



U.S. DEPARTMENT OF ENERGY
SOLAR DISTRICT CUP
COLLEGIATE DESIGN COMPETITION

The Solar District Cup prepares collegiate students for energy careers with experiential learning in conceptual solar + storage system design, hosting capacity, financial modeling, & project development.



Figure 1. Class of '25 teams from Alfred University, Northeastern University, University of Dayton, and California State University Chico, clockwise from top left

RE+ 2025 Poster Session

PROJECT NAME: Solar District Cup

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BACKGROUND

- The Solar District Cup seeks to grow the energy workforce by inspiring students to pursue energy careers through hands-on design and modeling experience.
- In this collegiate competition, student teams act as energy developers proposing solar + storage systems for a defined district use case (such as a college campus, research institution, or other district with multiple buildings on a local electrical distribution network).
- The class of 2024–2025 was the 6th annual competition.

RESULTS

- **192 U.S. collegiate institutions in total** have registered a team in the 6-year history of the competition. Each year we see a mix of new and returning schools.
- On average, **30 competing teams** present to judges in the final event, out of an average of 65 teams that register at the beginning of the competition each year. **A record of 38 teams competed in the final event in April 2025.**
- **Over 350 students** completed the pre-competition knowledge check and accessed the educational materials provided for the Class of '25.
- Hundreds of alumni have secured jobs or internships in the energy industry.

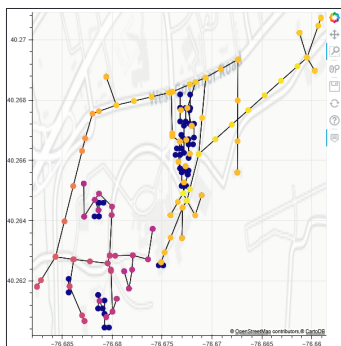


Figure 2. Distribution system hosting capacity "heat map" of the Penn State Health district use case, created by NREL researchers and provided to student teams



Figure 3. HelloScope design by University of Pittsburgh Class of '25

STUDENT FEEDBACK

Students in the Class of 24-25 shared that their favorite aspects of the competition included:

- Collaborating with a **multidisciplinary** team
- Solving **real-world** energy challenges
- Deepening **technical knowledge** of energy systems and district-scale design
- Strengthening **teamwork** and communication skills
- Learning to use **industry-leading software tools**
- Presenting their projects to judges from the energy industry.

LEARN MORE



Learn how to register for the competition!
www.herox.com/SolarDistrictCup



Scan to watch the Class of 2024-2025 student presentations.
bit.ly/4kJRNIX

HOW TO GET INVOLVED

- Scan the QR codes to learn how to register a team for the next competition class of the Solar District Cup and watch recordings of previous competitions!
- Are you currently working in the solar development industry? Do you want to share your experience and knowledge with a group of students eager to jump-start their own careers? Email us at SolarDistrictCup@nrel.gov to share your interest in mentoring a student team or serving as a competition event judge!



Figure 4. Industry and district use case partners of the Solar District Cup Class of '25

NREL'S METHODS

- Conduct outreach each year to recruit students and faculty advisors.
- Update the Competition Rules annually. These serve as a guiding document for teams.
- Produce supporting curriculum (including live and recorded webinars) for conceptual solar system design, distribution system impact analysis, financial modeling, project development, and stakeholder engagement.
- Partner with 3-5 new, unique use cases each year to develop documents, constraints, and building energy data for student teams.
- Partner with the solar industry for students to access design and analysis tools, real-world district use case data and constraints, experienced mentors, expert judges, and career connections, including free registration to RE+ regional events.
- Place teams in 3-6 competition divisions, with each division consisting of 4-12 competing teams. Teams in each division present to a panel of 3 judges in the final event.
- Organize a final virtual event where teams present their work to a panel of industry judges.
- Track and assess competition impact by reviewing annual student feedback questionnaires, knowledge checks via the learning platform, and recording testimonials from alumni who secure internships and entry-level employment in the industry.

This poster was produced when the laboratory operated as the National Renewable Energy Laboratory (NREL). The laboratory is now the National Laboratory of the Rockies (NLR).



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Solar Energy Technologies Office

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