

New York State Pollution Prevention Institute 6th Annual R&D Student Competition Request for Applications (RFA)



Introduction:

As part of its research and development (R&D) Program, the New York State Pollution Prevention Institute (NYSP2I) developed the Student Competition to enable students to propose, research, develop, and design solutions to real world environmental challenges. NYSP2I's Student Competition seeks innovative projects focused on sustainability that respond to a defined topic or issue. The competition fosters creative thinking, problem solving, team work, and collaboration across disciplines and provides an opportunity for students to present their projects to environmental experts, gain insight from established professionals, and receive recognition by potential future employers. The program provides funding to offset project costs, as well as award prizes at the culminating competition exhibition.

Topics:

This year, NYSP2I is challenging student teams to come up with new, innovative approaches to address one of the following topics:

1. **Water Quality and Conservation** – Though plentiful, the water resources of New York State are threatened by chemical contaminants and other pollutants from a wide range of sources. The demand for clean water continues to grow. Pollution prevention measures can save energy and money. For this topic, teams are challenged to develop innovative methods to improve or measure water quality and/or conserve water on college campuses or within their communities.
2. **Food Waste Source Reduction** – Food waste is a growing problem, having both environmental and economic impacts. For this topic, student teams are challenged to find an innovative way to reduce food waste. Food waste source reduction or prevention is the strategy of preventing food waste before it is created. For example, a project may use technology/innovative concepts to address management and control of food items subject to expiration dates to minimize waste due to expired items.
3. **Air Quality** - Poor air quality is a serious health problem worldwide. About 7 million deaths were attributed to air pollution in 2012 and two years later the World Health Organization cited air quality as the largest environmental risk. Air quality is traditionally monitored by fixed stations. For this topic, students are tasked to improve or advance any home/business technologies that could lead to improved air quality or to design air quality monitoring devices. Students could develop sensors to collect data at varied locations and times, which would be advantageous for both individuals and communities.

Overview & Guidelines:

Teams will choose one of the topics noted above and submit an application describing their proposed approach to address the challenge. The application should address the innovative scientific or technical aspects of the proposed approach and describe how it relates to the three components of sustainability: environment, economy and society (i.e. planet, prosperity, people). See the **Application Instructions** below for additional details and application requirements.

The R&D Student Competition includes two levels:

Undergraduate – team members are students *currently* enrolled in a post-secondary program, working toward a Bachelor degree, Associate degree or certificate.

Graduate – team members are students *currently* enrolled in a post-secondary program, working toward a Master or Doctorate degree.

Teams with a mix of undergraduate and graduate students will be considered at the graduate level.

Applications will be reviewed and for each level, up to six teams will be awarded grants and selected to participate in the competition. Teams will bring their projects to the **2017 NYSP2I R&D Student Competition** exhibition that will be co-hosted by **University of Buffalo on Friday April 21, 2017**. Judging will take place at the exhibition, and two prizes (1st and 2nd place) will be awarded for each level. (See Prizes section below).

Team Requirements

Each team selected to participate in the competition will be required to:

- Develop their concept and complete their project as described in their proposal
- Submit a project report prior to the competition exhibition
- Prepare a PowerPoint presentation, poster, and visual representation of the solution. The visual representation may include, but is not limited to, a non-working model/prototype, working physical model, or electronic simulation.
- Attend and exhibit at the **NYSP2I R&D Student Competition** exhibition at **University of Buffalo in Buffalo, NY on April 21, 2017** and deliver an oral presentation about their project.

Eligibility Information:

Teams of undergraduate and/or graduate students enrolled at an institute of higher education located in NYS are eligible to apply. Students who have graduated are not permitted to participate. Teams with a mix of undergraduate and graduate students will be considered at the graduate level. Multi-institute teams are allowable. However, one institute must be named as the lead that will be responsible for the award contract.

Teams must be comprised of two to four student members (excluding the advisor). All team members must be current students for the entire duration of the competition. Students from different academic areas are encouraged to work together to create the strongest team possible to address the selected topic. One faculty or staff member is required to be listed as the primary advisor for the team, who will offer their guidance, support, and technical expertise. NYSP2I must be notified of any change of team members. New/replacement team members must be approved by the team's advisor and by NYSP2I *prior* to working on the project. All members must take an active role in developing and executing the project. Members may not be added for the presentation only. If a student member leaves the team prior to the competition exhibition, the team leader should notify NYSP2I in writing and include the team advisor in the communication.

Each team may only submit one application. There is no limit to the number of applications for each university.

Funding Information:

Project Expenses

Each team must submit a project expense budget as part of their application. Project expense budget guidelines are as follows:

- Maximum project expense funding per team is \$1,250
- Personnel/labor-related expenses are not allowable
- Indirect Costs (F&A) are not allowable
- Expenses must be reasonable and necessary to conduct the project and develop the visual representation of the project for the Exhibition.

Each team selected to participate in the competition will receive a stipend to cover their project expense budget.

Exhibition Travel Expenses

Each team selected to participate in the competition is expected to exhibit a visual representation of their project and give an oral presentation of their project at the NYSP2I R&D Student Competition Exhibition at University of Buffalo on April 21, 2017. For teams traveling from out of town to the exhibition, lodging the night before will be supplied by NYSP2I at designated location(s). For all teams, food (breakfast and lunch) the day of the event will be provided by NYSP2I.

Teams may request reimbursement for additional travel expenses (mileage, food, tolls, etc.) for travel to and from the exhibition. If your team will be requesting travel reimbursement, an estimate of travel expenses should be included in the application budget. Team members should keep all receipts for reimbursement and follow his/her university travel and reimbursement policies.

Official Award/Distribution of Funds

If selected to participate, a Student Competition Agreement must be signed by the sponsored research office of the awarded team's university to receive project funds on the team's behalf. Rochester Institute of Technology (RIT) administers agreements for NYSP2I and will work directly with your university to execute the required paperwork. A sample of the Agreement is included at the end of this document. Each team should work with their advisor to have the appropriate personnel at their school review the Agreement prior to submitting an application. ***Note: A sponsored research authorized signature from your school is required on the cover page of your application. If any team members are planning to count their work on the project toward academic credit, be sure to inform the sponsored research representative. Applications cannot be considered unless the cover page includes all the required signatures.***

An invoice for payment of the full project expense budget amount may be submitted to RIT upon execution of the Student Competition Agreement.

After the competition ends, any unspent funds are intended to be used for continued project-related work. Students must follow the internal policies of their university to spend down any leftover funds.

Reimbursement of Travel Expenses

After the competition has ended, the university may invoice RIT for actual travel expenses incurred, as per the Exhibition Travel Expenses section above.

Invoices may be sent to:

Randy Jones
Associate Director Finance & Administration
Golisano Institute for Sustainability
Rochester Institute of Technology
111 Lomb Memorial Drive
Rochester, NY 14623-5608

Note: Competition funding is subject to the availability of NYSP2I program funding.

Prizes:

Prizes will be awarded to the 1st and 2nd place team for both undergraduate and graduate teams, as follows*:

1 st Place Jeff Sama Award:	\$ 2,500
2 nd Place:	\$ 1,000

Winners will be announced at the awards luncheon at the exhibition on April 21, 2017.

**Twenty percent of each prize will be allocated to the team advisor to be used at their discretion, at their university. The balance will be dispersed by the advisor to the team members.*

Timeline:

September 19, 2016	Competition opens RFA is released.
November 11, 2016	R&D Student Competition applications due
November 18, 2016	Award notification to teams selected for participation
Upon award notification – April 20, 2017	Participating student teams work on projects and prepare for exhibition
March 31, 2017	Project reports due
April 21, 2017	R&D Student Competition exhibition at University of Buffalo

Application Instructions:

To compete in the NYSP2I R&D Student Competition, teams must submit a complete application package including:

- Cover Page (must use form provided)
- Project Description
- Detailed Project Budget

Cover Page:

The required cover page form is provided online at <http://www.rit.edu/affiliate/nysp2i/rd-student-competition>. Please note: ***A signature from an authorized sponsored research representative at your university is required on the cover page of your application. The sponsored research representative will want to review the competition terms and conditions, so please allow time for their review prior to the application due date.***

Project Description:

Describe your project following the outline below.

Project title (should be descriptive of the topic selected and the approach/concept)

Topic selected

1. Project Objective

- Provide a definition of the technical challenge that you will address.
- Describe your proposed concept/design approach and explain how it will address the challenge.
- Identify the innovative scientific or technical aspects of your concept/approach.
- Explain the environmental, economic, and social impacts of the challenge selected, and describe the objectives/opportunities to reduce these impacts.

2. Project Description/Research Plan

- Describe your project plan. Explain any partnerships with businesses, community organizations, etc. you will form or leverage.
- Provide a brief literature review of relevant and current approaches used to address the challenge.
- Identify the *innovative* scientific or technical aspects of your proposed project, why your team's approach was chosen and how your concept improves upon existing approaches to address the problem you've identified

3. Relationship to Sustainability

- Describe how the proposed project promotes sustainability; explain the specific environmental, economic and/or social benefits in the short and long term, as applicable.
- Address the impacts of the project/design on the local environment and discuss any environmental tradeoffs (e.g., air, water, land).

4. Results, Evaluation and Demonstration

- Identify the expected results of the project and describe your strategy to measure results.
- Describe how environmental impacts of the project/design will be evaluated (metrics – e.g. pounds of toxic material or waste reduced per year, gallons of water saved annually, pounds of solid waste eliminated, etc.). Discuss how you will perform an economic analysis, including estimated cost and payback period for the solution if implemented.
- Describe how you plan to visually represent your concept at the **2017 NYSP2I Earth Day Student Competition** event (for example, a non-working mockup, working physical model, electronic simulation, etc.).

5. Project Schedule and Milestones

- Provide schedule for key milestones and project tasks.
- Indicate anticipated roles and tasks of each team member, including the percent contribution of each team member.
- Indicate anticipated interactions with any and all partners/collaborators, if applicable.

Project narrative must be no more than 5 single spaced 8.5" x 11" pages (a page equals one side). All references should be cited and can be included as endnotes, which will not be included in the page limit. Pages should be consecutively numbered with 1" margins, and text should be standard 12-point font.

Project Budget – Provide a project budget using the outline format below. The budget may only include *non-personnel* related project expenses (i.e. supplies needed to conduct your project, materials needed to create a visual presentation of your project, etc.) Please include a narrative description of the budget describing how NYSP2I funds will be used. Total project expenses should not exceed \$1,250. (*Note: Indirect costs are not allowable.*) The project budget should not exceed one page, and is not counted toward project description 5 page limit.

Project Expense Budget:

Project related Materials/Supplies	\$
Other	\$
Total	\$

Budget Narrative: *description of how NYSP2I funds will be used*

(If applicable) Estimated Travel Expense Budget:

Mileage	\$
Food	\$
Tolls, misc.	\$
Total	\$

Competition Travel Budget Narrative: *description of estimated travel expenses to/from the exhibition at University of Buffalo. Keep in mind, NYSP2I will provide hotel accommodations and breakfast and lunch the day of the exhibition. Therefore, those costs should not be included in your budget. (Please consider making plans to carpool.)*

Submission: Application package must be submitted via email to: nysp2istudentcomp@rit.edu with the following subject line: *2016-2017 R&D Student Competition Application.*

The application deadline is: **Friday, November 11, 2016, 11:59pm EST.**

An email notification of receipt will be sent to the submitter.

Other important information:

Reporting – For participating teams, a report summarizing the project, milestones, and results will be due on **March 31, 2017**. Reporting guidelines will be provided.

Publicity – By submitting an application, teams agree to allow NYSP2I to utilize team and team member names, images, project information including application and reporting content, project metrics and results for NYSP2I promotional purposes. The Exhibition will be open to the public, and the press, including television and other video recording. By submitting an application, teams grant their right and permission to RIT and NYSP2I to use and publish any photographs, video or media images of themselves and/or their project materials.

Intellectual Property – Please refer to section 11 of the NYSP2I R&D Student Competition Agreement to review the intellectual property terms applicable to the competition funding.

Important note: The IP terms required for this competition may conflict with the IP terms of your university for student projects receiving academic credit. Thus, teams should consult with their university sponsored research department early if they intend to use a class project, thesis work, etc. for this competition. You may not be able to receive academic credit for projects using this funding.
Anticipated Award Notification Date - November 18, 2017

Program Contact Information:

Kate McArdle, Community Outreach Specialist
New York State Pollution Prevention Institute
Rochester Institute of Technology
111 Lomb Memorial Drive
Rochester, NY 14623
Phone: 585-475-2399
Email: kwmp2i@rit.edu

Administrative Contact Information:

Kimberly Heck, Business Manager
New York State Pollution Prevention Institute
Rochester Institute of Technology
111 Lomb Memorial Drive
Rochester, NY 14623
Phone: 585-475-6235
Email: kjhp2i@rit.edu

Application Selection Criteria

Applications meeting eligibility requirements will be reviewed and selected by NYSP2I based on the following criteria:

- The proposed project is scientifically sound, feasible, and appropriate to address the selected topic/identified challenge.
- Contribution to pollution prevention/sustainability and society.
- The novel research and/or development aspects of the project are clearly identified, and supported by a literature review.
- A qualitative and/or quantitative evaluation method is proposed and is reasonable to assess the projected environmental, economic, and social benefits of the project if implemented.
- The scope of the project and its goals and objectives are clearly stated and appropriate for the timeline.
- The proposed budget is reasonable and appropriate for the project.
- Collaboration and multidisciplinary approach are considered favorable.

Competition Judging

NYSP2I R&D Student Competition judges may include representatives from academia, environmental organizations, government, and/or business. The judges will have three opportunities to assess your project:

- the exhibit and physical representation of your project, including discussion with anonymous judge as they view your exhibit.
- the project report, and
- the oral presentation

Judging Criteria:

Undergraduate level:

- Team demonstrates a solid understanding of the environmental issue addressed (20%)
- Appropriate and Quantifiable metrics are used to determine environmental reductions and/or benefit (10%)
- Degree to which concept represents a **unique/novel** approach to sustainability/pollution prevention and the topic selected (20%)
- Potential positive impact to the environment (15%)

- Applicability/viability of the concept - potential to be applied or implemented – including business case/economics (15%)
- Oral presentation of concept and ability to clearly answer judges' questions (10%)
- Visual representation of the project (5%)
- Presentation at tabling exhibition (5%)

Graduate level:

- Team demonstrates a solid understanding of the environmental issue addressed (expected)
- Appropriate and Quantifiable metrics are used to determine environmental reductions and/or benefit (expected)
- Degree to which concept represents a **unique/novel** approach to sustainability/pollution prevention and the topic selected (20%)
- Potential positive impact to the environment (20%)
- Applicability/viability of the concept - potential to be applied or implemented – including business case/economics (20%)
- Oral presentation of concept and ability to clearly answer judges' questions (20%)
- Visual representation of the project (15%)
- Presentation at tabling exhibition (5%)

About NYSP2I:

The New York State Pollution Prevention Institute (NYSP2I) is a statewide technology development, transfer, and assistance center whose mission is to make New York state more sustainable for businesses, workers, the public, the environment and the economy. NYSP2I is led by Rochester Institute of Technology (RIT) and is a partnership between RIT, Clarkson University, Rensselaer Polytechnic Institute, University at Buffalo and the New York Manufacturing Extension Partnership.

To learn more about NYSP2I visit: <http://www.nysp2i.rit.edu>

Or contact us at: nysp2i@rit.edu

