Center of Excellence (ASCENT); Continuous Lower Energy, Emissions and Noise (CLEEN); Commercial Aviation Alternative Fuels Initiative (CAAFI); Carbon Offsetting and Reduction System for International Aviation (CORSIA) and the Aviation Environmental Design Tool (AEDT) have been progressing. The updates highlighted accomplishments that have been realized both locally and on the international front directly linked to the research that has been completed since our last meeting. There was some discussion on how to publicize the accomplishments of the AEE research.

Despite the COVID-19 concerns that we had expressed in our last report, the Subcommittee was very impressed with the job the leadership and staff of AEE has been doing. The presentations were well done and reflected impacts and or potential impacts, because of COVID-19, to the research that is being done and is proposed in the future. The presentations outlined a high level of communication between AEE staff and their partners to continue these necessary research efforts. The Subcommittee is also very happy to learn about the number of staff that have been hired to fill staff vacancies and the fact that the grant process has been improved resulting in a large number of grants being awarded.

The Subcommittee believes that AEE is doing a good job and has once again presented a balanced portfolio. We believe that the research priorities that the Subcommittee has previously identified do not need to be adjusted. The Subcommittee was happy to see that a number of new research projects have been added to study the impacts of UAS/UAM and Supersonics. The Subcommittee members realize that there is still additional research required to address ongoing areas of concern. There was some discussion among the members on whether there are any research opportunities that currently exist because of the impacts that COVID 19 has had on aviation industry.

The Subcommittee is comfortable that AEE, the ASCENT Center of Excellence, CLEEN Program, CAAFI and others efforts, as well as and their partners, including NASA, are working together to realistically address the potential impact that the COVID-19 pandemic could have on continued research efforts.

This pandemic continues to have a major impact on the citizens of the world and the aviation industry, among others. Guided by the updates and presentations, the Subcommittee has proceeded with the following "Findings and Recommendations". The recommendations offered are all for inclusion in the REDAC report. There are no recommendations from this meeting for the letter to the Administrator.

Finding (1): Global Leadership:

It is evident that the FAA AEE currently maintains a leadership role in ICAO CAEP and has been the driving force behind the push for data driven rule making. Despite the impacts of COVID 19 on aviation globally, the Subcommittee firmly believes that maintaining the U.S. global leadership position at ICAO CAEP is essential and advantageous to U.S. aviation industry. Work that has been done with ASCENT and the Volpe Center has clearly allowed the FAA to maintain a scientifically supported position at ICAO CAEP. The close collaboration with NASA at ICAO CAEP is also clearly supporting global leadership. Anything that jeopardizes ongoing research at AEE will impact the FAA/U.S. global leadership position at ICAO CAEP.

Recommendation (1):

The Subcommittee recommends the continuing strong support of all research efforts/programs that will allow the FAA and the U.S. to maintain its current global leadership position at ICAO CAEP. It is the belief of the Subcommittee that if the FAA/U.S. does not maintain its leadership position at ICAO CAEP it will not be able to influence policy/rulemaking and this could have a significant negative impact on the U.S. aviation industry.

Finding (2): Public Private Partnerships:

The Subcommittee wishes to acknowledge and support the fact that the Office of Environment and Energy (AEE) have proven over decades to be very good stewards of taxpayer money. The leadership team at AEE has used their budgeted amounts to conduct and coordinate the research necessary to produce informed, data driven policies, facilitate technological advances in the aviation industry, and produced models and data that have positioned the U.S. as both a State leader at ICAO CAEP and on the global aviation stage. The execution of this research portfolio has been accomplished by working collaboratively with private industry, major universities through the ASCENT Center of Excellence, other Federal Departments and Foreign Governments. Three quarters of Environment and Energy research funds generate 100% plus cost matching from non-federal partners (CLEEN, CAAFI, and ASCENT). This leverages scarce FAA R&D funds to accomplish significant advances and improvements. In addition, we believe that government funding has been used and executed effectively to lower the risk of new and emerging technologies such that they can be adopted by industry. The benefits of these partnerships has clearly been proven over time and is very apparent in most of the current projects. The maturation of new technologies has delivered improved environmental performance and has enabled aviation system growth and associated positive economic impacts.

Recommendation (2):

The Subcommittee continues to endorse Public Private Partnerships like the CLEEN, CAAFI and ASCENT programs to leverage resources and recommends that FAA should continue to allocate robust funding for these programs.

Finding (3): Sustainable Aviation Fuels (SAFs):

Significant gains have been realized in the Alternative Jet Fuel (AJF) Program (including efforts in the Commercial Aviation Alternative Fuels Initiative (CAAFI), CLEEN and ASCENT). Sustainable Aviation fuels (SAFs) are a critical component of the industry's emissions reduction strategy and must be developed if industry is to get to their carbon neutral growth goals after 2020 and their emissions reduction goals in 2050. This research has helped with the creation of a number of companies that have the potential to benefit the rural economies of several states and the U.S. Aviation industry. More than 3 million gallons of SAF was used in the first half of 2020 and expectations are positive that there will be a significant increase in consumption as production is increased. Recent support from a number of agencies, including the DOE will support SAF production. There are efforts to ensure that alternative jet fuels are in CORSIA through ICAO CAEP. The subcommittee members were very pleased to see that funding in this area has been restored in the President's budget for FAA AEE and they applaud the FAA leadership for their foresight on this matter as they are making it once again a vital part of their overall investment portfolio

Recommendation (3)

It is still the position of this Subcommittee that the work on Sustainable Aviation Fuels is critical to the U.S. industry and the FAA should maintain a leadership role in the development of SAFs to ensure that the rules to be considered will be beneficial to the U.S. industry. Since the maturation of the Alternative Jet Fuel program will be a major environmental benefit for the public, will create a new industry within the U.S. that benefits rural America, and will benefit the U.S. aviation industry, we strongly recommend that the FAA AEE continues to allocate funds for the continuation of research on SAFs.

Finding (4): Noise Research:

Aviation nose continues to be an issue that requires ongoing research. The Subcommittee realizes that there is much research that is still necessary to address the ongoing topic of aviation noise. AEE has a number of research projects that are looking at the impacts of noise on children's learning, sleep impacts, community annoyance and cardiovascular health. AEE is looking at the certification requirements for supersonic aircraft as well as UAS that are larger than 55 pounds. AEE is also examining how to reduce the

noise from commercial aircraft and helicopters through changes in operational procedures. There are a number of new research projects that have been added to address issues related to new entrants into the aviation system. There also have been significant upgrades made to the Aviation Environmental Design Tool (AEDT). FAA has also launched an initiative to partner with airports to gather more noise data resulting from noise complaints. Finally, AEE is working with industry to accelerate the development of technologies that reduce noise through the CLEEN Program.

Recommendation (4):

The Subcommittee strongly supports the prioritization of the noise research that will support informed decision-making, the introduction of new entrants to the national air space, and enable NextGen deployment.