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.

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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

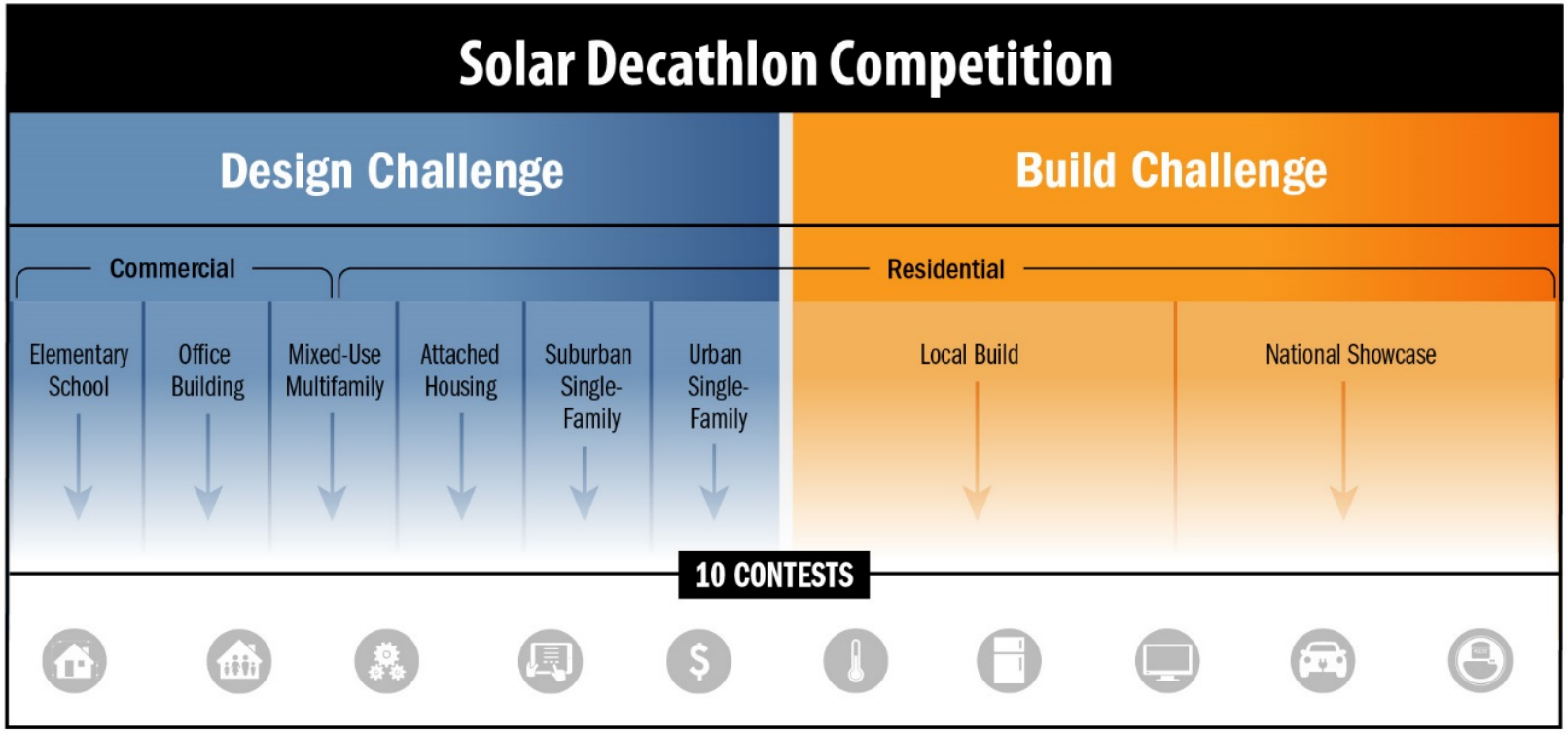
- Introduction– Sam Rashkin, Solar Decathlon Co-Director
- Kick Off the Competition – Rachel Romero, Design Challenge Manager
- Conclusion and Q&A

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!



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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!

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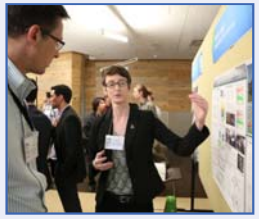
Why Zero Energy Buildings

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

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

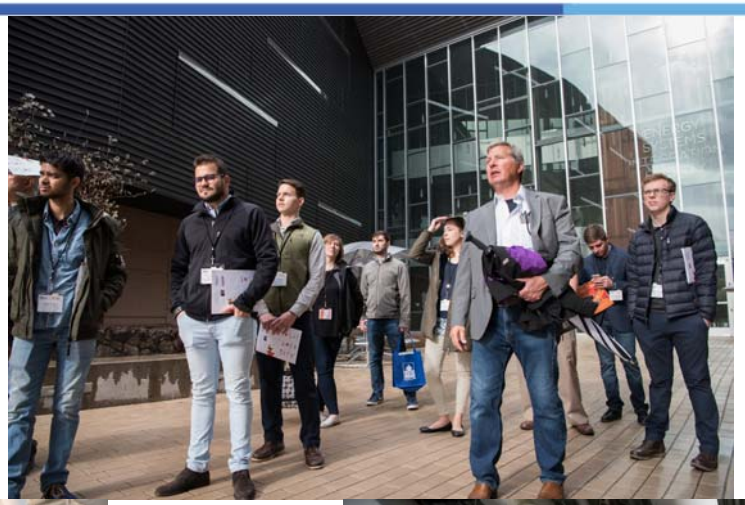
"It energizes me to see all the good ideas and brilliant young professionals who will be entering the work force (with any luck some of them will come work with me at my firm!)"

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

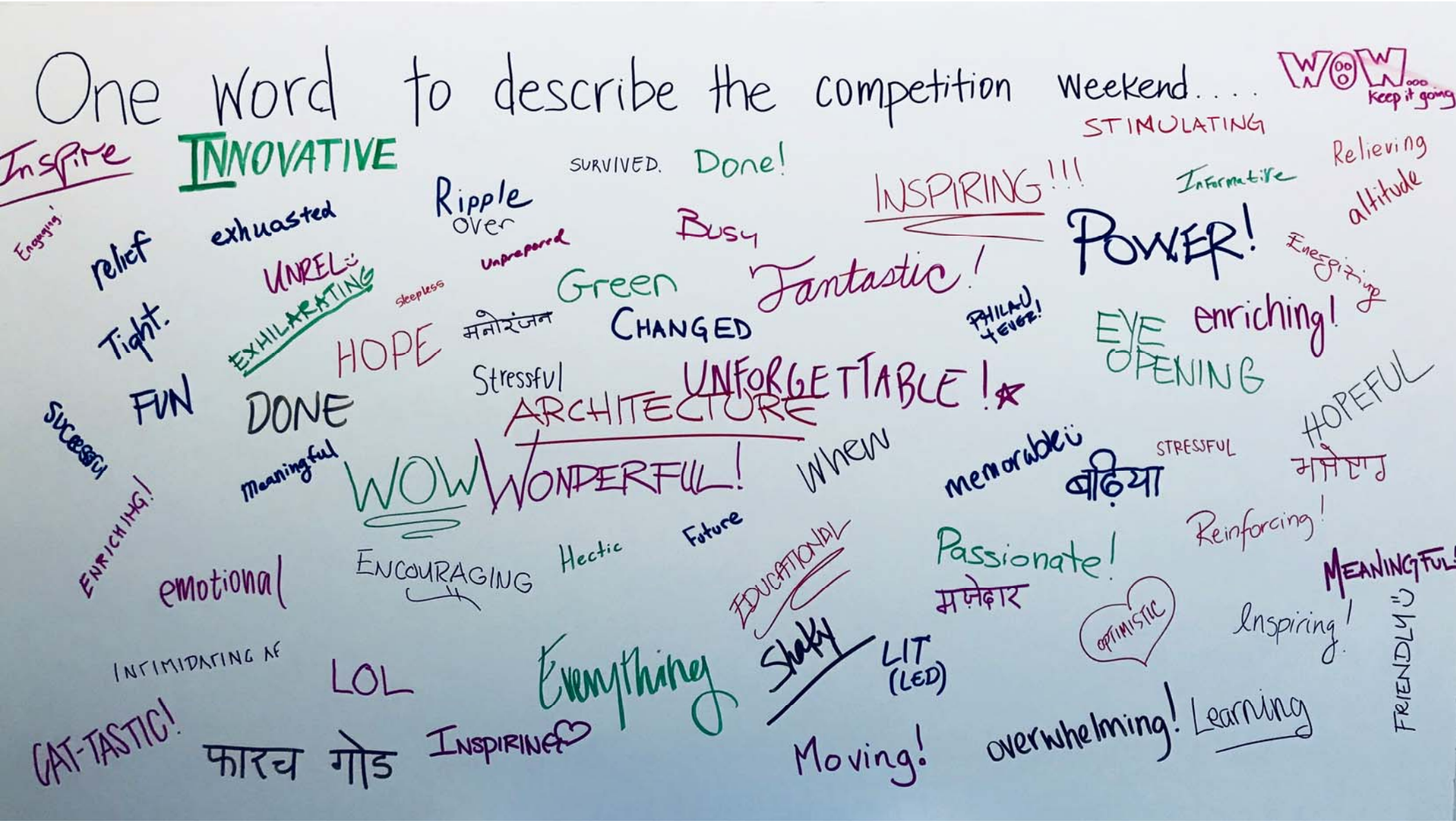
Touch, Feel, Smell Zero



"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
STIMULATING
Inspire
Engaging
INNOVATIVE
SURVIVED.
Done!
Ripple
over
INSPIRING!!!
Informative
Relieving
altitude
relief
exhausted
Busy
POWER!
Energizing
Tight.
UNREL
EXHILARATING
unprepared
Green
Fantastic!
sleepless
HOPE
मनोरंजन
CHANGED
PHILAU YEUGE!
EYE OPENING
enriching!
FUN
DONE
Stressful
ARCHITECTURE
UNFORGETTABLE!
HOPEFUL
Successful
Meaningful
WOW
WONDERFUL!
When
memorable
बढ़िया
STRESSFUL
ENRICHING!
emotional
ENCOURAGING
Hectic
Future
EDUCATIONAL
Passionate!
Reinforcing!
मज़ेदार
MEANINGFUL
OPTIMISTIC
Inspiring!
INTIMIDATING AF
LOL
Everything
Shaky
LIT
(LED)
FRIENDLY
CAT-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

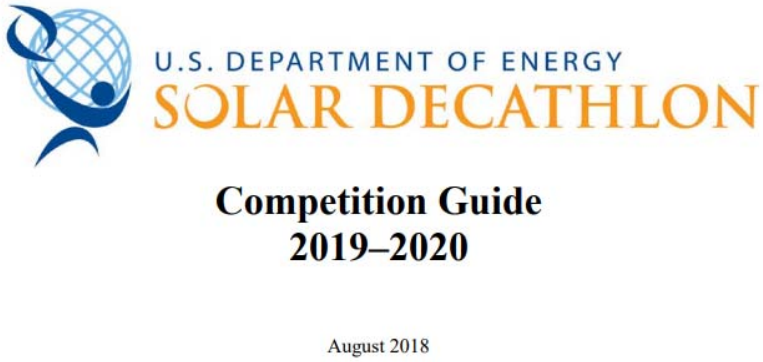
Design Challenge

- 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



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

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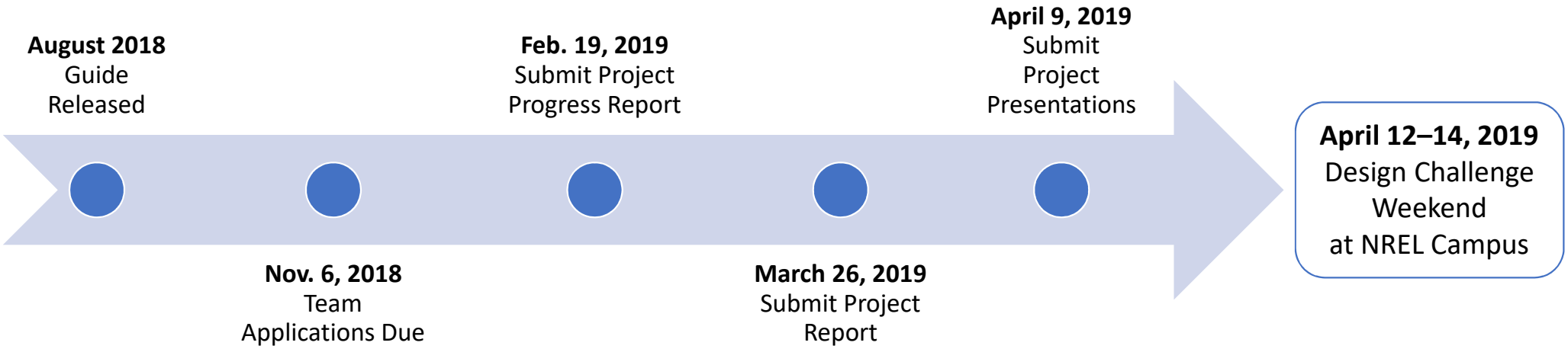
Project Requirements

- 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



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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

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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.

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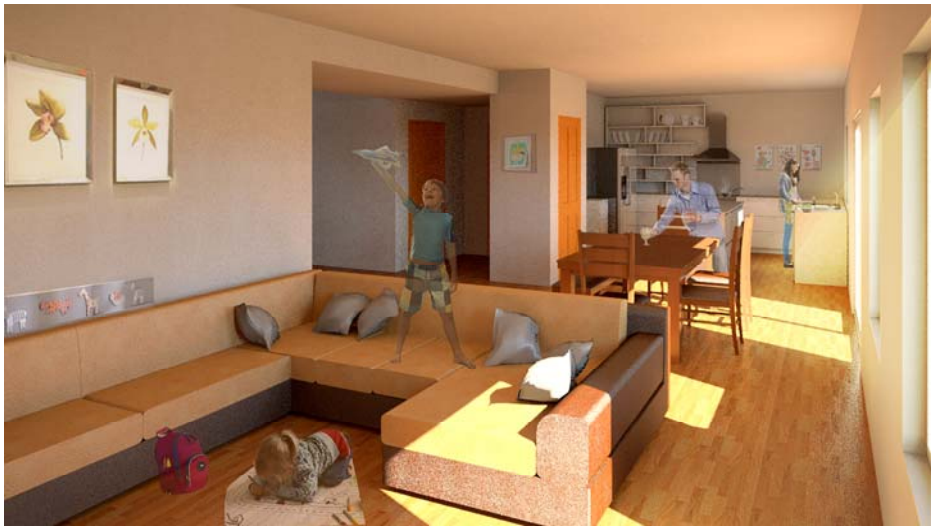
Task Overview

- 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

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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

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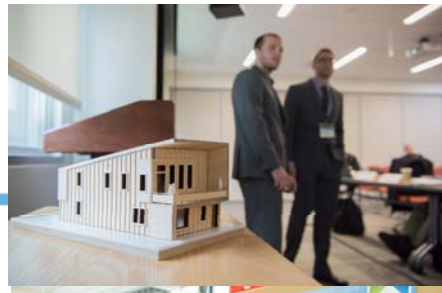
Design Challenge Weekend

- 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

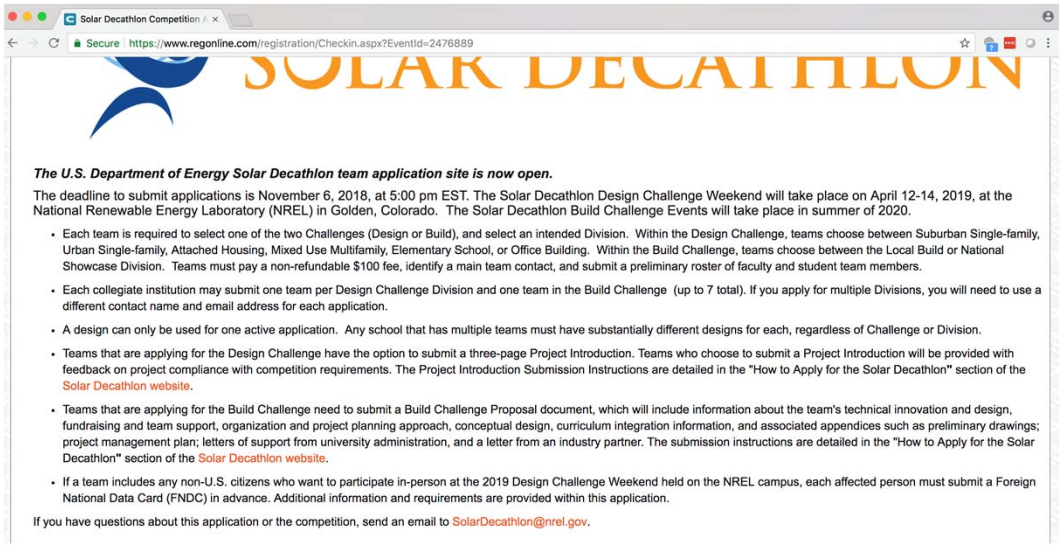
Design Challenge Weekend

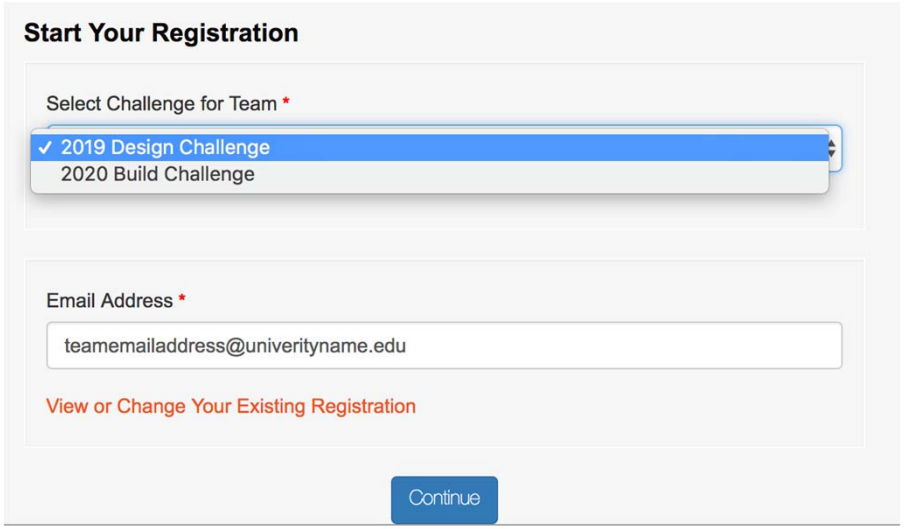
- 48 finalist teams invited to attend
- All students who are onsite can and should present
- Event attendee registration opens by March 6, 2018
  - At least 1 and up to 5 students may attend, including students
  - Faculty lead is encouraged to attend, but not required
- Organizers do not provide financial 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





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

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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

University of Illinois at Urbana Champaign, 2018 Small Multifamily

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 t

**Use the email address you will use to sign-up for the Building Science Training (i

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.
				Faculty lead's signature (typed name)

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

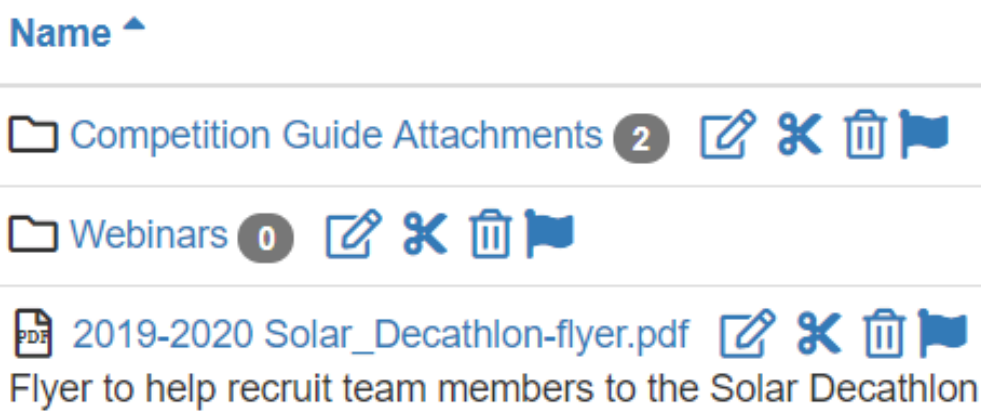
Student Team Members				
First Name	Last Name	Email address ** (school or personal)	Phone number	Building Science Training

Groups.io Project Site

Groups.io Project Site: Messages

Image coming soon

Groups.io Project Site: Files



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

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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 PICTURE."

[Insert Collegiate Institution Name]
[Insert Division Name]

INSERT NEW IMAGE BY RIGHT-CLICKING AND SELECTING "CHANGE PICTURE."

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. 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. 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.]

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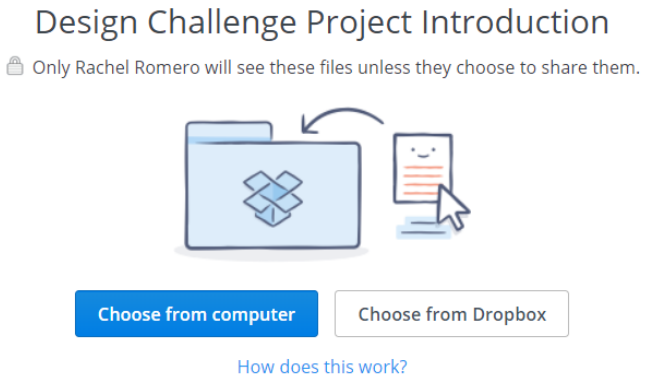
Project Introduction Format Requirements

- 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.



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!

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Next Steps

Form a Team → Complete a Team Application → Start work!

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CONCLUDE AND Q&A

Share the Excitement with #SolarDecathlon

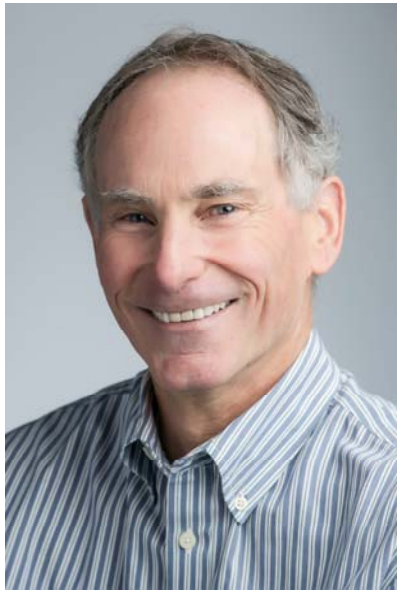
- Add this tag to your social media and show your enthusiasm!

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

TBD



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NEXT WEBINARS
October XX
LINK

www.solardecathlon.gov

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QUESTIONS?

For Competition Questions:
SolarDecathlon@nrel.gov
SDdesign@nrel.gov

For GENERAL Questions:
Solar.Decathlon@EE.DOE.GOV

THANK YOU!

www.solardecathlon.gov

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