



18th 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



SCARCE | ENVIRONMENTAL
EDUCATION



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SCARCE is excited to announce the 18th annual Sustainable Design Challenge! The 2024 Sustainable Design Challenge will be held on Tuesday, April 16th 2024 from 8am-2pm at the DuPage County Complex in 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 and 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, engineers, and designers

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 Thursday, February 1st. **The registration deadline is Monday, April 8th by 5pm.** Teams may not participate without online registration. Be sure to complete and return the Opt-Out Photography Form if applicable.

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 1st	Team Registration Opens <i>Register online: https://www.scarce.org/sdc-team-registration/</i>
March 21st	Sustainability in Action Virtual Meet-up. (Separate registration required, see page 7.)
April 8th	Team Registration Closes at 5pm
April 16th	18th Annual Sustainable Design Challenge
Late April/Early May	Winners Announced
May/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, 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, the day of the challenge, about their model including:
 - cover sheet (use attached page)
 - color photo of model
 - summary of sustainable features (see sample)
 - project write-up: detailed written explanation of features (see guidelines)
- Display & present their design on April 16th (similar to a science fair)
- Participate in all supplemental exploration sessions during the event

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

Recognition & Prizes

All student teams and teacher sponsors, if applicable, will be notified of the winners and award presentation date following the event. Project write-ups, as well as participation in the exploration sessions, will be taken into account when determining winners.

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 and follow signage to the Atrium.

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 for Students & Sponsors/Judges (teams will receive final judging and exploration session schedule and turn in write-ups)
9:00am-11:15am	Project Exhibition and Judging Exploration Sessions: Green Infrastructure Talks
11:15am-11:30am	Relocate with models to DuPage County Fairgrounds, Building 2, 2015 Manchester Road, N. County Farm Rd, Wheaton, ¾ mile east of the Admin Building. (Parking is available adjacent to the building. Leave models in vehicles. Provide own transportation. Walking is not recommended for safety and scheduling purposes!)
11:30am-12:30pm	Zero-waste lunch & Keynote Speaker, DuPage County Fairgrounds, Building 2
12:30pm-2:00pm	Teams will rotate between Green Career Booths at DuPage County Fairgrounds, Building 2, and possible other activities.

Lunch is provided for judges, participants and chaperones.

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

SCARCE will not provide transportation during any portion of this event.

See attached map for event location and parking. Parking location for buses during the morning may change due to construction projects.

Judging and Green Infrastructure Exploration Sessions

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**. Students will be escorted to the sessions, which will present a unique opportunity to view sustainable design in practice, and will 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 educators and 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, Building 2. Parking is available adjacent to Building 2. Models should be left in vehicles. SCARCE is not providing transportation between locations. After lunch, teams will visit Green Career Booths and participate in other activities in Fairgrounds Building 2. Please follow your schedule received at check-in.

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 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. All are invited.

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. Include the reasoning for your location choice.

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 kept with your model for the judges for reference during your presentation.

(i) Color Photo of Model

A color photo of the model must be included with each write-up.

(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, reasons and their use in the construction. Be sure to address how the location impacted 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

Thursday, March 21, 2024 = 3:30-4:30pm (Zoom link will be sent after registration is received.)

Log-in early to ensure a prompt start! We want to be respectful of the professionals and their time.

Join us to learn from local professionals in sustainable design! Go on a virtual tour of two local projects highlighting state-of-the-art sustainable features and a new type of certification. Following the tours, 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 complimentary 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. Register 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 mandatory tours and exploration sessions led by Stormwater Management and Architectural professionals the day of the Challenge. They will also have the opportunity to interact directly with judges and professionals from various other sustainable fields. Be sure to visit the Green Career Booths during your scheduled timeframe and turn in your completed sheets prior to departure.

Additionally, before you leave, please turn in your folders and nametags so we can reuse them!

Local Green Infrastructure

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

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

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

Resources to Get Started

(Feel free to explore others!)

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:

- Color 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).

Presentation Rubric			
Category	Scoring Criteria	Possible Points	Points Earned
Presentation: (18 possible points)			
	All team members have an active role.	3	
	Uses a clear voice.	3	
	Demonstrates good language skills and pronunciation.	3	
	Shows evidence of practice and preparation.	3	
	Keeps audience engaged.	3	
	Able to clearly convey key design components to audience.	3	
		18	0
Completeness: (15 possible points)			
	Model is professional and complete	3	
	Effectively uses a visual aid in addition to model.	3	
	Visual aid is neat and easy to understand	3	
	Design concepts can be integrated into a real-world project.	3	
	Project addresses the holistic impact on the environment, society, and economy	3	
		15	0
	Total:	33	0
Scoring key			
0= Non-existent. 1= Partially accomplished. 2= Majority accomplished. 3= Entirely accomplished.			

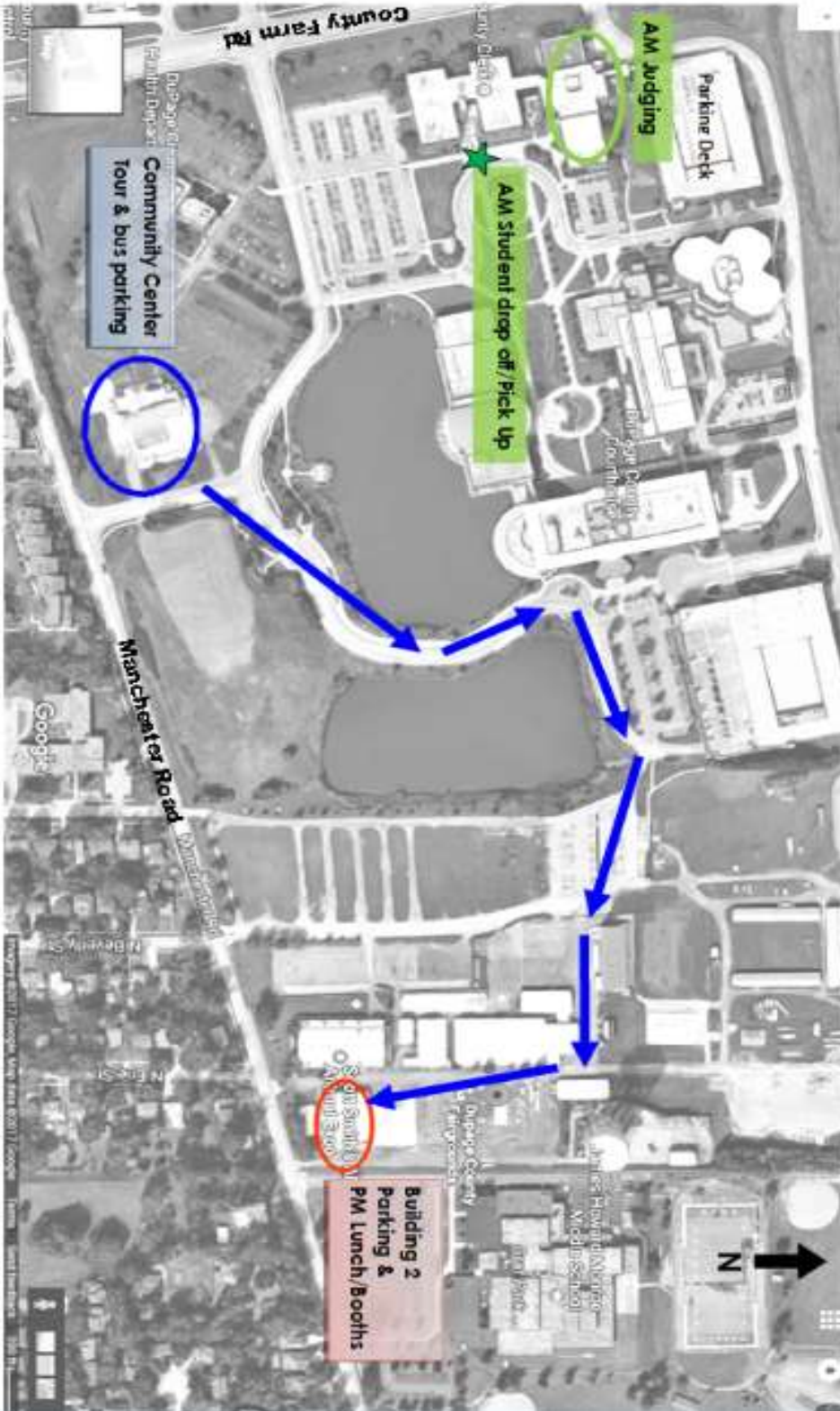
Judge comments: _____

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 and Reasoning	3	
	Innovation	3	
		6	0
		Total:	
		63	0
See scoring key on Presentation Rubric (page 11)			



Annual Sustainable Design Challenge

Map for Buses & Teachers



AM Student Drop-Off/Pick up: Main entrance circle drive at DuPage County Administration Building 421 N. County Farm Road.

Bus parking is at the Linda A. Kurzawa Community Center, 115 N. County Farm Road (Walking distance to Admin Building).

Vehicle parking for lunch is adjacent to Building 2 in the DuPage County Fairgrounds.

DO NOT PHOTOGRAPH

Please complete ONLY if you do **NOT WANT YOUR CHILD'S NAME OR PHOTOGRAPH BEING USED IN CONJUNCTION WITH THE Sustainable Design Challenge**

As a participant in the Sustainable Design Challenge, students may appear in photographs and videos taken by school, district staff members, SCARCE staff members, judges, DuPage County officials, other students, or other authorized officials. The school/district, SCARCE, DuPage County, Sponsoring organizations and other officials, may use these images in various publications, including the school newspaper, district newsletter, school/district website, SCARCE publications & websites, DuPage County publications & websites, social media platforms, or any other publication; the students may or may not be identified by name with their image.

Parents or guardians who do not want their student's photograph/image or work to be published in print, video, on social media or on the Web should provide this completed form one week prior to the Sustainable Design Challenge.

Please check if:

As a parent/guardian, I do not grant consent to any official involved in the Sustainable Design Challenge to publish the photographs/images/work of my child in any school, District, SCARCE, or DuPage County sponsored material, publication, video, social media or website, or to release it to outside entities such as the news media.

Student Name: _____

School Name: _____

Team Name: _____

Parent/Guardian Signature _____

Date: _____

Upload this form to www.scarce.org/file-upload