13th Annual

Sustainable Design
Challenge

for High School
Students
8am-2pm

Tuesday
April 16
2019

Form your team.
Go green.
Get creative.
Explore a career.
Win big.

AN IDEAL
GREEN HOME

Student Info Packet

SCARCE

Love Blue. Live Green.
DuPage County Stormwater Management

COOL DUPAGE
BE GREEN SAVE GREEN

THE COUNTY OF DUPAGE
WHEATON, ILLINOIS

Contents

This info packet contains the following:

SCARCE is excited to announce the 13th annual Sustainable Design Challenge! The 2019 Sustainable Design Challenge will be held on Tuesday, April 16th 2019 from 8am-2pm at the DuPage County Complex's Jack T. Knuepfer Admin 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

- Tour the DuPage County campus to learn about sustainable design and infrastructure

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 *www.scarce.org/event/2019-sustainable-design-challenge* to register

Registration opens February 6th. The **registration deadline is Wednesday, 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.

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

Questions or Concerns?
Contact:
Carrie Horak
630-545-9710
carrie@scarce.org
www.scarce.org

Important Dates

February 6th	Team Registration Opens *Register online: www.scarce.org/sdc-team-registration*
April 3rd	Team Registration Closes at 5pm
April 16th	13th Annual Sustainable Design Challenge
April 26th	Winners Announced
May/June Date TBA	Awards Presentation at DuPage County Board meeting

The Challenge

Who: Teams of 2-4 high school students are invited to tackle this challenge. Students must attend a high school in DuPage County to be eligible to participate.

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
- Provide 2 copies of written information about their model including:
  - cover sheet (use attached)
  - photo of model
  - summary of sustainable features (see sample)
  - project write-up: detailed written explanation of features
- 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 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 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 Efficiency Design: $250

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 to be announced.

What to Expect the Day of the Event

Participants will convene at the Jack T. Knuepfer Admin Building at 421 N. County Farm Road in Wheaton starting at 8:00am. The event will conclude by 2pm.

The approximate schedule is below:

8:00am-8:55am	Check-In/Set-up: Students & Sponsors/Judges
9:00am-11:15am	Project Exhibition and Judging Exploration Session: Green Infrastructure Talks
11:30am-2:00pm	Lunch followed by Exploration Sessions for participants: 　　　Green Building Tour 　　　Green Career Booths

Lunch is provided for judges, participants and chaperones.
Bring a reusable water bottle, bottled water will not be provided.

Morning: Judging and Green Infrastructure Exploration Session

Students will display their projects for the public and present to the judges. Student teams will receive a schedule at check-in with their assigned time slot for judging and for the exploration sessions taking place throughout the day. The Green Infrastructure Talk exploration session will take place in the morning.

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 professionals in fields of sustainable design including architecture, engineering, landscape architecture, and stormwater management.

Afternoon: Lunch and Exploration Sessions

A zero-waste sandwich lunch is provided including a vegetarian option. Please bring a refillable water bottle. A refill station will be available.

In the afternoon the Green Career Booths and Green Building Tour exploration sessions will take place. Each session is led by professionals in the field including engineering, ecology, architecture and more. The sessions present a unique opportunity to view sustainable design in practice and learn more about careers related to sustainable design.

Student teams will receive a schedule with their assigned time slots for the exploration sessions. Participation in the exploration sessions is mandatory and will be factored into final award decisions.

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 week after the event.

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. 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*
Come prepared with (2) copies of the write-up. Use the provided cover sheet for each copy. One must be turned in at registration. Have the remaining copy available for the judges for reference during evaluation. *Please print double-sided to conserve paper.*

(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 9 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.

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

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 From the Ground Up: A Builders Guide
Access a complete online PDF *https://bit.ly/2QghVD5*

Green Home Inspiration

Dwell— Green Homes
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
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

[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 4).

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

Team Number/Name:

Judge Name and Company:

Student Name(s):

Category	Scoring Criteria	Possible Points	Points Earned
Transportation and Sustainable Sites: (12 possible points)			
	Green Vehicles	3	
	Heat Island Reduction	3	
	Light Pollution Prevention	3	
	Site Development	3	
		12	
Stormwater Management: (9 possible points)			
	Landscaping	3	
	Storage	3	
	Runoff Absorption/Recharge	3	
		9	
Water Efficiency: (6 possible points)			
	Outdoor Water Use Reduction	3	
	Indoor Water Use Reduction	3	
		6	
Energy Efficiency: (12 possible points)			
	Lighting	3	
	Heating/Cooling	3	
	On-site Energy Production	3	
	Energy Usage Monitoring	3	
		12	
Materials and Resources: (6 possible points)			
	Storage and Collection of Recyclables and/or Compostables	3	
	Use of Sustainable Materials	3	
		6	
Indoor Environmental Quality: (6 possible points)			
	Low-emitting Materials	3	
	Air Quality Features	3	
		6	

	Total:	51	

0= Non-existent.
1= Features show minimal effort in research and implementation.
2= Present features show substantial effort in research and implementation.
3= Present features show exceptional effort and innovation in research and implementation.

Judge Notes/Comments:

Sustainable Design Challenge
Presentation Rubric

Team Number/Name:

Judge Name and Company:

Student Name(s):

Category	Scoring Criteria	Possible Points	Points Earned
Presentation: (18 possible points)			
	Maintains good eye contact.	3	
	Uses a clear voice.	3	
	Demonstrates good language skills and pronunciation.	3	
	Shows evidence of practice and preparation.	3	
	Each team member contributes to presentation.	3	
	Able to clearly convey key design components to audience.	3	
		18	
Completeness: (15 possible points)			
	Model is professional and complete.	3	
	Uses a visual aid (presentation board or computer 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	

	Total:	33	

0= Non-existent.   1= Partially accomplished.   2= Majority accomplished.   3= Entirely accomplished.

Presentation length should be a maximum of 8 minutes.

Judge Notes/Comments:

Flip for Design Rubric ➔

[School Name]

Team ID	Team Name	Member 1 Name	Member 2 Name	Member 3 Name	Member 4 Name
#					

Judge 1		Subcategory Scores	
Presentation Score		Stormwater Management	Energy Efficiency
Sustainable Design Score			

Judge 2		Subcategory Scores	
Presentation Score		Stormwater Management	Energy Efficiency
Sustainable Design Score			

Judge 3		Subcategory Scores	
Presentation Score		Stormwater Management	Energy Efficiency
Sustainable Design Score			

	Combined Total	Stormwater Management	Energy Efficiency
Cumulative Scores			

Student participation in supplemental activities:

☐ Green Building Tour

☐ Green Infrastructure Talks

☐ Green Career Booths