2021–2022 JUMP into STEM
Challenge Requirements and Rules

Updated: August 16, 2021

Summary of Important Dates

Please note the following key milestones for the 2021–2022 JUMP into STEM Competition:

- **August 16, 2021:** The three 2021–2022 JUMP into STEM Challenges are released and posted to the JUMP into STEM website. The Challenge Requirements and Rules document will also be posted to the website, and students can begin posting their submissions.
- **November 12, 2021 at 11:59 p.m. ET:** Challenges close and judging begins. No new submissions will be accepted after 11:59 p.m. ET. Internship applications must be finished and submitted through Zintellect. Please note that professor recommendations will be due one week after this deadline.
- **December 6, 2021:** Finalists will be notified and invited to attend the Final Event at Oak Ridge National Laboratory (ORNL) in January for one last round of competition.
- **December 10, 2021, 11:59 p.m. ET:** Finalists must reply to event organizers to confirm whether they will be attending the Final Event at ORNL in January.
- **January 27–28, 2022:** The Final Event will be held in person at ORNL, and finalist teams will have the opportunity to present their submissions. Due to the evolving nature of the COVID-19 pandemic, alternate arrangements may be made for participants unable to travel to the in-person event. Winners will be awarded with 2022 summer internships at the National Renewable Energy Laboratory (NREL), ORNL, and the Pacific Northwest National Laboratory (PNNL). Internships are subject to site access requirements and availability of funding. For more information, see the JUMP into STEM Building Technologies Internship Program (DOE-JUMPintoSTEM-BTIP-2022) eligibility requirements and procedures.

Tasks Overview

- ☐ Read through the Challenges as well as the Challenge Requirements and Rules document, and then form a multidisciplinary team of 2–4 students.
- ☐ Review past winning ideas, student resources, and the JUMP into STEM website.
- ☐ Select one Challenge for your submission.
- ☐ Develop a team name and mission statement.
- ☐ Watch the recorded webinar on jumpintostem.org/students/ to learn how to post a good submission.
- ☐ Engage with professors and industry mentors to gather information and valuable feedback.
- ☐ Study the resources provided for your selected Challenge.
- ☐ Create and detail an idea compliant with the requirements provided.
- ☐ Complete and post your team's submission on the JUMP into STEM website.
- ☐ Along with your submission, complete the internship application through Zintellect.
- ☐ Consult the JUMP into STEM website and check your personal email for updates and announcements.
- ☐ Submit all materials prior to the deadlines.

For communications and questions, email the organizers at jump@ornl.gov.

Challenge Submission

The required file naming conventions and due dates are listed below.

Deliverable	File Format	File Name	Due Date
Idea Submission	PDF	JUMP_[SHORT COLLEGIATE INSTITUTION NAME]_SUBMISSION_[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION]	Nov. 12, 2021, 11:59 p.m. ET
Final Event Presentation	PowerPoint or PDF	JUMP_[SHORT COLLEGIATE INSTITUTION NAME]_FINAL _[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION]	Jan. 20, 2022, 5 p.m. ET

Instructions for Adding Team Submissions to the JUMP into STEM Website

Winning teams will be recognized on the JUMP into STEM website. In order for your team to be showcased, you must submit an abstract and image using the relevant submission prompts on jumpintostem.org.

☐	**Abstract:** Please include an abstract of your project. The abstract may be displayed on the JUMP into STEM website. Your abstract can be up to 250 words.
☐	**Image:** Please submit an image (file type: .jpg, up to 5 MB) that represents your project. This can be a photo or a figure from your paper. The image may be displayed on the JUMP into STEM website.

Submission Paper Instructions

Your submission paper communicates the salient points of the project to all competition participants. A successful submission should meet the following requirements.

Submission Paper Format Requirements

☐	Paper size: 8.5 inches × 11 inches
☐	Font: Single-spaced, 11-point font for body text (diagrams may have smaller fonts)
☐	Borders: 0.5-inch minimum, except for tables, figures, and images
☐	Maximum page length: 7 pages for main content (unlimited appendix content)
☐	File format: Single PDF
☐	File size: Less than 300 MB
☐	File name: JUMP_[SHORT COLLEGIATE INSTITUTION NAME]_SUBMISSION_[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION]

Submission Paper Content Requirements

Project Team Background (up to 2 pages, single-spaced)
☐   List the project name, team name, and collegiate institution(s) in the header.
☐   Include the team's mission statement.
☐   Include a short biography for each team member (teams must be 2–4 students). This should include information such as major, level (freshman, sophomore, junior, senior, graduate), and other relevant background information such as experience with building science, future career goals, and formative experiences that shaped each individual's contribution to the Challenge.
☐   Include your team's diversity statement (minimum one paragraph, 5–7 sentences). One of JUMP into STEM's key objectives is to encourage diversity of thought and background in students entering the building science industry. There is a diversity gap in STEM, meaning that certain groups are underrepresented or have been historically excluded from STEM fields. These groups include, but are not limited to, those based on race, ethnicity, and gender—and this gap needs to be addressed. Diversity of thought can be achieved through teams consisting of students from different majors and minors. If there are barriers to entry present, that affect the racial, ethnic and/or gender breakdown of your team, please elaborate. As part of the next generation of building science thought leaders and researchers, you have a unique opportunity to influence this industry. The diversity statement is your opportunity to describe your team's diversity of background and thought, both generally and as applicable to your chosen Challenge.
Project Challenge Submission (up to 5 pages, single-spaced)
☐   Select 1 of the 3 Challenges to address.
☐   Investigate the **background** of the Challenge and consider related stakeholders. Stakeholders are those who are affected by the problem, those who are a part of the supply chain or manufacturing of the technology product(s), and those who may have decision-making power and are able to provide solutions (technical or nontechnical solutions, such as policies). For example, you could include stakeholders who have previously experienced environmental pollution or a high energy burden. Refer to the U.S. Department of Energy's (DOE's) Energy Justice and Environmental Justice initiatives, as DOE plans to deliver 40% of the overall benefits of climate investment to disadvantaged communities.
☐   Write a 1–2-paragraph **problem statement,** focusing on a specific aspect of the problem and the stakeholder groups affected by or involved in the problem. The stakeholder groups can be from a specific location, socioeconomic status, age, or demographic (e.g., people living in subsidized housing). The problem statement should clearly identify the injustices (energy or environmental) that the stakeholder group experiences. Students should consider social implications related to the identified injustices.

☐ Write a **holistic solution** that addresses or solves the specific problem from your problem statement. A holistic solution is one that includes a technical component as well as one or more of the following components, as appropriate: economic, policy, commercialization, codes and standards, and/or other. Address the requirements for your selected Challenge. Include graphs, figures, and photos. Discuss how your solution will impact your stakeholders, especially those who have experienced the injustices that you described in your problem statement.
☐ Develop a **technology-to-market plan** or a **market transformation plan**, depending on your selected Challenge. • A technology-to-market plan describes how the team envisions bringing its idea from concept to installation on real buildings, or integrated into the design of real buildings, and includes a cost/benefit analysis. This does not need to be exhaustive and should include comparing the solution to current or existing technologies or practices. Benefits, such as building energy reductions and improved occupant health or productivity, should be evaluated. The plan should also identify at least one key stakeholder barrier for implementation (in addition to cost) and address how the proposed solution will overcome that barrier. The plan should also discuss what key stakeholder(s) should be involved to commercialize the technology and then sell and install the technologies with your target market(s). • A market transformation plan describes how the team envisions increasing the adoption and use of the already commercialized idea in the market, including sales or distribution channels, outreach mechanisms, and other relevant details. The plan should also describe who the team would partner with to implement the idea (e.g., utilities) and how the collective team would increase market adoption.
☐ Include **references**. References will not count toward the 5-page maximum.
Appendix (optional, no page limit)
☐ Teams may wish to add an appendix. This is optional and might not be reviewed by the judges.

Challenge Evaluation Criteria

Ideas should represent advanced critical thinking toward a technical, innovative, diverse, and applicable solution with demonstrated presentation expertise and knowledge. Judges will complete one form below for each idea submitted:

Solution (weight: 40%)	Possible Score
Holistic Solution How well the proposed solution addresses the problem. The solution needs to include a technical solution, as well as one or more of the following components, as appropriate: economic, policy, commercialization, codes and standards, or other.	1–10
Feasibility The solution's overall feasibility and potential, including its viability. For example, solutions that are not technically possible or that lack a technical feasibility discussion will receive lower scores.	1–10
Novelty The originality and creativity of the solution and how significant the contribution will be to the building industry.	1–10
Applicability to Stakeholders How well the solution addresses the problem statement and associated stakeholder community.	1–10
Subtotal	**Up to 40**
Market Readiness and Impact (weight: 30%)	Possible Score
Technology-to-Market Plan or Market Transformation Plan The team's cost/benefit analysis and identified key barrier(s) for stakeholder implementation, along with how the proposed solution will overcome the barriers. In addition: For technology-to-market plans: How feasible is the proposed plan for bringing the solution from a paper concept to installation or integration with real buildings or building designs? For market transformation plans: How feasible is the proposed solution for providing market intervention and increasing market adoption?	1–10
Market Characterization and Readiness for Proposed Idea The team's description and understanding of the market and stakeholder group, and how the solution will create value, both economic and other, to drive industry adoption.	1–10
Impact The overall potential impact of the team's solution. For example, can the solution be extended to communities, similar stakeholder groups, or a nationwide solution?	1–10
Subtotal	**Up to 30**

Diversity and Justice (weight: 20%)	Possible Score
Diversity Statement and Project Team Background How well the team addresses the diversity gap in the building science industry in their diversity statement. This includes how the team brings together perspectives from a variety of backgrounds, including students from groups that are underrepresented in STEM. This also includes bringing together students from many different disciplines—ensuring diversity of thought. Finally, this includes how well the teams connect their mission statement and biographies to their problem statement.	1–10
Environmental and Energy Justice How well the proposed solution addresses environmental and energy justice.	1–10
Subtotal	**Up to 20**
Submission (weight: 10%)	**Possible Score**
Submission Requirements How well the student team followed all submission requirements. See the submission requirements at the bottom of each Challenge description.)	1–10
Subtotal	**Up to 10**
Total	**Up to 100**

Final Event Presentation Instructions

Judges will review team submissions and select finalists, who will be notified of their advancement in the competition by December 6, 2021. Finalist teams will then have until December 10, 2021 to notify JUMP into STEM organizers whether they will be attending the last stage of the competition on January 27–28, 2022 at ORNL. Due to the evolving nature of the COVID-19 pandemic, alternate arrangements may be made for participants unable to travel to the in-person event. The Final Event will include a round of presentations from each finalist team to a panel of three judges. At the conclusion of the event, winners of the summer 2022 10-week paid internships at NREL, ORNL, or PNNL will be announced. (Internships are subject to site access requirements and availability of funding. For more information, see the JUMP into STEM Building Technologies Internship Program (DOE-JUMPintoSTEM-BTIP-2022) eligibility requirements and procedures.)

Each team will have 15 minutes for their team presentation. After team presentations, there will be a 5-minute Q&A session with the panel of judges. Team concepts and presentations will be evaluated using slightly different criteria than the Challenge evaluation criteria. The criteria for the Final Event can be found on page 8–9 of this document.

Finalists must send their Final Event presentations to jump@ornl.gov by Wednesday, January 20, 2022 at 5 p.m. ET. JUMP into STEM organizers will confirm receipt of presentations.

Final Event Presentation Requirements

☐	File format: PowerPoint or PDF
☐	File size: Less than 100 MB
☐	File name: JUMP_[SHORT COLLEGIATE INSTITUTION NAME]_FINAL_[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION]
☐	Maximum presentation length: 15 minutes
☐	Must be prepared to answer detailed questions about team's idea/solution
☐	Must cover all technical requirements for selected Challenge in presentation
☐	Submit presentation file to organizers no later than 5 p.m. ET on January 20, 2022

Final Event Evaluation Criteria

The Final Event evaluation criteria are slightly different than the Challenge evaluation criteria. Please review the criteria detailed below.

Solution (weight: 30%)	Possible Score
Holistic Solution How well the proposed solution addresses the problem. The solution needs to include a technical solution, as well as one or more of the following components, as appropriate: economic, policy, commercialization, codes and standards, or other.	**1–10**
Feasibility The solution's overall feasibility and potential, including its viability. For example, solutions that are not technically possible or that lack a technical feasibility discussion will receive lower scores.	**1–10**
Novelty The originality and creativity of the solution and how significant the contribution will be to the building industry.	**1–10**
Applicability to stakeholders How well the solution addresses the problem statement and associated stakeholder community.	**1–10**
Weighted Subtotal	**Up to 30**

Market Readiness and Impact (weight: 25%)	Possible Score
Technology-to-Market Plan or Market Transformation Plan The team's cost/benefit analysis and identified key barrier(s) for stakeholder implementation, along with how the proposed solution will overcome the barriers. In addition: For technology-to-market plans: How feasible is the proposed plan to bring the solution from a paper concept to installation or integration with real buildings or building designs? For market transformation plans: How feasible is the proposed solution at providing market intervention and increasing market adoption?	**1–10**
Market characterization and readiness for proposed idea The team's description and understanding of the market and stakeholder group, and how the solution will create value, both economic and other, to drive industry adoption.	**1–10**
Impact The overall potential impact of the team's solution. For example, can the solution be extended to communities, similar stakeholder groups, or a nationwide solution?	**1–10**
Weighted Subtotal	**Up to 25**
Diversity and Justice (weight: 20%)	Possible Score
Multidisciplinary team approach How the team utilized information from many different disciplines to come up with a viable solution. This includes the team's diversity of thought.	**1–10**
Environmental and Energy Justice How well the proposed solution addresses environmental and energy justice.	**1–10**
Weighted Subtotal	**Up to 20**
Presentation (weight: 25%)	Possible Score
Effective delivery of ideas How well the team conveyed their ideas during their presentation, including how well the team engaged with and persuaded the audience.	**1–10**
Presentation preparation How prepared the team was for their presentation, including presentation materials and professionalism.	**1–10**
Question & Answers How well the team responded to questions from the judges.	**1–10**
Weighted Subtotal	**Up to 25**
Weighted Total	**Up to 100**

Internship Application Instructions for Finalists

Selected finalists will give presentations at the JUMP into STEM Final Event. A panel of judges at the event will select winners, who will be awarded with summer 2022 internships at either NREL, ORNL, or PNNL. Prior to the Final Event weekend, all participating teams must submit an internship application at the same time as their paper submission in order to be considered.

Internship Application Requirements

☐	Create a profile on Zintellect.com. Use an email that you will check often.
☐	Applicants must have a cumulative minimum grade point average of 3.0 on a 4.0 scale as of November 12, 2021.
☐	Applicants must be currently enrolled as an undergraduate or graduate student at a U.S. accredited institution. Graduating seniors and graduate students with an expected graduation date in Fall 2021, Winter 2021, or Spring 2022 are also eligible. Verification is required upon acceptance into the program.
☐	Applicants must have medical insurance during the internship appointment. Verification is required upon acceptance into the program.
☐	Applicants must be at least 18 years of age.
☐	Submit all required application essays and answer all required questions.
☐	Submit academic transcripts.
☐	Submit resume.
☐	Submit the name and contact information of one reference—academic or professional—into the Zintellect system. The letters of recommendation are due at the time of submission.
☐	Reference must submit their evaluation and/or letter through Zintellect.
☐	All documents must be submitted via Zintellect by November 19, 2021.