FAA REDAC Subcommittee on Environment and Energy
September 2019 Meeting
Findings and Recommendations

The Environment and Energy (E&E) Subcommittee of the FAA Research, Engineering and Development Advisory Committee (REDAC) met in Washington, DC on September 10 - 11, 2019. The subcommittee focused on reviewing the R&D portfolio in Environment and Energy for 2019 – 2020. Members of the subcommittee were happy to learn that there has been progress made in getting grants awarded to the Aviation Sustainability Center of Excellence (ASCENT). We were briefed on some of the results of work that has been accomplished by ASCENT, as well as other parts of the E&E Portfolio. **The Subcommittee reaffirms the belief that there will continue to be growth from commercial subsonic traffic, and a significant likelihood of new entrants including Urban Air Mobility (UAM)/ Unmanned Aerial System (UAS), supersonics civil aircraft and commercial space vehicles (in that order) and the FAA needs to be in a position to address the noise, emissions and impacts of all these users of the airspace. . The Subcommittee believes that it is vital that the U.S. maintains a global leadership position at ICAO CAEP and the FAA continues to develop the necessary knowledge, tools, and information to guide that position.** Following is the report on the outcome of this meeting. 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): - Noise Research:

The Subcommittee realizes that aviation noise is an ongoing issue that is critical to both the sustainability of our existing National Airspace System and opening new aviation markets. While there has been significant progress, additional research is still necessary to address the ongoing topic of aviation noise. If not properly addressed, it will continue to be a constraint on the growth of the U.S aerospace industry. This committee reconfirmed the current prioritization of commercial subsonic aviation, Urban Air Mobility (UAM)/ Unmanned Aerial System (UAS), supersonics and commercial space.

Noise concerns have been one of the primary limiting factors to implementing more efficient operational routes into and out of airports for commercial aircraft. There has been excellent coordination with NASA in establishing new supersonic standards, and this coordination needs to continue so that the U.S. can maintain leadership in this arena.

Smaller UAS are beginning to be used in commercial applications and there is significant investment being made in UAM concepts for moving both people and cargo. Due to the different nature of the noise generation and human perception of both of these vehicle types, current standards do not adequately apply to their certification. There is a growing sense of urgency to accelerate the understanding of noise impacts from these classes of vehicles so that proper standards can be established.

There is a strong symbiotic relationship between the FAA and NASA in the area of predicting noise, understanding impacts and also mitigating the effects of noise.

Recommendation (1):

The Subcommittee strongly supports the existing prioritization of the noise research that will support informed decision-making and enable NextGen Deployment. The FAA needs to be prepared to address certification and standards for UAM and UAS noise before these vehicles enter service. This action is urgently needed so that local communities are not compelled to establish their own standards that will both limit growth of the market and create an inconsistent and confusing regulatory environment. We recommend that the FAA strengthen its relationship with NASA in this domain and move to establish regulatory guidance related to UAM and UAS noise.

We believe that, when limited resources are available, the focus should be on impacts of commercial subsonic aviation, UAM/UAS, supersonics and then commercial space vehicles, in that order. The FAA should aggressively move forward with its research efforts as research is the key to establishing sound policy.

Finding (2): Global Leadership:

There have been indications from the European Commission that sustainability will be the number one aviation priority going forward. The Carbon Offsetting and Reduction System for International Aviation (CORSIA) that was adopted by ICAO CAEP is a result of FAA efforts and valuable research that the FAA has been doing. This research is also informing U.S. positions on international standards, such as for noise from supersonic aircraft, which in turn allows the U.S. aviation industry to maintain its competitiveness throughout the world. **The Subcommittee believes that maintaining the U.S. global leadership position at ICAO CAEP is essential to protecting U.S. aviation interests.** This position is only possible because of the FAA's ability to maintain its current research goals and its ability to evaluate the impacts of future entrants on the environment to continue to lead the world in international settings.

Recommendation (2):

The Subcommittee recommends the prioritization of all research efforts/programs that will allow the FAA and the U.S. to maintain its current global leadership position at ICAO CAEP and, in particular, to expedite university research grants through the ASCENT Center of Excellence that support the U.S. work in 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 (3): Alternative Jet Fuels:

It is the position of this Subcommittee that the work on Alternative Jet Fuels (AJF) is critical to the U.S. industry and should be supported at the highest levels. Having the FAA maintain a leadership role in the development of AJF will also ensure that the rules that are developed internationally will benefit the U.S. industry. **A lot of progress has been made in the development of AJFs and any reduction of funding for the Alternative Jet Fuel Program (including efforts in the Commercial Aviation Alternative Fuels Initiative (CAAFI), Continuous Lower Energy, Emissions and Noise (CLEEN) and ASCENT Center of Excellence will have a catastrophic effect on the maturation of this fledgling industry.** It is our view that the new companies and the industry that have been created will not be able to continue the work on AJF without government support and the policies and procedures that are currently in place. AJFs are a critical component of the industry's emissions reduction strategy and must be developed if the aviation industry is to get to its carbon neutral growth goals after 2020 and their emissions reduction goals in 2050.

Recommendation (3)

Since the maturation of the Alternative Jet Fuel program will have a major environmental benefit for the public, create a new industry within the U.S. that benefits rural America, and benefit the U.S. aviation industry, we strongly support funding for the continuation of research on AJF.

Finding (4): Public Private Partnerships:

During the meeting, the Office of Environment and Energy (AEE) provided updates on successes that have been realized as a direct result of the collaborative work that has been done with private industry, major universities through the ASCENT Centers of Excellence, other Federal Departments and Foreign Governments. **AEE has used their budgeted funds to conduct and coordinate the research necessary to produce informed 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.** Three quarters of Environment and Energy research funds generate 100% cost matching from non-federal partners (CLEEN, CAAFI, and ASCENT) and CLEEN has generated a 200% cost match thus far. It was noted that there have been improvements made to the grant approval process and most of the grants that were stuck in the government's pipeline, are now moving forward.

Recommendation (4):

As has been shown by the successes that have been realized, the Subcommittee continues to endorse the robust funding of Public Private Partnerships (PPP) like the CLEEN, CAAFI and ASCENT that leverage scarce resources and helped the U.S. to maintain a leadership position at a global level. **The Subcommittee recommends that FAA continues its strong support of these PPPs to continue to realize value of both U.S. industry and to bolster FAA's position in international settings.** The Subcommittee is also pleased with the close collaboration between NASA and the FAA. The subcommittee supports the

improvements that have been made to the existing grant approval process, but would like to see additional streamlining of the process to reduce the time required to go from idea development to grant execution.

Finding (5): Emissions

AEE has identified challenges associated with the use of the Aviation Environmental Design Tool (AEDT) to evaluate compliance with air quality standards. AEE has also identified challenges in getting air quality and noise data to support modeling efforts. **The FAA relies on AEDT to accurately conduct environmental impact analyses of proposed changes to airspace and airport design.** The Subcommittee is supportive of the work that has been done to develop this tool, but believes that a plan needs to be developed to address air quality modeling challenges and to compare AEDT results with field measurements.

Recommendation (5):

The Subcommittee recommends the FAA continue the simultaneous balanced development of usability improvements, enhanced features, and increased accuracy of AEDT in the near term. The FAA should make a point of emphasis to improve the dispersion modeling that is used by AEDT to evaluate air quality impacts. We also recommend that the FAA reach out to airports that use air quality and noise monitors and partner with them in order to get their emissions and noise data that would support their modeling efforts.

Finding (6): Staffing

Staff vacancies within the organization are a big concern. The Subcommittee is very supportive of the work that AEE does and believes that E&E is well managed and has a well balanced portfolio. We also know that the workload has increased and that they do not have the full complement of staff that is required to maintain the same level of research to inform decision making and advance solutions such that the FAA can achieve its core mission. The loss of skilled staff could further delay the completion of critical projects. We are happy to hear that the FAA has a plan and is committed to addressing the staffing vacancies.

Recommendation (6):

The subcommittee recommends the FAA place a high priority on filling staff vacancies to manage the AEE portfolio and support the expanding workload.