



16th Annual

Sustainable Design Challenge

For High School Students
Tuesday, April 5, 2022

Form your team.

Go green.

Get creative.

Explore a career.

Win big.



Student Info Packet

For In-Person Presentations



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SCARCE is excited to announce the 16th annual Sustainable Design Challenge! The 2022 Sustainable Design Challenge will be held on Tuesday, April 5th 2022 from 8am-1:00pm at the DuPage County Complex's Jack T. Knuepfer Administration Building, 421 N. County Farm Road, Wheaton.

High school students are challenged to design and construct a sustainable building model in competition for cash prizes of up to \$500. This great STEAM opportunity is open to any DuPage County high school student.

This program invites students to:

- Research, design, and construct a sustainable building model
- Present their project to the public & a panel of judges
- Explore sustainability careers through interaction with professionals working in the field including architects and engineers
- Participate in a professionally led tour/exploration session of the Administration Building exhibits to learn about sustainable design and green infrastructure on the campus

How to Participate

Participation is free. Up to (10) teams from each high school serving DuPage County residents may participate. Students must register their team online.

Visit <https://www.scarce.org/sdc-team-registration/> to register online

Registration opens February 4th. The **registration deadline is Wednesday, March 25 by 5pm.**
Teams may not participate without online registration.

Registration is on a first come, first serve basis. Submissions will be followed up with an email notification confirming participation, pending a school's team limit has not been reached. Contact SCARCE if confirmation has not been received within 2 business days.

Any teams wishing to participate that do not have a teacher sponsoring their project should contact Jean, jean@scarce.org, before registering.

Questions or Concerns?

Contact: Jean Kent
630-545-9710
jean@scarce.org
www.scarce.org

Important Dates

February 4th	Team Registration Opens <i>Register online:</i> https://www.scarce.org/sdc-team-registration/
TBD	Sustainability in Action Virtual Meet-up (Separate registration required, see page 7)
March 25th	Team Registration Closes at 5pm
April 5th	16th Annual Sustainable Design Challenge
Week of April 25th	Winners Announced
May/June Date TBA	Awards Presentation at DuPage County Board meeting

The Challenge

Who: Teams of 1-4 high school students are invited to tackle this challenge. Students must attend a high school that serves residents from DuPage County to be eligible to participate. (2-4 members per team is highly recommended.)

Goal: Design a sustainable building with Leadership in Energy and Environmental Design (LEED) criteria as the basic guide. Students will be evaluated on their sustainable features and on presentation skills and professionalism (see rubrics). Write-ups will be used to aid in determining final winners.

Students are expected to:

- Build a model of their design
- Create a visual aid explaining features of the design (presentation board, PowerPoint, Prezi, etc.)
- Provide 2 copies of written information about their model including:
 - cover sheet (use attached page 9)
 - photo of model
 - summary of sustainable features (see sample page 10)
 - project write-up: detailed written explanation of features (see page 6)
- Display & present their design on April 5th (similar to a science fair)
- Participate in all supplemental exploration sessions during the event
- Return signed photo/video release form from each team member

Additional details on the project components are provided in the Project Guidelines on page 6.

Recognition & Prizes

All student teams will be notified of their score totals following the event. Participation in the exploration sessions will be taken into account when determining winners. Winning teams and their sponsor (if applicable) will be notified ahead of the awards presentation.

There will be cash prizes for winners of the following categories:

- Best Overall LEED Design: \$500
- Best Stormwater Design: \$250
- Best Energy Design: \$250

The Best Stormwater Design award places emphasis on the Stormwater Management and Water Efficiency categories on the Sustainable Design Scoring Rubric. The Best Energy Design award focuses on the Energy Efficiency category on the Sustainable Design Scoring Rubric.

Awards will be presented at a DuPage County Board meeting in the County Board Chambers on the third floor of the Jack T. Knuepfer Admin Building, 421 N. County Farm Road, Wheaton, exact date TBD.

What to Expect the Day of the Event

Participants will convene in the atrium and auditorium of the Jack T. Knuepfer Admin Building at 421 N. County Farm Road in Wheaton, starting at one of the time shifts, either 8:00am or 10:45am. The event will conclude by either 10:15am or 1:00pm, depending on the assigned shift. Students will be notified of their time shift prior to competition day, after registration closes. **Masks must be worn for the duration of the event.**

The **approximate** schedule is detailed below. Changes may be made at any time due to capacity restrictions and safety requirements. All teams will be notified of any changes as soon as possible.

SHIFT A	8:00am-8:45am	Check-In/Set-up for Students & Sponsors/Judges
	9:00am-10:15am	Project Exhibition and Judging Exploration Sessions: Green Infrastructure Talks
SHIFT B	10:45am-11:30am	Check-In/Set-up for Students & Sponsors/Judges
	11:45am-1:00pm	Project Exhibition and Judging Exploration Sessions: Green Infrastructure Talks

Bring a reusable water bottle, bottled water will not be provided.

Judging and Green Infrastructure Exploration Sessions

Students check-in with SCARCE staff and receive their detailed schedule with their assigned time slot for judging and exploration sessions taking place during the visit. Teams will need to proceed to their assigned table and set up their projects promptly. Displays will stay assembled for public viewing and for presentation to the judges. The Green Infrastructure Talk exploration sessions will take place intermittently based on assigned times and are mandatory to attend. The sessions present a unique opportunity to view sustainable design in practice and learn about careers related to sustainable design.

Each student project will be evaluated once by a group of at least two judges. Evaluation forms will be filled out individually by each judge. Judge groups are made up of local sustainable design professionals in the fields of architecture, engineering, landscape architecture, ecology, and stormwater management.

At the end of the event, students must take their models and displays with them. Scores will be tallied and winners will be notified a few weeks after the event. Please **do not disassemble models** – winners may be asked to bring them to the awards presentation or to donate them to SCARCE to be used as examples for future competitions.

Awards will be presented at a DuPage County Board meeting, exact date and time to be announced. Award checks will be presented at the awards presentation. If students are unable to attend, alternative arrangements will be made.

Project Guidelines

The outputs of the Sustainable Design Challenge are (1) a sustainable building model, (2) a visual aid, (3) verbal presentation, and (4) a project write-up, detailed below. Successful projects will demonstrate creative innovation and an overall consideration of the three pillars of sustainability: environment, economy and society. Be sure to choose a specific location for your project in order to make appropriate decisions in relation to the community.

Projects will be scored by judges using the design and presentation rubrics included in this packet. Further evaluations and decisions will be made by SCARCE staff based on participation and the write-up.

(1) Sustainable Building Model

Refer to the Sustainable Design Scoring Rubric for the types of features to consider. The model should attempt to represent as many of the project's design features as possible.

(2) Visual Aid

Create a visual aid to explain the features of the project. A presentation board or a computer-aided visual is acceptable. *Please note: we are unable to guarantee access to an outlet. If a computer is used, come with your laptop fully charged.*

(3) Presentation

Your verbal presentation will be evaluated by judges using the presentation scoring rubric. Presentations must not exceed 8 minutes. Be prepared for questions from the judges during the remaining evaluation time, not to exceed 15 minutes total. Keep in mind, this is a professional setting. Please dress appropriately.

(4) Write-up (please print double-sided to conserve paper)

Bring 2 copies of the write-up. Use the provided cover sheet for each copy (page 9). One must be turned in at registration and the other available for the judges for reference during evaluation.

(i) Photo of Model

Include a photo of your model with the write-up that is turned in at registration.

(ii) Summary of features

Include a bulleted list of design features as outlined on page 10 of this guide.

(iii) Report

The report provides the opportunity to explain your project in greater detail to demonstrate your research and understanding. Reports will be used in combination with the project evaluation scores and participation information to determine winners. Descriptions of features with examples will be weighted more favorably. For instance, if you intend to use local materials, you should provide specific examples and their use in the construction.

Be sure to address how the location affected your project. Also include 1-2 paragraphs that describe the potential barriers to constructing your building.

There is an 8 page limit for the report. Use the Calibri font, size 11, with 1.5 spacing and 1" margins.

Learning Opportunities

Sustainability in Action Virtual Meet-Up - Date and time to be determined, be sure to check back.

Join us to learn from local professionals in sustainable design! Go on a tour of a local project highlighting state-of-the-art sustainable features. Following the tour, we'll learn about careers in sustainable design straight from local professionals in the fields of architecture, design and engineering.

The above is a great opportunity to gain insight and inspiration for Sustainable Design Challenge projects as well as future internship and career opportunities. Open to any interested DuPage County high school student, teacher, and school administrator. Sustainable Design Challenge student teams are strongly encouraged to participate.

Separate registration required and more details will be available soon here:

<https://www.scarce.org/sustainable-design-2/sustainability-in-action-virtual-meet-up/>

Professionally-led Tours and Interaction

Students competing in person at the Administration building on the DuPage County campus will be able to view and learn about green infrastructure in DuPage County during tours and exploration sessions led by Stormwater Management professionals. They will also have the opportunity to directly interact with judges and professionals from various sustainable fields.

Video Content

All Sustainable Design Challenge competitors will have access to videos created by DuPage County Stormwater Management highlighting green infrastructure on the campus and beyond. Sustainable Design Challenge sponsors have also been encouraged to share videos that offer insight on careers, projects and organizations. The link to these videos will be available here <https://www.scarce.org/sustainable-design-2/> on the Sustainable Design Challenge Website once they are received.

Local Green Infrastructure

A list of local green infrastructure in DuPage County is available here online:

<https://www.scarce.org/sustainable-design-2/resources/>

You are encouraged to explore sites to see examples of sustainable design in your community.

Resources to Get Started

U.S. Green Building Council

<https://new.usgbc.org/>

Illinois Green Alliance

<https://illinoisgreenalliance.org/>

Archived U.S. Environmental Protection Agency: Green Building

<https://archive.epa.gov/greenbuilding/web/html/>

Whole Building Design Guide

<https://www.wbdg.org/>

Sustainable Facilities Tool

sftool.gov

ENERGY STAR

<https://www.energystar.gov/>

Green Home Inspiration

Inhabitat—*Architecture*

<https://inhabitat.com/architecture/>

Treehugger - Green Architecture

<https://www.treehugger.com/green-architecture/>

Beyond LEED

Passive House Institute

<http://www.phius.org/home-page>

Passive House Explained in 90 Seconds

<https://youtu.be/CasrjYhZB1M>

Passive House Pioneer (interview)

<https://mainehomes.com/passive-house-pioneer/>

Living Building Challenge

<https://living-future.org/lbc/>

WELL Building Institute

<https://www.wellcertified.com/>

Cover Sheet

Team Name:

List of Team Members:

Type of Building:

School:

Project Number: _____

(assigned via email the week prior to the event)

Include:

- Photo of model
- Summary of Sustainable Features
- Report

Summary of Sustainable Features [Sample]

Transportation & Sustainable Sites

Green Vehicles

- Sample feature A
- Sample feature B

Heat Island Reduction

- Feature C
- Feature D
- Feature E

Light Pollution Prevention

- Feature F
- Feature G

Site Development

- Feature H
-etc

Continue in this manner for each category on the Sustainable Design Scoring Rubric that you included in your model. Simply name each feature. Provide details in the separate project write-up (see page 6).

Sustainable Design Scoring Rubric <i>(Adapted from LEED v4 BD+C Project Checklist)</i>			
Category	Scoring Criteria	Possible Points	Point Earned
Transportation and Sustainable Sites: (12 possible points)			
	Green Transportation	3	
	Heat Island Reduction	3	
	Light Pollution Prevention	3	
	Site Development	3	
		12	0
Stormwater Management: (9 possible points)			
	Landscaping	3	
	Storage	3	
	Runoff Absorption/Recharge	3	
		9	0
Water Efficiency: (9 possible points)			
	Outdoor Water Use Reduction	3	
	Indoor Water Use Reduction	3	
	Water Metering	3	
		9	0
Energy Efficiency: (15 possible points)			
	Lighting	3	
	Heating/Cooling	3	
	On-site Energy Production	3	
	Energy Usage Monitoring	3	
	Building Envelope	3	
		15	0
Materials and Resources: (6 possible points)			
	Storage and Collection of Recyclables and/or Compostables	3	
	Use of Sustainable Materials	3	
		6	0
Indoor Environmental Quality: (6 possible points)			
	Low-emitting Materials	3	
	Air Quality Features	3	
		6	0
Overall Project: (6 possible points)			
	Project Location	3	
	Innovation	3	
		6	0
		Total:	
		63	0
See scoring key on Presentation Rubric (page 11)			

Photo & Video Release 2022 Sustainable Design Challenge

I, _____, hereby grant SCARCE staff and Sustainable Design Challenge judges or representatives permission to take photos and/or video recordings of me and my/my team’s sustainable design model, and any supplemental materials that I have on display for the Sustainable Design Challenge and/or during the awards presentation (if I/my team is selected as a winner) without payment or other consideration. I understand these photos and/or videos, which may include my name, voice or likeness, may be used by SCARCE in any of its publications, including web-based publications, in conjunction with the announcement of the competition’s winners, as well as in the future for promotion, illustration, or advertising of the Sustainable Design Challenge.

I hereby waive my right to inspect or approve the finished product where my likeness appears as well as my right to any royalties or other compensation arising from or related to the use of my photos and/or videos.

I hereby also hold harmless, release and forever discharge SCARCE or any of its representatives all claims, demands and causes of action which I, my heirs, representatives, family members, or any other persons acting on my behalf have or may have by reason of this authorization.

I HAVE READ AND UNDERSTAND THE ABOVE PHOTO/VIDEO RELEASE. I AFFIRM THAT I AM AT LEAST 18 YEARS OF AGE, OR, IF I AM UNDER 18 YEARS OF AGE, I HAVE OBTAINED THE REQUIRED CONSENT OF MY LEGAL GUARDIAN/PARENT AS EVIDENCED BY THEIR SIGNATURE BELOW.

Printed Name of Participant: _____

Signature of Participant: _____ Date: _____

If participant is under the age of 18:

Printed Name of Legal Guardian: _____

Signature of Legal Guardian: _____ Date: _____

Relationship to Participant: _____