

Specifically, this opportunity seeks proposals for programs that engage students, particularly those considered underrepresented in STEM (see box), in meaningful learning experiences that increase STEM skills (science, technology, engineering, and math) through environmental problem solving. The overall goal of this program is to increase students' environmental literacy (see box), build STEM skills, and create pathways to environmental careers.

The Opportunity

The Pratt & Whitney E-STEM Innovation Grants program supports promising programs that build and use STEM knowledge and skills in environmental learning and problem solving. Preference will be given to nonprofit organizations proposing to work with underrepresented audiences in STEM (see box), and to organizations using partnerships to boost their impact. Applicants will be asked to define “underrepresented” based on their country and/or region's situation (in the United States, these groups include women, people with disabilities, and Black, Hispanic, and American Indian or Alaska Native people). Partnerships with additional organizations such as schools, governmental agencies, or other groups are encouraged to help strengthen the program offered.

Two to three grants of up to \$15,000 USD each will be awarded in the following geographic regions:

- **The Americas (funding pool available: \$30,000 USD)**
- **Europe, Middle East, and Africa (funding pool available: \$35,000 USD)**
- **Asia Pacific (funding pool available: \$35,000 USD)**

What are underrepresented audiences?

A number of audiences are underrepresented in E-STEM careers, as compared to the demographics of their country's population as a whole. These audiences may vary by region or country. For example, in the United States, underrepresented audiences in STEM include women, people with disabilities, and Black, Hispanic, and American Indian or Alaska Native people. Note that the concept of “underrepresentation” is fluid and constantly changing, and all applicants who can reasonably demonstrate why the groups they are working with are underrepresented will be given preference.

What is environmental literacy?

An environmentally literate person is someone who, both individually and together with others, makes informed decisions concerning the environment; is willing to act on these decisions to improve the well-being of other individuals, societies, and the global environment; and participates in civic life. There are four interrelated components of environmental literacy: knowledge, dispositions, competencies, and environmentally responsible behavior. [Learn more about environmental literacy here.](#)

Since environmental issues are cross-disciplinary by nature, programs considered for the E-STEM Innovation Grants (from E-STEM Excellence Prize) must be working to engage students in at least one of the four STEM topics (science, technology, engineering, and/or math), and have taken action (see box) on one or more of the following solutions to environmental issues:

- **Climate change solutions**—STEM learning opportunities that build student understanding of the impacts of human-caused increased levels of atmospheric carbon dioxide (CO₂). Programs may explore broad implications of sea level rise, changing weather patterns, global warming, or other climate change impacts. An example might be citizen science projects studying the impact of climate change on coral reefs or other ecosystems, and taking action to address or mitigate the impacts. Another example might involve learning about changing weather pattern impacts on local agricultural production and vulnerable communities, and taking action to conserve water.
- **Sustainable energy**—STEM learning opportunities that build student understanding of non-depleting, renewable, or zero-emission energy sources, and energy conservation strategies. Clean and renewable energy sources include wind, solar, geothermal, biomass, or hydropower, among others. Energy reduction can include a variety of strategies, from transportation choices to clean manufacturing to locally-grown food to installing energy efficient light bulbs or weather stripping.
- **Sustainable aviation**—STEM learning opportunities that build student understanding of strategies to reduce the environmental impact of aviation, an extremely energy-consumptive human behavior. Potential projects might include educating students about sustainable aviation fuels (clean biofuels) and clean manufacturing. Projects might involve using a gas sensor to test the CO₂ emissions of various biofuels and then calculating how much fuel would be needed to support a region's or country's commercial flight sector. Another example project could be educating students about the importance of aircraft design in fuel efficiency, and then holding an aircraft design competition in which students use computer software and engineering concepts to design their own aircraft.

Taking action

Environmental education helps people gain the knowledge, skills, and dispositions to understand and tackle environmental challenges. It also motivates people, individually and collectively, to take action. These actions can include everything from educating others in a community about environmental issues to taking direct conservation action, such as planting trees, cleaning up a beach, or designing a new technology for collecting plastic waste.

For example, students could reduce food waste by developing a composting system for the school. Or they could monitor energy use in their school and present energy-saving ideas to the principal or superintendent. Actions include anything that can contribute to solving an environmental issue.

Eligibility

Applicant organizations must:

- Be a nonprofit organization under your country's laws, or a nongovernmental organization who follows other foreign government laws for charitable purposes. For example, a US organization would be qualified under Section 501 (c)(3) of the Internal Revenue Code.
- Not be subject to US or other applicable governmental sanctions and other restrictions.
- Have a working bank account that can receive electronic funds in USD. The bank must not be subject to US or other applicable governmental sanctions and other restrictions.
- Submit a program that works with students ages 11–18.
- Be able to administer programs between November, 2022–October, 2023.
- **Submit applications online through Submittable** by 11:59 PM US Eastern Time on Monday, July 11, 2022 ([time converter](#)).

Only submissions in English will be considered.

Timeline

- Late May, early June 2022: Applicant webinar to go through application and share tips for grantee success; webinar will be recorded and posted to the [program webpage](#).
- July 11, 2022: All applications due in **Submittable** by 11:59 PM US Eastern Time.
- July–September 2022: Applications reviewed by E-STEM panel.
- September–October 2022: Grantees notified and announced.
- November 2022: Grant projects begin.
- May 2023: Midterm reports due.
- October 2023: Grant projects end and final reports due. Grantees attend the NAAEE virtual conference and present about their projects.

Benefits

If awarded, Grantees will receive:

- Funding to support their E-STEM programs
- Professional development and training
- Support to attend the 2023 NAAEE international virtual conference
- Peer support and networking
- Access to the NAAEE network and Pratt & Whitney nonprofit community

Requirements

Once awarded, Grantees will be responsible for the following:

- **Professional Development and Networking:** Before receiving funding, grantees will attend a training focused on project planning, budgeting, and evaluation of proposed projects (October 2022). Grantees will also be asked to attend periodic networking calls during the project implementation period to share challenges, updates, and ideas.
- **Reporting:** Grantees will be asked to submit a brief narrative and financial report at the midpoint of their grant (May 2023) and at the end of their grant (October 2023).
- **Lessons Learned and Project Impact:** Grantees will be expected to share their program through possible presentations at the 2023 NAAEE virtual conference, and through ongoing informal communications updates (including photos and videos, if available). There may also be opportunities to share their work on NAAEE platforms through blogs and social media.

Contact

For any questions, please email the Global E-STEM team at estem@naaee.org.

See the following pages for application details.

Application Process and Evaluation Criteria

To be considered for an E-STEM Innovation Grant, please complete all required sections of the online application. Instructions for completing each section of the application are included below and **Submittable**. A panel of experts in E-STEM from around the world will review your responses using the criteria listed below (out of 100 points).

1. Project Description: Describe your proposed project, including objectives and key activities. The proposal should clearly describe how the project will help engage students in relevant, real-world, and student-directed environmental problem solving. We also want to know how your project promotes creative solutions and teamwork, improves STEM and environmental literacy, and emphasizes skills needed to pursue environmental careers. See Figure 1 in the article, “**A new green learning agenda: Approaches to quality education for climate action,**” for examples of skills needed for pursuing environmental careers. In addition, please describe any partner organizations who will be working with you on the project and their role in the project. (max 800 words)

In addition, if you will work with partners, provide a letter of commitment from each partner organization and explain how they will help you achieve your objectives. You can upload up to three letters of commitment from partner organizations (one letter per organization).

Project Description Evaluation Criteria (35 points)

- Proposal objectives address one or more of the following solutions to environmental issues: climate change solutions, sustainable energy, and/or sustainable aviation.
- Proposal is interdisciplinary and includes at least one objective addressing at least one STEM discipline (science, technology, engineering, and/or math).
- Proposal clearly describes how the project will engage students in relevant, real-world, and student-directed environmental problem solving.
- Proposal describes how the project promotes creative solutions and collaboration, improves STEM learning and environmental literacy, and emphasizes the one or more skills needed to pursue environmental careers.
- Proposal identifies partnerships that will add to the success of the project, and (if applicable) includes letters of commitment from each partner.

2. Outcomes and Evaluation: Identify at least one outcome for each objective in the project description and tell us how you will evaluate success. Outcomes should be focused on improving student STEM learning and environmental literacy (see box at right for examples). Note: outcomes should be feasible within a one-year period and use evaluation methods that are appropriate for the project, audience, and context. Evaluation methods may include pre/post-experience tests and quizzes, surveys, interviews, focus groups, portfolios, or observations. (max 300 words)

STEM Learning Outcome Examples

- 85 percent (or the majority) of student participants demonstrate increased knowledge and understanding of STEM concepts from pre/post tests.
- 60 percent (or the majority) of student participants successfully applied newly acquired STEM skills to solve climate change, sustainable energy, or sustainable aviation issues in the community as reflected through their final projects.

Environmental Literacy Outcome Examples

- 80 percent (or the majority) of student participants demonstrate increased awareness and understanding of or concern about climate change, sustainable energy, or sustainable aviation as demonstrated through student interviews.
- 60 percent (or the majority) of student participants demonstrate increased knowledge of and the skills and motivation to address climate change, sustainable energy, or sustainable aviation issues in the community as identified through surveys.

Outcomes and Evaluation Criteria (30 points)

- Proposal clearly identifies at least one outcome for each objective.
- Proposed outcomes align with proposed activities and the project's audience.
- Proposal includes a reasonable and well-thought-out evaluation process (i.e. a plan to measure these outcomes).
- The proposed evaluation process is relevant to the audience in terms of development (age, maturity) and **cultural identity**.

3. Audience Reached/ Beneficiaries: Describe who your project will reach, including if and how it will reach underrepresented audiences (defined in the context of your country or region). (max 300 words)

Audience Evaluation Criteria (10 points)

- Proposal clearly defines your intended audience.
- Proposal explains how it will reach audiences considered underrepresented in STEM learning and/or environmental careers for your country or region.
- Proposal involves students ages 11–18.

4. Organizational Capacity: Describe your organization's experience administering similar programs. Please include your organization's operating budgets for the past two fiscal years (including 2022) and brief biographies of the project managers. Describe existing and potential future risks and challenges and how you plan to mitigate them. For example, COVID-19, other acts of nature, changes in partner organizations, delays in school approval, or staff changes can significantly influence the outcome of a proposed project. We are not evaluating you on these risks, but rather on your ability to foresee them and how you plan to mitigate them. We understand that all projects have risks and challenges! (max 500 words)

Please include up to three URLs to any photos, videos, or websites that demonstrate your organization's previous work. These supporting materials will help our reviewers better understand your organization's relevant experience.

Organizational Capacity Evaluation Criteria (15 points)

- Proposal demonstrates the organization's capacity to manage the project through experience administering similar programs.
- Proposal includes current and previous year's operating budgets.
- Proposal includes biographies of the project managers.
- Proposal clearly identifies potential risks and challenges to project success and how the organization plans to mitigate them.

5. Timeline and Budget: Download and fill out our **timeline and budget template** and upload it to the online application in Submittable. The budget should include how you calculated the cost of each line item in the Description column. If your overall project budget is higher than \$15,000 USD, please list your additional sources of funding (including amounts) in the provided Matching Funds column.

Timeline and Budget Evaluation Criteria (10 points)

- Proposed timeline is reasonable and achievable during the one-year grant period.
- Proposed budget is presented in USD.
- Proposed budget is reasonable and includes staff time, indirect/overhead costs, as well as direct expenses that support the project.
- If the project budget exceeds the amount of funding requested, the proposal identifies additional matching funds support.

Apply for an E-STEM Innovation Grant



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