



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 Virtual Presentations



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SCARCE is excited to announce the 16th annual Sustainable Design Challenge! High school students work in teams to design a sustainable building in a bid for cash prizes of up to \$500. Students collaborate to research, design, and present their model for a panel of professionals from design fields including architecture and engineering. This great STEAM opportunity is open to any DuPage County high school student. For the 2022 challenge, projects can be submitted electronically.

This program invites students to:

- Research, design, and construct a sustainable building model
- Create a video presentation featuring their model to be remotely viewed and evaluated by a panel of judges
- Explore sustainability careers through videos made by professionals, including architects and engineers
- Virtually explore sustainable design and infrastructure throughout DuPage County

How to Participate

Participation is free. Students must register their team online. A limit of 10 teams per school may register. This limit may be expanded based on capacity.

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

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

Registration is on a first come, first serve basis. A limited number of teams may participate. Registration submissions will be followed up by an email notification confirming participation, pending a school's team limit has not been reached. Contact SCARCE if confirmation is not received within 2 business days.

Teams may participate independently or with a teacher sponsor.

Questions or Concerns?

Contact: Jean Kent
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 <i>Separate Registration required. Details on page 6</i>
March 25th	Team Registration Closes at 5pm
April 5th	Project Submissions Due by 5:00pm
Week of April 25th	Winners Announced
May/June Date TBA	Awards Presentation



The Challenge

Who: Teams of 1-4 high school students are invited to tackle this challenge, however it is highly recommended that teams have 2-4 members. Students must attend a high school that serves residents from DuPage County to be eligible to participate.

Goal: Design a sustainable building incorporating criteria from the Sustainable Design Scoring Rubric, which was derived from Leadership in Energy and Environmental Design (LEED) project checklists. 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:

- View provided supplemental videos for ideas and applications currently in use throughout DuPage County
- Participate in any virtual programming
- Build a model of their design
- Create a visual aid explaining features of the design
- Record a video presentation of their design
- Provide photos of the model
- Compose a project write-up
- Submit all portions of the finalized project online through the provided link by April 5th at 5pm including signed photo/video release forms from each team member

Additional details on the project components are provided in the Project Guidelines on page 5.

Recognition & Prizes

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

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

All components of the project will be taken into account when determining winners. 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.

Individual student teams will be notified of their score totals following the event. Teacher sponsors may request the scores of their participating teams. Winning teams and their teacher sponsors (if applicable) will be notified ahead of the awards presentation.

Do not destroy or change models! Winners may be asked to bring them to the awards presentation or donate them to SCARCE to be used as examples for future competitions.

Awards are typically presented during a DuPage County Board meeting, exact date and location to be determined. Alternative arrangements may be made due to social distancing measures.



Project Guidelines

The outputs of the Sustainable Design Challenge are (1) a sustainable building model, (2) a visual aid, (3) recorded video 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. Choose a specific location for your project in order to make appropriate decisions in relation to the community.

Please note: Projects will be scored by judges using the design and presentation rubrics included in this packet. Final decisions will be made by SCARCE staff based on judge evaluations and project submissions.

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. It may be a physical model or digital rendering. You will be asked to upload photos of your model in the online submission form. Include up to 10 images to best exhibit its features.

2) **Visual Aid**

Create a visual aid to further explain the features of the project, such as a presentation board or a computer-aided visual (PowerPoint, Prezi, etc.)

3) **Recorded Video Presentation***

Your video presentation will be evaluated by judges using the presentation scoring rubric. Presentations must not exceed 10 minutes. Include the model, visual aid, and explanation and reasoning behind your model's features. Keep in mind, this is a professional competition, so please dress and speak appropriately. Attempt to include as many team members in the presentation as possible. ***Project submissions must include a signed photo & video release form for each team member.**

4) **Write-up**

(i) **Cover page**

Include team name, list of team members, building type, and your school.

(ii) **Summary of features**

Include a bulleted list of design features as outlined on page 8 of this packet.

(iii) **Report**

The report provides the opportunity to explain your project in greater detail to demonstrate your research and reasoning. Reports will be used in combination with the project evaluation scores 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 still to be determined - check back soon.

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/>

Video Content

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 professionals from environmental fields. For the virtual Sustainable Design Challenge competitors, DuPage County Stormwater Management has created videos 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 - LEED certification & criteria <https://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/>

BuildingGreen (some articles available for free) <https://www.buildinggreen.com/>

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/>

Green Home Inspiration

Inhabitat—Architecture <https://inhabitat.com/architecture/>

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



Summary of Sustainable Features [Sample]

Transportation & Sustainable Sites

Green Transportation

- 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 5).



Sustainable Design Scoring Rubric (Adapted from LEED v4 BD+C Project Checklist)			
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 9)



Photo & Video Release 2022 Sustainable Design Challenge

I, _____, hereby grant SCARCE staff and Sustainable Design Challenge judges permission to view the video recording, either in its entirety or portions of, and/or photos of me and my/my team's sustainable design model, and any supplemental materials that I electronically submit for the purpose of evaluating the features of my/my team's project without payment or other consideration. I understand the viewing of these photos and videos is how I and/or my team will be evaluated for the purposes of the 2022 Sustainable Design Challenge. I understand my submitted photos and/or video will be made available online for public viewing.

I also understand these photos and/or videos or portions of them, which may include my name, voice, likeness and physical surroundings, 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. This includes any photo or video that may be taken during the actual awards ceremony of me or my teammates if I/my team is selected as a winner. 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 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: _____

