



## Greenway's Build a Better World Challenge 2022-2023

### **SUSTAINABLE ENERGY & FOOD!**



#### **The problem:**

Nutritious food is essential to human health and happiness. But the way we grow, transport, consume, and dispose of food harms people and the environment.

- **1 in 3** people in the world doesn't have access to adequate food.
- **50,000 acres of forest** are cleared **every day** for agriculture.
- Food production creates **11%** of our global carbon emissions.
- In the US, between **30-40%** of the food we produce ends up as waste

In order to create a greener world, we need future engineers who can design and build more sustainable and effective food solutions.

#### **The Challenge:**

### **Design and build a sustainable engineering prototype that solves a food-related issue somewhere in the world!**

Your student team will choose a local, regional or global food issue to solve. Then, you will design and build an innovative prototype that helps solve that problem. The prototype (a working model) must improve some aspect of how people access, produce, transport, consume, or recycle food. Projects will be shared at our 2023 Demonstration Day, where a team of judges (Dartmouth engineering students and industry professionals) will evaluate and provide feedback on student projects.

#### **Here are examples of the kinds of projects student teams might tackle:**

- Design a self-mixing compost bin for recycling cafeteria food waste
- Create a zero-waste aquaponics system for small or urban farms
- Build an irrigation system that conserves water
- Design an eco-friendly cooking stove for people without electricity
- Build a heated greenhouse that can grow plants during the winter
- Or, create any other food-related engineering solution!

#### **Guidelines**

- Teams should include between 3 and 5 members, and can be HS, MS or mixed HS/MS.
- Teams must be student-led: students should be initiating conversations with Greenway throughout the challenge.



- All teams will be provided with a kit of renewable energy materials (solar panel, battery, charge controller, and wires)
- Financial support will be available for other project materials

### **How does Greenway work with teachers to support success?**

1. Greenway allows teachers to decide when they give students time to work, e.g.:
  - a. Some dedicate one day each week over several months
  - b. Some dedicate time every day for a shorter period of time
  - c. Some support the activity as an after-school club
2. Greenway assigns an engineering mentor to each team to help if students get stuck.
3. Greenway coaches and provides funding for basic materials.
4. Greenway pushes students to get hands-on ASAP, because building a first prototype, even if it doesn't work, is how students figure out how to improve their design for their next iteration.
5. Greenway can suggest NGSS and CTE standards (see [here](#)) that typically correspond to student engineering projects

**Check out last year's challenge here:** [greenwayinstitute.org/past-challenges/](https://greenwayinstitute.org/past-challenges/)

### **Prizes / Compensation**

Prizes will include up to **\$2500** worth of prizes awarded by Greenway and prizes from local businesses and organizations.

Find all other challenge details including design specifications, evaluation criteria, proposal expectations and FAQs, at our website: [greenwayinstitute.org/build-a-better-world-challenge/](https://greenwayinstitute.org/build-a-better-world-challenge/)

### **Challenge Timeline**

#### **December 20th - Letter of Intent deadline**

Teams who submit a LOI will be paired with a Greenway mentor to provide support throughout the challenge.

#### **January 13th - Proposal deadline**

- **Required:** A proposal that confirms your intent to participate. See [Deliverables](#) for proposal details.
- **Optional:** Teams that want Greenway to provide financial support for materials must submit a design drawing along with a list of materials, which have been reviewed by a Greenway mentor.

**April 28th: Final report due**

**May 5th: Demonstration day**

**Submit letters of intent to** [challenge@greenwayinstitute.org](mailto:challenge@greenwayinstitute.org).

**Reach out to** [challenge@greenwayinstitute.org](mailto:challenge@greenwayinstitute.org) with any questions.