



19th 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



Contents

This info packet contains the following:

Page 1.....Introduction and How to Participate

Page 2.....Important Dates

Page 3.....The Challenge, Recognition & Prizes

Page 4.....What to Expect the Day of the Event

Page 5.....Judging, Green Infrastructure Exploration Sessions, Activity Sheets, and Scoring

Page 6.....Project Guidelines

Page 7.....Learning Opportunities

Page 8.....Resources to Get Started

Page 9.....Report Cover Sheet

Page 10.....Sample Summary of Sustainable Features

Page 11-12....Project Scoring Rubrics (for use by judges)

Page 13.....Map of DuPage County Complex

Page 14.....Opt-Out Photography Form



SCARCE is excited to announce the 19th annual Sustainable Design Challenge! The 2025 Sustainable Design Challenge will be held on Tuesday, April 15th 2025 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 Monday, February 3rd. **The registration deadline is Monday, April 7th 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, or teams with only 1 individual, 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 3rd	Team Registration Opens <i>Register online: https://www.scarce.org/sdc-team-registration/</i>
April 7th	Team Registration Closes at 5pm
April 15th	19th 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. Teams of 1 individual need to be pre-approved by SCARCE staff prior to registration – see page 1 of this packet.

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 15th (similar to a science fair)
- Participate in all supplemental exploration sessions and activities 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

Please note: 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. Exact time frames will be determined once registration closes and school bus schedules are confirmed. All teams will be notified of any changes as soon as possible.

8:00am-8:55am	Check-In for Students & Sponsors/Judges. (Teams will receive personalized judging and exploration session schedule and turn in write-ups. Teams will then proceed to their assigned table/location and promptly set up their projects. Displays are to stay assembled for public viewing & presentation to the judges.)
9:00am-11:30am	Project Exhibition and Judging Exploration Sessions: Green Infrastructure Talks Students visit peer models and Informational Exhibits and complete A.M. Activity Sheet
11:30am-12:30pm	Students gather personal items and move into adjacent auditorium for Zero-waste lunch & Keynote Speaker. Models/displays are to remain assembled on the tables in the atrium for additional public viewing. These items are to be picked up at the end of the day upon exiting the event.
12:30pm-2:00pm	Teams will rotate between Green Career and Green Infrastructure Booths in the auditorium, and complete P.M. Activity Sheet

Lunch is provided for judges, participants and chaperones.

A lunch survey needs to be completed by those interested – sent separately via email after registration

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 may change due to construction projects.

Judging, Green Infrastructure Exploration Sessions, Activity Sheets, and Scoring

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. Students are encouraged to interact with judges when time allows.

Green Infrastructure Talk Exploration Sessions will take place intermittently based on assigned schedules. Teams will receive this schedule at check-in. **The sessions are mandatory to attend.** Students will be escorted to the sessions, which will present a unique opportunity to view sustainable design in practice, and learn more about careers related to sustainable design.

A.M. and P.M. Activity Sheets need to be completed by each student and turned in at the conclusion of the day in designated bins. In order to complete them, students must visit other team models, the Informational Exhibits, and the Green Career and Infrastructure Booths.

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

Scores will be tallied and winners will be notified a few weeks after the event competition. Green Infrastructure attendance, completed activity sheets, and project write-ups will be taken into consideration when finalizing winners.

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 and explain your decision.

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

Teams will present one time to a panel of 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. 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. Points (a total of 8 possible) will be awarded by SCARCE staff based on its completeness.

(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 (in paragraph form)

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 and reasoning will be weighted more favorably. For instance, if you intend to use local materials, you should provide specific examples, why they were chosen, 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 (4 double-sided) limit for the report itself. Use the Calibri font, size 11, with 1.5 spacing and 1" margins.

Learning Opportunities

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. Students have received valuable information regarding internships and related courses of study, for example, from these experts working in various sustainable fields. Be sure to visit the Green Career and Green Infrastructure Booths during your scheduled timeframe and turn in your completed sheets prior to departure.

The *Wonder About Your Water?* and *Where Is Away?* exhibits will be available for participants to learn more about sustainable practices for proper disposal of unwanted items and ways to help protect the quality of our fresh water. Remember to read all panels on the exhibits (this will also help with completing the A.M. Activity Sheet). Applying as many of these practices to daily activities is a great way to help protect our precious natural resources.

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: _____

Team 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.			
*Whole numbers only please			

Judge comments: _____

Sustainable Design Scoring Rubric

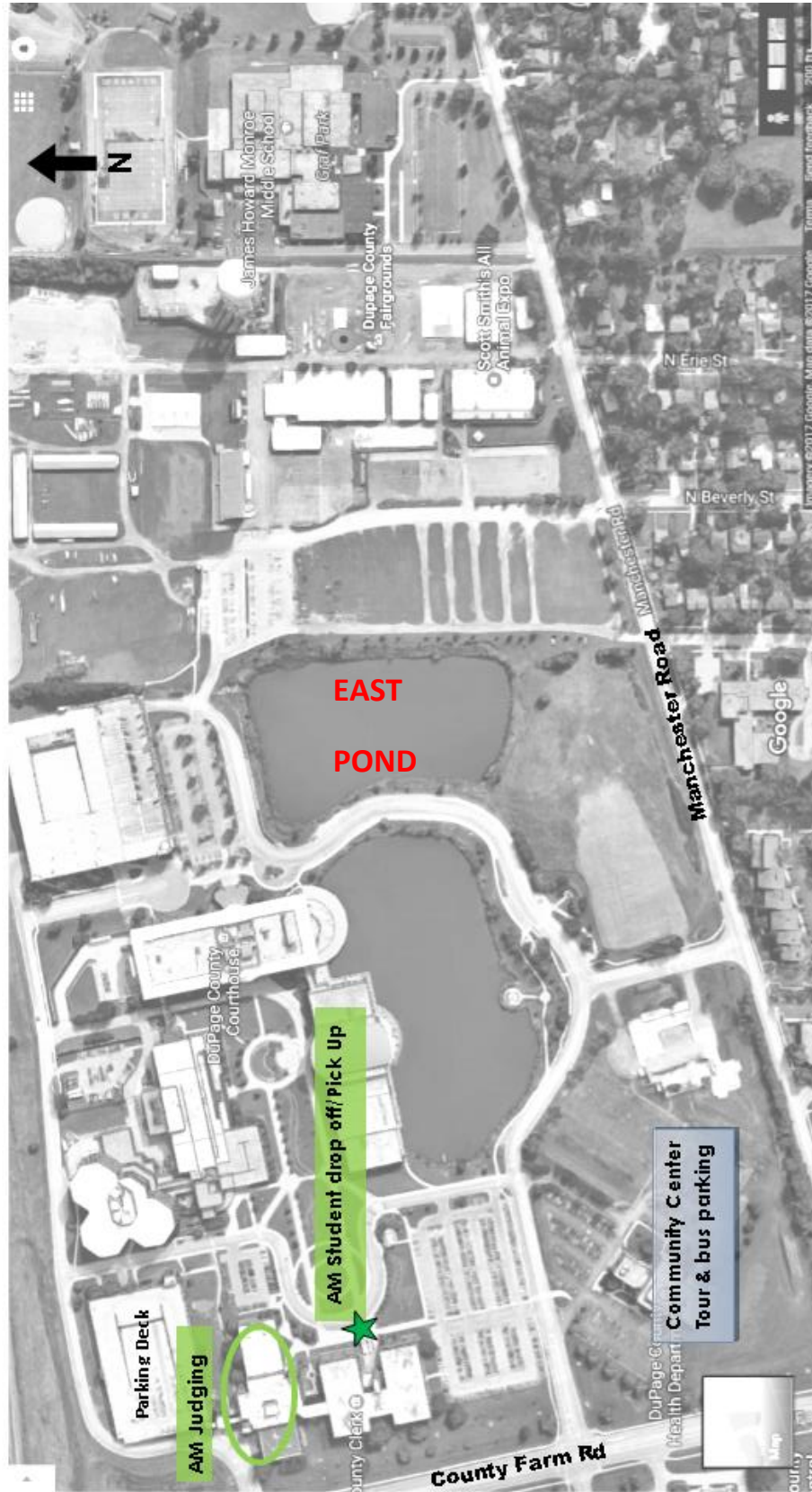
(Adapted from LEED v4 BD+C Project Checklist)

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
		63	0

See scoring key on Presentation Rubric (page 11)



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).

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