

JUMP into STEM

How to Create a Successful Submission

Allison Georgeson, NREL
Dr. Kim Trenbath, NREL
Jason Schmidt, ORNL
Dr. Jennifer Mott Peuker, Cal Poly
Dr. Yeobeom Yoon, ORNL

August 2023

Agenda



- JUMP into STEM Overview
- Important Dates
- Challenge Topics
- Evaluation Criteria & Rules
- Submission Instructions
- Internship Requirements
- How to: Technology-to-Market Plan
- Website Overview
- Q&A

Management Team



U.S. Department of Energy (DOE)
Building Technologies Office (BTO)



Nicholas Ryan

Oak Ridge National Laboratory
Grid Interactive Controls, Integrated
Building Performance



Dr. Yeonjin Bae

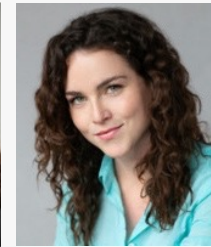


Bill Eckman

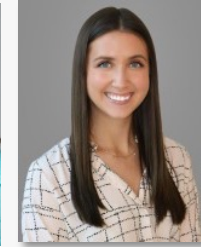
National Renewable Energy Laboratory
Building Technologies and Science
Center



Dr. Kim Trenbath



Dr. Kerry Rippy



Allison
Georgeson

Pacific Northwest National Laboratory
Building Simulation & Design, Building
Systems



Dr. Sarah Newman



Carmen Cejudo



Dr. Mini Malhotra



Dr. Yeobeom Yoon



Jason Schmidt



Alyssa Bersine



Lindsey McGuirk



Salem Haile

JUMP into STEM Vision



- Inspire the next generation of building scientists, focusing on creative ideation and diversity in the building science field
- Provide a gateway for undergraduate and graduate students to experience the research and career possibilities of studying building science
- Attract students from diverse majors and backgrounds



Challenge-level competition



- Challenges run August-November
- Each team chooses to participate in one of three Challenges
- Online resources help teams explore solutions and craft submissions
- Winning teams selected from each Challenge will be awarded a token of recognition and 1:1 mentorship with an industry expert



Challenge Winners



- Challenge winners, and additional eligible teams will be selected to compete at the Final Competition at ORNL
- Finalists will be notified in December
- To be eligible to participate in the Final Event, students must complete Zintellect internship applications



Final Competition



- The Final Competition will be held in person at ORNL (January 25-26, 2023)
- Finalists will present ideas to a panel of judges from industry, DOE, academia, and national labs
- Students from winning teams will earn paid 2024 summer internships at NREL, ORNL, or PNNL



2023-2024 Important Dates



August 1

Challenges open.

November 10

Challenges close. Internship Applications due.

November 17

Professor recommendations for intern applications due.

December 4

Challenge winners announced. Finalists invited to final competition.

December 8

Finalists accept or regret invitation.

January 25–26

Final Competition hosted by ORNL

2023-2024 Challenge Topics!



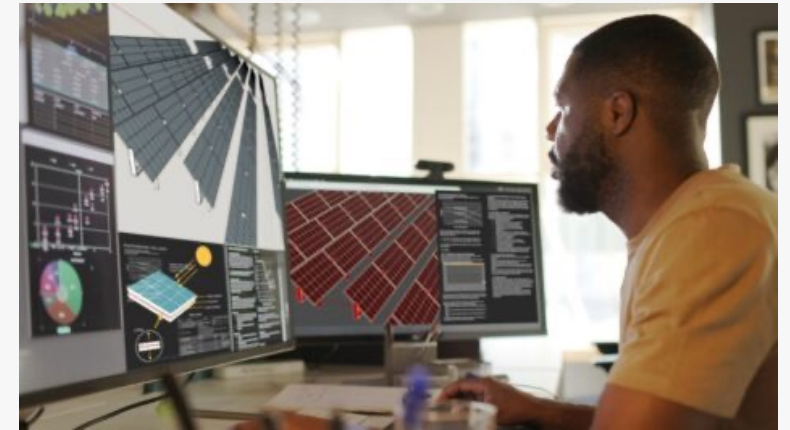
- 2023-2024 Challenge launched on August 1, 2023
- The three challenge topics are:



Keepin' it Cool (or Hot)



That's a Wrap!



You and Me, Carbon Free!

Keepin' it Cool (or Hot)



This challenge focuses on developing an innovative solution for **thermal energy storage** for buildings to optimize energy utilization, enhance sustainability, and increase resilience. The solutions could involve (but are not limited to) integration of materials, systems, and controls for the storage and release of energy.



That's a Wrap!



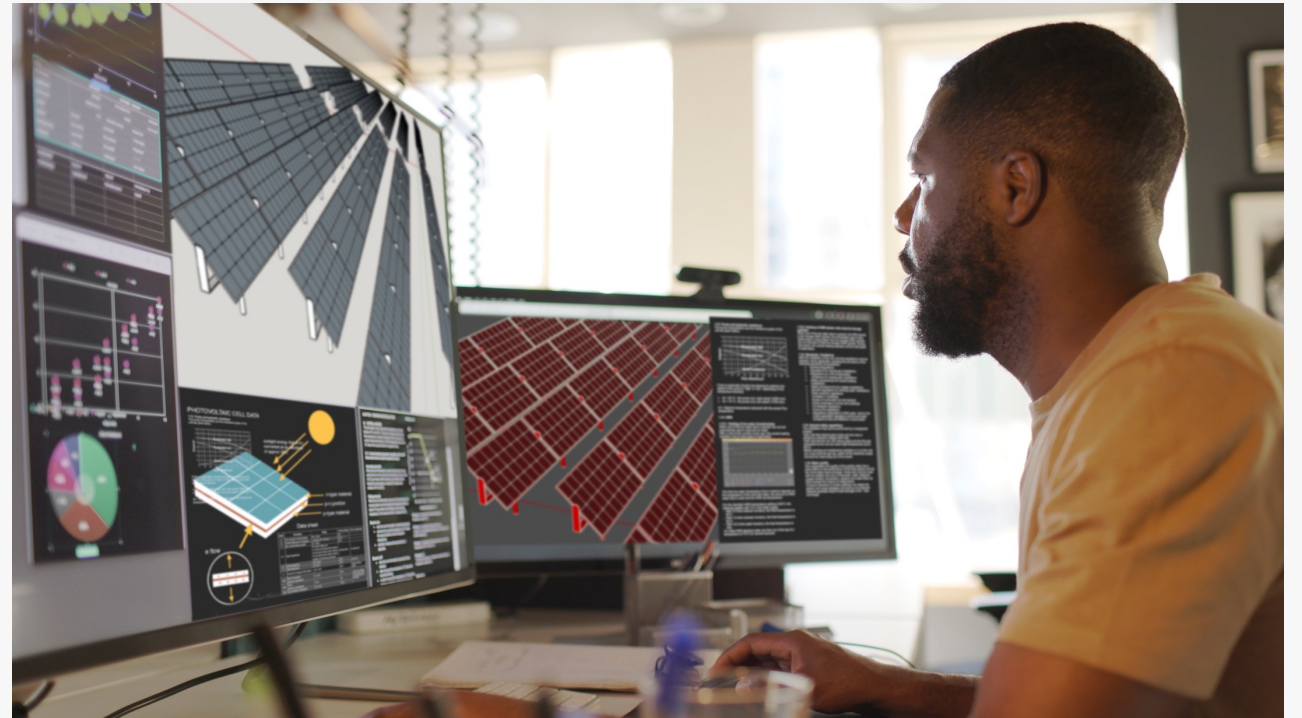
The objective of this challenge is to improve the **building envelope performance** of new or existing residential buildings by reducing energy consumption in a cost-effective and accessible way.



You and Me, Carbon Free!



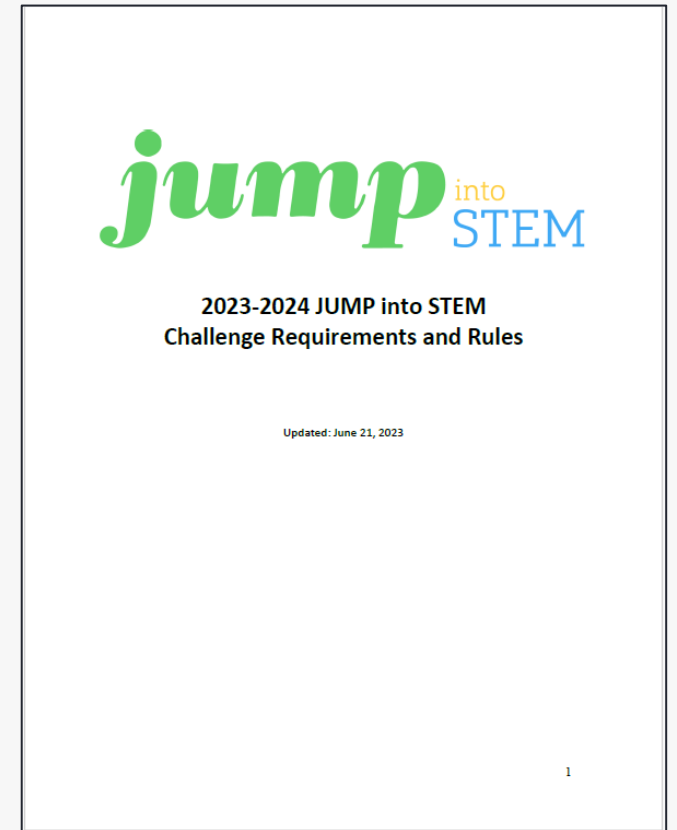
The objective of this challenge is to develop an innovative solution that will **reduce carbon emissions** from U.S. buildings (residential or commercial, new or existing). Problem statements can address embodied carbon emissions and/or operational carbon emissions. Innovative solutions should lead to significant reductions in carbon emissions and increased affordability for identified stakeholder groups to obtain new technologies.



Rules Document



- Summary of important dates
- Tasks overview
- Submission paper instructions
- Challenge evaluation criteria
- Final competition presentation instructions
- Final competition evaluation criteria
- Internship application instructions



Challenge Evaluation Criteria



Solution (40%)

- Solution
- Feasibility
- Novelty
- Impact

Market Readiness (30%)

- Market characterization
- Technology-to-market
- Overcoming adoption barriers

Team Diversity and Understanding Stakeholders (20%)

- Diversity statement and project team background
- Understanding stakeholders

Submission (10%)

- Submission requirements

Idea Submission



Project Team Background

- 2-page max (Single-spaced)
- Project name, team name, and collegiate institution(s)
- Team's mission statement
- Short bio for each team member
- Diversity statement
 - minimum 1 paragraph, 5–7 sentences

Plagiarism will not be tolerated. The quality of writing will be considered, so review by peers is strongly encouraged.

Project Challenge Submission

- 5-page max (Single-spaced)
- **Background**
 - Investigate the background of the Challenge and consider related stakeholders
- **Problem statement:**
 - Focus on a specific aspect of the problem
 - Identify stakeholder(s)
- **Solution**
 - Technical solution + one or more of the following components
 - Economic, policy, commercialization, codes and standards, and/or other
- **Technology-to-market plan**
 - Cost/benefit analysis
- **Market adoption barrier analysis**
 - Identify at least one key market adoption barrier for implementation

Submission Template



ABOUT + GUIDANCE - SCHEDULE AWARDS + NEWS CHALLENGE TOPICS + FINAL COMPETITION

PROFESSORS
STUDENTS

announces the release of the JUMP into STEM 2023-2024 challenges!

What's included in a submission?

- All teams competing will be required to submit the following Project Team Background
- Abstract
- Project Challenge Submission (Background, Problem Statement, and Solution)
- Technology-to-Market Plan
- Image
- References
- Appendix (optional).

Detailed guidance, including page limits, can be in the requirement section of each challenge and in the [Rules](#).

Submission Template

JUMP Into STEM Submission Template

Template Instructions:

- Fill in all sections unless marked as optional.
- Replace italic text with your own content.
- Read through the Student Team Submission Requirements document to make sure you are meeting all submission requirements.
- Check that your submission conforms to the page limits.
- Remove this page from the document and save your submission as a PDF with the file name JUMP_[SHORT COLLEGIATE INSTITUTION NAME]_SUBMISSION_[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION] (e.g., JUMP_ORNL_SUBMISSION_2023-06-25.pdf)

Avoid Plagiarism. If a team includes the work of others without citation, the submission will be disqualified. Plagiarism includes but is not limited to copying and pasting the work of others and paraphrasing published works without citation. Photos and images also require citation. Please consider appropriate style guidelines to avoid plagiarism such as APA, Chicago, MLA, and others.

Forming Teams

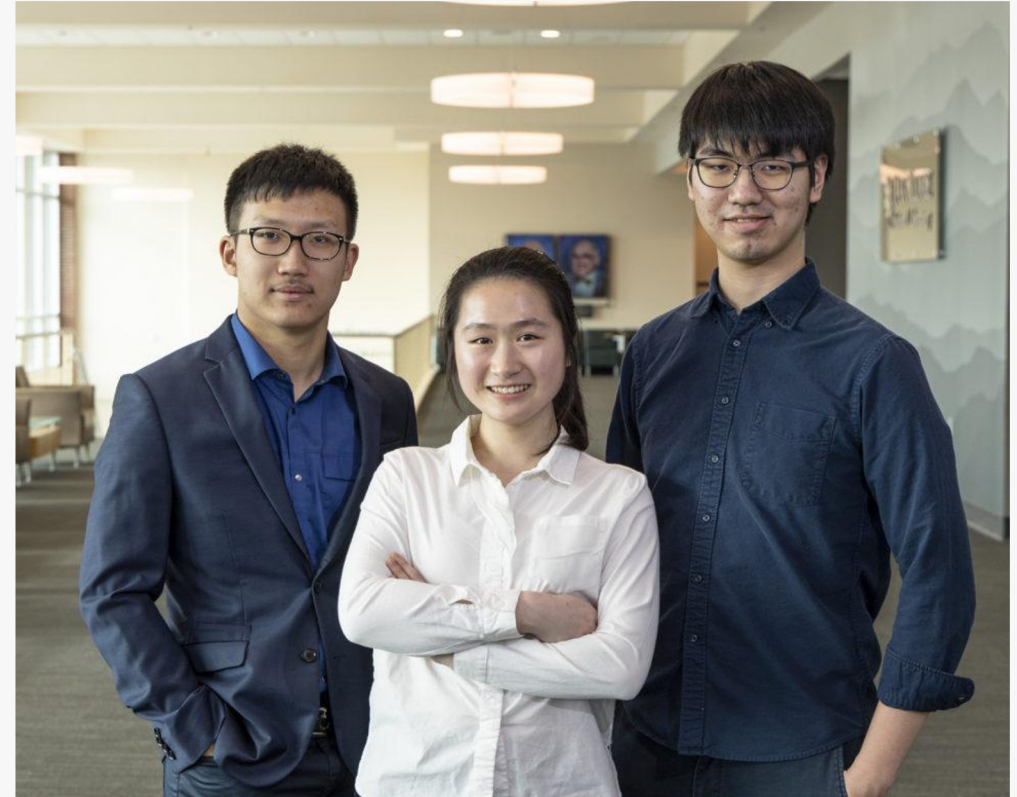
- Teams of 2-4 students:
 - Undergraduate or graduate
 - Same or different schools
- Diversity of Thought and Background
 - Multiple majors and/or minors
 - Underrepresented groups in STEM (including, but not limited to race, ethnicity, gender)
 - Evaluation will be based on the diversity statement that is required as part of the submission



Diversity Statement



- A key objective is to encourage diversity of thought and background in students entering the building science industry
- You must describe how your team is contributing to diversity in building science



Submission Tips

- Read all requirements
- Review evaluation criteria carefully
- Include all required sections in submission
- Use the supplied template
- Research the challenge and potential stakeholders
- Develop a problem statement and identify the stakeholder groups involved



Internship application



- Of the challenge-level winners and eligible teams, only the students who are **eligible** for the internship and **submit internship applications** will be invited to the final competition.
- Internship application is due on Nov. 10.
- Requirements:
 - Completed through Zintellect
 - Include reference name and contact info
 - Submit all required essays, academic transcripts, and resume
 - One academic or professional recommendation due November 17, 2023

A screenshot of the Zintellect website. The top navigation bar includes 'zintellect climb higher' on the left, 'powered by ORAU' on the right, and links for 'Opportunity Catalog', 'About', 'Help', 'Login', and 'Register'. The main content area is titled '2024 JUMP into STEM Building Technologies Internship Program'. It lists the organization as 'U.S. Department of Energy (DOE)', the reference code as 'DOE-JUMPintoSTEM-BTIP-2024', and the ORISE logo. Under 'How to Apply', it includes a note about eligibility and a list of requirements: Profile Information, Educational details, Awards and honors, Internships or related experience, Short answer questions, An updated resume (pdf), Contact information for one academic or professional recommender, and Academic records. A footer note provides contact information for Chris Nelson at JUMP-BTIP@orise.orau.gov.

Internship Requirements



- Eligibility Requirements:
 - Enrolled in an undergraduate or graduate degree-seeking program at an accredited U.S. college or university at time of application. **Location must be within the U.S.**
 - Have a cumulative minimum GPA of 3.0 on a 4.0 scale as of November 10, 2023
 - Be at least 18 years old
 - Have medical insurance effective for entire term of appointment
 - Have one academic or professional recommendation
 - Provide proof of relevant citizenship/immigration status
 - Internship will be for the summer of 2024 only. Once awarded, students are responsible for securing their approval to work summer of 2024.



Tech-to-Market Plan



- Steps to go from concept to market?
 - Who needs to be involved?
 - Development, production, commercialize, sell, install,
- Key Stakeholders?
 - Who to commercialize?
 - Sell?
 - Need to subsidize? Where will funds come from?
- Market Adoption Barrier

Cost/Benefit Analysis



- Basic costs for materials, construction, installation – use best estimates
- Compare to current solutions – why is yours better?
- Benefits – why should we do it?
 - Save \$?
 - Reduce energy usage?
 - Occupant health/productivity?
 - Relate back to key stakeholders

Website Overview



- Learn more about the competition
- Find specific rules and requirements
- Read through the three Challenges
- Check the competition schedule
- Get the latest news
- Apply!

www.JUMPintoSTEM.org

Challenge Topics

Keepin' it Cool (or Hot)



This challenge focuses on developing an innovative solution for thermal energy storage for buildings to optimize energy utilization, enhance sustainability, and increase resilience.

[READ MORE](#)

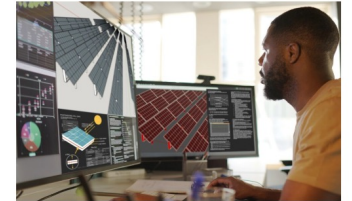
That's a Wrap!



The objective of this challenge is to improve the building envelope performance of new or existing residential buildings by reducing energy consumption in a cost-effective and accessible way.

[READ MORE](#)

You and Me, Carbon Free!



The objective of this challenge is to develop an innovative solution that will reduce carbon emissions from U.S. buildings (residential or commercial, new or existing).

[READ MORE](#)

Website Resources



- Submission template
- Rules document
- Challenge details
- Challenge videos
- Challenge references
- Schedule/Important dates

The collage displays several key website resources:

- Submission Template**: A blue button for accessing the submission template.
- Additional Challenge Resources**: A blue button for finding more resources.
- Downloadable Challenge Description**: A blue button for downloading the challenge description.
- Schedule**: A section with a search bar and a "Find Events" button. It lists events for August 2022 and November 2022. The August event is "How to Create a Good Submission" on August 30 at 4:00 pm - 5:00 pm. The November event is "Challenges and Internship Applications" on November 11 at 5:00 pm.
- Citations**: A list of four references: 1. World Green Building Council (2022), 2. United States Environmental Protection Agency (2022), 3. Leung, Jessica (2018), and 4. The White House (2021).
- Video Player**: A video titled "JumpintoSTEM Sustainable Resilience Presentation" by Mini Malhotra, Ph.D. from Oak Ridge National Laboratory. The video features the "jump into STEM" logo and the text "Sustainable and Resilient".

How to Submit Online

- Each Challenge will have its own page
- Submit at the bottom of the relevant Challenge page
- Be sure to coordinate either in person or virtually as a team when performing this step

Submit an idea

[SHOW THE SUBMISSION FORM](#)

Ready to submit an idea? Note that we require information from each team member.

Team Member 1

Idea Name *

Name *

First Last

Email *

Phone *

Are you 18 years of age or older (or the age of majority in your state if it is over 18 years)? *

Yes
 No

What is the name of the U.S. college or university where you are currently enrolled? *

In which state is your college or university located? *

Alabama

What is your major/discipline of study? *

What is your minor? Please state "none" if you do not have one. *

Internship consideration *

If you would like to be considered for an internship at either Oak Ridge National Laboratory or the National Renewable Energy Laboratory in Summer 2021, please review the eligibility requirements and select "yes" to acknowledge that you have begun your Zintellect application. If you decline to be considered for an internship at either Oak Ridge National Laboratory or the National Renewable Energy Laboratory in Summer 2021, please select "no"

Yes
 No

Zintellect

Please check this box to acknowledge you understand & agree to the following statement: "I have read & understand the Terms & Conditions of the challenge." *

[Terms & Conditions](#)

Agree

How many team members are in your team?

Two
 Three
 Four

How did you hear about JUMP? *

Abstract *

Optional Image Upload

[Choose File](#) No file chosen

Upload a relevant image to be displayed with your abstract.

Challenge Submission *

[Choose File](#) No file chosen

Allowed file type: pdf

Diversity Statement *

[Choose File](#) No file chosen

Allowed file type: pdf

Hide my identity (Display anonymously)

Yes

Consent *

Please check this box to acknowledge you understand & agree to the following statement:

All team members have read & understand the Terms & Conditions of the challenge. We understand that all team members must begin their internship application OR decline to be considered for an internship BEFORE we submit our challenge solution idea in order to be eligible to compete in the JUMP into STEM competition.

Submit

Questions?

jump into
STEM

Q&A

THANK YOU!



Additional questions:
JUMP@ORNL.gov