GEOTHERMAL RISING

ENERGIZING OUR RENEWABLE FUTURE

WEBCAST SERIES

Full Steam Ahead

GEOTHERMAL RISING NEXT GEN GEO

September 17th, 2024 11:00-12:30Pm CT Zoom webinar

The role collegiate competitions play in growing and strengthening the geothermal industry

Thank you to our members that make this possible!

Earth Energy Visionaries

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Webinar Overview and Objectives

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- Brief intro from our panelists
  - Where they are from, which competition they participated in and what their geothermal focus was on
- Questions to our panelists
- Overview of Switch Case Competition and DOE Geothermal Collegiate Competition
- Wrap up questions
- Q&A from attendees

Objective

- Highlight the impact these project-based competitions have on preparing our next generation of geothermal leaders and workers
- Provide information on how students and industry mentors can get involved

Collegiate Competition Panelists

Nickolas Fry
Thermal Energy Networks Market Lead, Jacobs

Fidelis Onwuagba
2023 Switch Case Competition
1st place team-EnerGreen

Jessica Eagle Bluestone
Tribal Community Engagement Manager, Geothermal Rising

Kaitochukwu Chukwudi
Project Engineer, PESO Energy Nigeria

Alex Martin
Masters student at the Iceland School of Energy

INTRODUCTION

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- Kaitochukwu Chukwudi (Kaito)
- Chemical Engineering, Nnamdi Azikiwe University
- Intern, Switch Energy Alliance (Switch Alumni Network)
- Project Engineer, PESO Energy, Nigeria
- 2023 Switch International Energy Case Competition First Place Winner (Team EnerGreen)

KEY HIGHLIGHTS OF ENERGREEN'S SIECC PROJECT

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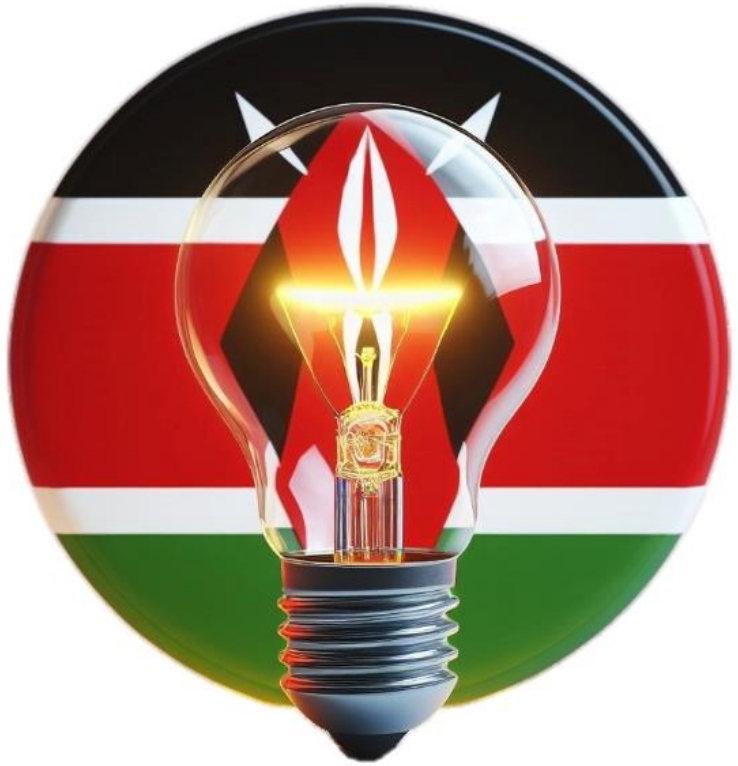

- Evaluating the Energy situation in Kenya and seeing its feasibility in transferring the solution to Bangladesh.
- Kenya's energy mix as of 2023 highlighted a whopping 41% to Geothermal Energy.
- Our solution, LightUP Kenya, projects to provide at least 95% energy access by 2033 and increase electricity capacity to 5,000MW by 2033 as well.
- The proposed solution which entails on-grid system expansion utilizing geothermal energy plus battery storage system, will remove 1.95 million tonnes of CO2 per year.

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Nicholas Fry
Jacobs | Geothermal Consultant, Thermal Energy Networks Market Lead

Various GCC Participation

- **Geothermal District Heating in Colorado (2019)**
- **Geothermal District Heating in North Dakota (2021)**
- **Mentor for borehole thermal energy storage and district heating in Alaska (2024)**

Alex Martin

- Education
  - BS Environmental Engineering, University of Colorado Boulder
  - MS Sustainable Energy Engineering, Iceland School of Energy (Feb 2025)
- Experience
  - Reykjavik Energy, Egg Geo LLC, Plant Operator
- Geothermal Collegiate Competition
  - 2022 3rd place CU Boulder Team
  - Local non profit HVAC replacement w/ heat pumps
  - Labs and lessons for ages 7-16

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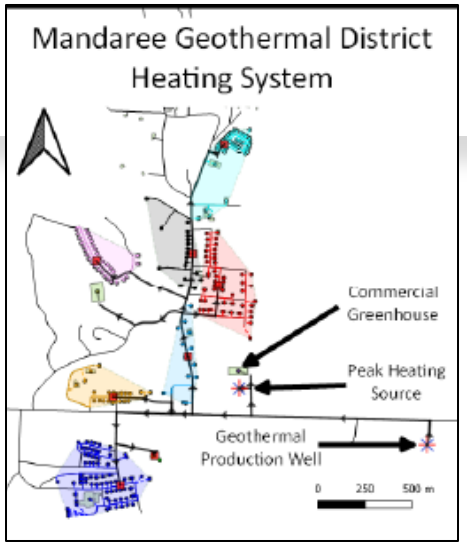
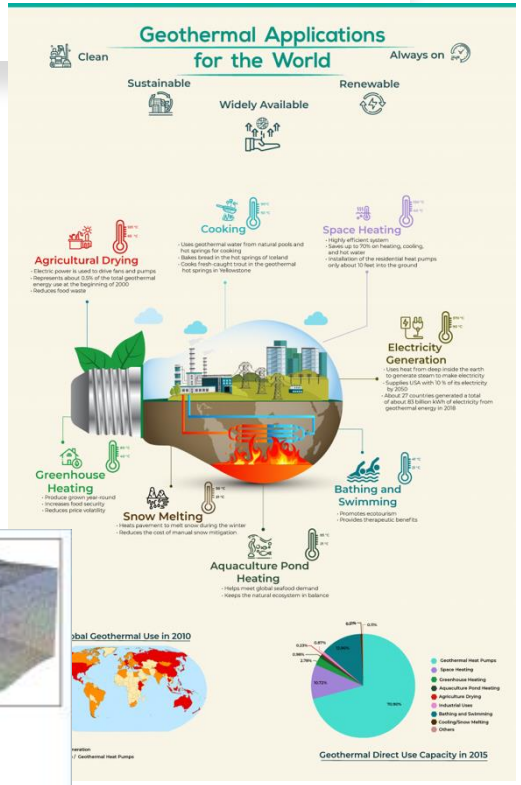
Jessica Eagle-Bluestone

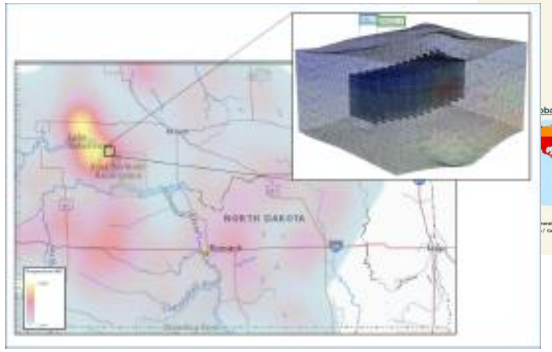
- Geothermal Rising-Tribal Community Engagement Manager
- MHA Nation- Energy Advisor
- Tribal Energy Consortium- Vice-President

Participated in GCC- Team Geothermal Vision

- Fall 2020- Infographics **1st Place**
- Spring 2021- Community Geothermal **1St Place**
- 2022 Collegiate Competition **2nd Place**







Fidelis Onwuagba

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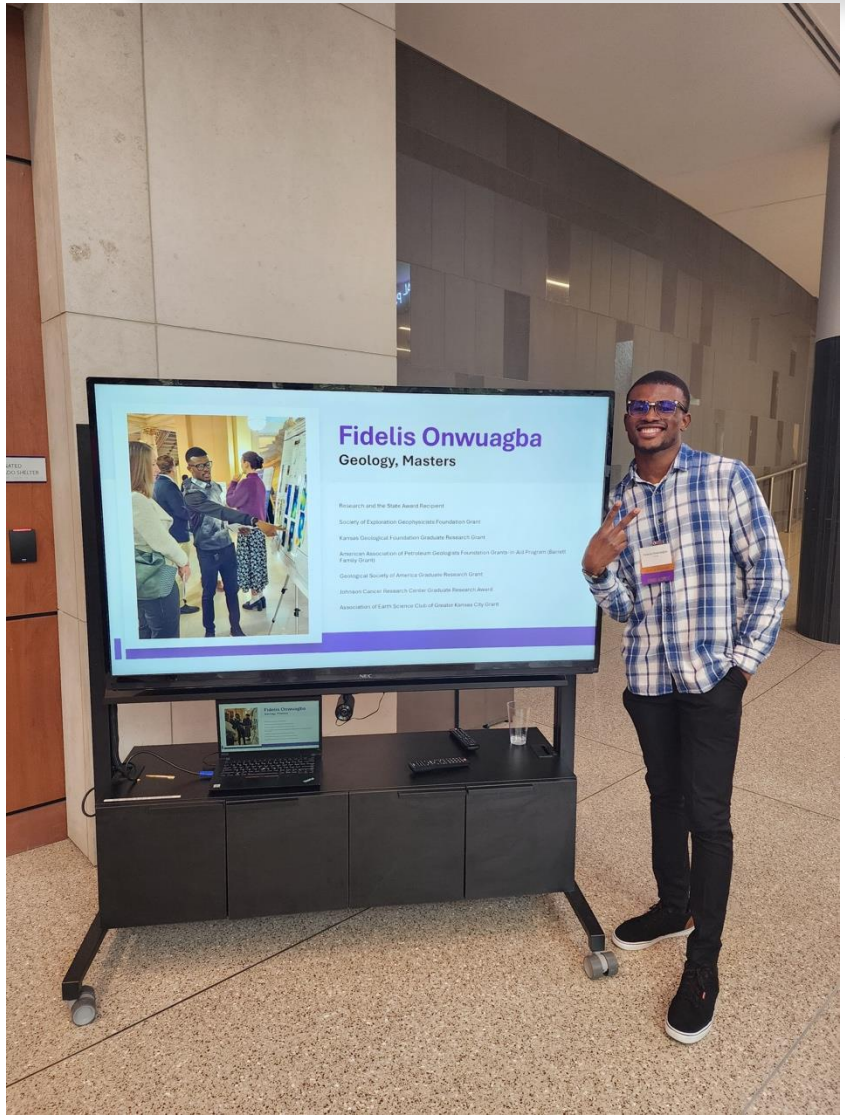
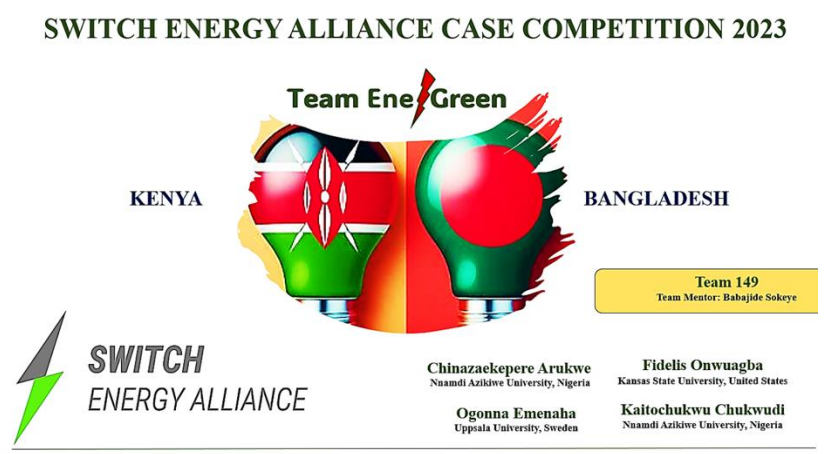


- Ph.D. Student (Geology) – University of Kansas
- MSc. (Geology) – Kansas State University
- BSc. (Geological Science) – Nnamdi Azikiwe University

- Competition Participated

Switch International Energy Case Competition (1st position) (November 2023)



➢ Project – Light Up Kenya!

✓ Scope Summary:

Develop Clean Energy Solutions for Kenya and evaluate their transferability to Bangladesh

Switch Competition

COLLABORATE. COMPETE. INSPIRE.

Full Steam Ahead Webinar: Geothermal Workforce and the role of collegiate competitions

September 17th, 2024

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Switch Competition Overview

- Annual competition for university students focused on solving global energy poverty
- Teams have 3 weeks to research the issue and create a presentation explaining their solution.
- Presentations are submitted and reviewed by judges in up to 2 rounds, that result in selection of the top 5 teams to compete in the Final Judging Round
- Winners share $25,000 prize package, apply for internships

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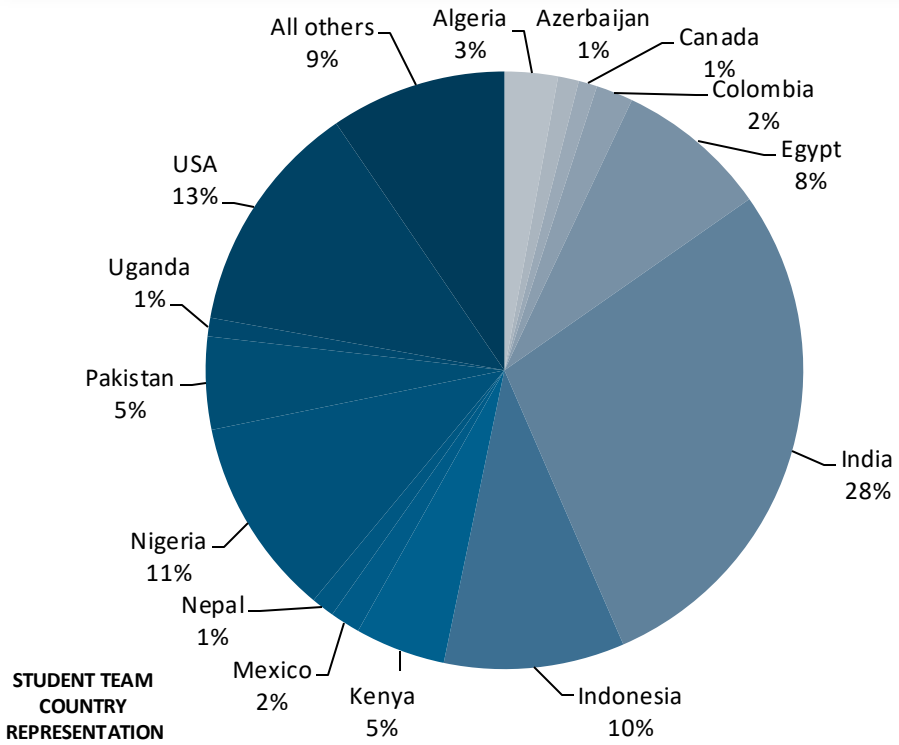
Global reach



Since 2020, 3,200 student participants, 800 teams from 55 countries, & 700+ professional volunteers

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Mark your calendar!

SEPT 01 2024 — Switch Competition registration opens

SEPT 27 2024 — Switch Competition registration ends

SEPT 30 2024 — Competition begins, teams receive case packets

OCT 06 2024 — Teams must submit scenario of choice

OCT 27 2024 — Preliminary Round submission deadline

NOV 01 2024 — Semifinalists announced

NOV 05 2024 — Finalists announced

NOV 09 2024 — Final Judging Round, live

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Switch Competition goals

- Understand the widespread nature of energy poverty, its impact on people's daily lives, and the broader energy justice issues brought on by energy poverty globally.
- Analyze and compare the factors contributing to energy poverty in different countries.
- Consider how best practices in one country might be implemented in an analogous country.
- Consider the impact of government energy policies on a country's economic development.
- Network with energy professionals

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2024 Prompt

1. Select a pair of countries
2. Conduct a thorough comparative energy analysis of the energy landscapes in both countries
3. Propose a 10-year plan for one of the two countries
    - Design (resource use, avoid imports, consider stakeholder engagement)
    - Implementation – 10-year timeline, within given budget
    - Impact (environmental, social, financial, political)
4. Evaluate the feasibility of transferring the 10-year plan to the second country
5. Record a concise and well-structured video presentation of no more than 15 minutes with a complementary PowerPoint presentation

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Mentoring & Judging

- Mentors
  - Guide & encourage 1 or more teams
  - Meet once weekly for 30 minutes, October 7th - October 27th
- Judges
  - Prelims – all submissions, review October 28-October 31
  - Semifinals – Top team in each Region + next highest-scoring 15 teams overall, review November 1-4
  - Finals – Top 5 teams, review November 5-8, live on November 9th
- Workshops to be offered for Mentors, Judges, & Team Leaders

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Social Media Contest

- An optional multi-stage engagement event designed to amplify the competition's social media presence, promote community among teams, and raise public awareness about energy poverty
- Variable scoring based on likes, comments, & shares
- One winner selected from each of five(5) regions, with highest-scoring teams sharing $1200 USD prize package
- Winning teams announced during the live Final Judging Round

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Switch Alumni Network

- Connect & engage with former competition participants
- Increase participation in the Switch Competition
- Engage professional organizations & past/current volunteers to support SEA's programs
- Create partnerships with global organizations conducting energy installations and other practical deployments related to energy poverty for SAN members to engage with for a hands-on global experience

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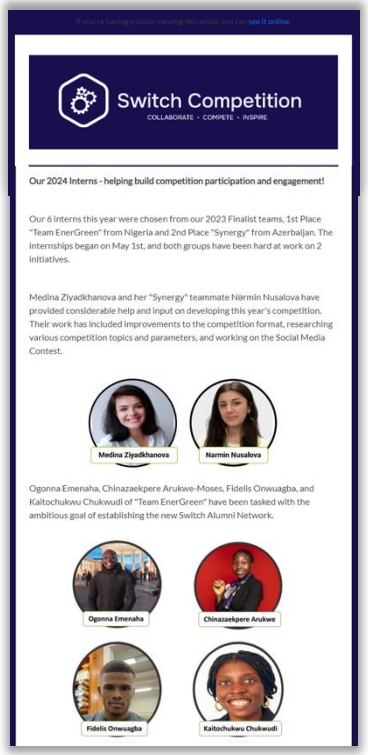
Sign up today!



Switch Competition
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Our 2024 Interns - helping build competition participation and engagement!

Our 6 interns this year were chosen from our 2023 Finalist teams, 1st Place "Team EnerGreen" from Nigeria and 2nd Place "Synergy" from Azerbaijan. The internships began on May 1st, and both groups have been hard at work on 2 initiatives.

Medina Ziyadkhanova and her "Synergy" teammate Nərmin Nusalova have provided considerable help and input on developing this year's competition. Their work has included improvements to the competition format, researching various competition topics and parameters, and working on the Social Media Contest.

Medina Ziyadkhanova
Nərmin Nusalova

Ogonna Emenaha, Chinazaekpere Arukwe-Moses, Fidelis Onwuagba, and Kaitochukwu Chukwudi of "Team EnerGreen" have been tasked with the ambitious goal of establishing the new Switch Alumni Network.

Ogonna Emenaha
Chinazaekpere Arukwe
Fidelis Onwuagba
Kaitochukwu Chukwudi

- Emails sent out to 1,215 Faculty, 1,309 Students, & 420 Volunteers
- Newsletter reaches an audience of 2,554
- Social Media posts on LinkedIn, Instagram, Facebook, & X

carl.steffensen@switchon.org

www.switchcompetition.org

Geothermal Collegiate Competition (GCC)

- What is the GCC?
- Why should students participate?
- Benefits for students
- Description of current competition

AMERICAN MADE
U.S. DEPARTMENT OF ENERGY

Geothermal
Collegiate Competition

Geothermal Collegiate Competition

Diana Acero-Allard
Geothermal Researcher
NREL

September 17, 2024

WHAT IS THE GEOTHERMAL COLLEGIATE COMPETITION?

Funded by the U.S. Department of Energy's (DOE) Geothermal Technologies Office (GTO) for more than 10 years, the GCC **supports workforce development** and gives students a chance to gain **resume experience** in the **geothermal industry** while still in school.

The competition invites teams from collegiate institutions to **develop real-world geothermal solutions** while competing for **cash prizes** and gaining **valuable experience** in the renewable energy industry.

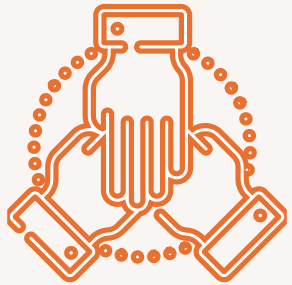
- Students of all majors, minors, and career paths are encouraged to participate.
- Teams can have students from multiple collegiate institutions.
- "Collegiate institution" = any post-secondary institution (tribal colleges, community colleges, 2-year colleges, 4-year colleges/universities, etc.)

Why should students participate in the GCC?

- **Gain hands-on experience in the renewable energy industry**—great resume item that includes the DOE
- Engage with industry mentors and community
- Collaborate with students from other disciplines—students of any major, minor, emphasis, undergraduate/graduate level, etc. can participate
- No previous geothermal experience needed
- **Total prize pot of $38,000!**

Photo courtesy of the University of Oklahoma

Geothermal Collegiate Competition By The Numbers



300+ Students

101 Teams

56 Colleges

30 States

126K Cash

Mentors and Faculty

Mentors
- Connect teams with resources
- Give feedback on deliverable drafts
- Share experience in the renewable energy industry.

Faculty
- Not required but recommended
- Incorporate the GCC as part of fall courses for a hands-on learning experience.

Geothermal Collegiate Competition 2024

Technical Track

Teams present a qualitative justification for deploying a **geothermal district heating and cooling (GDHC) system** in a district of their choice (community or campus), a conceptual design of a geothermal system based upon community needs, available resources, and prospective benefits to that community. Deliverables include:

- A geothermal resource assessment
- An engineering and system design assessment.

Policy Track

Teams present a qualitative justification for deploying a **GDHC system** in a district of their choice, an analysis of the regulatory environment, a workforce analysis, financial incentives, and an economic assessment. Deliverables include:

- A permitting assessment
- An economic and financial incentives assessment.

Photo by NREL

- **1st place** (for each track): **$10,000**
- **2nd place** (for each track): **$6,000**
- **3rd place** (for each track): **$2,000**
- **Bonus:** outstanding submission from a team of all Tribal and/or community college students: **$2,000**
- **Honorable mentions**

Stakeholder Engagement Event

- First-place teams will hold an in-person stakeholder engagement event.
- This event will take place prior to July 2025 and should be held at or near the selected site.
- Teams receive a $9,000 University Support Cash Prize to assist with planning and holding this event.

Follow the competition on HeroX for updates!
www.herox.com/geothermalcollegiatecompetition2024

Recruit

Team members/ faculty advisors

Read

The rules to plan your participation

Register

Your team on HeroX by Oct. 7

Learn

Using the resources provided in the rules

Design

Your solutions! First optional deadline is Oct. 28

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Collegiate Competition

Thank You

Questions

Geo.Competition@NREL.gov

Learn More

energy.gov/eere/geothermal/geothermal-collegiate-competition

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THANK YOU FOR ATTENDING

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Recording and resources will be sent out this week and posted on our website