



U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON

Launch Your Solar Decathlon Build Challenge

THE WEBINAR WILL BEGIN SHORTLY

Speakers:

Linda Silverman, Director of the Solar Decathlon, Department of Energy

Joe Simon, National Renewable Energy Laboratory

September 13, 2018



Housekeeping

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Agenda

- **Introduction – Linda Silverman, Solar Decathlon Director**
- **Kick-Off the Competition – Joe Simon, Build Challenge Manager**
- **Conclusion and Q&A**



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!



Welcome to the New Solar Decathlon!

- **Design Challenge**

- Formerly the Race to Zero Student Design Competition
- Teams design a building over 1–2 semesters and present in April 2019

- **Build Challenge**

- National Showcase Division to design and build a functional transportable house for display on the National Mall as part of the Folklife Festival 2020
- Local Build Division to design and build a full-size house in a team's own community and then present an exhibit as part of the Folklife Festival 2020





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!

Solar Decathlon History

- Biannual competition to design, build, and present single-family residential houses
- Held from 2002 to 2017 in the United States for a total of eight competitions
- More than 140 houses built
- Impact:
 - Career development, technology innovation, public education
- International reach in five additional events:
 - Europe, China, Middle East, Africa, and Latin America
- 1 billion+ media impressions and international recognition annually



The Build Challenge!



What Does it Mean to Compete?

- Deciding on your team's goals and passions. What matters to you.
- Developing a complete application with conceptual design.
- Designing an at least net-zero house that showcases the future.
- Recruiting adequate team members, industry partners, and sponsors.
- Building the house you designed to meet all codes and rules.
- Operating the house to earn points in the competition.
- Presenting your solution to juries in Washington, D.C.
- Impacting thousands of visitors by showcasing the project at home and nationally.



Advice for Collegiate Institutions

- Senior Collegiate Institution Leadership Support
- Faculty/Administrative Support
- Construction Support
- Student Support
- Fundraising Support
- Final Resting Place

Additional information: <https://www.solardecathlon.gov/blog/>



Why Participate?

- Develop critical career skills
- Learn from experts and peers
- Gain valuable insights from world-class thought leaders
- Showcase the future of construction
- Get hands-on experience and unique training in preparation for entering the clean energy workforce
- Be a part of multidisciplinary teams
- Become part of a huge network of past decathletes



Our Smithsonian Folklife Festival Partnership



Our Smithsonian Folklife Festival Partnership



Solar Decathlon at the Folklife Festival Concept



Our NAHB International Builder's Show Partnership

- Showcase select top-performing teams
- Outdoor exhibits for national showcase + floor space for local build teams
- February 9–11, 2021, in Orlando, Florida



Collaboration and Local Outreach

- Connect with other students at the Design Challenge Weekend April 12-14, 2019
- Present your house in your own communities in May and June 2020
- Online outreach and media engagement opportunities
- Compete with hundreds of students at the Build Challenge Events



Notable Goals and Improvements

- Integrate competitions with shared common objectives
- Increase impact cost-effectively
- Increase opportunities for collegiate institution engagement and collaboration
- Reduce costs and logistical burdens on collegiate institutions
- Increase opportunity for public engagement
- Open to international participation



BUILD CHALLENGE DETAILS



Agenda

- Challenge Requirements
- Past Examples
- Recommendations for Success
- How to Apply
- Questions and Answers



Solar Decathlon Competition Guide

The image displays three overlapping screenshots related to the Solar Decathlon Competition Guide. On the left is the website's homepage, featuring a navigation menu with 'ABOUT', 'EDUCATION', 'HISTORY', and 'INTERNATIONAL'. A prominent 'HOW TO APPLY FOR THE SOLAR DECATHLON' section is visible, with a red box highlighting the link 'Solar Decathlon Competition Guide'. The middle screenshot shows the cover of the 'U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON Competition Guide 2019-2020', dated August 2018. The right screenshot shows the '3 Solar Decathlon Build Challenge Rules' section, detailing the competition's purpose and rules. A yellow callout box at the bottom center states 'Available on the Solar Decathlon website'. The U.S. Department of Energy Solar Decathlon logo is in the bottom right corner.

Available on the [Solar Decathlon website](https://www.solardecathlon.gov)

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON



Build Challenge Divisions

- **National Showcase** builds a single-module transportable house
- **Local Build** constructs a house permanently in their community
- Construction progress and built house will be documented prior to arrival
- All teams will offer tours in their own communities in May and June 2020
- All teams compete and exhibit in Washington, D.C., as part of the Smithsonian Folklife Festival 2020
- Jury presentations are in Washington, D.C.
- Winners announced in July 2020 at the Folklife Festival

National Showcase Division

- Build a single-module, complete dwelling unit including kitchen, bathroom, and living and sleeping spaces
- Target markets include urban infill, disaster response, rural solutions, multifamily developments, etc.
- Transported to Smithsonian Folklife Festival in Washington, D.C., and deployed in ~3 days or less
- Up to 15' wide, 14' tall, 60' long
- Minimum of 400 sq. ft. of conditioned space
- Separate entry and exit doors
 - DOE will provide and install ramps



Local Build Division

- Design and build a house in your region that can be effectively exhibited and operated
- Target markets such as single-family, low-income housing, townhouse, retrofit, etc.
- Must have between 600 and 3,000 sq. ft. total of conditioned space
- Must bring a compelling exhibit to D.C. that is a max of 20 ft. long x 10 ft. wide x 12 ft. tall
 - Easily unloaded and set-up for display
- Must have an accessible tour route through house
 - Multiple-story designs allowed; don't need to show other floors on public tours



Build Challenge Rules and Requirements

3.1 – Summary of Important Dates

3.2 – Build Challenge Description

- Task overview, developing a team, student qualifications, etc.

3.3 – Build Challenge Project Requirements

- Divisions, authority, restrictions, event details, site operations, etc.

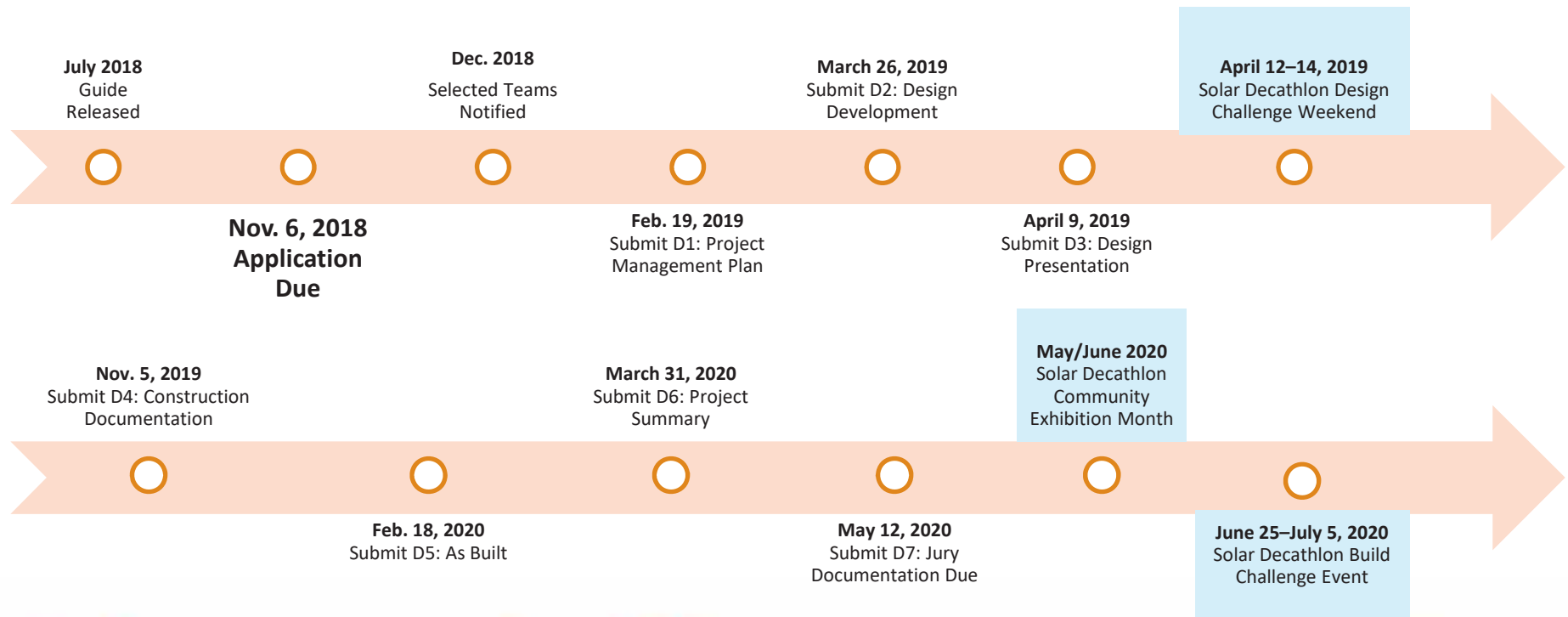
3.4 – Build Challenge Contests

3.5 – Build Challenge Evaluation Process

3.6 – Build Challenge Deliverables



Summary of Important Dates



Task Overview

- Read the Rules
- Review past entries
- Submit an application
- Access Groups.io Project Site
- Complete Building Science Training
- Find industry partners
- Attend webinars and monthly calls
- Design and document project
- Submit deliverables
- Build your house
- Exhibit your house locally
- Exhibit your solution in D.C.
- Compete
- Win



Developing a Team

- Faculty Advisors
- Team Leaders
- Multidisciplinary
- Industry Partners



10 Contests x 100 Points Each = 1,000 Total

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!



Energy Performance

This Contest evaluates the building's energy use and production, as well as its capability to provide energy services—whether connected to the electricity grid or operating with onsite and/or stored power.

SUBCONTEST NAME	SUBCONTEST POINTS
Energy Efficiency (HERS score w/o PV)	30
Energy Production (producing power w/ PV)	20
Net Zero Plus Energy (estimated annual energy production – consumption)	20
Demand Response (capability to shed at least 30% of peak load)	10
Off Grid Functionality (maintain 3 days of critical loads)	20



Engineering

- This Contest evaluates the effective integration of high-performance engineering systems in energy-efficient and energy-producing buildings.
 - Approach
 - Design
 - Efficiency and Performance
 - Documentation

The jury shall consider the following specific criteria in its evaluation:

3.4.2.2.1 Approach

- Overall approach to solving engineering challenges and integrating solutions in design
- Extent to which the design demonstrates research, multidiscipline collaboration, market-leading technologies, and engineering integration?

3.4.2.2.2 Design

- How well will house systems and architectural details function together?
- Structural selection and design of all building envelope components (foundation, wall systems, roof) to address building science control issues
- Natural comfort design (i.e. passive solar design) integration including solutions such as solar orientation, effective solar shading, thermal mass storage, and cross ventilation
- How well will the home's envelope and active comfort systems maintain occupant comfort in the permanent site location year round, including but not limited to: air temperature, humidity, surface temperatures, temperature asymmetries and stratification?
- Lighting system selection and design for energy efficient ambient, task, and mood lighting fully integrated with natural light
- How appropriately are energy production systems sized for estimated annual performance of the competition prototype house at its target location?
- Plumbing system layout for efficient hot water delivery
- Landscaping system for minimizing water use for irrigation

3.4.2.2.3 Efficiency and Performance

- To what extent is energy efficiency integrated into the house design?
- How complete is the space conditioning system integration within the building's structural system?
- Extent of the quality of space conditioning system design to ensure full air mixing in all rooms
- To what extent is water efficiency integrated into the house design?
- To what extent has the team considered maintenance in the design.
- How likely is it that a homeowner will be able to operate the house as the team intends?

3.4.2.2.4 Documentation

- How accurate, complete, and clear are the competition drawings and specifications?
- To what extent was the energy model created in a professional and accurate manner?
- How effectively did the reviewed deliverables reflect the constructed project and enable the jury to conduct a preliminary evaluation of the design prior to its arrival at the competition site?



Architecture

- This Contest 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.
 - Architectural Concept and Design Approach
 - Architectural Implementation
 - Documentation

3.4.3.1 Architectural Concept and Design Approach

- How well did the team utilize an overall clear concept, idea, or theme to guide the development of the house?
- How well does the house demonstrate overall cohesion among disciplines and systems?
- How well does the house address unique issues and challenges as required in its target site?
- What is the design's overall ability to effectively enhance the life of intended occupants?
- How effectively does the overall architectural design offer a sense of inspiration and delight to occupants?
- To what extent does the design consider sustainability, including plant palette and water conservation, in the landscaping and site design?
- How effectively does the design address unique issues and challenges given its target site?

3.4.3.2 Architectural Implementation

- What is the overall quality of the architectural design and project appearance?
- What is the design's effectiveness in integrating energy efficiency and building science principles?
- To what extent do the floor plan and interior details for flow, furnishings, storage, linkages to outdoors, and efficient use of space?
- How well does the house demonstrate quality design through materials, details, and implementation?¹¹
- How effectively does the design use of natural methods to meet heating, cooling, and lighting needs (also known as passive solar design)?
- How well does the team integrate both natural and electric lighting into the house?
- How well did the team integrate energy efficiency and energy production technology into the architectural design?
- How optimally is the use and consideration of the specified site, including views, drainage, regionally appropriate materials, and community connection?

3.4.3.3 Documentation

- How effectively did the deliverables enable the jury to conduct a preliminary evaluation of the design?¹²
- How effectively does the team use digital technology, to represent its as-built competition prototype accurately?
- How accurate, complete, and clear are the competition drawings and specifications?



Market Potential

- This Contest 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.
 - Livability
 - Market Potential
 - Buildability

3.4.7.2.1 Livability

- How well does the design reflect current market expectations for livability and convenience?
- How well does the house support a safe, functional, convenient, comfortable, and enjoyable place to live?
- How successfully do the design details of the competition prototype meet the unique needs and desires of the target client?
- How successful is the design of the house's lighting, entertainment, and other controls?
- How successfully does the design encourage a homeowner to use fewer resources than a typical homeowner?

3.4.7.2.2 Market Potential

- How effective is the team market analysis, and how well does the design integrate key findings from the market analysis?
- How successfully do the house, material, equipment, and design details demonstrate appeal for the target client?
- How effectively does the team highlight the house's energy features and strategies to improve the marketability of the house to the target client?
- How effectively does the team demonstrate the market need for the competition prototype house and associated components?
- To what extent is the design able to leverage growing interest in off-site construction or other innovations to improve quality, cost, and productivity?
- To what extent will the innovations have immediate and/or long-term commercial impact in the marketplace (e.g., offer opportunities for more effective production and delivery of housing in the United States)?
- To what extent is there market potential for the design as built, including ability for trades to reproduce and/or scale it to other sites?
- To what extent could the design and integrated elements positively impact the U.S. residential energy efficiency and renewable energy industry?

3.4.7.2.3 Buildability

- How effective are drawings and documentation at demonstrating construction materials and practices conducive to housing industry adoption at scale?
- How successfully does the design support buildability including thoroughness of the construction documentation?
- How challenging would the competition prototype be to construct successfully?
- How effectively could the house be adopted and built in the private sector?



Financial Feasibility & Affordability

- This Contest evaluates the building's financial costs and ability to address growing affordability challenges in the housing industry.
 - Affordability
 - Cost-Effectiveness
 - Cost Estimate

The jury shall consider the following specific criteria in its evaluation:

3.A.3.2.1 Affordability

- How likely is it that the house would be affordable to the team's target market, estimated upfront cost (i.e., cost to consumer), financing, insurance, taxes, monthly utilities, and maintenance?
- How do the energy-related and other innovative features enhance the home's market value?
- To what extent does the estimated competition prototype cost align with market needs and expectations?

3.A.3.2.2 Cost-Effectiveness¹¹

- Does the house offer a good value to the target market, considering quality of design, construction, materials, equipment, and other related elements?
- To what extent is the cost effectiveness supported by reasonable and complete market analysis?

3.A.3.2.3 Cost Estimate

- Quality of construction cost estimate based on built house
- How successfully does the team construction cost estimate reflect the as-built competition house?
- The quality and magnitude of the team operational cost estimate for the as-built competition house, including forecasted utility, maintenance, insurance, and any monthly operations or subscription fees.



Resilience

- **This Contest evaluates the building's ability to withstand and recover from prevailing disaster risks for its intended location, maintain critical operations during grid disruptions that commonly occur post-disasters, and ensure long-term durability in response to local climatic conditions.**
 - Durability
 - Performance
 - Resource Management

The jury shall consider the following specific criteria in its evaluation:

3.4.4.2.1 Durability

- To what level do the building design details and construction practices ensure durability of all building science control layers (thermal air, bulk moisture, and moisture vapor)?
- To what extent is the house, through both design and materials, durable and able to resist extreme environmental conditions?
- How well does the design optimize or address longevity of design, including maintenance, material performance, life cycle costs, and owner operation?

3.4.4.2.2 Performance

- To what extent does the building design approach for the specified location enable the building to withstand and recover from potential disasters because of risks posed by weather and other natural or man-made events?
- To what extent does the building design approach for resilience ensure an ability to meet critical loads after a disaster event or supply outage?
- To what extent does the house provide occupants critical load capabilities, including the ability to operate during an extended power and water outage through energy-efficient designs, on-site generation, on-site storage with islanding capabilities, and critical load considerations.

3.4.4.2.3 Resource Management

- To what extent does the team holistically integrate passive strategies, materials selection, life cycle, and local strategies to maximize resilience?
- To what extent does the competition prototype enable the reclamation and reuse of water utilized by the house?
- To what extent is the competition prototype house expected to require less energy than a comparable code-built house?



Operations

This Contest evaluates how effectively and efficiently the building operates to carry out intended functions while also ensuring performance persistence.

SUBCONTEST NAME	SUBCONTEST POINTS
Kitchen Appliances	25
Hot Water	25
Laundry	5
Electric Lighting	15
Home Electronics	5
House Occupancy	10
Electric Vehicle Charging	15



Comfort & Environmental Quality

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

SUBCONTEST NAME	SUBCONTEST POINTS
Temperature Control	30
Humidity Control	20
Indoor Air Quality	20
Air Tightness	20
Exterior Noise Infiltration	5
Internally Generated Noise	5



Innovation

This Contest evaluates the design's success incorporating innovations and/or creative approaches that enhance energy efficiency, energy production, grid interaction, and building operations, as well as overall functionality and appeal.

3.4.2.2.5 Engineering Innovation

In addition to and separate from the score assigned to each team for the Engineering Contest, the Jury shall assign each team a score for innovation, which will be scored as one quarter of the Innovation Contest.

- To what extent did the team use engineering research processes to develop or decide on the solution implemented?
- To what extent does the design solution utilize new, unique, or atypical technologies or engineering solutions that improve upon the status quo?

3.4.4.2.4 Resilience Innovation

In addition to and separate from the score assigned to each team for the Resilience Contest, the Jury shall assign each team a score for innovation, which will be scored as one quarter of the Innovation Contest.

- To what extent did the team take unique or innovative approaches to building resilience and occupant safety throughout the design process and implementation?
- How well does the team use resilient design to improve home performance and occupant health?

3.4.5.2.4 Architectural Innovation

In addition to and separate from the score assigned to each team for the Architecture Contest, the Jury shall assign each team a score for innovation, which will be scored as one quarter of the Innovation Contest.

- How innovative was the team in its use of architectural elements including, but not limited to, scale and proportion, indoor/outdoor connections, composition, and linking of various house elements?
- How innovative was the team's approach to holistic and integrated design, inclusive of space, structure, and building envelope?

3.4.7.2.4 Market Appeal Innovation

In addition to and separate from the score assigned to each team for the Market Potential Contest, the Jury shall assign each team a score for innovation, which will be scored as one quarter of the Innovation Contest.

- How innovative was the team in its approach to market potential, increasing the likelihood that the design will be adopted in the residential home market and impact minimal energy performance?
- How innovative was the team's approach to livability and buildability, inspiring the public to consider the opportunities for housing of the future?

- What approach did the team take toward the integration of innovations into the design?
- To what extent does the design utilize innovations or innovative approaches to satisfy an existing market need or desire?
- How successfully did the team utilize discovery, research, prototyping, analysis, and collaboration?
- What is the validation of the innovation potential through the as-built design and implementation?
- To what extent do the design and innovative features address the interests and needs of target buyers and users (e.g., not only in terms of providing a comfortable living environment, but with attractive and desirable elements that meet the target users' needs)?
- To what extent does the team's approach to innovation relate to the team intent, mission, strategies, or goals?

3.4.9.2.1 Durability and Safety

- To what extent will the innovations endure relative to the anticipated life cycle of the house?
- To what extent do the innovations improve or maintain the safety of occupants of the house?



Presentation

- **This Contest evaluates the team's ability to accurately and effectively convey its design and energy performance strategy to relevant audiences.**
 - Strategy
 - Implementation

The jury will consider the following specific criteria in its evaluation:

3.4.10.2.1 Strategy

- How well did the team's communications materials and activities work together to convey a comprehensive, consistent, and integrated communications strategy?
- How clearly defined are the team's communications audiences and goals?

3.4.10.2.2 Implementation

- What is the quality of all presentations to the jury, the local public, and the public at the Build Challenge Event in Washington, D.C.
- How successfully did the team conduct outreach, education, and engagement in its local market?
- How successfully does the team incorporate online and digital communications strategies and products to engage audiences?
- How effective are the team's educational and outreach messages to intended audiences?
- How informative, interesting, engaging, and audience-appropriate was the team's public presentation and approach for providing tours to people?
- How effectively does the team use features, displays, models, or other materials to engage and educate the public?
- How extensively and successfully was the team's local outreach, education, and engagement?
- How effective is the team's strategy for accommodating large crowds and long lines?
- How well do the on-site communications materials educate and inform the visiting public?
- What is the quantity and quality of visitors to each team's house or exhibit locally and in Washington, D.C.?



Scoring and Evaluation Process

- Each jury has 3–5 jurors
- Each jury reviews both divisions, but will score and rank separately
- A jury's evaluation of each project consists of:
 - Deliverables review
 - Extensive evaluation of the as-built house
 - Team-led walkthrough and presentation of the National Showcase house in D.C.
 - Team presentation by Local Build teams in D.C. of their house with photos and videos
 - Deliberation and scoring

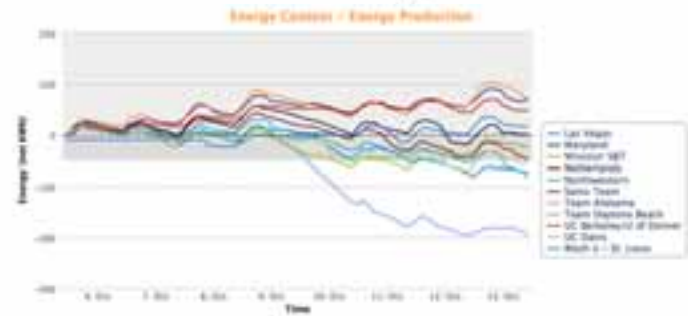
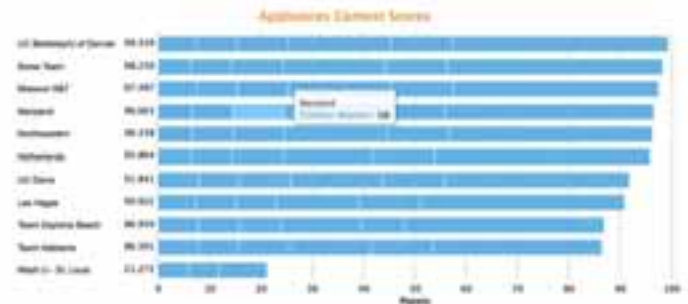
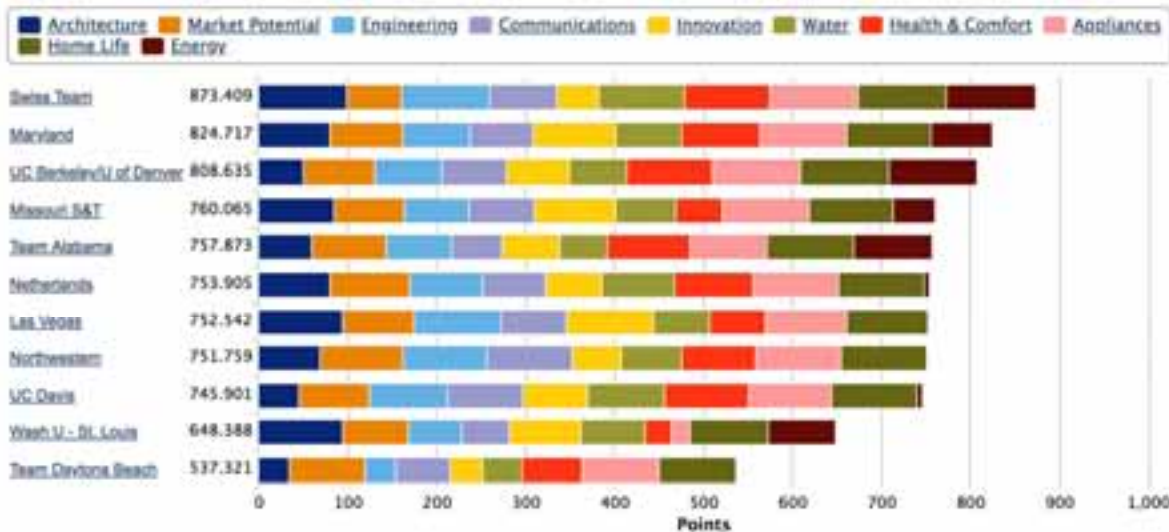


Measured Contest Scoring

- **Detailed functionality verification by organizer-provided equipment**
 - Not as tied to minute-by-minute performance or task-completion as in the past
- **On-site evaluation of all teams by organizer staff**
 - Staff will visit each local-build team
 - Staff will be present on the National Mall in D.C. for National Showcase teams
- **Measured results provided to teams as part of scoring**



2017 Contest Scoring and Results



Note: The contests have changed for the current edition of the Solar Decathlon. Review the Competition Guide for current details.

Examples from the Past for Inspiration

- National Showcase-Compliant Homes
- Local Build-Compliant Homes
- Exhibits for Local Build Teams
- Digital House Representations
- Target Markets
- Team Structures



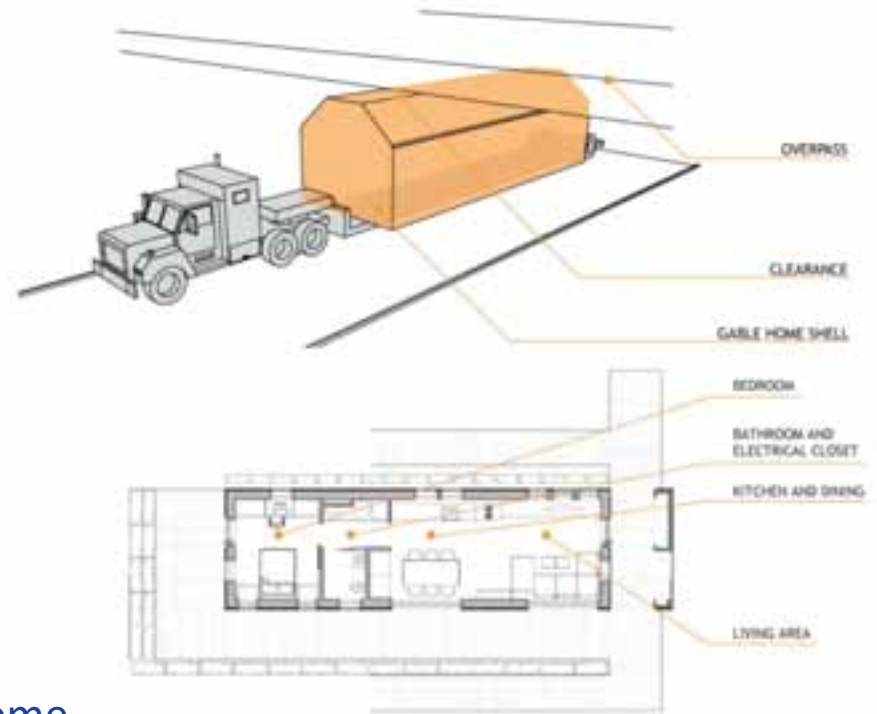
National Showcase-Compliant Home Example



Solar Decathlon 2009: Rice University ZeRow House



National Showcase-Compliant Home Example



Solar Decathlon 2009: University of Illinois Gable Home

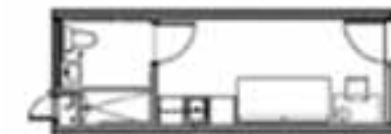
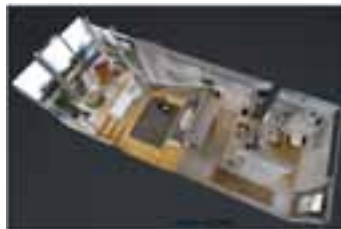


National Showcase-Compliant Home Example



Solar Decathlon 2011:
Tennessee Living Light

National Showcase-Compliant Home Examples



Studio - with sink



Left: Kasita Modular Homes

Right: Blockable Modular Homes



Local Build-Compliant Home Example



Solar Decathlon 2011: Parsons/Stevens Duplex in D.C. built w/Habitat for Humanity



Local Build-Compliant Home Example

GreenBuild Community Open House

THURSDAY, MAY 17, 2018

Faculty, staff, student, alumni, and community members are cordially invited to the GreenBuild Community Open House on May 19 and 20, 2018. The GreenBuild duplex is a pair of affordable, high-performance homes designed after the Penn State student team's award-winning submission to the 2015 Department of Energy's Race to Zero competition. The GreenBuild duplex has been made possible through a partnership between the State College Community Land Trust, Envinity, and Penn State's Stuckeman School, Hamer Center for Community Design, and Energy Efficient Housing Research group (EEHR).

Penn State Design built after participating in the competition.



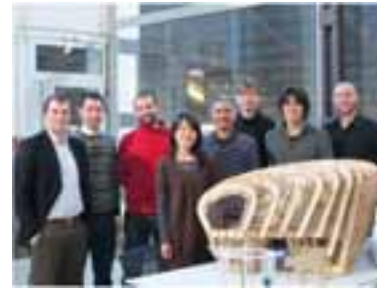
Local Build-Compliant Home Examples



Top Left: Rural Studio
Top Middle: Yale
Top Right: Utah Design Build Bluff
Bottom Left: U of Colorado
Bottom Right: Tidewater Virginia



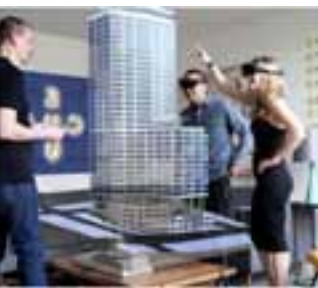
Exhibits for Local Build Team Examples/Ideas



Exhibits for Local Build Team Examples/Ideas



Digital House Representation Ideas/Examples



Digital House Representation Ideas/Examples



Target Market Ideas/Examples

- Urban infill
- Accessory dwelling units
- Production housing
- Low-income housing
- Aging-in-place
- Disabled occupants
- Rural housing
- Multifamily
- Disaster relief
- Disaster resilient
- Retrofit/redesign of existing home
- Remote worker housing
- Housing for indigenous populations
- Temporary Housing



Multidisciplinary Teaming

- Architecture
- Mechanical Engineering
- Electrical Engineering
- Civil Engineering
- Urban Planning
- Industrial Design
- Interior Design
- Landscape Architecture
- Business
- Communications
- Marketing
- Human Health
- Construction Management
- Environmental



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



How to Succeed

- Read the Solar Decathlon Competition Guide
- Plan for good team communication
- Secure commitments from collegiate institution leadership
- Submit deliverables on time
- Develop industry partnerships
- Create a compelling and complete project
- Explain your project well
- Read the Solar Decathlon Competition Guide (seriously!)



Build Challenge Application and Selection Process

- **Teams must apply by Nov. 6, 2018**
 - Must indicate Local Build or National Showcase Division as part of application
 - Must pay a nonrefundable \$100 application fee
 - Must submit a Build Challenge Proposal
 - Information on team structure, collegiate institution support, and conceptual design is required.
 - Selection of up to six teams in each Division in December
- **Teams selected are announced in December**
 - Those not selected may enter the Design Challenge

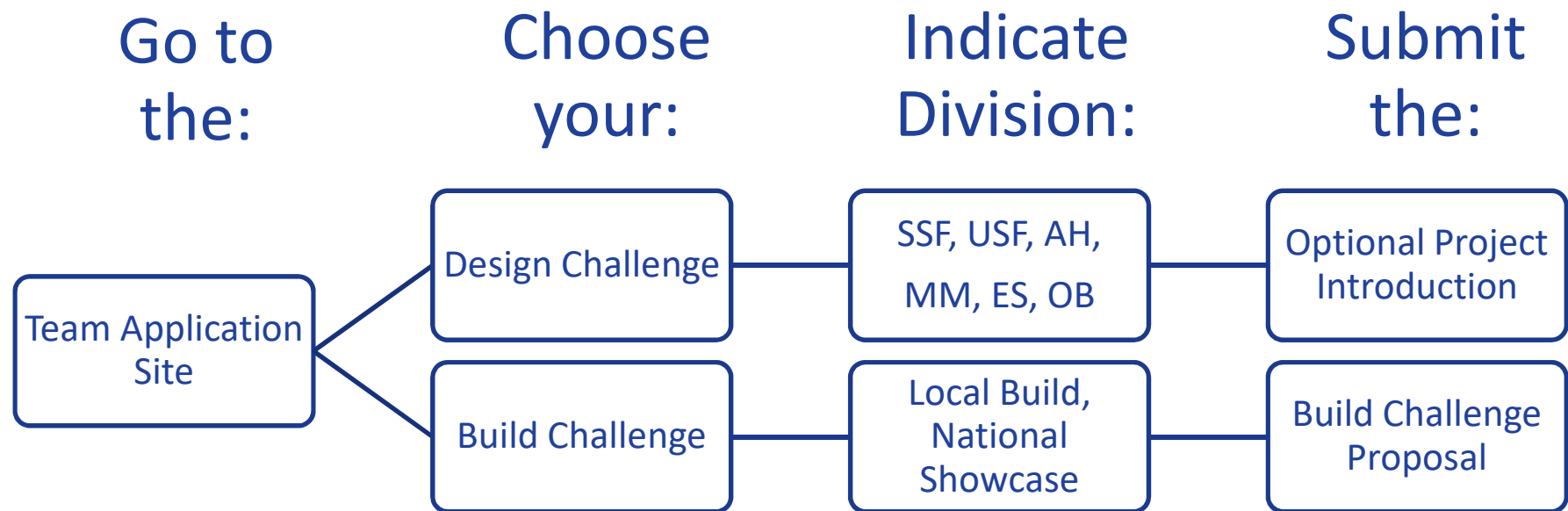


Build Challenge Advancement and Cash Awards

- **Following the selection of participating teams in December 2018, teams are required to submit a variety of deliverables to show team progress**
- **Teams “approved to proceed” in three stages:**
 - After April 2019 Design Challenge Weekend
 - After November 2019 Construction Submission
 - As part of Summer 2020 Build Challenge Event Approvals
- **All participation Build Challenge teams can proceed if minimum requirements are met, no further down-selection**
- **Prizes provided to all participating teams**




Team Application Selection and Requirements



Complete application and all associated documents are due Nov. 6, 2018.



Team Application Process



SOLAR DECATHLON

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 team leader 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 at the NREL campus, each affiliated person must submit a Foreign National Visa Cost (FNVCC) 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 to Register For

- 2019 Design Challenge
- ✓ 2020 Build Challenge

Email Address *

[View or Change Your Existing Registration](#)

Continue

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



Team Application Process

Main Team Contact

Email*

jwinn@mel.gov

First Name*

Last Name*

Work Phone

Cell Phone*

Other Info

Main Team Contact Role *

- Faculty Lead
 Student Team Lead

Other Team Contact:

- Faculty Lead
 Student Team Lead

Team Name:

Enter your Team's Name - must have a unique team name for each application *

Build Challenge (Biennial)

Teams competing in the **Build Challenge** work over a two-year period to design and build their houses, culminating with the U.S. Department of Energy Solar Decathlon Build Challenge Event in Washington, D.C. in summer 2020. Participants design and build complete, functional houses to demonstrate creative solutions for real-world issues in the building industry. Teams will complete construction projects and then compete and exhibit their solutions before panels of industry expert jurors in Washington, D.C. as part of the 2020 **Smithsonian Pupils Festival**.

The Solar Decathlon Build Challenge is comprised of two Divisions; each collegiate institution may apply to only one division.

National Showcase Division. Teams shall design and build an energy-positive house that can be effectively transported long distances and rapidly installed.

Local Build Division. Teams shall design and build an energy-positive house in their region that can be effectively exhibited and operated in May and June of 2020. All Local Build Division teams will be expected to bring a compelling exhibit to the **Smithsonian Pupils Festival** on the National Mall in late June and early July of 2020.

Select one design build Division: *

- Local Build
 National Showcase



Team Application Process

Academic Level of Your Team

Select one academic level:

- Undergraduate only
- Graduate only
- Mixed - Graduate and Undergraduate

Collegiate Institution

Will you be forming a team with multiple schools?

- Yes, our team will consist of multiple schools
- No, our team will not consist of multiple schools
- Undecided at this time

Collegiate Institution Name (main point of contact) *

Collegiate Institution Mailing Address Line 1 (main point of contact) *

Collegiate Institution Mailing Address Line 2:

City — U.S. or Foreign: *

U.S. State Name:

Non-U.S. Country:

Canadian Province:

Zip Code or Postal Code:

Template for Team Rosters

Team Roster template Each team must submit a preliminary team roster (one for each team/Challenge/Division). By the time of the competition, each team must have at least three students and a faculty lead, with one student designated as the student team lead; however, an application can be completed even if all team members are not yet identified. Download the Challenge specific Excel template - [Design Challenge](#) or [Build Challenge](#) - and email the completed worksheet to SolarDecathlon@nrel.gov. An Excel file is required; do not submit a PDF.

The required file-naming convention is: [DESIGN OR BUILD CHALLENGE]_DIVISION ABBREVIATION_ UNIVERSITY NAME_ ROSTER_ SUBMISSION DATE (YYYYMMDD).xlsx

Submitting a roster will provide the Organizers a list of names to grant access to the Solar Decathlon Groups in portal, which is the means of communications for information, webinars, and other resources.

As your team forms, you can resubmit updated team rosters as often as needed. Make sure to change the submission date in the file name before resubmitting.



Team Application Process

Survey Question
How did you learn about the U.S. Department of Energy Solar Decathlon Competition? Check all that apply.

Colleague

Participated in previous event

Solar Decathlon website

Publication — type publication name:

Other — type in description:

Fees

2025 Solar Deca Event Fee	
Quantity	1
Unit Price	\$100.00
Amount	\$100.00
Subtotal	\$100.00
Total	\$100.00

Save your details for next time

Recommended
You can speed up your next registration with this company by creating an account. [Learn More](#)

Create Password

Show Password

If you choose not to create a password, please note that you must keep your confirmation e-mail as it will contain a link to access your registration.

Payment Method

Select a payment method:

Refund Information

The \$100 team application fee is non-refundable.



Build Challenge Proposal Requirements



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<https://www.solardecathlon.gov/assets/pdfs/sd-build-challenge-proposal-req.pdf>



Proposal Content

- Cover Page (1 page)
- Table of Contents (1 page)
- Introduction (2 pages)
- Technical Team Approach and Innovation (4 pages)
- Fundraising and Budgeting (2 pages)
- Organization and Project Planning (5 pages)
- Conceptual Design (10 pages)
- Collegiate and Community Support (3 pages)
- Special Considerations (1 page)
- Conclusions (2 pages)

APPENDIX

- Executive Summary (1 page)
- Letters of Commitment (1 page)
- Project Budget (no limit)
- Optional Additional Appendices (no limit)




Proposal Evaluation

- Technical Team Approach and Innovation (25%)
- Fundraising and Budgeting (25%)
- Organization and Project Planning (20%)
- Conceptual Design (15%)
- Collegiate Institution and Community Support (15%)
- Quality Program Factors



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.				
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

Home **Messages**

- Subscription
- Admin
- Messages
- Hashtags
- New Topic
- Subgroups
- Directory
- Calendar
- Files
- Databases

 U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON

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.

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**

Deliverables

Deliverable	Due Date
D1: Project Management Plan	February 19, 2019
D2: Design Development Documentation (50%)	March 26, 2019
D3: Design Presentation	April 9, 2019
Design Challenge Weekend	April 12–14, 2019
D4: Construction Documentation (95%)	November 5, 2019
D5: As-Built Documentation (100%)	February 18, 2020
D6: Project Summary	March 31, 2020
D7: Jury Deliverables	May 12, 2020
Community Exhibition Month	May/June 2020
Build Challenge Event at Smithsonian Folklife Festival	June 25–July 5, 2020
D8: Final Report	September 1, 2020



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 on the team roster**



File Submission and Naming

- DESIGN_[DIVISION ABBREVIATION]_[UNIVERSITY NAME]_INTRO_[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION]
 - Example: BUILD_NAT_ILLINOIS_PROPOSAL_2018-11-06.pdf
- Post your Build Challenge Proposal to [Build Challenge Dropbox](#).



Join Us for the Solar Decathlon!



Build Challenge Summary

- Returns to the National Mall with large public event
- New local build opportunity
- Greater access to homebuilding industry
- Lower cost of commitment to collegiate institutions with emphasis on learning and sharing (e.g., internet, electronic displays, films, virtual home walk-throughs)
- STEM emphasis through building science curriculum
- Reduced logistical burdens for the U.S. Department of Energy and collegiate institutions



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, Oct. 24, 3 p.m. EDT
 - <https://attendee.gotowebinar.com/register/5675955393367388675>
- Recorded and available on the Groups.io Project Site
- Announcement of future webinars will be on the Groups.io Project Site and the Race to Zero website home page



QUESTIONS?

For Competition Questions:

SolarDecathlon@nrel.gov

Sdbuild@nrel.gov

For GENERAL Questions:

Solar.Decathlon@EE.DOE.GOV

THANK YOU!



www.solardecathlon.gov

