



U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON

Launch your Solar Decathlon 2019 Design Challenge

September 12, 2018

Sam Rashkin – U.S. Department of Energy

Rachel Romero – National Renewable Energy Laboratory



Housekeeping

Two Options for Audio (select audio mode):

1. Listen through your computer.

- Select the “mic and speakers” radio button on the right hand audio pane display.

2. Listen by telephone.

- Select the “telephone” option in the right-hand display, and a phone number and PIN will display.

3. Panelists - mute your audio device when not presenting.

4. Technical difficulties - contact the GoToWebinars Help Desk at 888-259-3826.



Housekeeping (continued)

To Ask a Question

- **Select the 'questions' pane on your screen and type in your question.**

Having Trouble Viewing the Webinar?

- **A video/audio recording of this Webinar and the slide decks will be made available.**



Agenda

- Introduction– Sam Rashkin, Solar Decathlon Co-Director
- Kick Off the Competition – Rachel Romero, Design Challenge Manager
- Conclusion and Q&A



INTRODUCTION TO THE DESIGN CHALLENGE



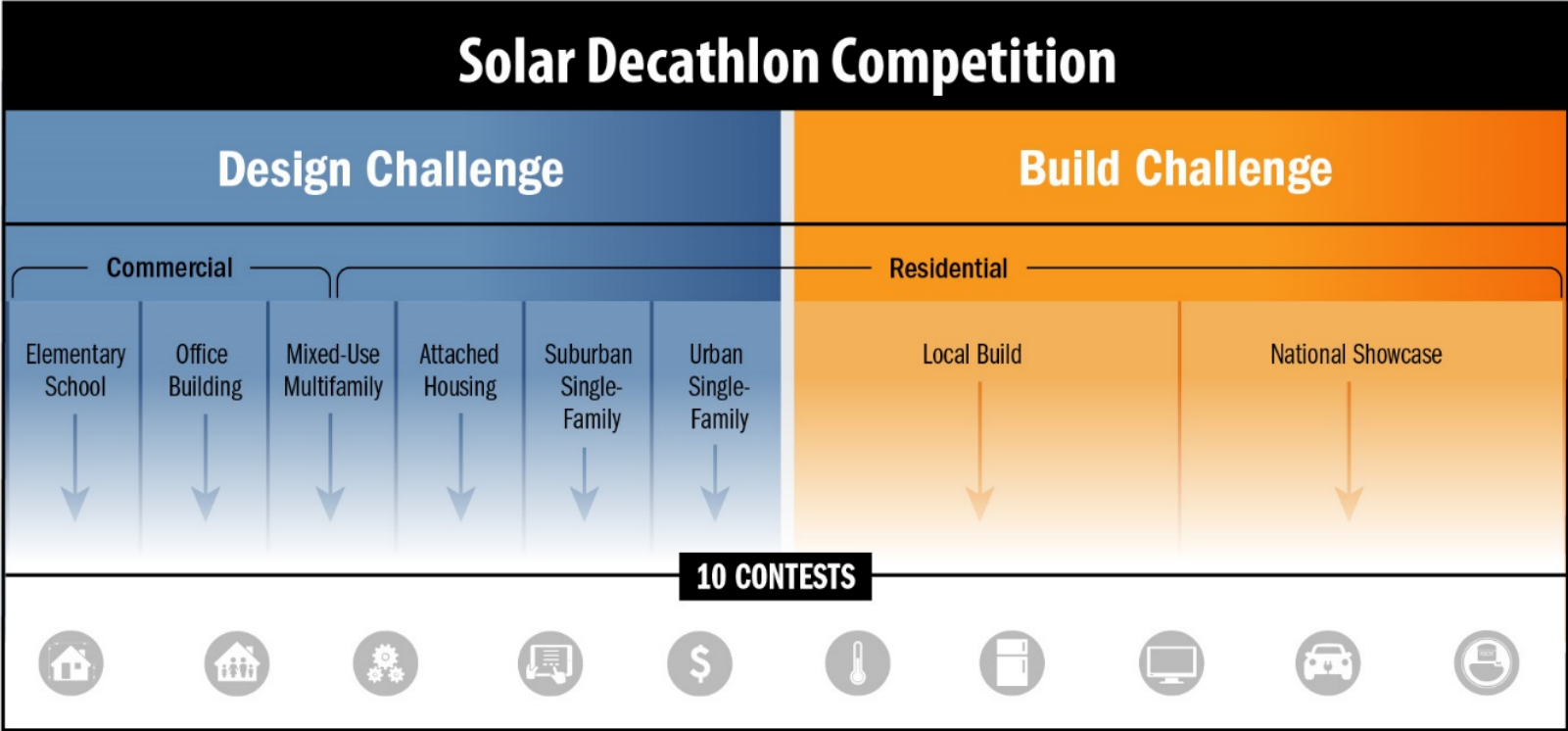


What is the Solar Decathlon?

The U.S. Department of Energy Solar Decathlon® is a collegiate competition, comprising 10 contests, that challenges student teams to design and build highly efficient and innovative buildings powered by renewable energy.



Welcome to the New Solar Decathlon!





Two Challenges, 10 Contest Categories

Energy
Performance

Engineering

Architecture

Market
Potential

Financial
Feasibility &
Affordability

Resilience

Operations

Comfort &
Environmental
Quality

Innovation

Presentation

Teams must do well across all contests to win!

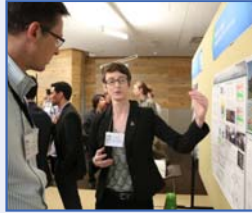
Why Zero Energy Buildings



Impact: Design Challenge Careers



Thomas Simpson



Lena Burkett



Nathan Kahre



Peter Schneider



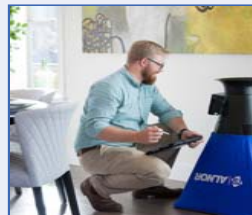
Shannen Martin



DIGIBILT



DOE and now
NREL



Thrive



Faithful + Gould



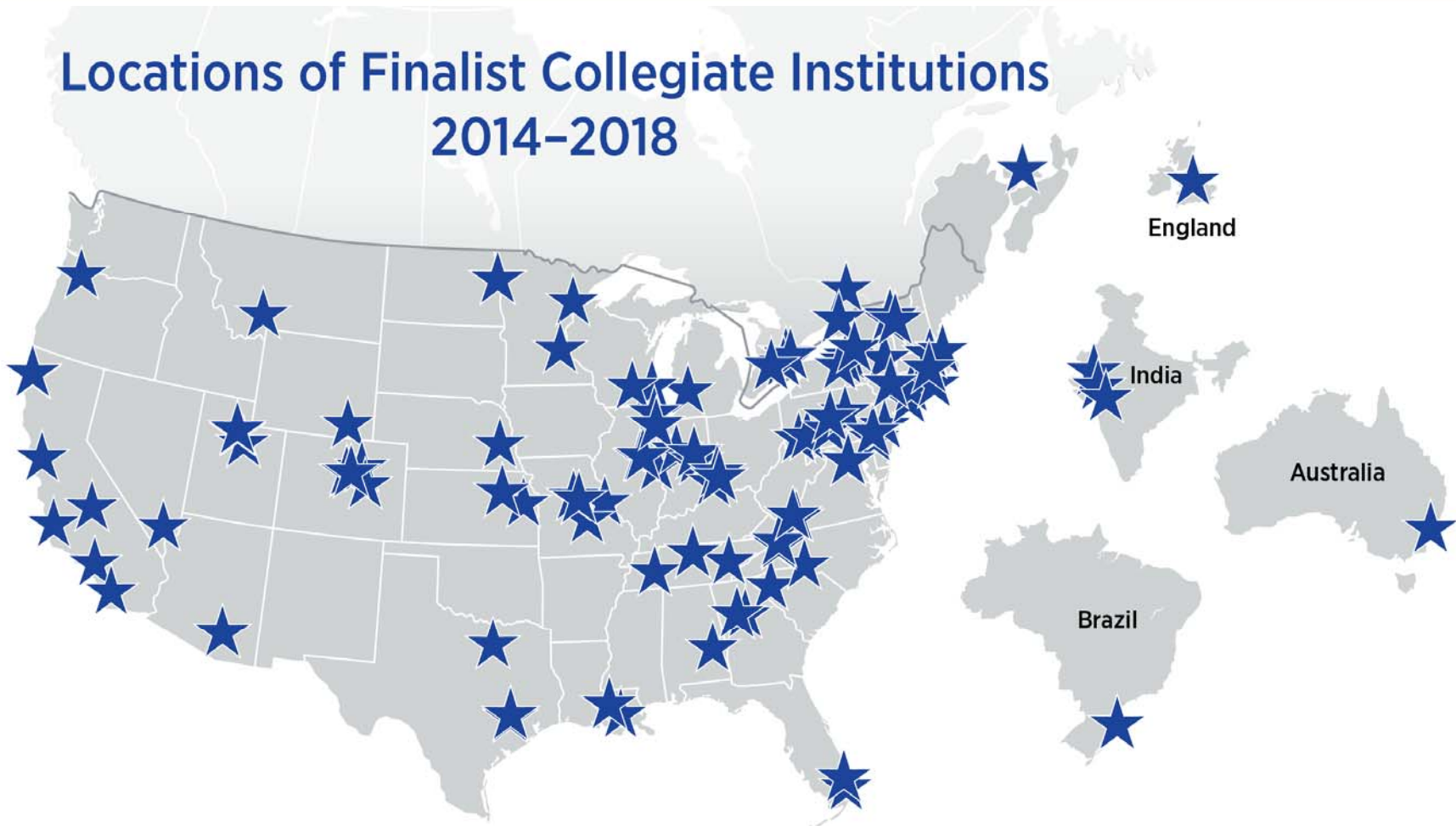


Focus on Building Science

- Control layers image from Sam

Stars of the Challenge

Locations of Finalist Collegiate Institutions
2014-2018



Networking Experience



“The competition weekend was truly an unforgettable experience! We learned so much from the speakers, jurors, and the other teams.”

-2018 Faculty Advisor

Presenting to the Experts



"It energizes me to see all the good ideas and brilliant young professionals who will be entering the work force (with any luck some of them will come work with me at my firm!)"



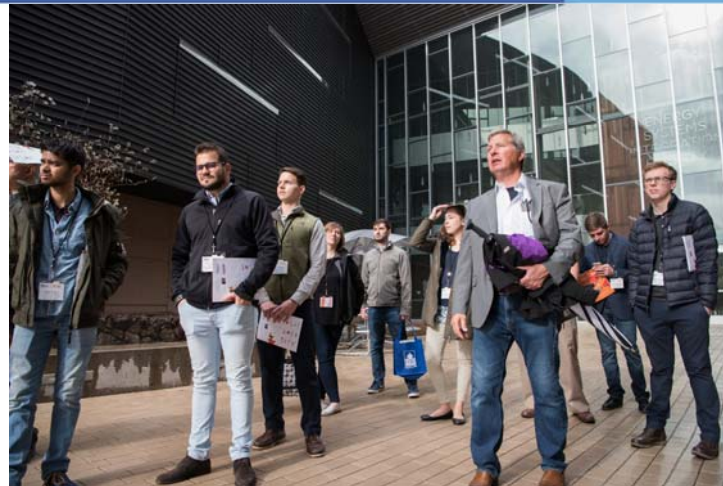
Experience High Performance Buildings

“My favorite part about the competition was seeing all the innovative ideas other teams had in regards to net zero design and talking to other people as excited about sustainable building design as I am.”

-2018 Student



Touch, Feel, Smell Zero



"Getting to see the NREL campus was also an amazing opportunity; it is a place where I hope to work one day!"

-2018 Student



Career Connections



One word to describe the competition weekend....

WOW
Keep it going

Inspire

INNOVATIVE

STIMULATING

SURVIVED. Done!

INSPIRING!!!

Informative

Relieving altitude

Engaging

relief

exhausted

Ripple over

Busy

POWER!

Energizing

Tight.

UNRELIABLE

sleepless

Green

Fantastic!

PHILAU
+ EVER!

enriching!

Successful

FUN

EXHILARATING

HOPE

मनोरंजन

CHANGED

EYE OPENING

DONE

Stressful

UNFORGETTABLE! ★

ARCHITECTURE

HOPEFUL

Meaningful

WOW WONDERFUL!

When

memorable

बढ़िया

STRESSFUL

मजेदार

ENRICHING!

emotional

ENCOURAGING

Hectic

Future

EDUCATIONAL

Passionate!

Reinforcing!

MEANINGFUL

INTIMIDATING AF

LOL

Everything

Shaky

LIT (LED)

OPTIMISTIC

Inspiring!

FRIENDLY

GAT-TASTIC!

फारच गोड

INSPIRING

Moving!

overwhelming!

Learning



2018 Grand Winner



Prairie View A&M University
Prairie View Mod Squad, The Fly Flat Project, Urban Single-Family

2018 1st Place in Elementary School Design





2019 Design Challenge Grand Winner

YOUR TEAM'S STORY HERE

DETAILS OF THE DESIGN CHALLENGE



Design Challenge

- Complete a design project with integrated building science
- Present design to a contest panel of industry expert jurors
- Encourage student participation for one or two academic semesters



Solar Decathlon Guide

- Available on the [Solar Decathlon website](#)
- Read the Competition Guide
 - Design Challenge: Pages 9-32
 - Look for an update in October



Competition Guide 2019–2020

August 2018



Design Challenge Divisions

- Teams choose to compete in one of six Divisions:
 - Suburban Single Family
 - Urban Single Family
 - Attached Housing
 - Multifamily
 - Elementary School
 - Office Building



NREL Image 19656



NREL Image 10675



Project Requirements

- Effectively integrate building science principles and best practices
- Demonstrate marketplace relevance
- Develop new, upgraded, retrofit, or rehabilitation building designs
- Each team defines:
 - Target market
 - Specific location
 - Building lot or site
 - Neighborhood characteristics



2019 Design Challenge Timeline

August 2018
Guide
Released

Nov. 6, 2018
Team
Applications Due

Feb. 19, 2019
Submit Project
Progress Report

March 26, 2019
Submit Project
Report

April 9, 2019
Submit
Project
Presentations

April 12–14, 2019
Design Challenge
Weekend
at NREL Campus

Design Challenge Contests

Energy Performance

Evaluates the building's energy use and production, as well as its capability to provide energy services

Engineering

Evaluates the effective integration of high-performance engineering systems in energy-efficient and energy-producing buildings

Financial Feasibility & Affordability

Evaluates the building's financial costs and ability to address growing affordability challenges in the housing industry

Resilience

Evaluates the building's ability to withstand and recover from prevailing disaster risks for its intended location

Architecture

Evaluates the building architectural design for its creativity, overall integration of systems, and ability to deliver outstanding aesthetics and functionality along with energy-efficient performance



Design Challenge Contests

Operations

Evaluates how effectively and efficiently the building operates to carry out intended functions while also ensuring persistence of performance.

Market Potential:

Evaluates the building's responsiveness to its stated target market, likely appeal to intended occupants and construction industry, and ability to transform how energy is used in buildings given its approach and wide-scale desirability.

Comfort and Environmental Quality

Evaluates the building's capability to integrate comfort and indoor environmental quality with energy-efficient performance.

Innovation

Evaluates the design's success incorporating innovations and/or creative approaches that enhance energy efficiency, energy production, grid-interaction, and building operations

Presentation

Evaluates the team's ability to accurately and effectively convey its design and energy performance strategy to relevant audiences.



Task Overview

- Read the Challenge Rules
- Review winning team presentations and event photos
- Email the organizers with questions (SDdesign@nrel.gov)
- Ensure all team members have access to the Solar Decathlon Groups.io Project Site
- Ensure that all student team members complete the building science training course online or receive a confirmation from the team's faculty lead that equivalent training
- Identify areas in which industry partnership is needed or wanted.
- Design and document a project compliant with the requirements listed in these Rules.
- Submit all materials by the deadlines. Note that all deadlines are 5:00 p.m. Eastern Time.

Forming a Team

- Associated with one or more collegiate institutions
- Faculty advisor lead
- Student team lead
- Minimum two additional students
- Industry partners or advisors



Penn State, 2018 Suburban Single Family

Multidisciplinary Teaming

- Architecture
- Engineering
- Construction Management
- Interior Design
- Business
- Environmental/Sustainability
- Other



Industry Partners

Partners

Builders

Architects

City Officials

Contractors

Developers

Energy Auditors

Engineers

Tradespeople

Collegiate Alumni

Areas of Assistance

Site Development

Codes

Construction

Building Materials

Mechanical Systems

Lighting Systems

Financing

Sales

Appliances

Interior Furnishings



Design Challenge Weekend

- Present to 3-5 Division jurors at Design Challenge Weekend
- One winner announced in each Division
- Grand winner selected by grand jury based on 8-minute presentation to all teams at awards banquet



Design Challenge Weekend

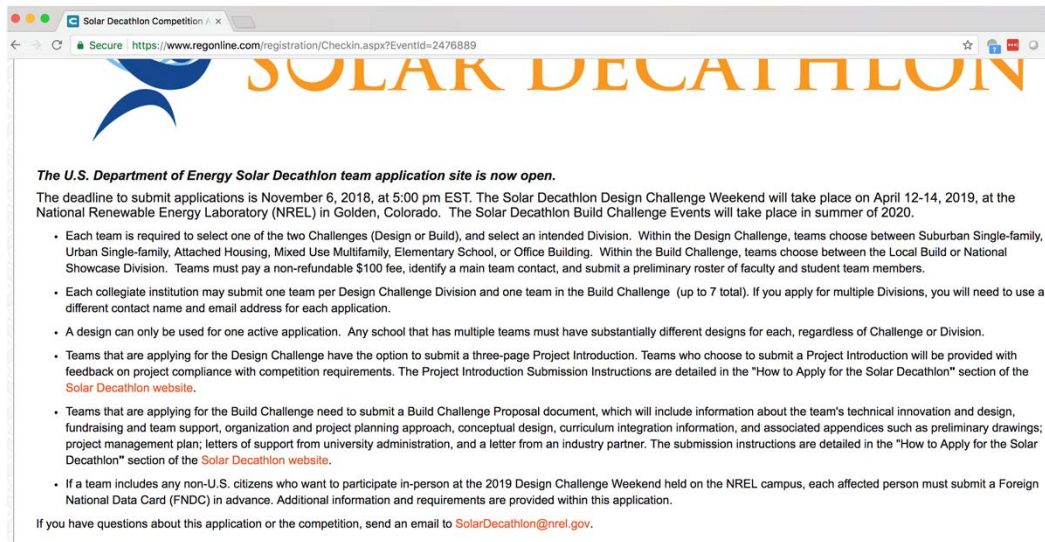
- 48 finalist teams invited to attend
- All students who are onsite can and should present
- Event attendee registration opens by March 6, 2018
 - At least 1 and up to 5 students may attend, including students
 - Faculty lead is encouraged to attend, but not required
- Organizers do not provide financial assistance
 - Hotel lodging room block will be available
 - Meals provided at no-cost during the weekend through sponsors
- Architectural-scale models can be displayed, but not required
- Poster session opportunity to share with other contests



SUCCEED IN THE DESIGN CHALLENGE



Team Application Process



The screenshot shows a web browser window with the URL <https://www.regonline.com/registration/Checkin.aspx?EventId=2476889>. The page features the Solar Decathlon logo and the following text:

The U.S. Department of Energy Solar Decathlon team application site is now open.

The deadline to submit applications is November 6, 2018, at 5:00 pm EST. The Solar Decathlon Design Challenge Weekend will take place on April 12-14, 2019, at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. The Solar Decathlon Build Challenge Events will take place in summer of 2020.

- Each team is required to select one of the two Challenges (Design or Build), and select an intended Division. Within the Design Challenge, teams choose between Suburban Single-family, Urban Single-family, Attached Housing, Mixed Use Multifamily, Elementary School, or Office Building. Within the Build Challenge, teams choose between the Local Build or National Showcase Division. Teams must pay a non-refundable \$100 fee, identify a main team contact, and submit a preliminary roster of faculty and student team members.
- Each collegiate institution may submit one team per Design Challenge Division and one team in the Build Challenge (up to 7 total). If you apply for multiple Divisions, you will need to use a different contact name and email address for each application.
- A design can only be used for one active application. Any school that has multiple teams must have substantially different designs for each, regardless of Challenge or Division.
- Teams that are applying for the Design Challenge have the option to submit a three-page Project Introduction. Teams who choose to submit a Project Introduction will be provided with feedback on project compliance with competition requirements. The Project Introduction Submission Instructions are detailed in the "How to Apply for the Solar Decathlon" section of the [Solar Decathlon website](#).
- Teams that are applying for the Build Challenge need to submit a Build Challenge Proposal document, which will include information about the team's technical innovation and design, fundraising and team support, organization and project planning approach, conceptual design, curriculum integration information, and associated appendices such as preliminary drawings; project management plan; letters of support from university administration, and a letter from an industry partner. The submission instructions are detailed in the "How to Apply for the Solar Decathlon" section of the [Solar Decathlon website](#).
- If a team includes any non-U.S. citizens who want to participate in-person at the 2019 Design Challenge Weekend held on the NREL campus, each affected person must submit a Foreign National Data Card (FNDC) in advance. Additional information and requirements are provided within this application.

If you have questions about this application or the competition, send an email to SolarDecathlon@nrel.gov.

Start Your Registration

Select Challenge for Team *

- ✓ 2019 Design Challenge
- 2020 Build Challenge

Email Address *

teamemailaddress@universityname.edu

[View or Change Your Existing Registration](#)

Continue

<https://www.solardecathlon.gov/about-apply.html>




Design Challenge Application Process

- Teams must apply by Nov. 6, 2018
 - Must pay a nonrefundable \$100 application fee
 - Can optionally submit a Project Introduction
 - Teams will receive feedback on compliance
 - All complete applications will be accepted
- Participating teams are announced in December



Team Roster



2019 Solar Decathlon Design Challenge Team Roster

Collegiate Institution Name(s): _____
 Team Name*: _____
 Division*: _____

*Use one roster template for each team if your collegiate institution has multiple teams.
 **Use the email address you will use to sign-up for the Building Science Training (if applicable).

Division
 Select division
 from the drop
 down list

Faculty Lead				
First Name	Last Name	Email address** (school or personal)	Phone number	By electronically signing, the faculty lead attests that the information regarding the training for each participant is correct.
<div style="border: 1px solid black; padding: 2px; font-size: x-small;">Faculty lead's signature (typed name)</div>				
Faculty Advisors				
First Name	Last Name	Email address** (school or personal)	Phone number	
Student Team Lead				
First Name	Last Name	Email address ** (school or personal)	Phone number	Building Science Training
				Not Started
Student Team Members				
First Name	Last Name	Email address ** (school or personal)	Phone number	Building Science Training
				Not Started



Groups.io Project Site

- Home **Owner**
- Subscription
- Admin ▾
- Messages
- # Hashtags
- New Topic
- Subgroups
- Directory
- Calendar
- Files
- Databases



2019DesignChallenge@solardecathlon.groups.io

Group Description

This subgroup is for communications specific to the 2019 Design Challenge.

[Solar Decathlon Groups.io home](#)

Group Information

- 4 Members
- 0 Topics
- Started on Jul 30

Group Settings

- This is a subgroup of [SolarDecathlon](#).
- Only moderators can post to the group.
- Posts to this group require approval from the moderators.
- Posts from new users require approval from the moderators.
- Messages are set to reply to moderators.
- Subscriptions to this group do not require approval from the moderators.
- Archives are visible to parent group subscribers.
- Only moderators can create hashtags.
- Members can edit their posts.


















Groups.io Project Site: Messages

Image coming soon



Groups.io Project Site: Files

Name [▲]	Type
 Competition Guide Attachments 2    	Folder
 Webinars 0    	Folder
 2019-2020 Solar_Decathlon-flyer.pdf     Flyer to help recruit team members to the Solar Decathlon	PDF



Educational Resources

- Building Science Training (Coming in September)
 - Seminar: Principles of high-performance buildings taught by renowned industry leaders
 - Webinars: REM/Rate, BEopt, + more
- REM/Rate software license
- Expertise from industry sponsors
- Financial analysis tools
- Past winning presentations and designs

Required Building Science Training

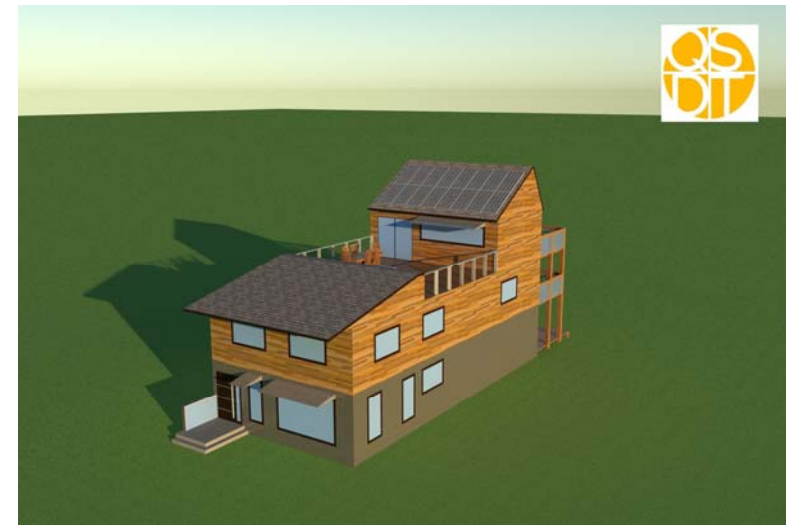
- Students must watch building science training videos
 - 10 hours of building science training (plus 4+ optional seminars for small multifamily, K-12 schools, office buildings and innovation in building science)
 - On-demand videos for students
 - Access available upon receipt of updated Team Roster (in September)
 - Completion certificate provided

OR

- Faculty must attest to equivalent coursework at university on the team roster

Building Modeling Software

- REM/Rate for residential divisions
 - Will be posted to Groups.io
- OpenStudio for commercial divisions
 - Elementary School: currently posted to Groups.io Project Site
 - Office Building:
 - Option 1: Wait for similar package to Elementary School by November
 - Option 2: Use resources online on the OpenStudio site
 - Option 3: Use a different software package



Queens University, 2018 Attached Housing

Project Submissions



- Project Introduction
- Project Progress Report
- Project Report
- Project Presentations
- Project Poster

Project Introduction

- Project Summary
 - Project name
 - Team name
 - University name(s)
 - Brief summary of goals, target market, and strategy
 - Project data
 - Key images
- Team Information
- Project Highlights



[INSERT TEAM NAME]

[INSERT PROJECT NAME/TITLE]

INSERT TEAM
LOGO HERE BY
RIGHT-CLICKING
AND SELECTING
"CHANGE PIC-
TURE."

[Insert Collegiate Institution Name]
[Insert Division Name]

Project Summary

[Summarize the project and provide a concise description of the project, including a brief identification of the target market. Explain the relevance of the project to the goals of the competition.] Replace this text with information about your project. Replace this text with information about your project. Replace this text with information about your project. Replace this text with information about your project. Replace this text with information about your project. Replace this text with information about your project. Replace this text with information about your project.



Replace this text with information about your project. Replace this text with information about your project. Replace this text with information about your project.

Design Strategy

[Discuss how the team reached the project goals and contest definition.] Replace this text with information about your design strategy. Replace this text with information about your design strategy. Replace this text with information about your design strategy. Replace this text with information about your design strategy.

Project Data

- [Insert location and climate zone.]
- [Insert house, unit, or building square footage and lot size.]
- [Insert number of bedrooms, bathrooms, stories, and occupants.]
- [Residential: Insert Home Energy Rating System (HERS) Index or insert energy use intensity (EUI) target.]
- [Insert estimated monthly utility cost.]
- [Insert other relevant data.]

Technical Specifications

- [Insert wall, foundation, and roof insulation = A, B, C.]
- [Insert window performance = D.]
- [Insert heating, ventilating, and air conditioning (HVAC) specifications = E.]
- [Insert other technologies.]
- [Insert renewable systems specifications.]

[NOTE: All content above must fit on one page; organizers will extract the page for dissemination.]



Project Introduction Format Requirements

- Paper size: standard 8.5 in. × 11 in., according to ANSI A
- Borders ½-in. minimum, except for tables, figures, and images
- Maximum page length: three
- Single, bookmarked PDF
- File size less than 10 MB
- Name the file according to the instructions



File Submission and Naming

- DESIGN_[DIVISION ABBREVIATION]_[UNIVERSITY NAME]_INTRO_[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION]
 - Example: DESIGN_AH_PVAMU_INTRO_2018-11-06.pdf
- Post your Project Introduction to [Design Challenge Dropbox](#).
 - Note that the file size limit is 10MB.

Design Challenge Project Introduction

 Only Rachel Romero will see these files unless they choose to share them.



Choose from computer

Choose from Dropbox

[How does this work?](#)

Project Introduction Evaluation Criteria

1

Compliance
with contest
definition

2

Submission
formatting
compliance

Keys to Success

Read the Solar Decathlon Competition Guide

Plan for good team communications

Submit deliverables on time

Develop industry partnerships

Create a compelling and complete project

Explain your project well

Agree on Joint Vision/
Design Goals &
Program

Select a Team Leader/
Team Roles & Rules

Have Effective Team Meetings

Create an Environment of Mutual Respect

Remain Open to
Other's
Recommendations

Create a Reasonable
Schedule for
Successfully
Completing the Project

Submit Your Work
Early!

Have fun!

Next Steps

Form a Team



Complete a
Team
Application



Start work!



CONCLUDE AND Q&A



Share the Excitement with #SolarDecathlon

- Add this tag to your social media and show your enthusiasm!

We look forward to seeing your team progress!



Join us for the next webinar!

- What is Good Design?
 - Sam Rashkin, DOE Chief Architect and Competition Director
 - Wednesday, October 24, 3:00 p.m. EDT
- Recorded and available on the Groups.io portal
- Announcement of future webinars will be on the Groups.io Race to Zero website home page



NEXT WEBINARS

October XX

LINK



www.solardecathlon.gov



QUESTIONS?

For Competition Questions:

SolarDecathlon@nrel.gov

SDdesign@nrel.gov

For GENERAL Questions:

Solar.Decathlon@EE.DOE.GOV

THANK YOU!



www.solardecathlon.gov

