NASA Advisory Council Aeronautics Committee Meeting
March 13, 2024
NASA Headquarters Mary W. Jackson Building
Washington, DC

Welcome

Dr. John-Paul Clarke, committee chair, called the meeting to order. Introductions were made and new members of the Committee were welcomed. Information regarding the purpose and scope of the Committee's discussions, findings, and recommendations were described. This meeting was conducted in a hybrid style, with some attending in person at NASA Headquarters in Washington, DC and others attending virtually.

ARMD Portfolio and Fiscal Year 2025 Budget

Mr. Robert Pearce, NASA's associate administrator for Aeronautics, gave a presentation of the proposed Fiscal Year 2025 budget for NASA's Aeronautics Research Mission Directorate (ARMD). The presentation included brief overviews of each of ARMD's four transformational areas, programs, and key projects and their individual goals.

Discussion

There was discussion throughout Mr. Pearce's presentation identifying areas where the various goals of ARMD's programs and projects may conflict with one another, where new challenges of ARMD's vision could arise.

Dr. Clarke summarized the discussion as a need for integration across areas like Advanced Air Mobility, Future Airspace, and High-Speed Commercial Flight, especially with regards to the latter's fuel efficiency, noise abatement, or wake turbulence.

Dr. Clarke provided the specific example of ARMD's development of a small jet engine core potentially informing the materials research for hypersonic research.

Finding:

1. The Committee finds that the ARMD's research portfolio substantively addresses key challenges in aeronautics. However, more thorough emphasis could be placed on the synergies between ARMD's programs to develop and identify projects addressing issues that apply to more than one program, as well as quantifying how the programs jointly provide benefits greater than the sum of

their parts. For example, materials research for engine-core technology may also provide benefits to hypersonic research.

STEM Education and Workforce Recruiting

Mr. Mike Kincaid, NASA's associate administrator for STEM Engagement; Dr. John Cavolowsky, ARMD's director for the Transformative Aeronautics Concepts Program; and April Lanotte, ARMD's STEM engagement lead, gave an overview of NASA's Office of STEM Engagement's activities, how ARMD interfaces with them, and workforce recruiting and retention within ARMD. Additional focus was paid to STEM and workforce initiatives that stand out compared to other NASA initiatives.

Mr. Kincaid explained in detail NASA's various outreach activities including its vastly successful internship program, the speakers' bureau, K-12 resources for teachers and students, and other investments and awards made by the Office of STEM Engagement.

Ms. Lanotte introduced ARMD's individual K-12 STEM products ranging from activities for kids to resources for their teachers and educators. She also explained an overall goal of providing continuity spanning K-12 and into postsecondary education to best transition people into a career involving STEM.

She described the importance of remembering "non-STEM STEM majors" as well – those career paths not directly in the sciences, but which have direct pathways into STEM fields. She provided examples of how humanities majors are critical to the success of the overall field of science.

Dr. Cavolowsky outlined some of the projects in his portfolio, such as the University Innovation project and similar endeavors, and how they address certain challenges and needs involving workforce and career development.

He described how activities such as the University Leadership Initiative (ULI) and Gateway to Blue Skies competition are designed to inspire and enable the next generation of researchers and entrepreneurs – not just for ARMD, but the broader aeronautics enterprise. He explained how these activities are attracting students and other early-career researchers to NASA for the first time, as well as reaching underserved institutions and more diverse thinkers.

Dr. Cavolowsky also explained the Convergent Aeronautics Solutions and Transformational Tools and Technologies projects, and how they recruit and support innovative, multidisciplinary research activities, as well as the workforce driving those activities. He described how these projects discover the innovative ideas that have substance and potential, and thereby, can retain early-career workforce members into their mid-careers.

Discussion

Ms. Dorothy Reimold suggested there be a pathway connecting NASA's K-12 initiatives with tangible career opportunities, explaining how many who are interested in a STEM career are rightfully mentored in STEM programs, but then no further guidance or opportunities are provided as to entering the workforce and starting a career.

Dr. Michael Winter stated there is an opportunity to harness newfound interest in aerospace, with the context being that aerospace is "cool" again, with prospective workforce members returning to the field after Silicon Valley and others attracted them away for several years.

Dr. Todd Citron added how NASA's creation of STEM resources for teachers and educators is uniquely beneficial, expressing how few in industry do so, and how NASA could leverage the private sector to disseminate and distribute these materials.

A discussion ensued on the "connective tissue" holding together NASA's STEM initiatives, industry, and the prospective workforce. For example, how these initiatives and their benefits could be spread further to more organizations such as tech companies and educational institutions.

Mr. Bunce suggested younger members of NASA's workforce be the messengers for NASA's STEM initiatives and outreach. He explained the benefit in kids being provided with a role model closer to their age instead of much older, as well as how much savvier the younger members of the workforce would be in communicating these messages, especially in newer mediums. Mr. Bunce also proposed more collaboration at the joint-enterprise level for STEM outreach.

He also proposed that, since NASA and ARMD receive far more applicants than can be accepted into activities such as ULI, Gateway to Blue Skies, and internships, that a pathway could be established for these early-career researchers could interface with industry.

Ms. Reimold concurred with Mr. Bunce and expressed how interns are in demand at other organizations, and there is potential to expand and leverage the pipeline.

Mr. Billy Nolan emphasized the importance of students having unique ideas and solutions for how to bridge the gap between near-term and far-term visions for aeronautics, specifically, the National Airspace System (NAS). He highlighted how these solutions can come not just from the research, but everything that follows it holistically, such as pilots, aviation maintenance technicians, and others.

Mr. Nolan, Dr. Clarke, and Dr. Helen Reed both commended ARMD's efforts in recruiting and retention and how they are coupled to researching innovative solutions in a larger vision for the future of aeronautics. Dr. Reed appreciated the efforts to reach early-career people with opportunities to pursue new ideas not necessarily connected to their day jobs.

Dr. Reed also emphasized the importance of non-traditional majors, bringing up the examples of journalism or business majors and how they can tell the story out and work critical areas of the field not tied to conducting the research itself.

Findings:

1. The Committee is pleased with the efforts made by ARMD to recruit and retain its workforce. In particular, the Committee applauds the effort to reach out to individual, ad-hoc research activities as a way to integrate different kinds of thinkers and establish a mid-career pathway for them.

2. The Committee commends ARMD's efforts to create resources and content specifically for teachers and finds a further need to expand the distribution of these teacher-oriented products.

3. The Committee finds there is an opportunity to engage students and other prospective workforce members with outreach from younger members of NASA's workforce, who are not as far removed from being students themselves and are more likely be able to communicate their journey.

4. The Committee finds there could be avenues by which NASA could help industry bring together its outreach initiatives as a joint enterprise-level effort. For example, since NASA is not able to absorb all the applicants to initiatives such as internships or ULIs, these applicants could potentially be connected to other opportunities on the industry side.

5. The Committee finds ARMD's efforts to reach out to non-STEM majors is a worthwhile endeavor worthy of further pursuit, especially considering that future workforce needs and demands extend beyond STEM capabilities and activities.

NASA 2040 Initiative

Mr. Jon Montgomery, ARMD's deputy associate administrator for policy, gave a presentation on the NASA 2040 initiative and its agencywide vision for improving and evolving the agency into the future. He explained in detail the strategy of NASA 2040 and how it is being executed by senior NASA leadership, and examples of the types of future challenges and potential strategies addressing them.

His presentation covered how NASA 2040 examines the agency holistically, ranging from infrastructure to budget to people and beyond, and is leveraging strengths and weaknesses of the current agency's various offices, facilities, and mission directorates into a more unified, integrated agencywide approach to ushering itself into the future.

Discussion

Mr. Nolan pointed out the question of what the world itself looks like in 2040, specifically, the NAS. He posited that NASA is the "brains" of not just the future NASA, but plenty of other areas in aerospace, but it isn't always leveraged as such by other agencies.

Mr. Bunce suggested there could be synergy between NASA 2040 and a "NAS 2040" – how NASA, the FAA, and others could position themselves to be prepared to usher in the future NAS and its wide-ranging new capabilities and infrastructure. He pointed out mutual interests between different components of separate areas of the government, such as congressional committees, the FAA, or the National Oceanic and Atmospheric Administration. He asked if there is a way to get these organizations to complement each other in a truly integrated NAS 2040 vision.

The discussion shifted to how to tell the ARMD story and NASA 2040 story concisely with a guiding north star for ARMD. Dr. Citron asked what a potential two-minute video about NASA 2040 would focus on, as opposed to covering separate areas not necessarily relating to one another, with the rhetorical questions of what life is like in 2040 and how NASA is making that happen.

Findings:

1. The Committee commends NASA for taking on the NASA 2040 initiative and recognizes that transforming the agency is a daunting challenge.

2. The Committee finds there is an opportunity to align and converge the spirit of the NASA 2040 initiative with the government-wide vision for a NAS 2040. As NASA envisions what aeronautics holistically looks like in 20 years, it could also consider how to synergize its capabilities, infrastructure, and budgetary limitations to set itself up for bold leadership and success – as well as establish a north star for concisely articulating what ARMD is all about.

Public Comments

A public comments period was offered as required. One question was received in the meetings chat section online, asking if the NASA 2040 initiative is in response to the

NASA mission-critical workforce infrastructure and technology study conducted by the National Academies.

Mr. Montgomery answered NASA 2040 is not a result of that, however, several of the topics discussed in that study are similar to conversation topics in NASA 2040 and that the study's results will be taken into account once the final report is reached.

Conclusion

The meeting of the Committee was concluded with discussions on the timeline and plans for future meetings.

MEETING ADJOURNED

List of Attendees

Committee Members:

1. Dr. John-Paul Clarke (Chair)
2. Mr. Peter Bunce
3. Dr. Todd Citron
4. Mr. Jay Dryer (Virtual)
5. Ms. Lisa Ellman
6. Mr. Billy Nolen
7. Ms. Susan Pfingstler
8. Dr. Helen Reed (Virtual)
9. Ms. Dorothy Reimold
10. Dr. Hassan Shahidi
11. Dr. Michael Winter

NASA:

12. Dave Berger
13. John Cavolowsky
14. Olivia Carte
15. Robert Clark
16. Sasha Ellis
17. Barbara Esker
18. John Gould (FedWriters)
19. Starr Ginn
20. Mike Kincaid
21. April Lanotte
22. Nateri Madavan
23. Samantha Magill
24. Lee Noble
25. Naseem Saiyed
26. Tara Strang
27. Gerard Welch
28. Alicia Wesley (eMITS)

External (affiliation identified if provided):

29. Mary Cowser
30. Sam Magill
31. Lee Olson (FAA)
32. Richard Rogers
33. Zoe Wai (GISS/NCS)
34. Brunel
35. Yohan