



Agair Aviation Solutions for Agriculture



The Gateways to Blue Skies competition is managed by the National Institute of Aerospace (NIA) on behalf of the National Aeronautics and Space Administration (NASA)

TABLE OF CONTENTS

TABLE OF CONTENTS	2
NASA AERONAUTICS & UNIVERSITY INNOVATION PROJECT OVERVIEW	
GATEWAYS TO BLUE SKIES COMPETITION OVERVIEW	
2025 COMPETITION THEME BACKGROUND & CONTEXT	
2025 COMPETITION THEME DESCRIPTION AND DETAILS	5
ELIGIBILITY	
AWARD FUNDING FOR FINALIST TEAMS	
DATES AND DEADLINES	7
NOTICE OF INTENT	
PROPOSAL AND 2-MINUTE VIDEO	
PROPOSAL GUIDELINES VIDEO GUIDELINES PROPOSAL AND VIDEO EVALUATION CRITERIA SUBMITTING THE PROPOSAL AND VIDEO	
INTELLECTUAL PROPERTY (IP) AND MEDIA RELEASE	
Intellectual Property - Summary Media Release	
DELIVERABLES FOR FINALIST TEAMS	16
FINAL TECHNICAL PAPER GUIDELINES INFOGRAPHIC GUIDELINES FINAL EVALUATION CRITERIA SUBMITTING FINAL TECHNICAL PAPER AND INFOGRAPHIC FILES PRESENTATION GUIDELINES SUBMITTING THE PRESENTATION	
PRIZES AND AWARDS	22
CONTACT INFORMATION	23
NATIONAL INSTITUTE OF AEROSPACE	23

Change Log

- 27 February: Forum registration date changed from April 15 to April 17.
- 6 February 2025: ACH Form requirement at time of proposal was removed. The ACH Form is no longer required at the proposal stage.
- 1 November 2024: Notice of Intent Submission Deadline was changed from October 22, 2024 to Rolling (until 11:59 PM Eastern on February 17, 2025)
- 1 November 2024: Submit a Question Deadline was changed from November 4, 2024, to November 6, 2024.

NASA Aeronautics & University Innovation Project Overview

NASA's Aeronautics Research Mission Directorate (ARMD) conducts research that generates concepts, tools, and technologies to enable advances in our Nation's aviation future. ARMD programs facilitate a safer, more environmentally friendly, and efficient national air transportation system.

As a program within NASA ARMD, the <u>University Innovation Project (UI)</u> funds university-led innovation to address systemlevel challenges in NASA Aeronautics' <u>strategic plan</u>, which guides the Aeronautics programs. This is done through NASAcomplementary, independent, alternative, and multi-disciplinary research. The main UI research opportunities include the University Leadership Initiative (ULI), the University Student Research Challenge (USRC), and the Gateway to Blue Skies Competition.

Gateways to Blue Skies Competition Overview

Blue Skies expands engagement between universities and NASA's University Innovation Project, industry, and government partners by providing an opportunity for multidisciplinary teams of students from all academic levels (i.e., freshman, sophomore, junior, senior, and graduate) and majors to tackle significant climate-related challenges and opportunities that can be addressed by the aviation industry through a new project theme each year. The competition is guided by a push toward new technologies as well as environmentally and socially conscious aviation.

Through the 2025 Blue Skies Competition, collegiate-level student teams will **conceptualize novel aviation systems that can be applied to agriculture by 2035 or sooner with the goal of improving production, efficiency, environmental impact, and extreme weather/climate resilience.** Teams are encouraged to consider high-potential technologies and systems that aren't currently mainstream or highly regarded as becoming mainstream in the future and imagine beyond applying sensors to aviation systems.

This challenge seeks to investigate either new or improved aviation capabilities that, if developed further or approached differently, could modernize aviation capabilities in agriculture, increasing impact, safety, and ease of access to both these enabling systems and the products/services they ensure. For this competition, participants are asked to focus on cropland, rangeland, and livestock management. **Forestry and aquaculture are excluded.** Solutions should be aviation-centered.

Initial participation involves a conceptual systems-level study, submission of a 5–7-page proposal, and creation of a video summarizing the team's proposal. Based on the review of proposal submissions, up to 8 teams may be chosen as finalists to further develop their proposals into an 8-10 page final technical paper, an infographic summarizing their concept, and to present their findings in a competitive review during the Gateways to Blue Skies Forum at NASA's Armstrong Flight Research Center. Each finalist team will receive a monetary award to facilitate full finalist participation. Internship opportunities* with NASA's ARMD serve as the competition prize for members from the winning team.

*Please review <u>NASA's Internship Eligibility at a Glance</u> for more information about Blue Skies prize eligibility.

2025 Competition Theme Background & Context

The agriculture industry plays a vital role in providing food, fuel, and fiber for the global population. It not only sustains human life but also contributes significantly to the economy of many countries. However, the industry faces several challenges, including limited resources and growing demands to reduce agriculture's environmental impact while increasing its climate resilience. With a growing world population, the demand for food continues to rise, putting pressure on available resources such as arable land, water, and energy. The changing climate exacerbates these challenges by leading to unpredictable weather patterns, extreme temperatures and natural disasters affecting crop yields and livestock. To ensure food security and sustainability in the face of these challenges, the agriculture industry must swiftly innovate and adapt to more efficient and resilient farming practices, embracing new technologies and promoting sustainability throughout the process.

NASA Aeronautics is dedicated to working with commercial, industry, and government partners in advancing aviation systems that could help modernize capabilities in agriculture as the industry adjusts to changes in productivity, efficiency, environmental impacts, and extreme weather/climate. Capabilities and opportunities for improvement include, **but are not limited to**:

- Cropland/Rangeland surveyance, conservation, tracking, and inspection
- Pest and disease management
- Agriculture inspection prior to and following damaging natural or human-caused events
- Targeted application of fertilizers and protectants
- Agricultural essential variables, examples of NASA Acres EAV's can be found <u>here</u>
- Autonomous or remotely piloted missions considered extremely risky for humans
- Livestock management
- Improved weather prediction update accuracy and frequency
- Some examples of new, recent agricultural aviation can be found <u>here</u>

Opportunities exist to improve currently deployed systems and/or implement new technologies by modernizing aviation capabilities in agriculture to increase impact, safety, and ease of access. Aviation systems can be widely inclusive, with variation in vehicle system type and application (e.g., fixed wing, drones, traditional aircraft, tethered applications, balloons, autonomous or crewed flying vehicles). Proposed solutions should be aviation-first, with primary focus on the aviation systems being employed, but should include well-described end-user applications, system operations and methods, and user relevance and adoptability. Teams should consider how the proposed technology can integrate with or replace existing systems. The competition is keenly interested in innovative concepts, with evaluation weighted toward sound technical analysis and justification of the proposed concept according to the theme description and details.

2025 Competition Theme Description and Details

In the 2025 Blue Skies Competition, teams will **conceptualize novel aviation systems that can be applied to agriculture by 2035 or sooner with the goal of improving production, efficiency, environmental impact, and extreme weather/climate resilience.** Teams are encouraged to consider high-potential technologies and systems that aren't currently mainstream or highly regarded as becoming mainstream in the future and imagine beyond applying sensors to aviation systems.

Proposing teams will:

1. Assess the situation: Select a specific agricultural area/management practice that is affected by changes in the industry and environmental landscape or that is a good opportunity space for improvement. For this specific area/management practice, assess its current state, the people/processes involved in its management, and any relevant equipment or technology currently utilized. In addition, identify the predicted demands of the future that can be met with proposed aviation solutions.

NOTE: Teams are not limited to the list of application or aviation vehicle technology examples provided and are encouraged to select an application / technology about which they are passionate or that may affect them regionally or personally.

- 2. Identify a use case & propose a solution: Conceptualize and justify a system that can effectively meet the situational needs of your specific team-selected area/management practice (i.e., use case) and which is deployable by 2035 or sooner. Identifying agricultural management techniques to which the proposed concepts can be applied will be an important part of this proposal discussion area.
 - a. Teams may consider adopting **new** technologies, proposing **updated** technology applications, **integrating** technologies used elsewhere, making **better use** of existing technologies, **evolving** organizational practices to better employ technologies, etc.
 - b. Consider the operational context surrounding the system, i.e., those impacted by the technology, decisions made from information collected (and who makes the decisions), what part of the process is the technology improving, etc.
- 3. **Conceptualize/analyze technical development and implementation:** Provide an overview and concept of operations (ConOps) of the system, addressing the team-selected application/use case. Concepts must consider:
 - a. Minimal barriers to adoption/use (i.e., effectiveness, simplicity, high reliability, maintenance, user-friendliness, relevance to current operations/ag society norms)
 - b. Cost/return on investment and economic impact
 - c. Support system requirements and TRL
 - d. Connectivity constraints (internet, power, GPS, etc.)
 - e. Challenges posed by adverse environmental conditions (weather, wind, rain, smoke, etc.)
 - f. Interoperability with existing people, processes, organizations, solutions, and technologies
 - g. Expected improvement over existing practices
- 4. Chart a path to deployment: Provide a pathway and timeline to deployment for the systems by 2035 or sooner, including, but not limited to: <u>technology readiness levels</u>, training, customer/stakeholder operational integration requirements, and opportunity/barrier analysis (technology/development, policy and regulations, risks, etc.).

Teams are highly encouraged to contact appropriate stakeholders to better understand the impacts of climate change on agricultural processes and current management approach gaps that may be addressed through aviation-related systems.

Eligibility

The Gateways to Blue Skies competition is open to full-time or part-time undergraduate and graduate students at an accredited U.S.-based community college, college, or university. Teams may also include senior capstone students, clubs, and/or multi-university teams. **Multidisciplinary teams and teams from Minority Serving Institutions are highly encouraged to apply!**

University Teams Must Include:

- At a minimum, teams must contain one faculty advisor with a college/university affiliation at a lead U.S.-based institution, and 2 U.S. citizen (or lawful permanent resident) students from that lead U.S.-based college/university who work on the project and present at the culminating Blue Skies Forum.
- Team size is limited to a maximum of 6 student team members.
- A faculty advisor is encouraged to attend the Forum with each team.

Special Eligibility Considerations

- An individual may join more than one team.
- A faculty advisor may advise more than one team.
- A university may submit more than one proposal.
- Team members may not be federal employees acting within the scope of employment (this includes co-op students with civil servant status).
- The expectation is that Blue Skies projects are student-led initiatives (i.e., students are doing the work).
 - Faculty take on the role as mentors, and if a team is selected as a finalist, help manage any monetary awards sent to the university.
- Blue Skies projects should originate in the academic environment, versus from a business or professional endeavor.

Special Notes Regarding Foreign Nationals

Foreign Nationals (FNs) attending the proposing U.S.-based university can participate on a Blue Skies competition team, with notable exclusions. *Due to NASA security restrictions and policies, FNs will not be able to attend culminating Blue Skies Forum events that take place on-site at a NASA Center (including tours). FNs are also ineligible for the internship prize.* There will be no exceptions to this policy. FNs can, however, participate in any portions of the culminating Blue Skies Forum that take place off-Center. Blue Skies Competition forums typically take place at a NASA Center with limited activities off-Center.

Foreign Universities: Ineligible

Eligibility is limited to universities in the United States. Foreign universities are not eligible to participate in the Blue Skies Competition.

Award Funding for Finalist Teams

Up to 8 finalist teams will be selected to present their 2025 Blue Skies concepts at NASA's Armstrong Flight Research Center in late May 2025. Each team will be awarded \$8,000 to facilitate each team's full competition participation.

NOTE: Blue Skies funding **may not be used** to directly support travel or stipends for federal employees acting within the scope of employment (including co-op students with civil servant status). Awards will be issued in April 2025 following the selection of finalist teams.

Dates and Deadlines

Note: All deadlines must be met by 11:59 PM Eastern Time on the date specified below, unless otherwise indicated.

DATE	DESCRIPTION
Rolling Previously, October 22, 2024	Notifications of Intent (NOI) submissions deadline (non-binding)
November 6, 2024	Deadline to submit questions in advance for 1 st Q&A Session
November 20, 2024	Q&A Session #1 for interested teams (3:30-5:00 PM Eastern Time)
January 23, 2025	Q&A Session #2 for interested teams (3:30-4:30 PM Eastern Time, Open-Call Format)
February 17, 2025	Deadline to submit Proposal and Video
March 14, 2025	Teams are notified of their selection status
April 17, 2025	Deadline for Online Registration and Payment for the Gateways to Blue Skies Forum
April 20, 2025	Deadline for Hotel Reservations at Gateways to Blue Skies Group Rate
May 4, 2025	Deadline to submit Final Technical Paper & Infographic
May 16, 2025	Deadline to submit Presentation/Chart Deck Files (Noon Eastern Time)
May 20-21, 2025	2025 <u>Gateways to Blue Skies Forum</u> at NASA's Armstrong Flight Research Center NOTE: Subject to change. The Forum may be extended by up to one day to accommodate additional travel time to and from NASA Armstrong Flight Research Center.

(Click image below to expand in web browser.)



Notice of Intent

Notice of Intent Deadline: 11:59 PM Eastern Time October 22, 2024

Interested teams are strongly encouraged to submit a Notice of Intent (NOI) to compete by the deadline to stay informed of competition news, and for program managers to ensure an adequate number of proposal reviewers. Teams are limited to one NOI. Teams who submit an NOI by the deadline will receive an exclusive invitation to participate in the Q&A sessions with judges prior to the proposal due date and will receive all competition updates. NOIs submitted by the deadline will be reviewed, and teams with concepts outside of competition parameters will be notified. NOIs do not need to be comprehensive, are non-binding, and intended concepts may change prior to proposal submission.

To complete the brief NOI form, visit the <u>Blue Skies Competition Details website</u>.

The following information will be requested on the NOI submission form:

- Name of College or University
- Partnering universities (if any)
- Project title (if known)
- Contact information for the faculty advisor and student team lead
- Contact information for additional advisors/team members (if applicable)
- Synopsis (high-level overview) of the proposed concept (limited to 1,500 characters), including specific agricultural area selected.

Optional (but requested) items:

- Where do you seek information about available academic opportunities / academic competitions?
- Please suggest other avenues for competition awareness (i.e., specific database listing, newsletter distribution, etc.)
- What made you want to participate in this competition?

Proposal and 2-Minute Video

Proposal and Video Submission Deadline: 11:59 PM Eastern Time on February 17, 2025

Submitting teams represent and warrant that the team is the sole author of the submission, that the submission is wholly original, that it does not infringe on any copyright or any other rights of any third party of which the team is aware, and that the electronic proposal and video submission are free of malware. Teams may not have any portion of their submissions created by non-team members, which includes the use of tools such as Generative AI.

PROPOSAL GUIDELINES

Proposal Expectations

Robust proposals are expected, which demonstrate a strong basis of research analysis. The Gateways to Blue Skies judging panel will be seeking well-developed concepts that have strong potential for concept development in the technical paper. Innovative systems with sound analyses are more likely to advance to the finals. The proposal should reflect the total scope planned for the final paper. Permitted length is a minimum of 5 pages and maximum of 7 pages.

Required Proposal Elements:

Utilize the <u>Checklist for a Successful Proposal</u> to ensure your proposal is complete prior to submitting. **Note, be prepared to upload a higher resolution version of your Quad Chart image during proposal submission.

Cover Page (Excluded from page limitation)

- Proposals must include a cover page with the following information:
 - o University name
 - o Project title
 - Team Photo and/or Individual Photos labeled with the full names of all team members [including faculty advisor(s)] along with major course of study and academic level of each student (undergraduate or graduate).
 - OPTIONAL, but encouraged: A graphical depiction of proposed concept.
- Teams should reference the sample <u>Cover Page</u> when submitting proposals. Sample can be found on the "Proposal" section of the <u>2025 Challenge Details webpage</u>.

Quad Chart (Excluded from page limitation)

- A quad chart is a form of technical documentation used to briefly describe a concept or innovation through writing, illustration and/or photographs. It is a useful tool for decision making and should accurately and succinctly represent the proposal. Teams must insert the provided <u>Quad Chart Template</u> as an image into their proposal. Quad charts must address:
 - A project summary
 - An image/graphic of all or part of the concept. Consider the graphic requirement as an "artist's depiction" of the concept, as opposed to a flow chart, diagram, UML, or similar.
 - A description of the team composition
 - Proposed deployment timeline
- Proposers must use the <u>Blue Skies Proposal Quad Chart Template</u> when submitting proposals. Template can be found on the "Proposal" section of the <u>2025 Challenge Details webpage</u>.

Abstract/Summary (Excluded from page limitation)

Include a brief summary (no more than 2 paragraphs) of the specific agricultural area selected, team-selected use case, proposed novel aviation system, and the approach being used to incorporate the technology into operations. Include an overview of the anticipated challenges and opportunities of integrating the proposed systems into operations, which will be expanded upon in the proposal. This summary gives the reader a quick glance at the *Why? What?* and *How?* of the project.

The body of the proposal must (5-7 pages):

- 1. Assess the situation
- 2. Identify a use case and propose a solution
- 3. <u>Conceptualize implementation</u>
- 4. Chart a path to deployment

It is imperative that teams address all the criteria listed in the <u>Theme Description and Details</u> section above, in summary form if necessary due to space limitations. If needed, placeholders may be left for analysis not yet completed (to be completed if selected as finalist) but must be well justified and relevant. Proposing teams should clearly identify their assumptions and provide the justifying rationale to support them.

NOTE: The bulk of the proposal should focus on Items 3 and 4. It is up to each team to prioritize space allocation to formulate the best proposal for the judges' consideration. A good rule of thumb is to provide enough information to justify your vision for concept/deployment by 2035 or sooner but allocate more of your available space to the analysis of that vision. The proposal should be a clear articulation of the intended path forward, should the team be selected as a finalist.

Appendices, if needed (Excluded from page limitation)

Appendices are to be used for references and calculations ONLY and should be included after the main body of the proposal. Judges are not obligated to read beyond the stated page limit; therefore, all pertinent information should be included in the paper's main body.

Faculty Advisor Attestation

The proposal submission form includes a PDF file upload for the Faculty Advisor Approval Attestation Template.

- IMPORTANT! Submissions without a valid Faculty Advisor Approval Attestation will be deemed non-compliant and will not be reviewed.
- Use "2025 Blue Skies University Name Advisor Proposal Attestation" as file naming convention.

Proposal Tips

- Start with a big picture view of your concept's context and use case to frame your solution and rationale. Consider the proposal page limit when determining the appropriate level of analysis details (i.e., higher systems level analysis).
- A strong proposal will make a compelling argument convincing judges of a concept's feasibility and viability. TBD placeholders should be well-justified, relevant and not overused/abused.
 - If results/details are not available yet, or are still being finalized, it is valuable to indicate that they are forthcoming and how they will be determined. If not mentioned, judges may assume it is not being addressed.
- A picture is worth a thousand words and can convey a lot of information. Images for the proposal are a plus where appropriate. Show your innovation! (Please do not include illegible hand-drawn sketches).
- Consider multiple facets of the issue, utilizing a multi-disciplinary approach to provide a well-rounded concept & analysis.
- Consider including team members from a variety of disciplines.

- Utilize all available page space.
- Report quality is considered in the judges' scoring. Poor grammar, typographical errors, etc. do not reflect well on your team and will be penalized.
- Make use of published papers and reports available to you. Resources can include **but are not limited to** those posted on the <u>Competition Details webpage</u>.

Proposal Formatting Guidelines

Teams are responsible for the formatting and appearance of their proposal. Figures and tables must be embedded and therefore must be in digital format. We recommend teams use image files with a minimum dpi of 150.

- Proposal must be a minimum of 5 pages and a maximum of 7 pages.
 - The Cover Page, Quad Chart, Abstract, Table of Contents (if used), and Appendices are excluded as a part of the total page limit. They do not count toward the minimum or the maximum page limitations.
 - References should be included as an appendix at the end of the document and will not count toward the minimum or maximum page limits. **Appendices are to be used for references and calculations ONLY.**
 - Note: Judges are not obligated to look at anything beyond the listed page limit, including the appendices. Include important details in the body of your proposal to ensure they are reviewed.
 - There is no preference in citation formatting, but references must be formatted uniformly and correctly. Simply listing a link to the source is not acceptable.
 - Papers should be single-spaced and single column.
 - Margins should be a standard 1" (2.54 cm) all the way around (top, bottom, left, and right).
 - Use of information graphics, tables, and charts are highly encouraged where appropriate (a well-conceived graphic can convey multiple pages worth of text and convey a deeper understanding of the problem and solution).
- Please use fonts common to Macintosh and PC platforms, i.e., Times, Times New Roman, Helvetica, Calibri, or Arial for text; Symbol for mathematical symbols and Greek letters.
- Font size should be 11 or 12 pt. (including in all tables, charts, and graphs).
- Use "2025 Blue Skies University Name Proposal" as naming convention

VIDEO GUIDELINES

Video Expectations

As a part of the proposal submission process, teams will be required to include a 2-minute video. The video should introduce the team, concept, and value proposition. It additionally provides an opportunity to augment the proposal with animation, graphics, or other creative ways of showcasing unique aspects of the proposed concept. Teams should avoid using a PowerPoint/presentation style approach.

• To address the value proposition: Before investing in a product, program, or research, stakeholders want to understand the vision for the concept, the problem it seeks to solve, the scale of the problem (i.e., market size), the product and what makes it unique, and the path for implementation. The <u>Heilmeier Catechism</u> represents the potential thought process of a stakeholder who is considering proposal funding.

Video Formatting Guidelines

- Videos are limited to a maximum length of 2 minutes.
- Videos should be uploaded to YouTube. Teams will provide their video's YouTube URL on the online proposal submission form. Other types of video files will not be eligible for consideration.

- Videos need to be **publicly viewable** via a link. Videos should be "Unlisted" or "Public" on YouTube.
 - Troubleshooting Tip: YouTube accounts sometimes need to be verified prior to being able to fully upload videos. If your video is stuck in the "processing" stage, check to <u>make sure your YouTube account is verified</u>.
- Include university name and project title in text at the front of the video.
- All team members should appear in the video, if possible (still images are OK)
- Do not use music or images which may violate copyright law. NASA nor NIA can approve the use of copyrighted material. You may use images created by NASA.

PROPOSAL AND VIDEO EVALUATION CRITERIA

The <u>2025 Blue Skies Scoring Matrix</u> outlines how proposals will be evaluated, including point-value assessment. The proposal and video together can earn a maximum of 100 points.

Proposal Evaluation Criteria (80 Points Total)

Proposals will be judged based on:

- Situation Assessment: Sound technical / scientific / engineering analysis, evaluation, and rationale of the selected agricultural area and its challenges, needs, the specific use case/opportunity for impact, and aviation system(s) proposed to address the opportunity, indicating thorough and proper analyses conducted or to be conducted. (Max 20 points)
- **Concept of Operations Overview:** Clear depiction of systems integration approach, including an understanding of integration factors and necessary trades: simplicity, cost/ROI, support system requirements, connectivity constraints, limitations posed by environmental conditions, expected improvements over existing practices, and interoperability with existing people, organizations, solutions, and technologies. (Max 20 points)
- Implementation Analysis: Sound analysis of pathway and timeline to implementation by 2035 or sooner, including, but not limited to: technology readiness levels, training, barrier analysis, customer/stakeholder operational integration, etc. (Max 15 points)
- Innovation: Of proposed aviation system in agriculture (i.e., a novel approach or proposed system, creative re-use of an existing technology, an improvement to a process that substantially and measurably lowers cost or improves efficiency and/or safety, etc.). (Max 15 points)
- **Proposal Compliance:** Proposal complies with all proposal requirements [i.e., inclusion of all required sections (as stated in the Overview and Competition Theme Description) and forms; adherence to format and page count requirements] (Max 5 points)
- **Composition/Grammar/Cohesion:** Paper utilizes excellence in the English language, grammar, and composition to effectively convey concepts. (Max 5 points)

Video Evaluation Criteria (20 Points Total)

- **Relevance to Proposed Concept:** Video enhances/highlights aspects of the team's concept(s) and/or increases understanding of aviation systems. (Max 10 Points)
- Value Proposition: Video provides clear, compelling argument for investment. (Max 5 points)
- **Overall Impression:** Video content is professional, visually appealing, organized, and flows. Viewers can easily follow the material. (Max 5 Points)

SUBMITTING THE PROPOSAL AND VIDEO

To upload your proposal and video (.pdf files and link), please visit the <u>Blue Skies Competition Details website</u>. **Utilize the** <u>Checklist for a Successful Proposal</u> to ensure your proposal is complete prior to submitting.

No revisions will be accepted after submission, so proof your proposal and video files carefully before submission. If there are any technical problems with the content of your proposal or video (for example, your file was corrupted or a URL link was broken), we will try to contact you immediately. Be sure to provide up-to-date contact information on the submission form.

Late submissions will not be accepted, and the submission form will close promptly at midnight.

The following information will be requested on the Proposal and Video Submission Form:

- College/University name
- University or Industry partners (if any), including contact information
- Project title
- Faculty advisor & student team lead contact information
- Team Member Information (Academic Major and Year in School)
- Survey Questions
 - How did your team hear about the Gateways to Blue Skies Competition?
 - List all departments and organizations from your college/university that contributed to your proposal.
 - e.g., College of Engineering Chemical, Engineering Policy; College of Architecture Urban Planning; Department of Art; AIAA Student Chapter
- File upload for PDF proposal document
- Use "2025 Blue Skies University Name Proposal" as naming convention
- URL link for team's public or unlisted YouTube video
 - Note: Video MUST be "Unlisted" or "Public." Private videos are not publicly viewable and may result in disqualification.
 - Use "2025 Blue Skies Proposal: University, 'Project Title'" as naming convention.
- A high-resolution photo or graphic of all or part of your concept, with a minimum dpi of 300
 - This can be the same image included in your quad chart. Consider the graphic requirement as an "artist's depiction" of the concept, as opposed to a flow chart, diagram, UML, or similar.
 - Use "2025 Blue Skies University Name Graphic" as naming convention.
- IMPORTANT: PDF file upload for Faculty Advisor Approval Attestation <u>using the provided template</u>
 - Note: Submissions without a valid Faculty Advisor Approval Attestation will be deemed non-compliant and will not be reviewed.
 - Use "2025 Blue Skies University Name Advisor Proposal Attestation" as file naming convention
- A 2-3 sentence synopsis of the proposed concept (max 600 characters)
- Confirmation of original work, including signature, signee's name, title, and email address
- <u>Vendor Form</u> and <u>ACH Form</u> for the primary proposing university (to be completed by the accounting department at the university).
 - NOTE: A completed IRS W9 Form is an acceptable substitution for the Vendor Form.*
 - Vendor Form (or W9 substitution) should be dated the same year as the proposal submission.
 - Use "2025 Blue Skies University Name W9" as naming convention.
 - 0 Use "2025 Blue Skies University Name ACH" as naming convention.
- Stipend Point of Contact Info (Name, Phone, Email)

- This is the individual at the college or university who will be receiving payment. They may be contacted to confirm receipt of stipend and/or to handle issues with payment transfer.
- Mailing address and POC contact info in the event a stipend check must be mailed.* Use format:
 - Attn: POC Name (if applicable)
 - University, Department/Office
 - Mailing Address
 - o Mailing Address 2
 - o City, State, Zip
- Acceptance of the Blue Skies Intellectual Property and Media Release statements
- Proposal Process Feedback:
 - What excites you about this competition?
 - o Did your team experience any challenges while preparing your proposal submission?
 - Please share improvements your team might suggest to facilitate initial competition participation.
 - o Share anything else your team would like us to know about your experience with the Blue Skies Competition thus far.

*Vendor Form, ACH Form, Stipend POC, and Stipend Mailing Address Information

As part of the proposal and video submission, teams will be required to submit a completed Vendor Form, ACH Form, and provide university contact who will be receiving payment of finalist stipends. If stipend checks must be mailed, teams must also include mailing information for a stipend check. **This is for use only if a team is selected as a finalist.**

IMPORTANT NOTE: Immediately upon selection, program management will verify W9/Vendor Form and ACH form information. If this information is incorrect, it will result in delays in stipend payment and receiving funding. <u>Be sure your submitted W9 and ACH Form are correct at the time of proposal submission.</u>

- A **Vendor Form** for the primary proposing university must be completed by the accounting department at the university.
 - o Please download, complete, and submit this Template Vendor W9 Form.
 - o Vendor Form must be completed/dated in the same year as the proposal submission.
 - NOTE: A completed IRS W9 Form is an acceptable substitution.
- An **ACH Form** for payment routing to the primary university must be completed by the accounting department at the university.
 - o Please download, complete, and submit this <u>ACH Form</u>.
- A **Stipend Point of Contact** (Name, Phone, Email) is required. This is the individual at the primary college or university who will be receiving payment. They may be contacted to confirm receipt of stipends and/or to handle issues with payment transfer.
- If a stipend check must be mailed, a **mailing address and POC contact info** for stipend checks is required. Stipend checks may only be mailed to a valid university contact who can handle the funding according to university policies and procedures (they cannot be directed to a student). Use format:
 - o Name
 - o Attn: POC Name (if applicable)
 - o University, Department/Office
 - o Mailing Address
 - o Mailing Address 2
 - o City, State, Zip

Intellectual Property (IP) and Media Release

Proposers must acknowledge that they have read and agree to abide by the <u>full Intellectual Property and Media Release</u> <u>Statements</u>. An excerpt is included below.

Intellectual Property - Summary

In addition to any rights granted to NIA Recipients, as applicable, recipients of monetary awards under the Gateways to Blue Skies (Blue Skies) Competition agree to grant to NASA and the Federal Government, as the source of awards funding, the Rights in Data and Patent Rights set forth in detail below. In summary, awardees agree to grant to NASA and the Federal Government (i) a license to use, distribute, reproduce, perform, display, and prepare derivative works, any data first produced by recipient in carrying out recipient's responsibilities under this award in which the recipient asserts copyright, or data for which copyright ownership was acquired under the grant for Federal purposes and to have or permit others to do so for Federal purposes only, and (ii) a license to practice or have practiced for or on behalf of the United States any invention of the recipient conceived or first actually reduced to practice in the performance of work under this award if recipient chooses to retain title to such invention, and NASA may elect to obtain title or patent such invention if recipient chooses not to do so, all as set forth more particularly in the below Rights in Data and Patent Rights provisions.

All deliverables provided to NASA under the Challenge, in NASA's sole discretion, may be publicly released in conjunction with any announcements concerning the Challenge.

Media Release

The recipients of monetary awards under the Blue Skies Competition ("Teams") agree to give permission to be recorded, photographed and/or videotaped by or for NIA, NASA or their representatives or designees for the purpose of announcements and other outreach or informational purposes, including public announcements, concerning the Challenge.

The Teams further give permission to NIA, NASA or their representatives or designees to use, reproduce, prepare derivative works, publish, distribute to the public, perform publicly, and/or publicly display all deliverables, including excerpts and any ancillary material, which may include each team participants' names, affiliations (schools), images, voice, and/or likenesses. NIA or NASA may distribute the materials, including excerpts therefrom, and any ancillary material through a variety of media in existence now or in the future, including but not limited to print, television, websites, radio, or any other means. NASA may also permit a third party to exercise NASA's rights, including but not limited to the right to display or distribute the recording, including excerpts therefrom, and any ancillary material.

The teams also understand that this permission to use each participant's name, image, voice and/ or likeness in such materials is not limited in time and team participant will not receive compensation for granting this permission.

Teams acknowledge that NASA has no obligation to use any participant's name, affiliation, image, voice, and/or likeness in any materials produced by NASA, but if NASA so decides to use them, each participant waives the right to inspect or approve any such use.

Teams hereby unconditionally release NASA and its representatives from any and all claims and demands arising out of the activities authorized under this Media Release.

Deliverables for Finalist Teams

Final Technical Paper & Infographic Submission Deadline: 11:59 P.M. Eastern Time on May 4, 2025 Presentation Files Submissions Deadline: Noon Eastern Time on May 16, 2025

Teams who are selected to attend the 2025 Blue Skies Forum will be required to:

- Submit an 8–10-page final technical paper
- Submit an infographic summarizing technical paper concepts
 - Submit a digital poster file **in addition to** bringing a full-size printed poster for display during the Forum's poster session (48" x 36")
- Submit a chart deck to support a 25-minute presentation with an additional 20 minutes of Q&A, to be delivered at the Blue Skies Forum

Technical papers, presentations, and posters will be posted and archived on the Blue Skies website. Finalist teams should plan to present the results of their Blue Skies project first at the Blue Skies Forum, waiting until after the Forum to share their project at outside technical conferences via papers or presentations. Sharing within the university environment prior to the Forum is permissible. Team members registered to attend the annual Forum must plan to participate in all mandatory Forum activities, with teams subject to penalties and/or returning their stipend if this criterion is not met.

Submitting teams represent and warrant that the team is the sole author of the final submission, that the submission is wholly original, that it does not infringe on any copyright or any other rights of any third party of which the team is aware, and that the electronic proposal and video submission are free of malware. Teams may not have any portion of their submissions created by non-team members, which includes the use of tools such as Generative AI.

FINAL TECHNICAL PAPER GUIDELINES

Final Technical Paper Expectations

The final technical paper should be treated as a stand-alone document, clear to someone who has never read the initial proposal. While a certain amount of overlap is to be expected, the final technical paper should be reflective of the team's entirety of findings in the competition period. It should expound upon initial findings in the proposal and take into consideration the listed final paper details, evaluation criteria, and judge feedback. It should be robust, creative, well-researched, and well-justified. The Final Technical Paper should be a minimum of 8 pages and a maximum of 10 pages. It should pay careful attention to composition, grammar, and cohesion.

The Final Technical Paper Should Include:

Finalist teams will develop an 8–10-page final research paper that includes the following, at a minimum:

A Cover Page (excluded from page limitation), which must include:

- University name
- Project title
- Team and/or individual photos with full names of all team members, including academic Level (graduate or undergraduate) and major
- Faculty advisor's full name(s) and discipline
- OPTIONAL, but encouraged: A graphical depiction of your concept
- Teams should reference the sample <u>Final Technical Paper Cover Page</u> when submitting final papers.

Quad Chart (excluded from page limitation)

- Teams must insert the provided <u>Quad Chart Template</u> as an image into their proposal. Template can be found on the "Technical Paper" section of the <u>2025 Challenge Details webpage</u>
 - Quad charts must address:

•

- o A project summary
- An image/graphic of all or part of the concept. Image/graphic should be an "artist's depiction" of the concept, as opposed to a flow chart, diagram, UML, or similar.
- A description of the team composition
- o Proposed deployment timeline

Abstract (excluded from page limitation)

Include a brief summary (no more than 2 paragraphs) of the final technical paper, including conclusions and key findings. Be sure to provide a clear summary of any changes/improvements made since the proposal review, including areas in which the final paper provides new information, expands upon proposal work, or provides expanded analysis.

The body of the final technical paper should (8-10 pages):

- Clearly articulate the situation assessment, use case and proposed solution, concept of operations, path to deployment and all justification analyses conducted.
- Expand analyses of proposed concept according to <u>Theme Description & Details</u> and <u>Final Deliverables Evaluation</u> <u>Criteria</u>, incorporating judge feedback.
- Include conclusions and key findings.

Appendices, if needed (excluded from page limitation)

Appendices are to be used for references and calculations ONLY and should be included after the main body of the technical paper. Judges are not obligated to read beyond the stated page limit; therefore, all pertinent information should be included in the main body of the paper.

Faculty Advisor Attestation

The Final Deliverables Submission Package includes a PDF file upload for the <u>Faculty Advisor Approval Attestation</u> <u>Template</u>.

- Note: Submissions without a valid Faculty Advisor Approval Attestation will be deemed non-compliant and will not be reviewed.
- Use "2025 Blue Skies University Name Advisor Technical Paper Attestation" as file naming convention

Final Technical Paper Formatting Guidelines:

Teams are responsible for the formatting and appearance of their final technical paper. Figures and tables must be placed in the file and therefore must be in digital format. We recommend teams use image files with a minimum dpi of 150.

- Papers should be single-spaced and formatted as a single column.
- Margins should be a standard 1" (2.54 cm) all the way around (top, bottom, left, and right).
- The final technical paper should be a minimum of 8 pages and a maximum of 10 pages.
 - The Cover Page, Abstract, Table of Contents, and Appendices are excluded as part of the total page limit. They do not count toward the minimum or maximum page limitations.
 - References should be included as an appendix and will not count toward the minimum or maximum page limits. Appendices are to be used for references and calculations ONLY.

- Note: Judges are not obligated to look at anything beyond the listed page limit, including the appendices. Include important details in the body of your paper to ensure they are reviewed.
- There is no preference in citation formatting, but references must be formatted uniformly and correctly. Simply listing a link to the source is not acceptable.
- Please use fonts common to Macintosh and PC platforms, i.e., Times, Times New Roman, Helvetica, Calibri, or Arial for text, Symbol for mathematical symbols and Greek letters.
- Use of information graphics, tables, and charts are highly encouraged where appropriate (a well-conceived graphic can convey multiple pages worth of text and convey a deeper understanding of the problem and solution).
- Font size should be either 11 or 12 pt (including in all tables, charts, and graphs).
- Final technical papers must be submitted as PDF files.
- Use "2025 Blue Skies University Name Technical Paper" as file naming convention.

INFOGRAPHIC GUIDELINES

Infographic Expectations

Finalist teams must provide a full-sized digital poster at the time of technical paper submission. Teams must also bring a 48"x36" printed copy of their poster for display at the Blue Skies Forum. The poster session provides teams with an opportunity to expound upon important concepts in their presentations and allows judges to ask questions for further clarification.

An infographic is a visual representation of information, data, or knowledge intended to present information quickly and clearly – see for example: 2022 and 2023 Best Infographic Winners.

Teams with the most successful infographic are often those that include a team member who excels in or is willing to learn graphic design.

The Infographic Should Include:

The purpose of the infographic is to visually depict the team's final paper. Someone looking at the infographic should be able to gain an overview and understanding of the *Why? What?* and *How?*, including the opportunity space/team-determined use case; the current solution; the proposed aviation solution; its projected improvements; and the conceptualized approach to deployment (including timeline, opportunities and challenges).

- The infographic should be easily understood by audiences from non-technical backgrounds, avoid technical jargon, and should be understood by a passerby with no verbal explanation.
- The infographic should incorporate a blend of both visual and textual information, with more emphasis on the visual aspect and avoiding lengthy blocks of text. Avoid overcrowding the infographic.
- The infographic should reflect only the information discussed in the final technical paper (i.e., it should NOT be used to add additional information that didn't fit within the 8-10 page final technical paper page limit).
- The infographic should convey technical paper elements in a visually compelling manner, demonstrating that attention was given to the use of color and artistic creativity, as well as the organizational flow of information (take us on a journey).

NOTES:

- A simple flow chart is not an acceptable infographic.
- An infographic is very different than a <u>conference poster</u>.
 - o View infographic samples | View 2022 and 2023 competition infographics

Digital Infographic File Guidelines

Each team is required to submit the digital file of their infographic. Submitted digital infographic files will be displayed on the Gateways to Blue Skies Website. Infographic files should adhere to the following guidelines:

- Infographic file should be 9600 pixels x 7200 pixels (48" x 36").
- Infographic must be formatted horizontally (landscape).
- Images and graphs embedded should be "print-ready," with a minimum PPI of 300 whenever possible.
- Images and graphs should be clear, legible, and appropriately sized.
- Links or redirects in the body of the infographic are not permitted with the exception of references.
- File size limit is 100MB.
- Infographic should be submitted as a .PDF file.
- Infographic should include a small team identifier in bottom left-hand corner (i.e., University and/or team name; logo).
- Use "2025 Blue Skies University Name Infographic" as file naming convention.

FINAL EVALUATION CRITERIA

The <u>2025 Blue Skies Scoring Matrix</u> outlines how the final technical paper, infographic, and presentation will be evaluated.

A panel of NASA and industry experts will evaluate and score the final competition components anew; the points from the proposal review process are used only for finalist selection purposes and have no bearing on teams' final scores. Final deliverables will be evaluated and judged based on adherence to the following, with a maximum of 100 points earned:

Final Technical Paper Evaluation Criteria (45 Points Total)

- Situational Assessment and Concept of Operations Description: Sound technical / scientific / engineering analysis, evaluation, and rationale of the conceptualized aviation system addressing the specific agricultural opportunity space. Clear ConOps description, demonstrating thorough and proper research, practical applications, and realistic assumptions. (Max 10 points)
- Implementation Analysis: Comprehensive analysis of integration approach, including integration factors and necessary trades: simplicity, cost/return on investment, support system requirements, connectivity constraints, limitations posed by environmental conditions, expected improvements over existing practices, and interoperability with existing people, organizations, solutions, and technologies. (Max 15 points)
- Timeline, Technology Readiness Level & Barrier Assessment: Sound pathway to implementation by 2035 or sooner, including, but not limited to: <u>technology readiness levels</u>, training, barrier analysis, customer/stakeholder operational integration, etc. (Max 10 points)
- Compelling Key Findings: Final paper makes a compelling case for concept implementation. (Max 5 points)
- Expanded Analyses: Clear highlight of changes made between proposal and final technical paper. (Max 5 points)

Presentation Evaluation Criteria (35 Points total)

- Visual Presentation: Quality of presentation slides (i.e., visuals, structure, appropriate use of slides for information, easy to follow). (Max 10 points)
- Presentation Delivery: Communication delivery and presence of integration and teamwork. (Max 10 points)
- Q&A Response: Quality of responses to questions from the judges. (Max 10 points)
- **Consistency with Final Paper:** Representative of the findings and work written in the Final Technical Paper. (Max 5 points)

Infographic Evaluation Criteria (20 Points Total)

- Aesthetics, Creativity, & Organization: Visually compelling; creative use of color, graphics, images, and/or photos; well laid out components that clearly overview the opportunity space/team-determined use case in the selected aviation solution, and its projected improvements; and the conceptualized approach to deployment (including timeline, opportunities and challenges), with relevant supporting information. (Max 10 Points)
- **Technical Simplification**: Language and information are easily understood by all audiences, especially those in non-technical fields. (Max 5 Points)
- **Consistency with Final Technical Paper and Adherence to Infographic Requirements:** Representative of the findings and work written in the Final Technical Paper. (Max 5 Points)

SUBMITTING FINAL TECHNICAL PAPER AND INFOGRAPHIC FILES

To upload your final technical paper (.pdf) and infographic (.pdf), please visit the <u>Blue Skies Competition Details website</u>.

No revisions can be accepted after submission, so please proof your final technical paper and infographic files carefully before submission. If there are any technical problems with the content of your final technical paper or infographic (for example, your file was corrupted or a URL link was broken), we will attempt contact immediately, so be sure to provide the most up-to-date contact information on the submission form. Late submissions will not be accepted, and the submission form will close promptly at midnight.

The following information will be requested on the Final Technical Paper and Infographic Submission Form:

- College/University name
- Project Title
- Faculty advisor & team lead contact information
- Additional Faculty Advisor (if applicable) & Team Member information (including academic year and major)
- File upload for PDF final technical paper document
 - 0 Use "2025 Blue Skies University Name Final Technical Paper" as file naming convention
- File upload for PDF infographic document
 - 0 Use "2025 Blue Skies University Name Infographic" as file naming convention
- At least one high-resolution photo or graphic illustrating your concept, for purposes of promotion in online media outlets (minimum dpi of 300)
 - Image can be a higher-resolution version of the image on the quad chart. Graphic/image should be an "artist's depiction" of the concept, as opposed to a flow chart, diagram, UML, or similar.
 - o Use "2025 Blue Skies University Name Graphic" as file naming convention
- IMPORTANT: PDF file upload for Faculty Advisor Approval Attestation <u>using the provided template</u>
 - Note: Submissions without a valid Faculty Advisor Approval Attestation will be deemed non-compliant and will not be reviewed.
 - Use "2025 Blue Skies University Name Advisor Technical Paper Attestation" as file naming convention
- A 2-3 sentence synopsis of the concept (max 600 characters)
- Confirmation of original work, including signature, signee's name, title, and email address
- Acceptance of the <u>Blue Skies Intellectual Property and Media Release statements</u>

PRESENTATION GUIDELINES

Presentations are limited to 25 minutes, followed by a 20-minute Q&A session with the judges. Presentations should reflect the final technical paper. **Significant ideas or concepts discussed during the presentation that were not included in the technical paper may be penalized for scoring.** However, it is expected that teams will "go deeper", utilizing the presentation to speak to the relevance and impact of the proposed system(s), providing additional context for solutions, and making inferences and extrapolations of their analyses. If errors were discovered after the paper was submitted, teams should take this time to address them.

Presentations will be supported by a PowerPoint slideshow. Teams may choose who speaks and who doesn't speak during the presentation. However, all team members are encouraged to stand together at the front of the room during the presentation to be available to answer questions, even if they are not presenting. **Teams should be prepared to answer questions about their concept through a sound understanding of the technologies and capabilities introduced in their final technical paper.**

Presentation Files (.PPTX) must include:

- A cover slide that includes: project title, university name, faculty advisor's name(s)
- Use "2025 Blue Skies University Name Chart Deck" as file naming convention

Slide readability

The presentation room may be very large. Ensure the font on your power point is large enough for those to see from the back of the room. Take advantage of high contrast options and avoid black screen backgrounds. Emphasize slide readability, especially for significant figures/calculations. Dark videos/animations and black backgrounds do NOT show well in the presentation room and should be avoided.

SUBMITTING THE PRESENTATION

To upload your team's presentation, please visit the <u>Blue Skies Competition Details website</u>.

Presentations must be submitted in PowerPoint format by the deadline using the online upload tool, prior to team check-in at the Forum (i.e., presentations on flash drives will not be accepted). Video and images should be embedded in the file (not linked to outside/web sources), which should not exceed 100 MB. <u>Revisions to these files will not be accepted after the noon</u> <u>deadline – no exceptions</u>. Teams that do not submit a presentation by the deadline will be barred from presenting, and their stipends may be subject to return. Teams are encouraged to submit their final presentation files prior to travel.

Late submissions will not be accepted, and the submission form will close promptly at Noon EST on the deadline.

The following information will be requested on the Presentation Submission Form:

- College or University Name
- Project Title
- Faculty Advisor and Team Lead information
- Additional Faculty Advisor Information (if applicable)
- File Upload for Presentation Chart Deck Files
 - o Submit a .pptx or .ppt file
 - o Use "2025 Blue Skies University Name Chart Deck" as file naming convention

Prizes and Awards

Overall Competition Winner

NASA ARMD is setting aside up to 6 internships for students on teams that advance to the Blue Skies Forum, with first opportunities being presented to members of the winning team. **Internships must be taken within the academic year following the Forum.** Selections will be made first to students on the winning team(s) and will be based on the cumulative merit of each student's individual internship application and availability for fall, spring, or summer internships.

- Fall 2025: Late August/early September to mid-December (16 weeks)
- Spring 2026: Mid-January to early May (16 weeks)
- Summer 2026: Late May/early June to August (10 weeks)

Please note that <u>NASA internships have additional eligibility requirements</u>:

- U.S. citizenship.
- Cumulative 3.0 GPA (on a 4.0 scale).
- Undergrad and graduate students must be enrolled full-time in a degree-granting program at an accredited college or university.
 - Applicants transitioning between undergraduate and graduate pursuits are eligible **IF** they have graduated within 6 months and can demonstrate enrollment in the next-level academic pursuit.
- See full eligibility criteria under "Eligibility at a Glance" on the <u>NASA Internships</u> website.

Other Recognition Awards MAY Include

At the judging panel's discretion, the following awards *may* be awarded at the Blue Skies Forum. The following list is not exhaustive, nor will all awards always be given:

- First Place Overall
- Second Place Overall
- Best Technical Paper
- Best Infographic
- Best Presentation
- Most Creative/Innovative Concept

Contact Information

For Gateways to Blue Skies inquiries, please contact the Blue Skies Program Team at <u>BlueSkies@nianet.org</u>:



National Institute of Aerospace

National Institute of Aerospace Gateways to Blue Skies Program Office 1100 Exploration Way Hampton, VA 23666 BlueSkies@nianet.org https://BlueSkies.nianet.org

NATIONAL INSTITUTE OF AEROSPACE

