



U.S. DEPARTMENT OF ENERGY

SOLAR DISTRICT CUP

COLLEGIATE DESIGN COMPETITION

Information for Winter/Spring Participation Class of 2025–2026



U.S. DEPARTMENT
of **ENERGY** | Office of Energy Efficiency
and Renewable Energy

Solar Energy Technologies Office



Solar District Cup

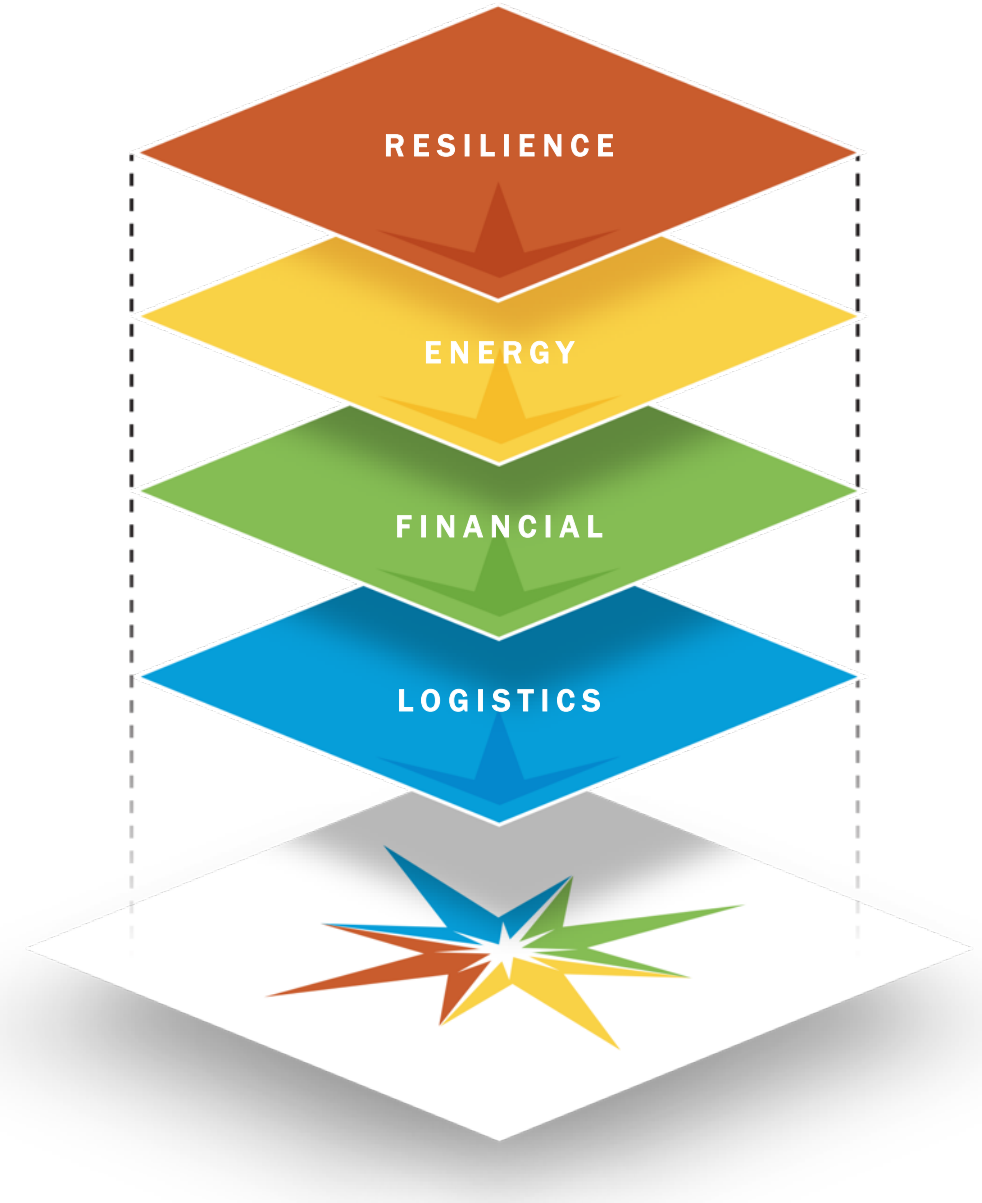
A multidisciplinary collegiate competition that challenges student teams to **DESIGN** and **MODEL SOLAR-PLUS-STORAGE SYSTEMS*** for multiple buildings on a local electrical distribution network—at a campus, across a development, or in a district.



*Winter/Spring Timeline teams design and model solar PV (only, without battery storage).

About the Competition

- Cultivating cross-cutting skills to prepare the next generation for the distributed energy workforce
- Student teams act as renewable energy developers proposing to solar-plus-storage system requests
- Multiple divisions, each with a partner district use case of existing building energy data
- One- or two-semester project culminating in a spring 2026 competition event
- Challenge aimed at upper-level undergraduate.



Thank You, Partners!



District Use Cases

- Clemson University
- University of Wisconsin Madison
- Tufts University

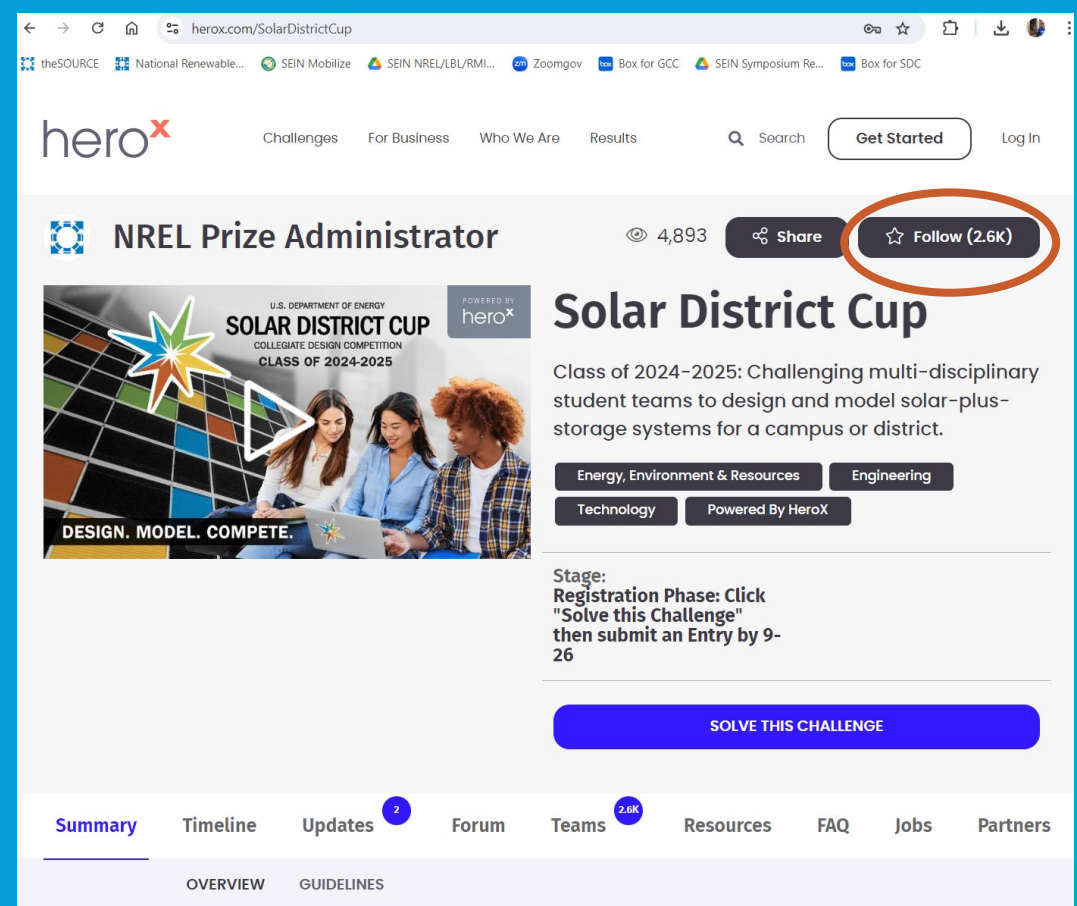
Design Model Compete



[Watch on YouTube](#)

How to Stay in the Know

Go to www.herox.com/solardistrictcup and click “Follow” to receive our announcements and updates.



The screenshot shows the heroX website's page for the Solar District Cup. The page is titled "NREL Prize Administrator" and "Solar District Cup". It features a hero image of three students working on a laptop, with the text "DESIGN. MODEL. COMPETE." and "U.S. DEPARTMENT OF ENERGY SOLAR DISTRICT CUP COLLEGIATE DESIGN COMPETITION CLASS OF 2024-2025". The page includes a "Follow (2.6k)" button, which is circled in orange. Other buttons include "Share", "Solve this Challenge", and "SOLVE THIS CHALLENGE". The page also has a navigation bar with links to "Challenges", "For Business", "Who We Are", and "Results".

Presentation Content

- 1) About the Competition & Welcome
- 2) Summary: Who, What, Why, How
- 3) Details
 - a. Who is Eligible
 - b. How to Compete
 - i. Competition Rules
 - ii. Divisions and District Use Cases
 - iii. Training & Resources
 - c. When to Engage: Timeline
 - d. Where to Register: HeroX
- 4) What's Next





Welcome!

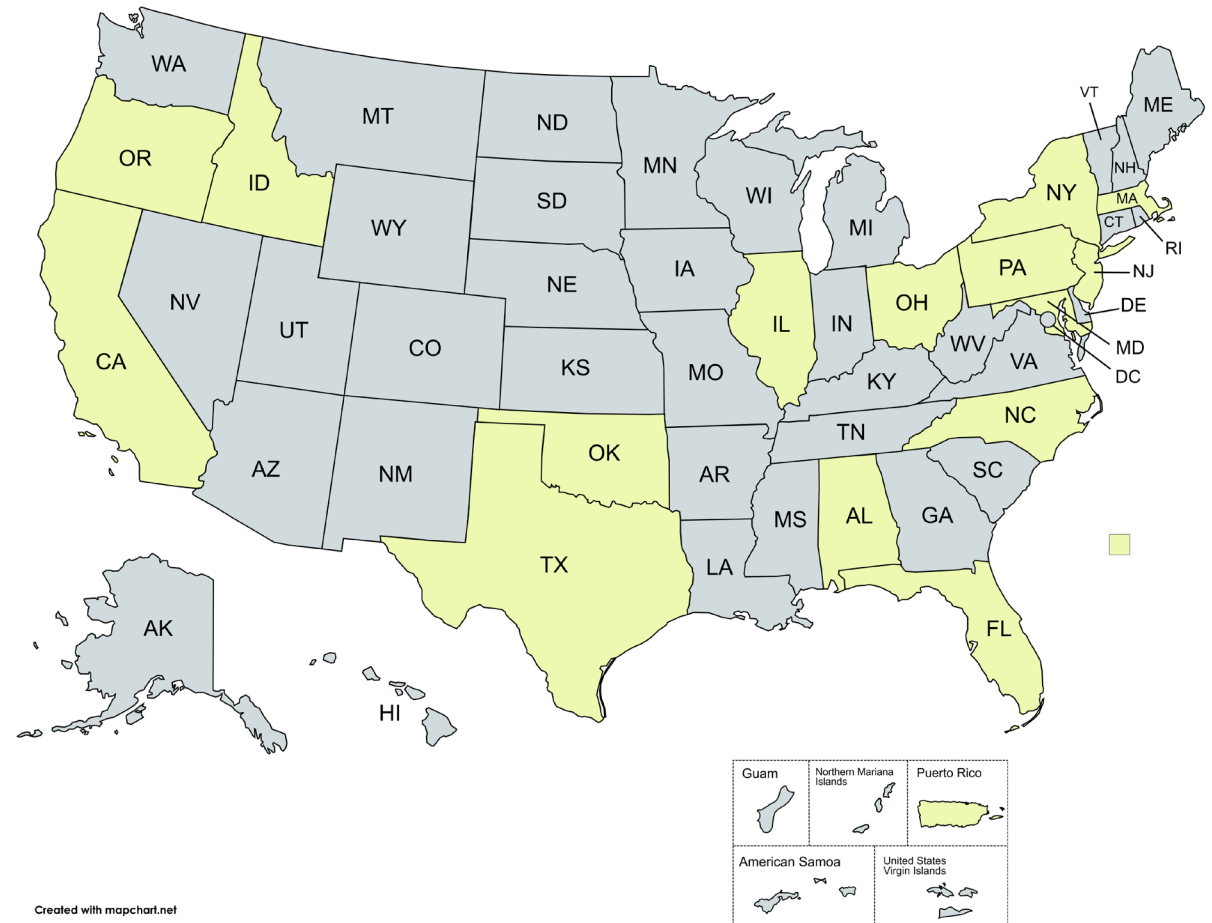
www.uncc.edu

Summary: Who is Involved?



Who: Class of 2025–2026 (so far!)

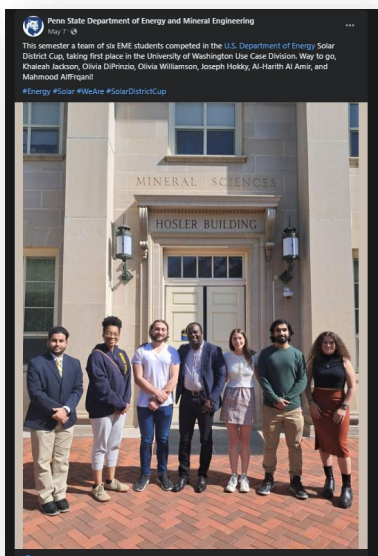
- 27 participating teams registered
 - From 24 collegiate institutions
 - 25% new, 75% returning schools
 - 3 schools have multiple teams
- Many teams are multidisciplinary
- Many types of team participation
- Many faculty advisors



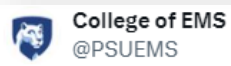
Who: Students, Faculty & Industry!



Who: Class of '24 University News & Student Profiles



Penn State

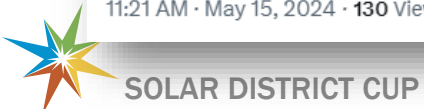


Department of Energy Announces Solar District Cup Winners. Congrats to the Penn State team for taking 1st place in the U.S. Department of Energy Solar District Cup Collegiate Design Competition.



nrel.gov
Department of Energy Announces Solar District Cup Winners. On Monday, April 29, the U.S. Department of Energy announced the division winners and winners of the 2023-2024 Solar District Cup Collegiate Design Competition.

11:21 AM · May 15, 2024 · 130 Views



University of Puerto Rico at Mayagüez



Appalachian State



Commercial Solar Guy



University of Colorado Boulder



Who Evaluates You: Judges from Industry for Class of '25

Bring-Your-Own-District



Ian Tsao
OneEnergy
Renewables



Kristen Fornes
ENGIE North
America



Alex Parlato
University of
Central Florida

Pennsylvania State Health



Caitlin Kearney
Nexamp



Rob Motto
ENGIE North
America



Kevin Kanoff
Penn State
Health

Seattle Colleges



Kristen Gardner
ENGIE North
America



Edward Settle
U.S. Bancorp
Impact Finance



Lincoln Ferris
Seattle Colleges

Who Evaluates You: Judges from Industry for Class of '25

SUNY Oneonta



**Mallory
Squier-Babcock**
Nexamp



Al Vershoi
ENGIE North
America



**Sandra
Garcia-Fine**
SUNY Oneonta

The College of New Jersey



Calvin Horton
Holt Renewables

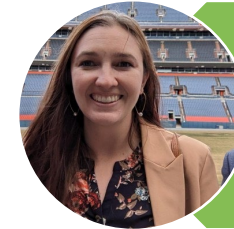


Hannah Bent
ENGIE North
America



Paul Romano
The College of
New Jersey

University of Oregon



Briana Morris
Namaste Solar



Christian Okolski
ENGIE North
America



Carla Brown
Cal Poly

Who: Competition Organizer Staff



Arielle Cardinal
P.I. Competition
Design & Manager,
Student Coordinator



Patrick Gibbs
Co-P.I., District
Use Cases,
SDC'20 Alum



Larson Lovdal
Solar Finance
Training & Reviewer



Tony Jiminez
Solar Design Training
& Reviewer



Jamie Cutlip-Gorman
Development Plan Training &
Reviewer, Judge Coordinator



Bruno Estrada
Technical Advisor
U.S. Dept. of Energy



Paul Kramer
Technical Advisor
U.S. Dept. of Energy
SDC'23 Alum



**Natasha
Headland**
Communications



Bree Mendlin
Student and Mentor
Recruiting, Events



Haley Ross
Distribution
Systems & PV
Hosting Capacity



Alex Kramer
Judge Coordinator,
SDC'22 Alum

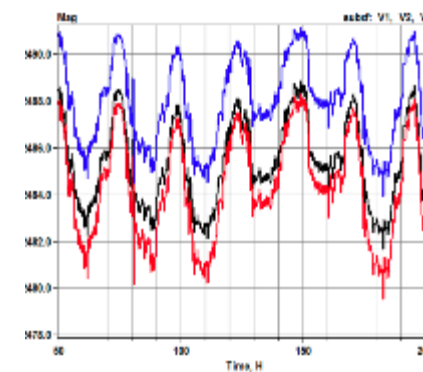


Summary: What You'll Do

What You'll Do: Deliverable Packages

Assume role of solar-plus-storage developer to create:

- Project proposal and pitch presentation
- Conceptual system design
 - Solar system layout and specifications
 - Average hourly energy production
 - Distribution system impact summary
- Financial analysis
 - Financing model
 - Customer savings analysis
- Development plan
 - Zoning and permitting in district master plan
 - Construction codes and schedule
 - Distributional energy equity.



What: Design, Analyze, Iterate, and Propose

- Land use & zoning ordinances
- Master plan compliance
- Permitting and codes
- Construction & interconnection timeline
- Distributional Energy Equity

Development Plan
Preliminary Site &
Data Analysis

Conceptual
System Design

Distribution System
Impact Summary

Financial
Analysis

Development
Plan

- PV system specification (location and sizing)
- Climatic data (irradiance and temperature profiles)
- Efficiency data of individual systems

- Risks and mitigation for over loading/voltage
- Curtailment of active power from PV systems

- Capital, financing, operation, and maintenance costs
- If design is not financially viable or is sub optimal, choose a different strategy





Summary: Why This Competition

*“I really enjoyed working with my peers
and collaborating on a real-world use case.
It was an amazing learning experience.”*
–Class of ‘23 student team member

Why Participate

- Build experience with renewable energy design and analysis
- Develop real-world solutions that shape the future of solar energy
- Enhance education and build resume with experiential learning
 - Senior design or capstone project
 - Elective or independent study course credit
 - Part of class curriculum or thesis
 - Seminar topic
 - Student interest club
 - Extracurricular activity
- Network with industry for career connections.



Why Participate: Career Connections

“I have taken this skill set and now use it on day-to-day basis at my current work position as an energy engineer.”
– 2023 Competition Finalist

“I'm a 3rd year engineering undergrad [...] and was able to accept a position that I love at a top commercial solar company [...] because of the things I learned here. The real-world experience you offer is unmatched and has put me 10 steps ahead in the career I am pursuing. It's great to take my Solar District Cup knowledge and see these projects come to life.”
– 2022 Competition Finalist

Jobs

Job & Internship Opportunities

[Updated - 12/3/24]

The appearance of an organization on this page does not constitute an endorsement, promotion, or recommendation of that organization by NREL, the Alliance for Sustainable Energy, DOE, or the U.S. Government.

Arizona Public Service (APS) is a utility company with a bold goal to provide 100% clean, carbon-free electricity to customers by 2050.

- Internships, College Programs, Recent Grads:
<https://www.aps.com/en/About/Careers/Internship-Programs>.

Aztec Engineering Group, Inc. is a multidisciplinary engineering and environmental consulting firm structured to assist public and private clients. We assess, plan, develop, design, construct and maintain critical infrastructure projects. Headquartered in Phoenix, Arizona, we have satellite offices in California, Colorado, Indiana, and Nevada to meet our clients' needs.

- [Aztec Career Board](#)

Baker Electric delivers innovative electrical construction projects, specialty services, and renewable energy solutions across all market sectors.

- Check out the openings for project managers, estimators, and project engineering interns:
[Job Board | Dayforce Jobs \(dayforcehcm.com\)](#).

Carolina Solar Services provides solutions for renewable energy systems to support a sustainable future. It offers premium service and rapid response to AC, DC, and medium-voltage components of utility-scale solar farms.

- Consider openings for solar technicians or interns: [Join Our Team - Carolina Solar Services](#)

Why compete?

This competition helps you communicate your professional value

In job interviews, Solar District Cup alumni talked about how this competition helped them:

- See the full life cycle of solar development
- Become familiar with aspects of solar development that weren't part of their school curriculum
- Develop core transferable skills



Class of 2023-2024 SunEEE team from Columbia University

Why Faculty Advise a Team

- Real data and use case for students
- Curriculum support and modeling tools
- Team-based design and analysis project
- Connections to industry.

“I enjoyed working closely with the students as they developed their design and seeing them present their work to the whole group.”

–Class of 2023 Faculty Advisor

What Students Win

- All student participants: resume-building experience, knowledge, and industry connections
- All competing team members: stickers and pins
- Students who complete the Solar District Cup curriculum receive certificates of completion
- Division Winners and Project Pitch Champion receive team trophies.



Details: Who is Eligible



Who Participates: Eligibility

- A team composed of at least 3 students
- Enrolled student
 - Accredited U.S.-based collegiate institutions
 - At least one class and pursuing a degree
- Any level college student
 - Challenge aimed at upper-level undergraduate
- Multidisciplinary teams highly encouraged
 - Engineering Business or finance
 - Urban planning Construction management
 - Communications Sustainability or environmental policy
 - Marketing Architecture
- Faculty advisor and/or mentor
 - Recommended (not required).



Intrigued?

The screenshot shows the heroX website for the Solar District Cup. The header includes the heroX logo and navigation links: Challenges, For Business, Who We Are, Results, Search, Get Started, and Log In. The main content area features the NREL Prize Administrator section with a view count of 4,893 and a 'Follow (2.6k)' button circled in orange. Below this is a banner for the 'SOLAR DISTRICT CUP' (U.S. DEPARTMENT OF ENERGY COLLEGIATE DESIGN COMPETITION CLASS OF 2024-2025) with the tagline 'DESIGN. MODEL. COMPETE.' and a 'POWERED BY heroX' logo. The banner image shows three students working on a laptop. To the right of the banner, the text describes the 'Class of 2024-2025: Challenging multi-disciplinary student teams to design and model solar-plus-storage systems for a campus or district.' Below this are tags for 'Energy, Environment & Resources', 'Engineering', 'Technology', and 'Powered By HeroX'. A 'Stage: Registration Phase: Click "Solve this Challenge" then submit an Entry by 9-26' is noted. A large blue button labeled 'SOLVE THIS CHALLENGE' is at the bottom. The footer contains a navigation bar with links: Summary, Timeline, Updates (2), Forum, Teams (2.6k), Resources, FAQ, Jobs, and Partners. Below this is a sub-navigation bar with 'OVERVIEW' and 'GUIDELINES'.

Go to www.herox.com/solardistrictcup and click “Follow” so we keep you up to date!

Details: How to Compete

Divisions & District Use Cases



Real-world use cases with data, district master plans, and partners interested in your solutions

How to Compete

Competition Rules Document

Posting: November 6, 2025

Essential references in Appendices A and E

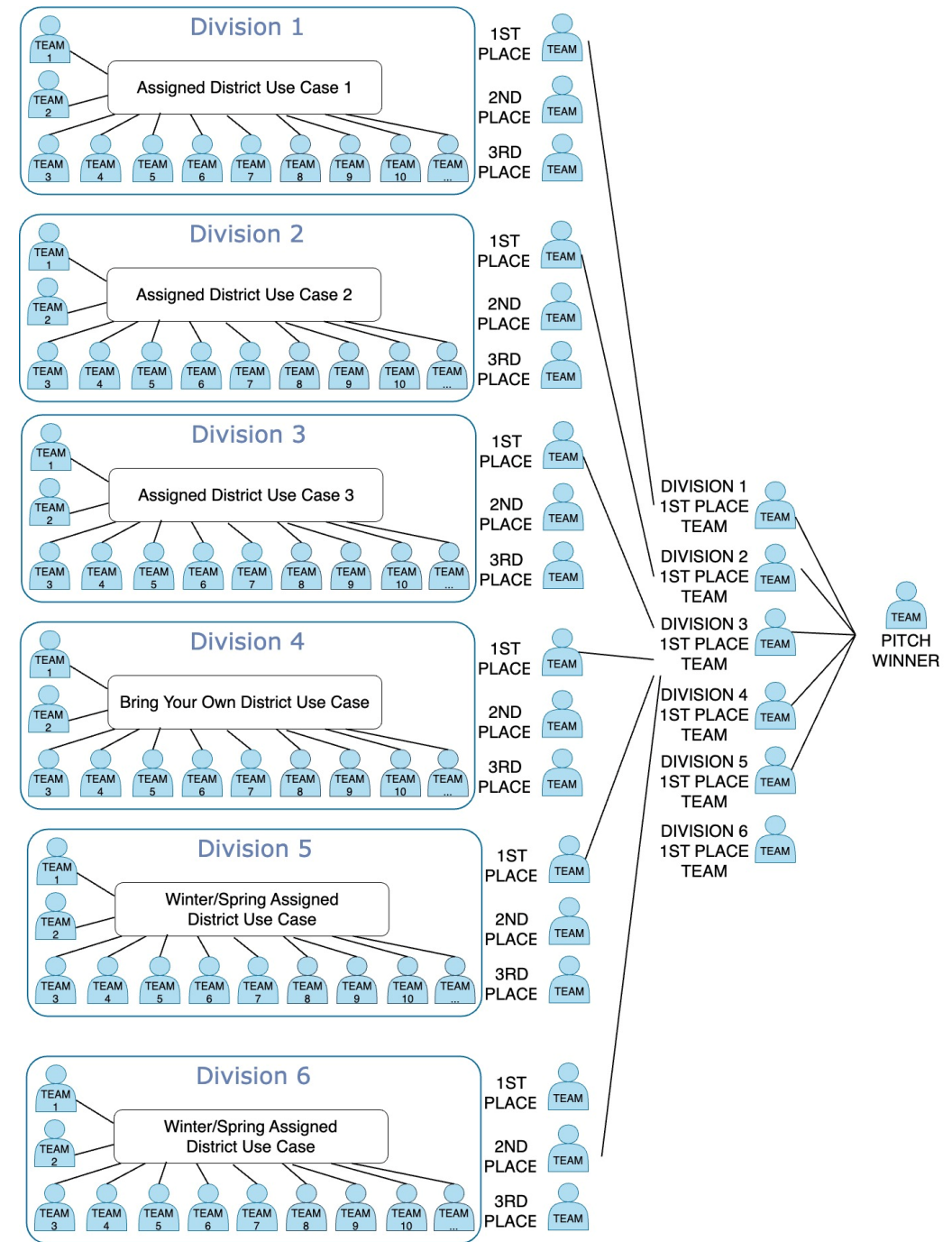
Class of 2025–2026 Rules
on HeroX in the “Guidelines”
and “Resources” tabs

<https://www.herox.com/SolarDistrictCup/resources>



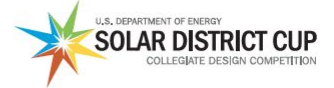
How to Compete: Divisions

- Anticipating 5 divisions
- Teams assigned to divisions by the competition organizers
- Winners of each division selected by industry judges
- Proposal pitch winner determined by industry judge panel at final virtual competition event.



Use Case Profile

- For organizer-assigned divisions: use case available in a secure online data room when divisions assigned
- Serves as the “challenge document,” outlining each district use case and the parameters for student team projects
- Profile and data room contain several datasets to complete the challenge, including:
 - Annual interval energy usage for multiple buildings (.xlsx)
 - District Google Earth map with identifiers (.kml)
 - Distribution system information.



District Use Case: Pacific Northwest National Laboratory

Version and Release date: 1.0, September 23, 2021

Note: This Progress Deliverable phase will challenge student teams to model solar systems only. The battery and microgrid aspects of this challenge will be introduced in the Final Deliverable phase beginning in January 2022.

This document contains a description, data, and reference links for the Solar District Cup Class of 2021-2022 district use case of Pacific Northwest National Laboratory. Data not available in this document can be found in the data room on the following website:

Website: <https://pfs.nrel.gov>

Username: pnml-uc

Password: Va8cpVa

DISTRICT DESCRIPTION AND SUSTAINABILITY GOALS



Figure 1: PNNL main campus, looking north.



Details: How to Compete

Training & Resources Provided

Customized training, templates, and tools necessary for every team to succeed in the competition

Customized Training in Canvas

Subscribe to the [Competition Calendar on Canvas](#) to add webinars, important deadlines, and events to your calendar!

Modules

Module 1: Getting Started

Project Management
Pre-competition Knowledge Check

District Use Case Files

District Use Case descriptions, load profiles, and supporting documents
Guidance to Define Bring-Your-Own District Use Cases and required BYOD Template

Module 2: Solar Development Plan & Distributional Energy Equity

Site analysis for prospective Solar PV installations
Project constraints and considerations
Energy Equity and Related Resources

Module 3: Solar System Conceptual Design

Solar Energy Systems & Battery Energy Storage System
Dispatch
Distribution System Impacts Summary

Module 4: Solar PV Finance

Solar Project Finance 101: Direct Buy, Power Purchase Agreement, and Solar Lease
Financial Model Spreadsheet Template and Tutorial. **This financial template is required for all teams to use.**

Module 5: Modeling & Analysis Software Tools

Aurora Solar Software: Aurora and HelioScope
System Adviser Model (SAM)
REopt

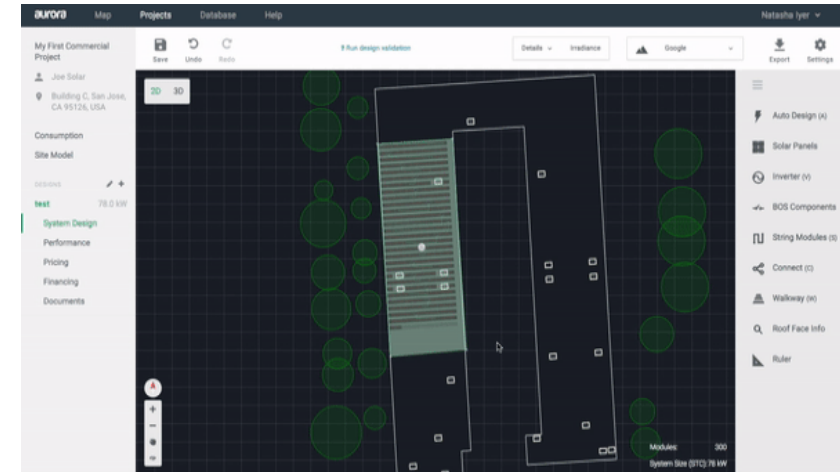
Module 6: Deliverable Packages & the Final Event

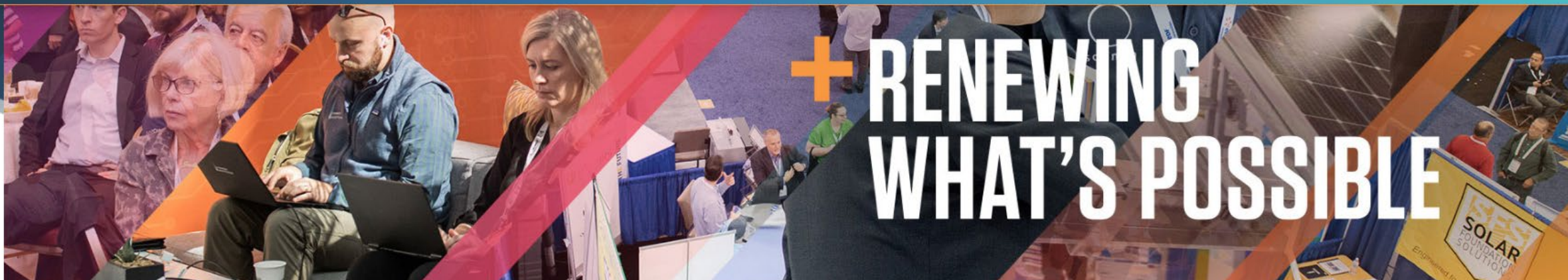
Example Industry Proposals & Last-Year Team Deliverables
What Makes a Good Solar Proposal
Guidance for Progress and Final Deliverable Packages
Post-competition Knowledge Check



Additional Resources and Tools

- Free access to industry-leading tools:
 - Required: Spreadsheet Financial Model
 - Options: *Aurora Solar and HelioScope* for conceptual solar system design
 - NREL's System Advisor Model (**SAM**) and Renewable Energy Integration and Optimization (**REopt®**) web tools
- Free access to RE+ conference and regional events
- Sample industry proposal packages to reference
- Class of '25 competition team presentations and winning teams' final deliverable packages
- Live “Office Hours” with experts
- Industry mentoring.





- Solar District Cup students and faculty attend for free conference registration at RE+ national and regional events
- Accommodations and travel expenses are the responsibility of each team member
- www.re-plus.com

2025

RE+ Florida	Orlando	Oct 13-14
RE+ Alaska	Anchorage	Oct 20
RE+ Charge H2	Washington	Nov 19-20
RE+ Community	Illinois	Dec 2-3
RE+ Mid-West	Illinois	Dec 3-4

2026

RE+ Hawaii	Honolulu	Jan 27-28
RE+ Northeast	Massachusetts	Feb 3-5
RE+ Microgrids	Texas	Mar 11-12
RE+ Cono Sur	Chile	Mar 25-26
RE+ Mexico	Jalisco	Apr 14-16

More Details: When to Engage

Timeline

Designed to fit within the academic calendar

Participate as part of a course, senior design or capstone projects, or an extracurricular activity.

When to Engage: Summary Timeline 2025–2026

September 25	Registration deadline for full academic year teams
Now – Dec. 4	Training and Develop Preliminary Solar Designs, Financing, etc.
December 4	Progress Deliverable Package Due
January 15	Deadline for new winter/spring teams to register
January 19	Finalist Teams Announced
April 9	Final Deliverable Package Due
April 25	Final Competition Division Presentation Event (online)
April 27	Winners Announced
April 27	Project Pitch Event
Early May	Provide Competition Feedback & Receive Judge Comments

Conclusion: Why Compete? No Risk, High Reward!

NO COST

to enter

TRAVEL

is not required

TRAINING

is provided

CONNECTIONS

to industry



More than intrigued?

Where to register a team

Register a Team on HeroX

1. Go to the Challenge page at www.herox.com/solardistrictcup
2. Click **“Solve this Challenge.”** This indicates your interest in competing; it is not a commitment (yet)
 - a. Sign-in or create a HeroX account if you don’t already have one (and remember your password)
 - b. Agree to the Terms of Use
 - c. Confirm your email address
 - d. Accept the Challenge-Specific Agreement
 - e. Indicate “Would you like to compete as a team?”
 - i. Yes, I want to create my own team (with email addresses of invited team members)
 - ii. Yes, I want to join a team
 - iii. No, I want to compete individually (can create or join other teams later)
3. Form a team with one Team Captain.



NREL Prize Administrator

4,919

Share

Follow (2.6K)



Solar District Cup

Class of 2024-2025: Challenging multi-disciplinary student teams to design and model solar-plus-storage systems for a campus or district.

[SOLVE THIS CHALLENGE](#)

How to Register a Team: Prompts in HeroX



This is only a draft. You can start now and complete your submission later!

 **Create Submission**

Save & Preview

Section 1: Introduction

Title *
Give your submission a catchy title that describes the idea and gets people interested.

Title0/50

Short description
Provide a brief description of your idea. Be clear and concise.

Short description0/140

How did you hear about this challenge?

How did you hear about this challenge?0/100

Section 2: Eligibility

☒ Submit as a team

 **Kiersten Kelley's team**

This submission will be connected to your team.

Section 3: Team Registration

ABOUT THE SECTION 1 FIELDS: For registration purposes only (not judged). For Title, please enter your school name with team, club, or class name. The description can be similar, and an image is optional.

Name of Collegiate Institution *
The full/formal name of the institution(s) represented by the students on the team.

Name of Collegiate Institution0/3000

 Challenges For Business

Please note: This is a draft of your entry and is draft at any time from the main challenge page. To submit your final entry, click the "Submit entry" button.

Please be aware that once you submit your entry, it will display publicly on your HeroX profile.

 **Preview**

EditSubmit entry

Questions on the Registration Form

How is your team of students expecting to participate? *

- ☐ Senior design or capstone project
- ☐ Elective or independent study course credit
- ☐ Part of curriculum or practicum of existing class
- ☐ Part of student interest club
- ☐ Seminar topic
- ☐ Extracurricular student activity
- ☐ Student participation not yet known

Please share key dates for your school's academic calendar. *

Is your school on a semester or quarter schedule?

When are the first and last days of classes for each semester or quarter? When is your school's commencement?

You may also include a link to your academic calendar.

Please share key dates for your school's academic calendar.

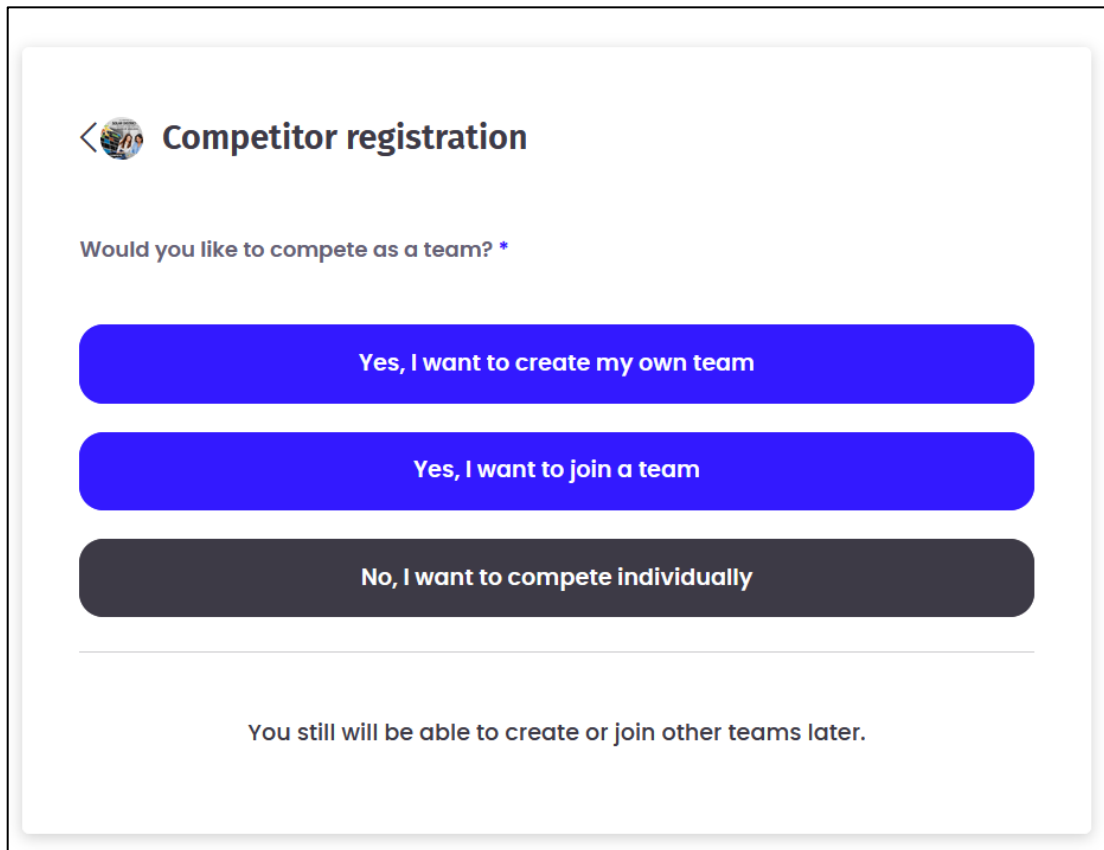
0/5000

- Academic calendar dates
- Team makeup (demographic information)
- Contact information for modeling accounts (one per team)
 - Name, email address, phone number, and zip code



How to Register a Team: Critical Steps

You must submit an entry at www.herox.com/solardistrictcup by 5 p.m. EST on January 15 to register your team for the competition.



The screenshot shows a web form titled "Competitor registration" with a back arrow icon. Below the title is the question "Would you like to compete as a team? *". There are three buttons: "Yes, I want to create my own team" (blue), "Yes, I want to join a team" (blue), and "No, I want to compete individually" (dark grey). At the bottom, a note states "You still will be able to create or join other teams later."

1. Click “Solve this Challenge”
2. Create an account **and** create a team
3. Click “Begin Entry” and submit the form
4. Make sure to “Submit as a team”

Next Steps: Recap

Go to:
www.herox.com/solardistrictcup
and choose “Follow” now!



RECRUIT

Team members,
faculty advisor,
and mentors



REGISTER

Your team on
HeroX by
January 16



READ

The Rules to
plan your
participation



LEARN

Using the
resources
provided by the
Organizers



DESIGN

And analyze
your proposed
district solar
solutions!



U.S. DEPARTMENT OF ENERGY

SOLAR DISTRICT CUP

COLLEGIATE DESIGN COMPETITION

Learn more at:

www.herox.com/SolarDistrictCup

Email:

SolarDistrictCup@nrel.gov

Tag & follow on social:

#SolarDistrictCup