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

NREL

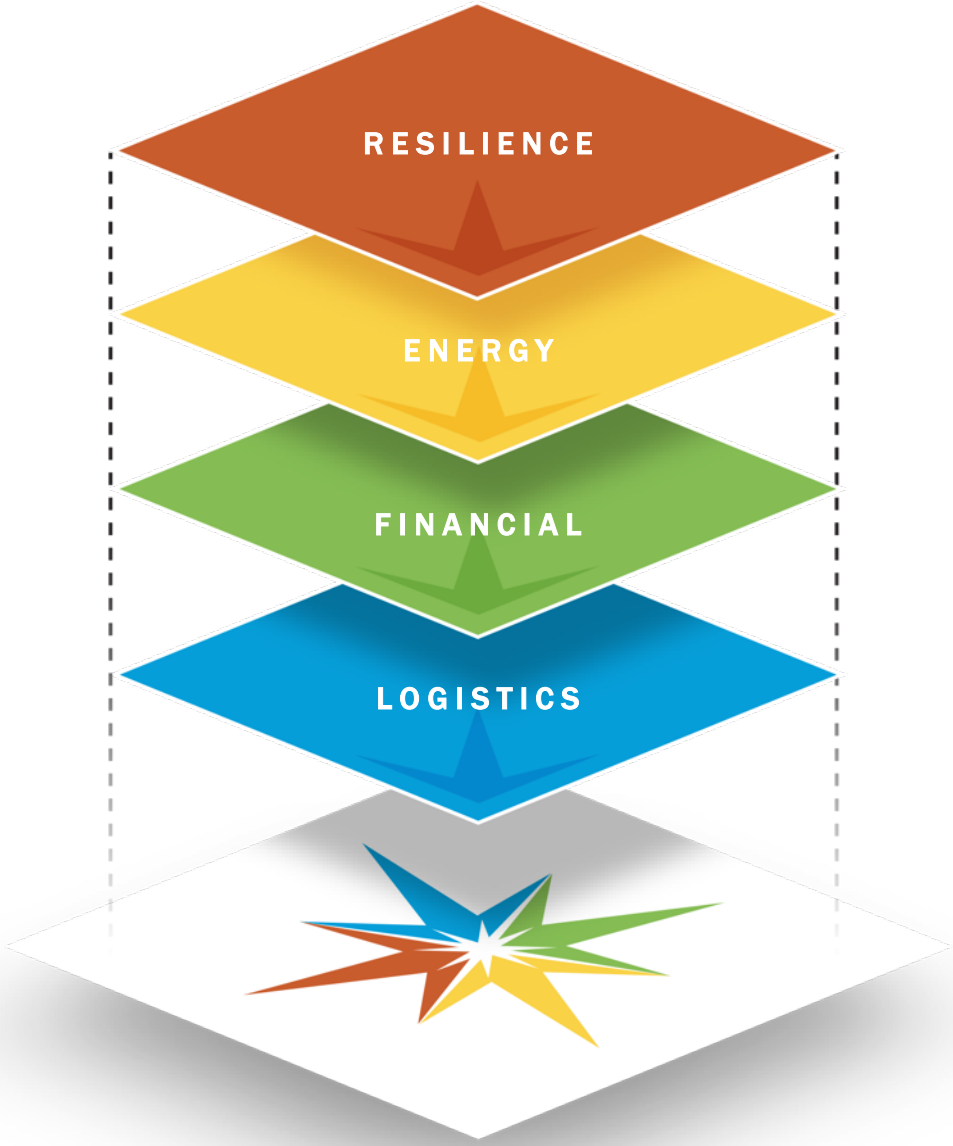
Solar District Cup

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!

aurora

RE+

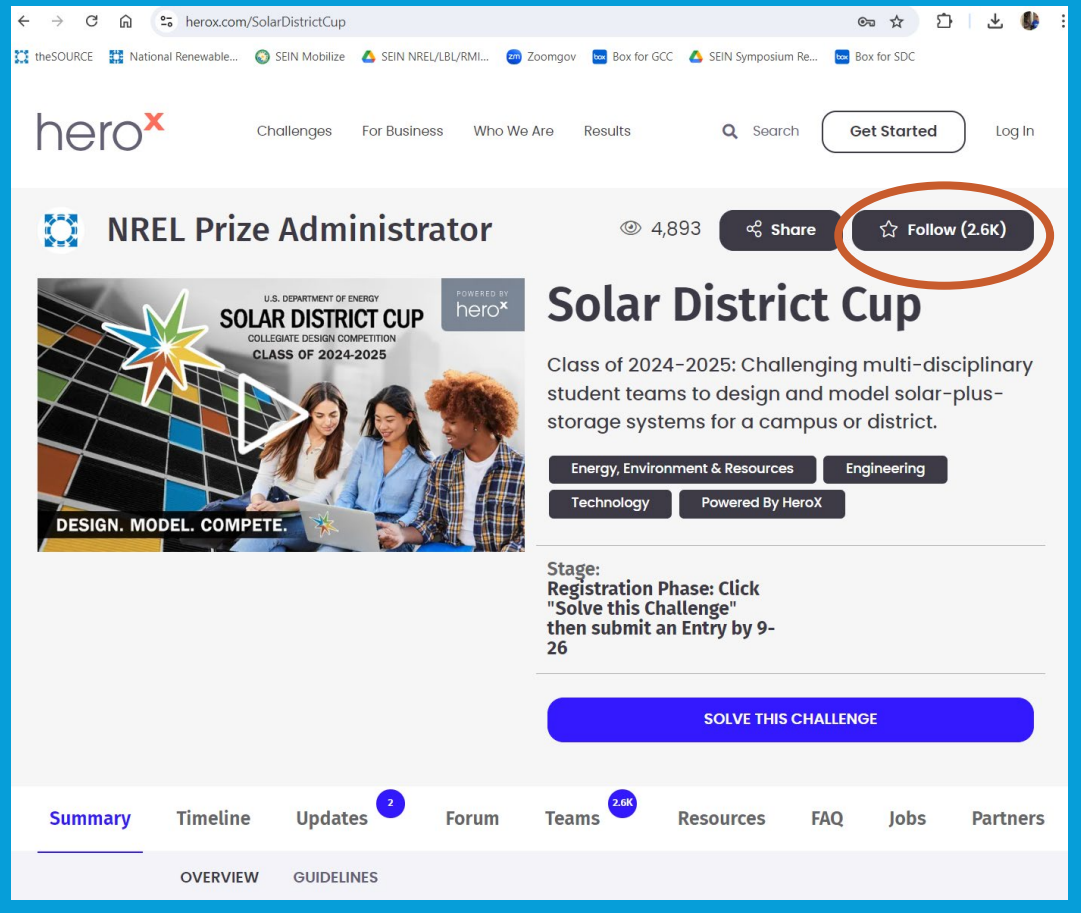
INTERNATIONAL DISTRICT ENERGY ASSOCIATION

District Use Cases

- Clemson University
- University of Wisconsin Madison
- Tufts University

Watch on YouTube

How to Stay in the Know



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

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!

Participant Feedback

What's one word to describe the Solar District Cup?

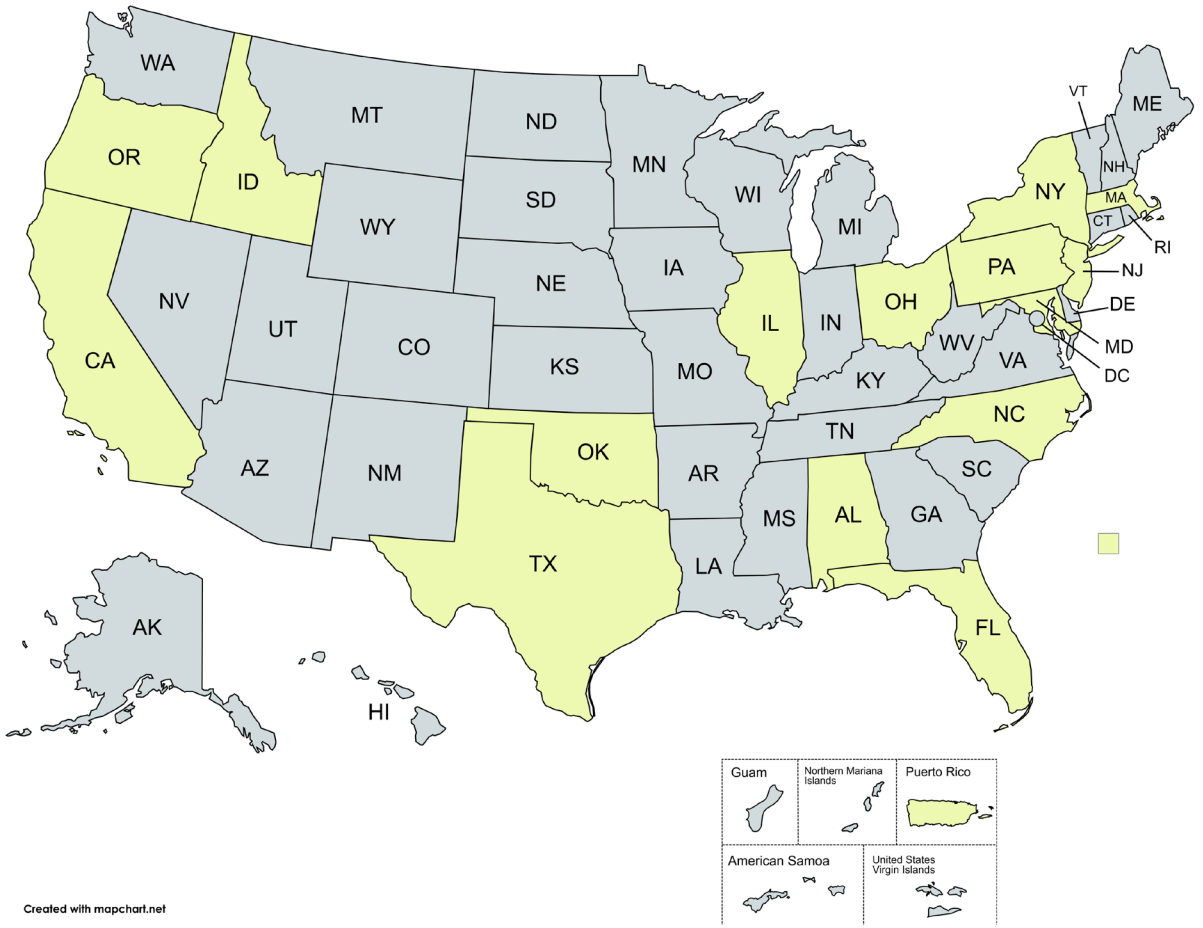
"...Solar District Cup offers a multifaceted experience, rich with opportunities for growth and learning...skills that are critical in professional settings."

– Class of '24 Student Participant

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



https://www.herox.com/SolarDistrictCup/updates

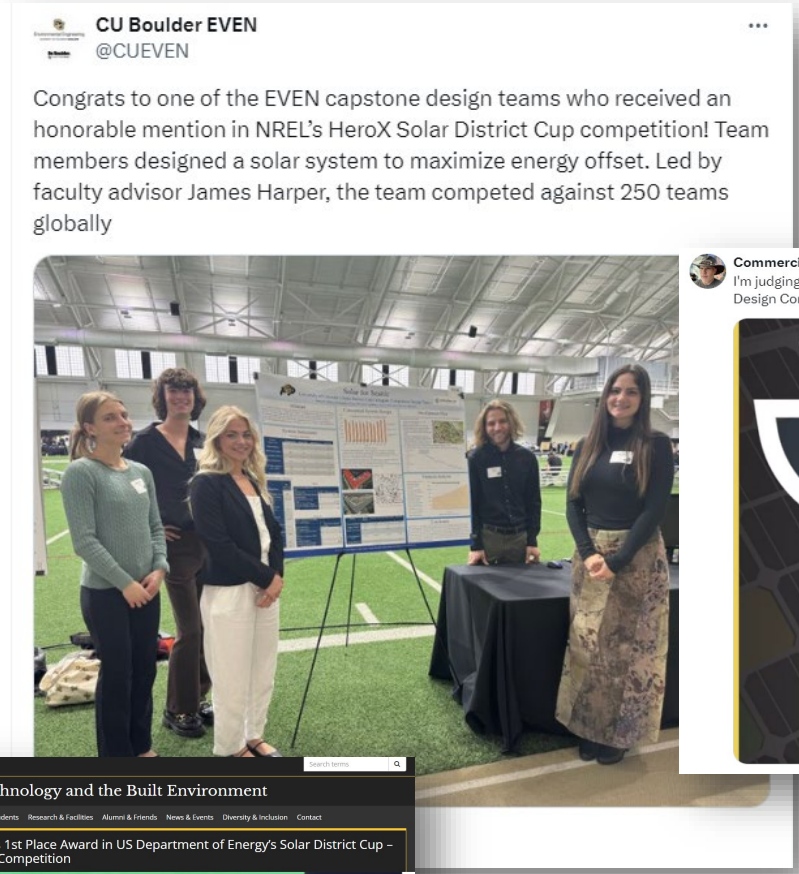
Who: Students, Faculty & Industry!

Who: Class of ‘24
University News & Student Profiles

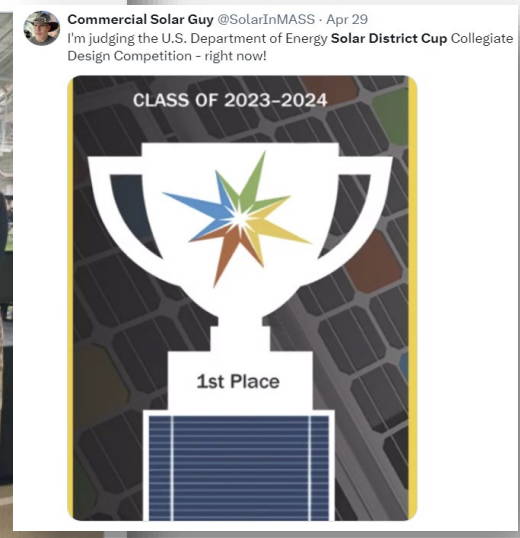
Penn State

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

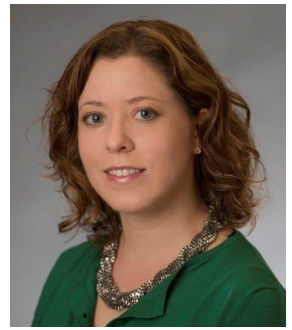
Who: Competition Organizer Staff

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

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

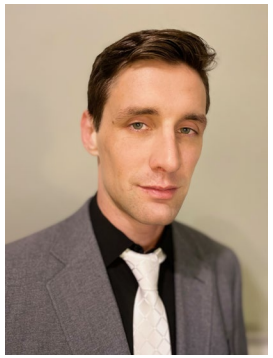
Larson Lovdal
Solar Finance Training & Reviewer

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

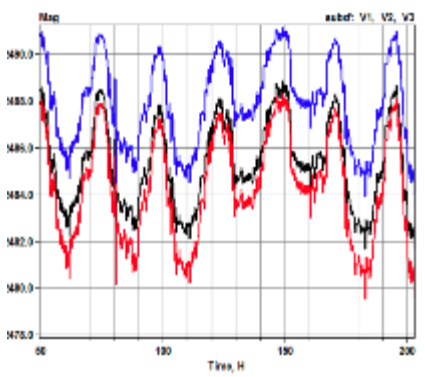
Alex Kramer
Judge Coordinator, SDC'22 Alum

Summary:
What You'll Do

What You'll Do: Deliverable Packages

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

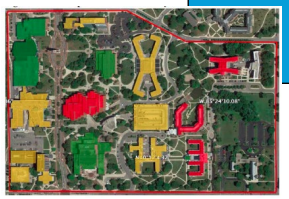
- Project proposal and pitch presentation
- Conceptual system design
  - Solar system layout and specifications
  - Average hourly energy production
  - Distribution system impact summary
- Financial analysis
  - Financing model
  - Customer savings analysis
- Development plan
  - Zoning and permitting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



What: Design, Analyze, Iterate, and Propose

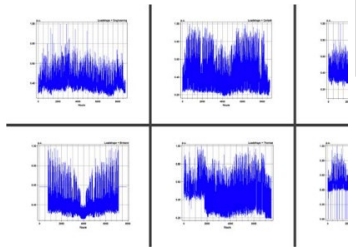
- Land use & zoning ordinances
- Master plan compliance
- Permitting and codes
- Construction & interconnection timeline
- Distributional Energy Equity

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

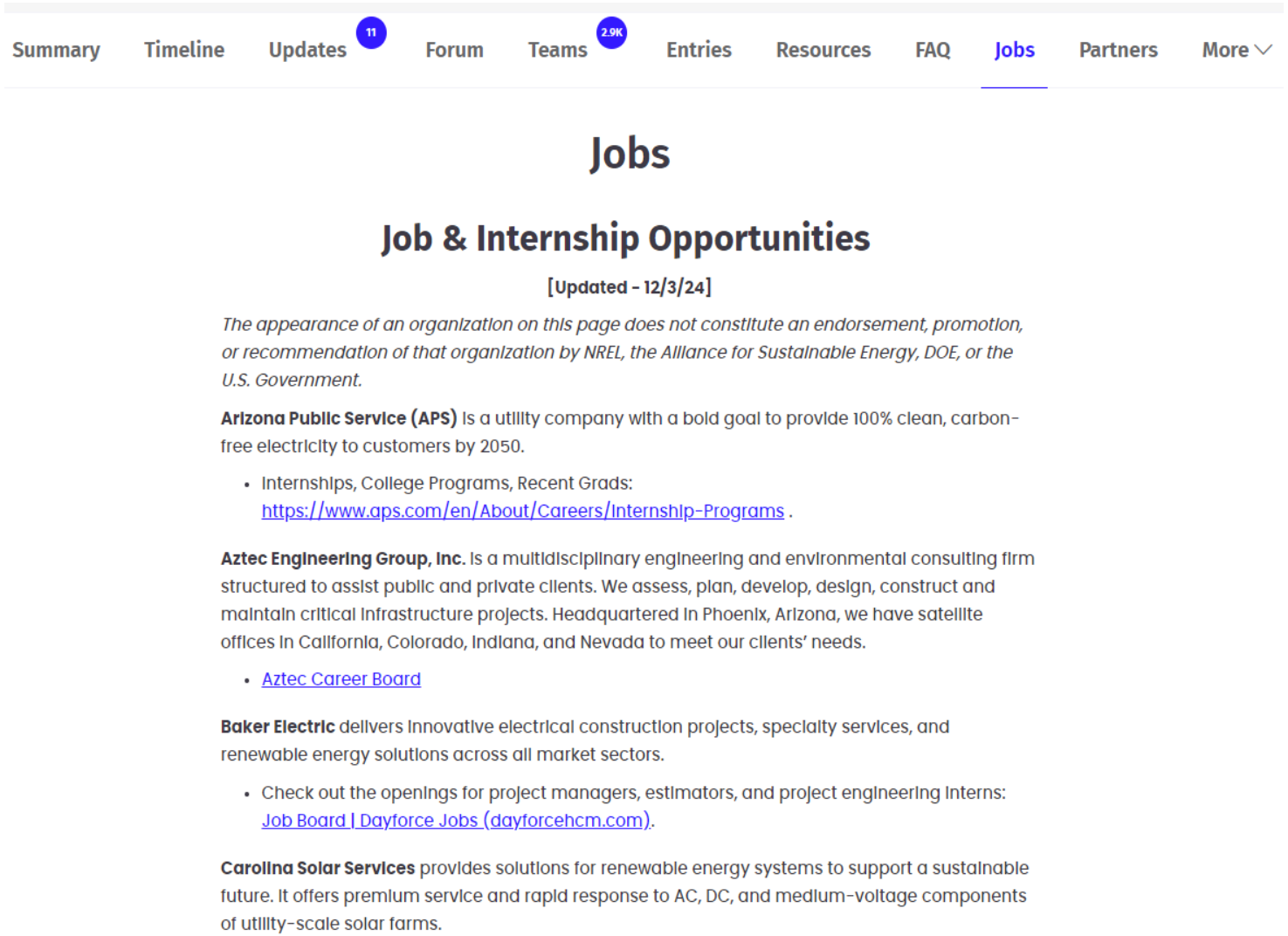
Why Participate

- 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



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

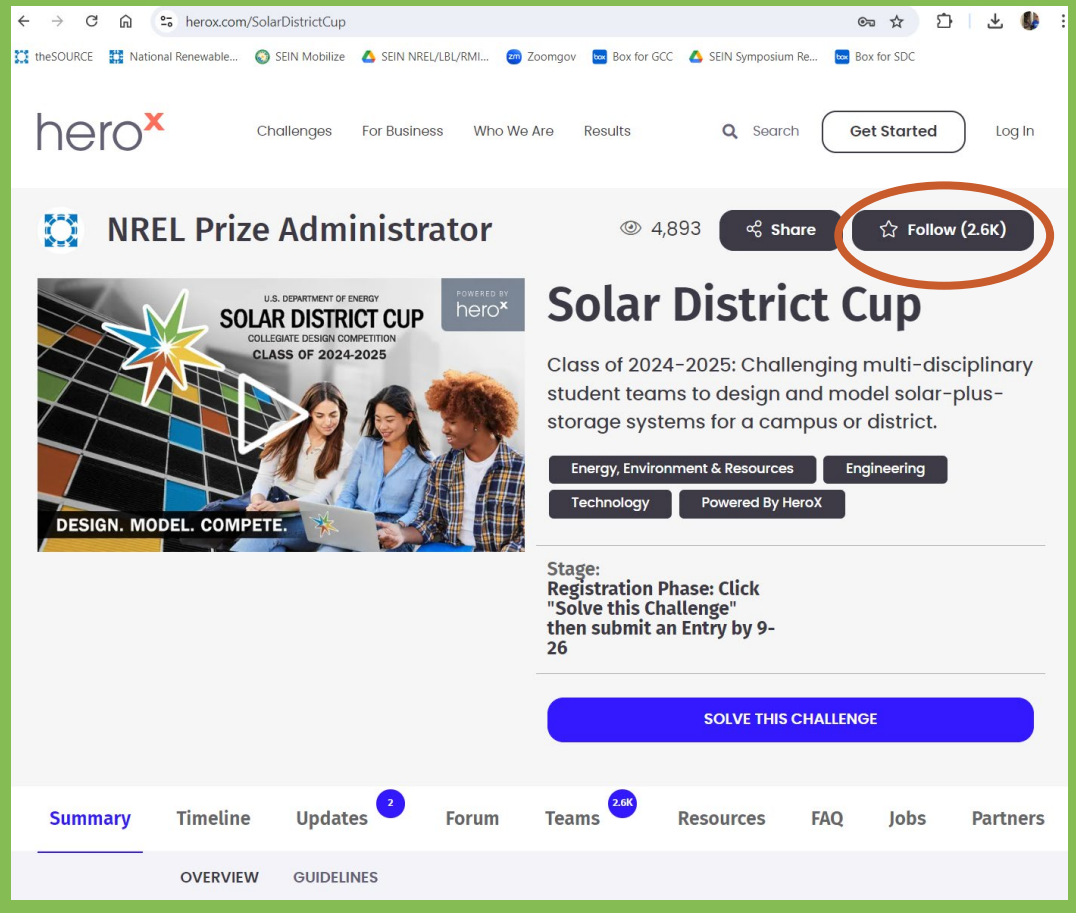
- All student participants: resume-building experience, knowledge, and industry connections
- All competing team members: stickers and pins
- Students who complete the Solar District Cup curriculum receive certificates of completion
- Division Winners and Project Pitch Champion receive team trophies.

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
  - Urban planning
  - Communications
  - Marketing
  - Business or finance
  - Construction management
  - Sustainability or environmental policy
  - Architecture
- Faculty advisor and/or mentor
  - Recommended (not required).

Intrigued?



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

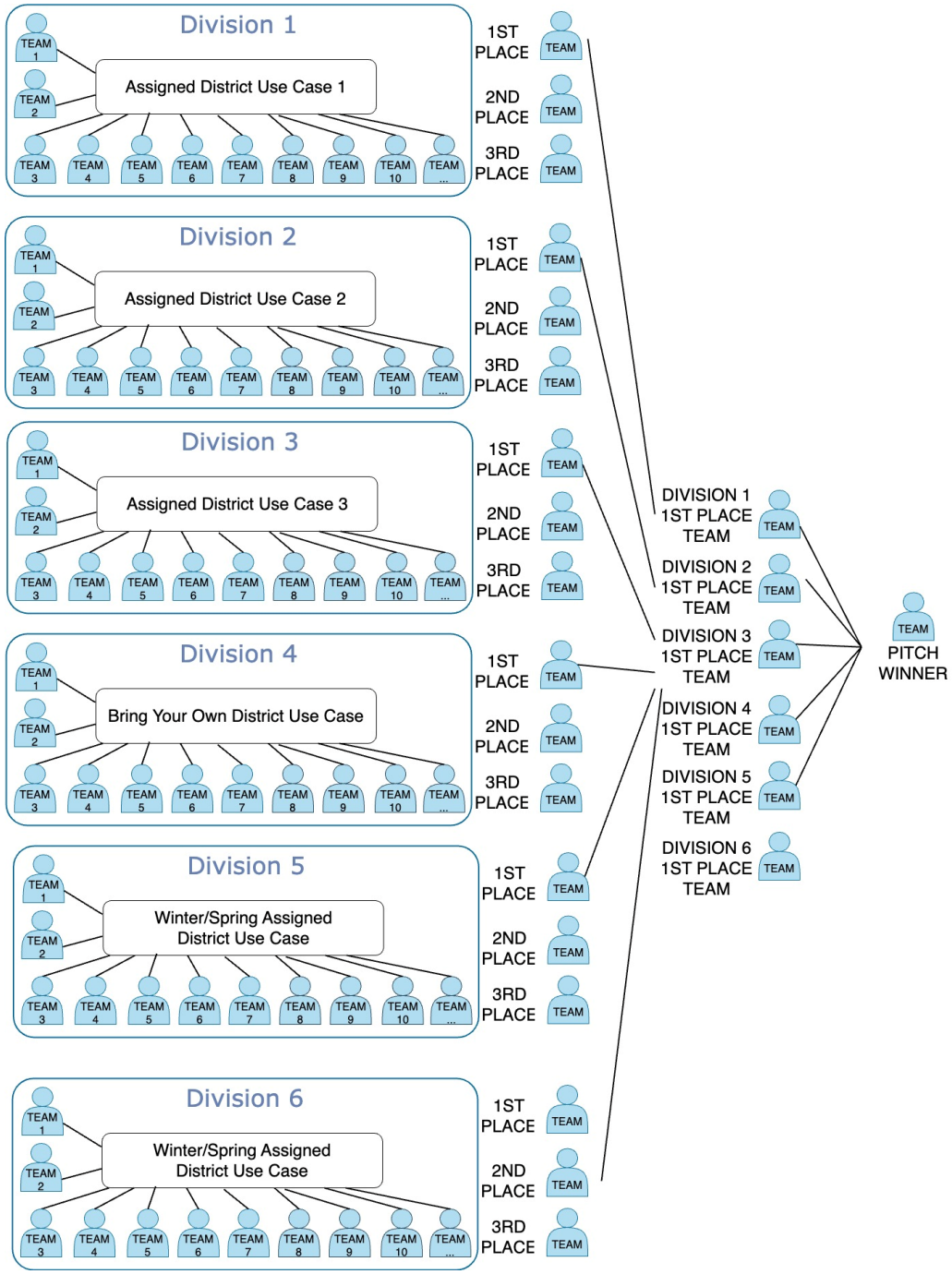
Essential references in Appendices A and E

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.

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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: pnnl-uc
Password: Va8cpVa

DISTRICT DESCRIPTION AND SUSTAINABILITY GOALS

Pacific Northwest NATIONAL LABORATORY

Figure 1: PNNL main campus, looking north.

SOLAR DISTRICT CUP 1

Details:
How to Compete

Training & Resources Provided

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

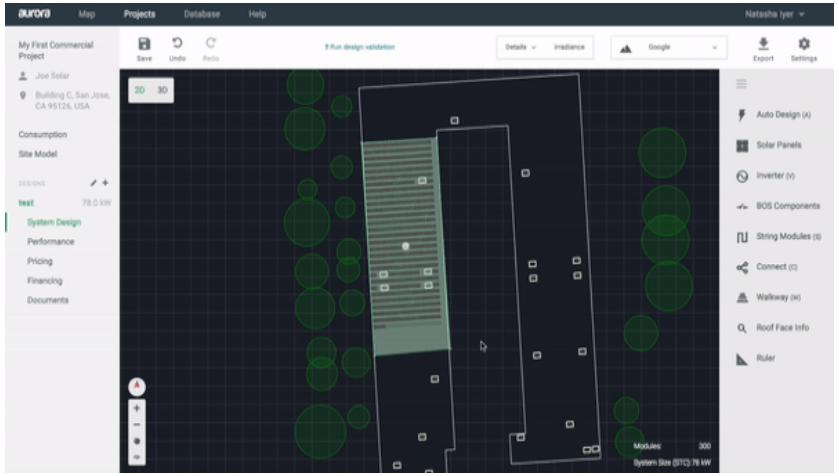
Customized Training in Canvas

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	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.**
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 5: Modeling & Analysis Software Tools Aurora Solar Software: Aurora and HelioScope System Adviser Model (SAM) REopt
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 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
Module 3: Solar System Conceptual Design Solar Energy Systems & Battery Energy Storage System Dispatch Distribution System Impacts Summary	

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

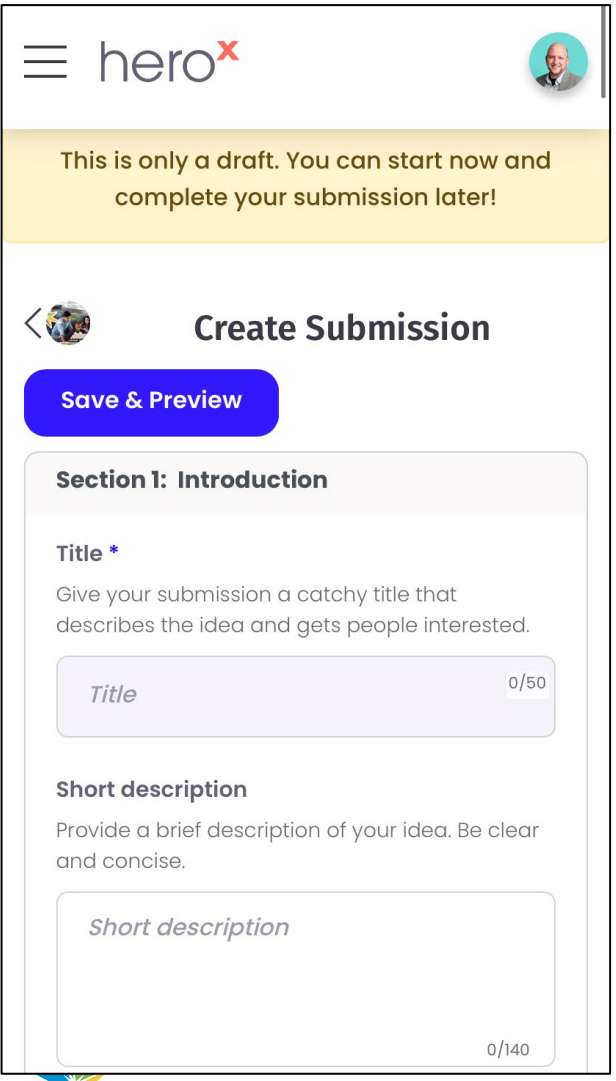
More than intrigued?

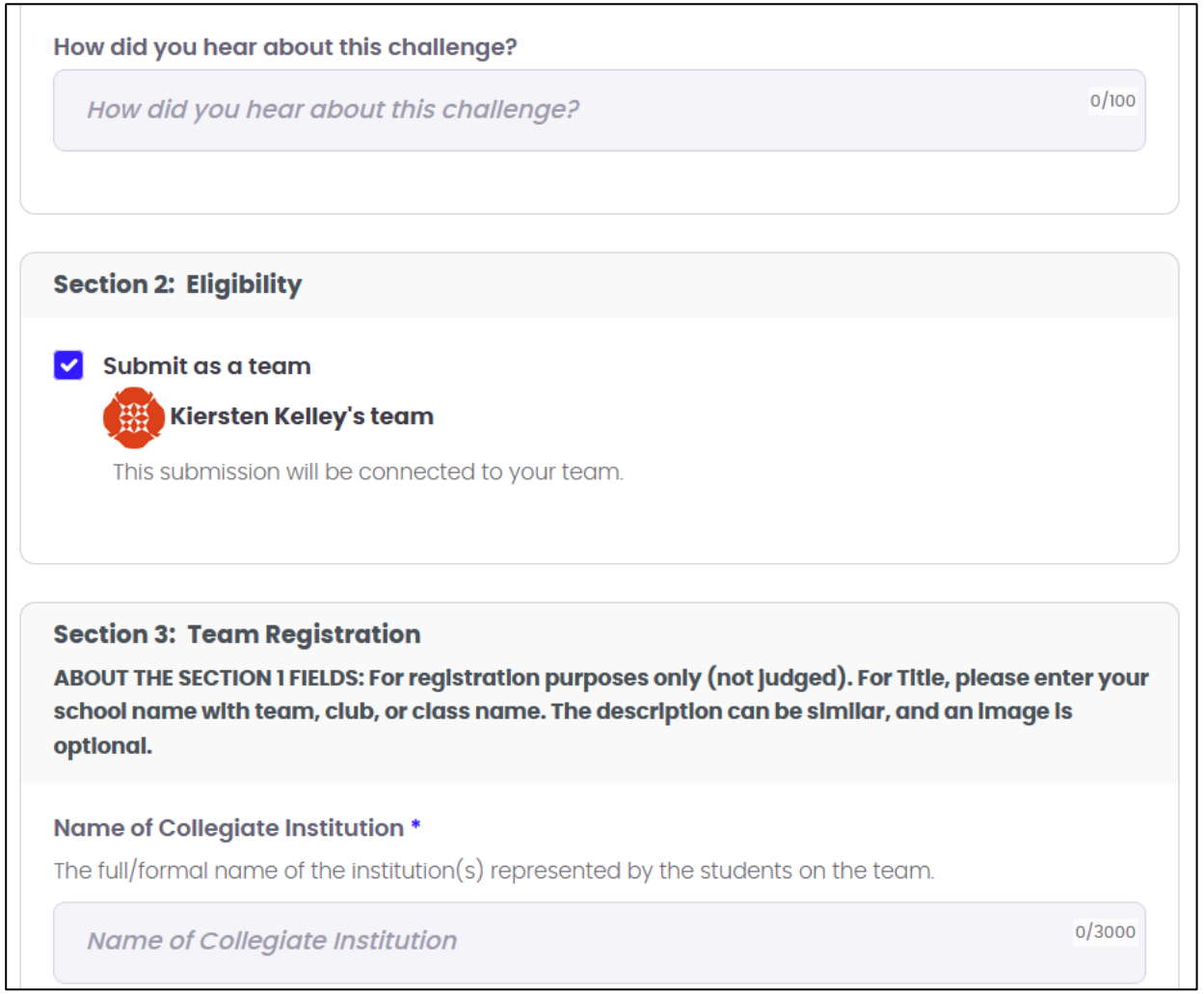
Where to register a team

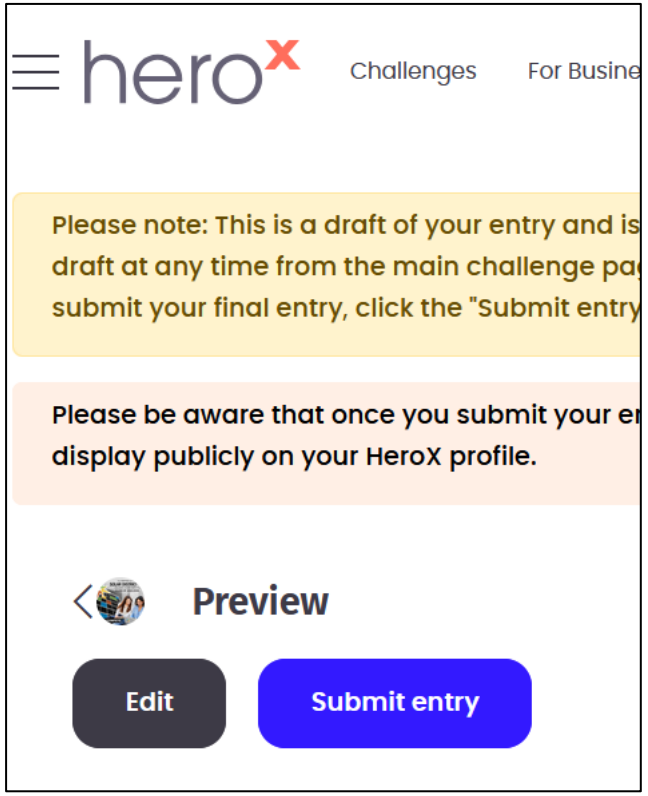
Register a Team on HeroX

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.

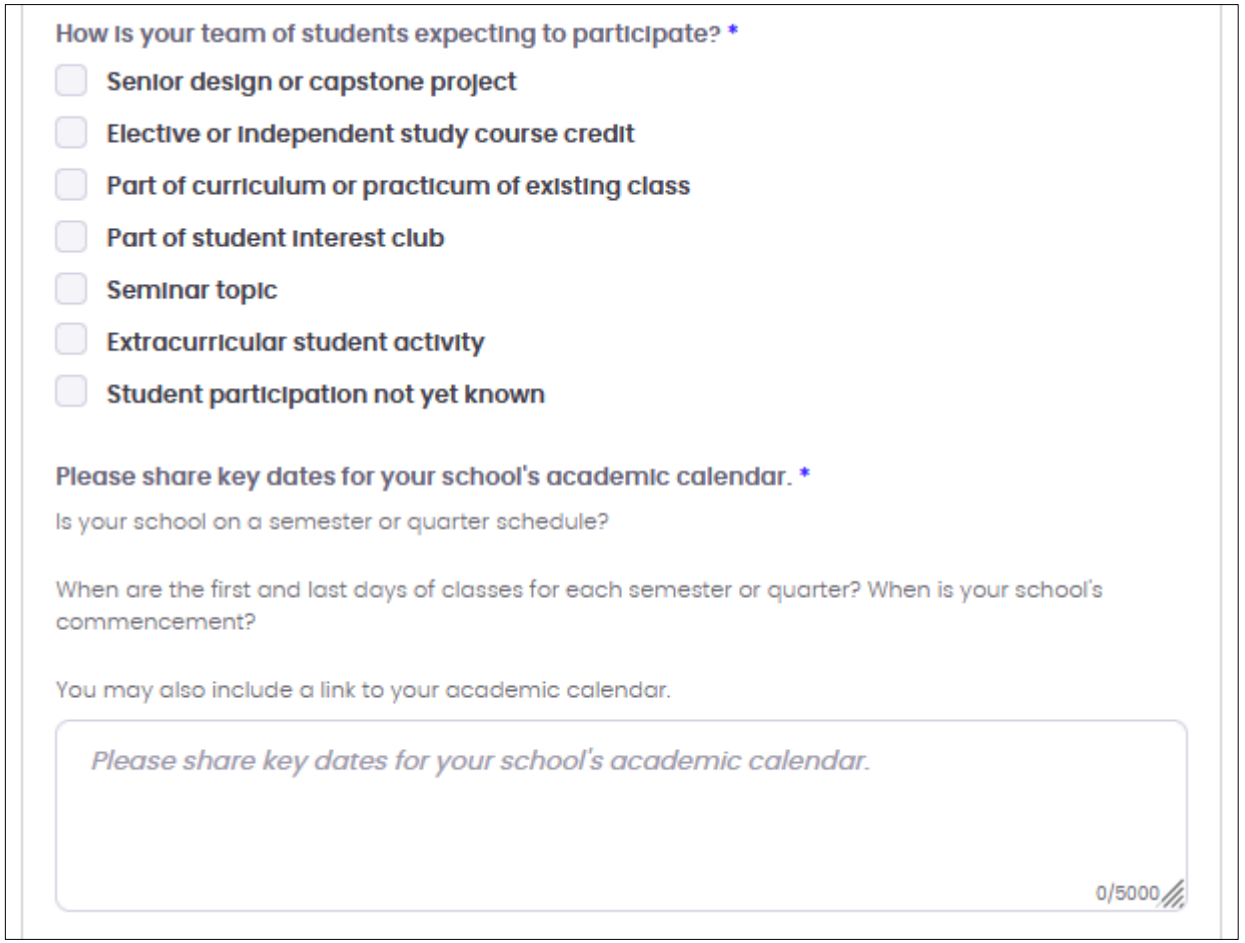
How to Register a Team: Prompts in HeroX







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.

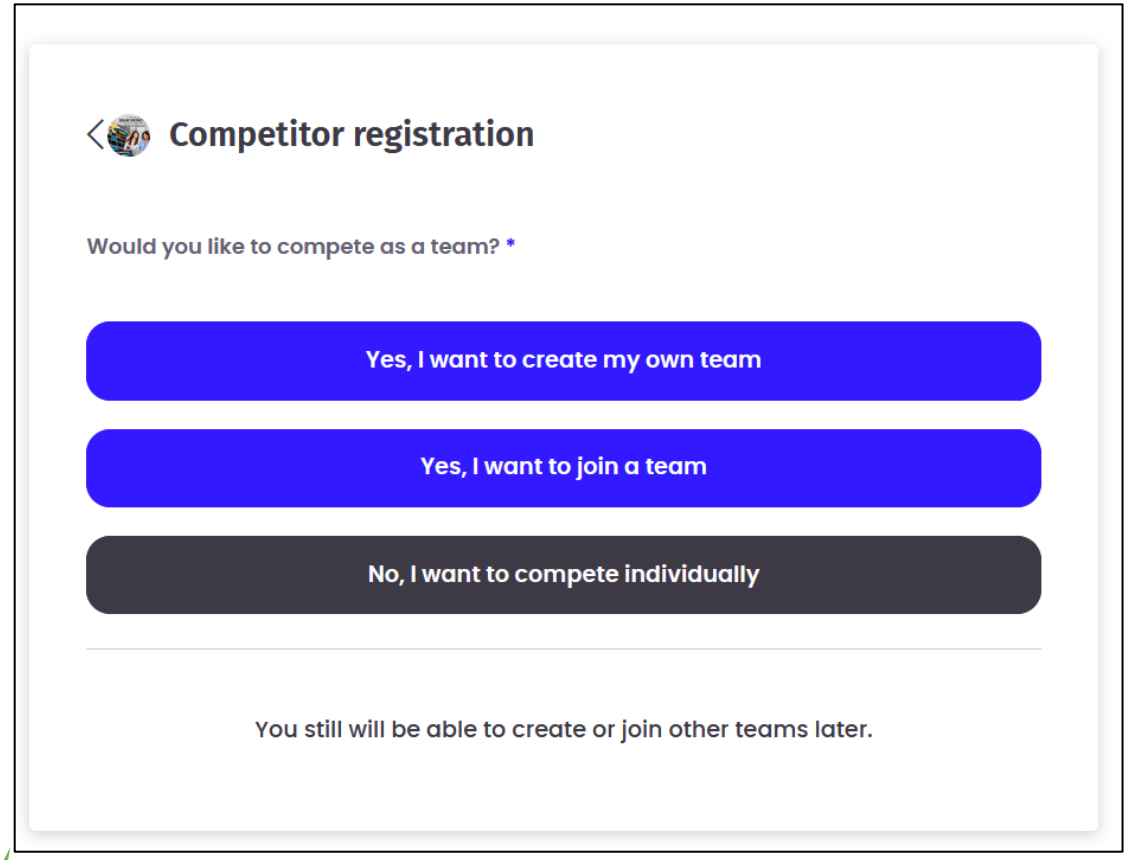
Please share key dates for your school's academic calendar.

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.



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

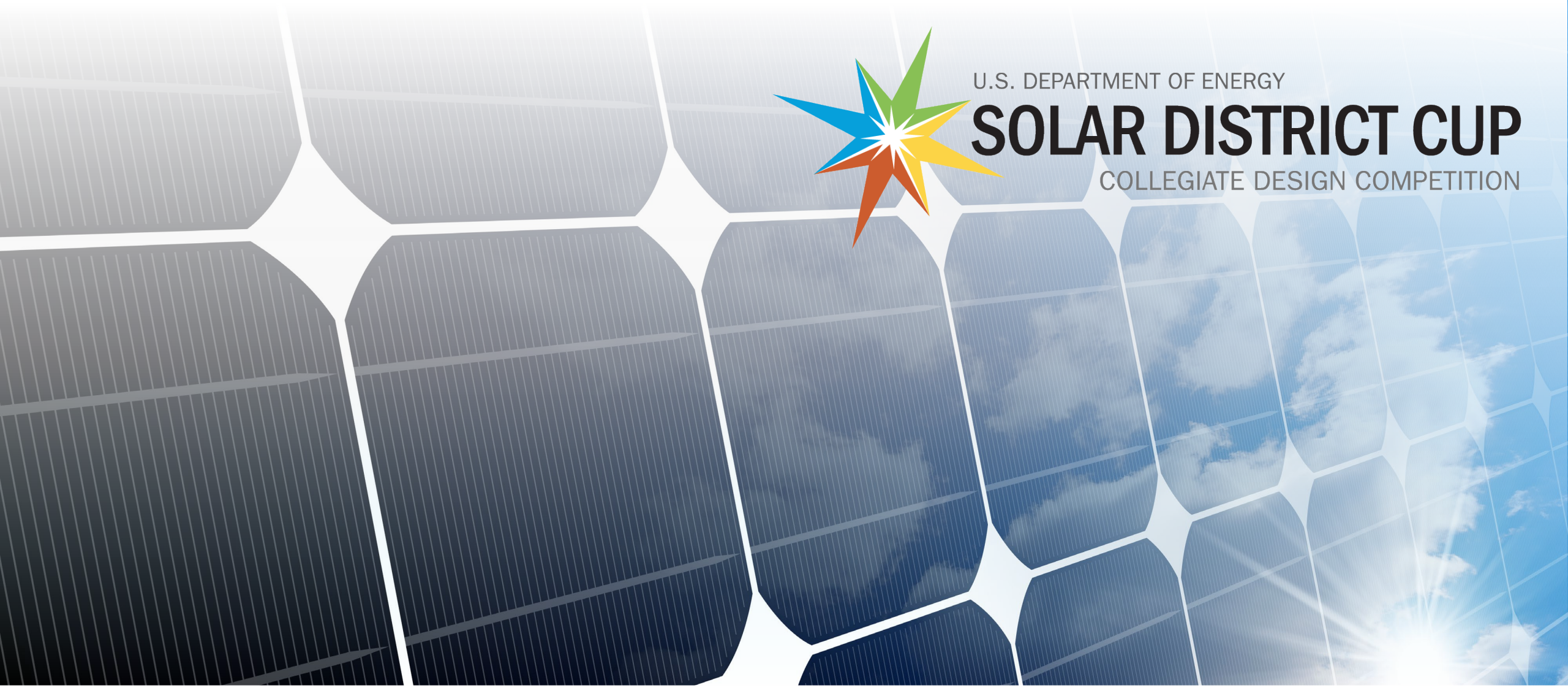
The Rules to plan your participation

LEARN

Using the resources provided by the Organizers

DESIGN

And analyze your proposed district solar solutions!



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Learn more at:

www.herox.com/SolarDistrictCup

Email:

SolarDistrictCup@nrel.gov

Tag & follow on social:

#SolarDistrictCup

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