



17th Annual

Sustainable Design Challenge



.....
**For DuPage County
High School Students**

8am-2pm

- Form your team
- Design a building
- Get creative
- Explore a career
- Win big!



Student Info Packet



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SCARCE is excited to announce the 17th annual Sustainable Design Challenge! The 2023 Sustainable Design Challenge will be held on Tuesday, April 18th 2023 from 8am-2pm at the DuPage County Complex, 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
- Participate in professionally led tours/exploration sessions to learn about sustainable design and green infrastructure on the campus
- Explore sustainability careers through interaction with professionals working in the field, including architects and engineers

How to Participate

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

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

Registration opens Friday, February 2nd. **The registration deadline is Monday, April 3rd 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 hasn't 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 2nd	Team Registration Opens <i>Register online: https://www.scarce.org/sdc-team-registration/</i>
TBD	Sustainability in Action Virtual Meet-up (Separate registration required, see page 7)
April 3rd	Team Registration Closes at 5pm
April 18th	17th Annual Sustainable Design Challenge
Early May	Winners Announced
June (Date TBD)	Awards Presentation at a 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 (ie. presentation board, poster. PowerPoint, etc.)
- Provide 2 copies of written information about their model including:
 - cover sheet (use attached page)
 - photo of model
 - summary of sustainable features (see sample)
 - project write-up: detailed written explanation of features
- Display & present their design on April 18th (similar to a science fair)
- Participate in all supplemental exploration sessions during the event
- Return signed photo/video release form from each team member at check-in

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 of the Jack T. Knuepfer Admin Building at 421 N. County Farm Road in Wheaton starting at 8:00am. Participants should enter through the main circle drive entrance of the building. The event will conclude at 2:00pm.

The **approximate** schedule is detailed below. All teams will be notified of any changes as soon as possible.

8:00am-8:55am	Check-In/Set-up: Students & Sponsors/Judges
9:00am-11:15am	Project Exhibition and Judging Exploration Sessions: Green Infrastructure Talks
11:30am-2:00pm	Lunch, Keynote Speaker & Info Sessions at DuPage County Fairgrounds (2015 Manchester Road, N County Farm Rd, Wheaton, just east of the Admin Building) Info Sessions for participants: <ul style="list-style-type: none">• Probable DPCHD Community Center Tour• Green Career Booths – County Fairgrounds

Lunch is provided for judges, participants and chaperones.

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 throughout the visit. Teams will need to proceed to their assigned table/location and set up their projects promptly after check-in. Displays will then 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 more 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 fields of architecture, engineering, landscape architecture, ecology, and stormwater management.

At the end of judging and the exploration sessions, students must take their models and displays with them to the DuPage County Fairgrounds. 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 for 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 that 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 (see page 12). The model should attempt to represent as many of the project's design features as possible.

(2) Visual Aid

Create a visual aid in addition to the model 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 on page 11. 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 two copies of the write-up. Use the provided cover sheet on page 9 for each copy. One copy must be turned in to SCARCE staff at check-in and the other available for the judges for reference during evaluation.

(i) Photo of Model

A photo of the model must be included with the write-ups.

(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 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 and include 1-2 paragraphs that describe the potential barriers to constructing your building/model.

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 - *separate registration required*

Date and time TBD – Be sure to check the SCARCE website and your email regularly for updates

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 will 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. This virtual meet-up is open to any interested DuPage County high school student, teacher, and school administrator. Prospective and registered 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

Student teams will be able to view and learn about green infrastructure in DuPage County during tours and exploration sessions led by Stormwater Management and Architectural professionals. They will also have the opportunity to interact directly with judges and professionals from various other sustainable fields.

Local Green Infrastructure

A list of local green infrastructure in DuPage County is available 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

General Background

U.S. Green Building Council

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

Illinois Green Alliance (Illinois Chapter of the U.S. Green Building Council)

<https://illinoisgreenalliance.org/>

U.S. Environmental Protection Agency

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

DuPage County Stormwater Management

<https://www.dupagecounty.gov/swm/>

Whole Building Design Guide

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

Sustainable Facilities Tool

sftool.gov

ENERGY STAR

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

Green Home Inspiration

Dwell— Green Homes

<https://www.dwell.com/green-homes>

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 (video)

<https://www.youtube.com/watch?v=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**



[Sample] Summary of Sustainable Features

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 (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
		63	0
Total:		63	0

See scoring key on Presentation Rubric (page 10)



Photo & Video Release 2023 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: _____

Each team member must turn in a printed and signed copy of this release to a SCARCE staff member at check-in on the day of the event. If participant is under 18, it must be signed by a parent or legal guardian.

