Energizing STEM

NOVEMBER 30, 2021

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- Grants
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U.S. Climate Goals

1

Reducing greenhouse gas pollution from 2005 levels by 50-52% in 2030

2

Creating a carbon pollution-free power sector by 2035

3

Reaching net-zero emissions economy-wide by no later than 2050

Climate Science Series

Nov. 30 - Energizing STEM: U.S. Department of Energy (DOE)

Dec. 9 - Environmental Literacy: National Oceanic & Atmospheric Administration (NOAA)

Jan. 19 - Environmental Protection Agency (EPA)

Dr. Arthur McMahan

Senior Associate Director

White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity through Historically Black Colleges and Universities (HBCUs)

Secretary Jennifer M. Granholm

U.S. DEPARTMENT OF ENERGY

Kerene N. Tayloe, Esq

Consultant

Office of Economic Impact and Diversity

U.S. Department of Energy

CHALLENGES

U.S. DEPARTMENT OF ENERGY

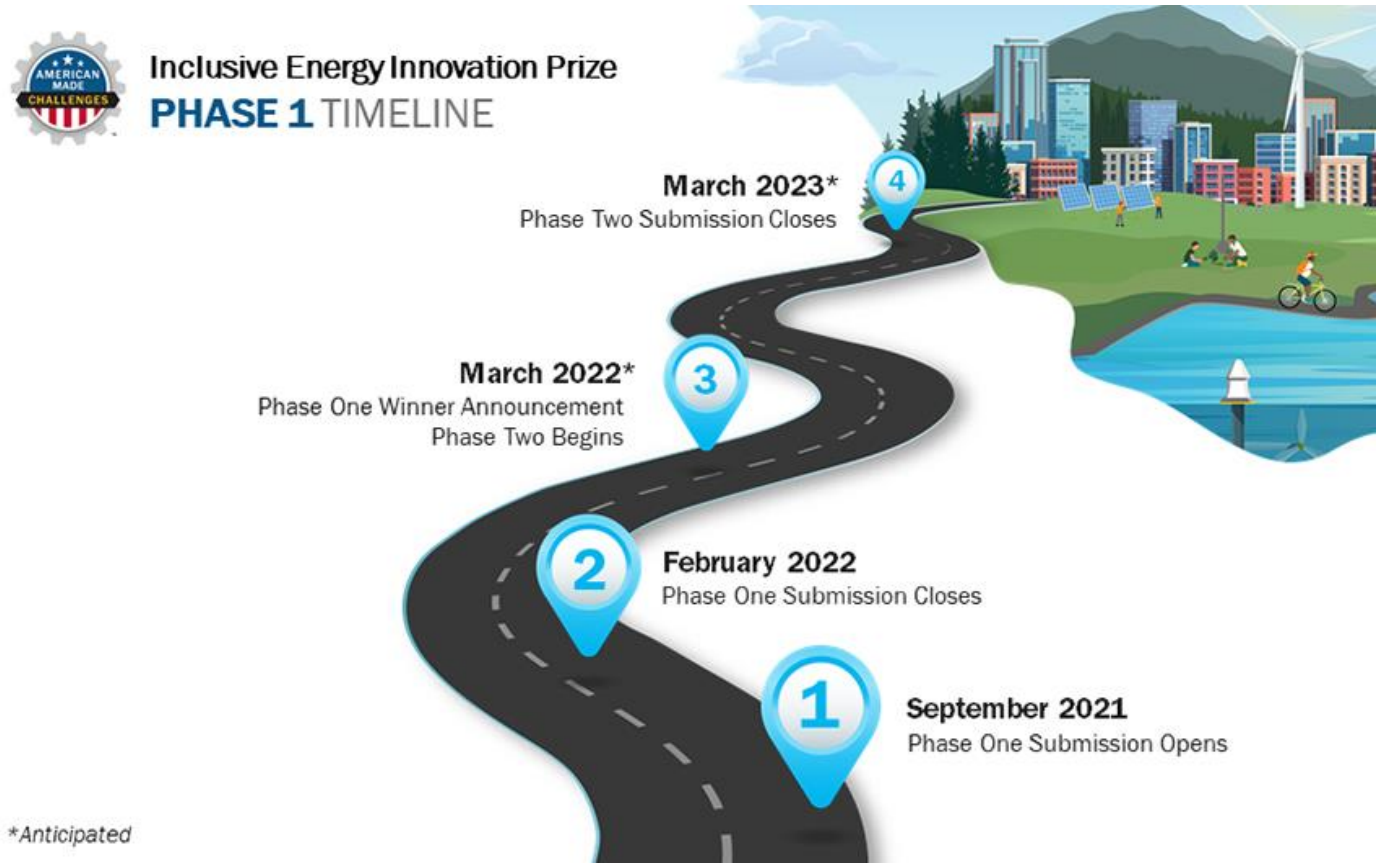
Inclusive Energy Innovation Prize

https://www.herox.com/InclusiveEnergyInnovationPrize

https://americanmadechallenges.org/inclusiveenergyinnovation/

Inclusive Energy Innovation Prize Summary

- Enable an inclusive and just entrepreneurial innovation ecosystem in climate and energy technologies.
- **Phase One:** Ten awards of $200,000 each to organizations for activities related to climate and clean energy that support, build trust, and strengthen relationships and partnerships with disadvantaged communities**. Submissions close February 25, 2022**
- **Phase Two**: Combined pool of $500,000 awarded to 2-3 Phase One winners based on performance during Phase One.



Prize Goals

Enable clean energy and climate innovation, and entrepreneurship programming and capabilities at colleges and universities that serve large populations of students underrepresented in STEM, Minority Serving Institutions (MSIs), community colleges, and undergraduate institutions.

Create or increase participation in clean energy and climate-smart job training and job placement/hiring, including programs that target participation from disadvantaged communities, including formerly incarcerated individuals and youth transitioning out of foster care. Workforce training could cover identifying energy efficiencies and greenhouse gas inventories, renewable energy manufacturing, and deployment.

Prize Goals Continued …

Foster grassroots innovation related to just and equitable clean energy deployment through activities focusing on community-centric networks and bottom-up solutions for sustainable development, based on the needs of the communities involved.

Identify and fund **activities that will help disadvantaged communities become aware of, apply into, or otherwise secure DOE funding** or other federal, state, local government or private (for-profit or nonprofit) funding, in support of the government's Justice40 goals.

Enable the development of replicable clean energy transitions that deliver just and equitable benefits to disadvantaged communities in support of the government's **Justice40 goals**.

How to Enter

- Prize will be scored based on:
  - 3-minute Video Pitch
  - 5000-word Impact Plan
- There are four criteria that need to be addressed in the three-minute video pitch and the impact plan:
  - **Criterion 1:** Experience in Engaging and Supporting Disadvantaged Communities
  - **Criterion 2:** Proposed Activities During Phase One of the Prize
  - **Criterion 3:** Resources and Capabilities to Execute Prize Goals
  - **Criterion 4:** Vision and Anticipated Long-Term Impacts
- Details in the rules document: https://americanmadechallenges.org/inclusiveenergyinnovation/docs/rules/Inclusive_Energy_Innovation_Prize_Official_Rules.pdf

David Canty

Program Manager

Minority Serving Institutions Partnership Program

National Nuclear Security Administration

U.S. Department of Energy

Alexander Godinez-Robinson

Program Manager

Minority Serving Institutions Internship Program

National Nuclear Security Administration

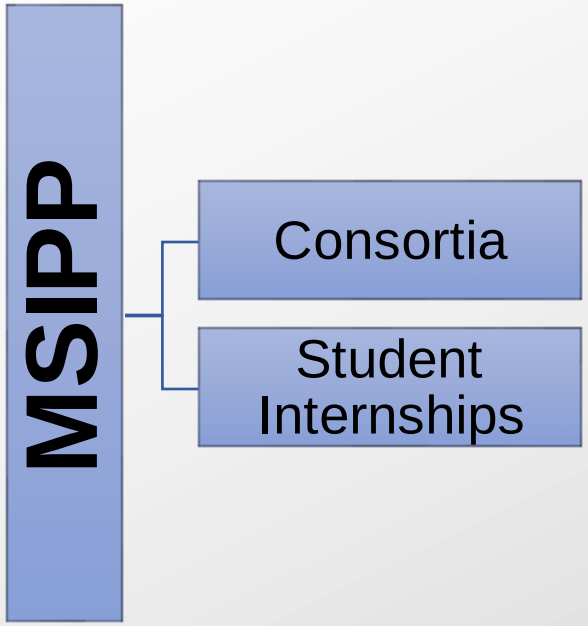
U.S. Department of Energy

Minority Serving Institutions Partnership Program

David Canty, Program Manager
Alexander Godinez-Robinson, Program Manager
National Nuclear Security Administration

MSIPP Mission

Mission: Create and foster a sustainable STEM-pipeline that prepares a diverse workforce of world class talent through strategic partnerships between Minority Serving Institutions and the Nuclear Security Enterprise (NSE).



Strengthen and expand MSI STEM educational and research capacity in NSE mission areas.

Target collaborations between MSIs and the NSE that that provide MSIs direct access to NSE STEM resources.

Grow the number of underrepresented minority (MSIPP) students who graduate with STEM degrees.

Grow the number of underrepresented minority (MSIPP) graduates and post-doctoral students hired into the NSE workforce.

National Nuclear Security Administration

MSIPP Partners

- 46 MSIs
- 24 Consortia
- 13 Lab/Plant Partners
- 277 MSIPP courses
- Over 240 Interns
- 92 K-12 Activities
- 8 New Degree Programs

National Nuclear Security Administration

MSIPP Student Pipeline Experiences

MSIPP Student Spotlight- Alta C. Bailey

Kansas City National Security Campus

Years at KCNSC: September 2018-Present

Years at ORNL: February 2017-June 2017, May 2016-August 2016

Degree: MA, BS, Chemical Engineering (2018, 2013)

Years in MSIPP: 2016-2018, North Carolina A&T State University

"In my two short years at KCNSC, I can say that I've not only been stretched beyond my degree's traditional boundaries, but also I've been challenged to build my skill set in multiple areas where I had no prior experience. Coming in I knew, through candid conversations had with KCNSC employees supporting MSIPP, that this was a place where I was going to be technically challenged, professionally developed, and supported to become my best self. Through MSIPP I've been fortunate to work at the KCNSC."

NNSA Graduate Fellowship Program cultivates partnerships with MSIPP Institutions

- **2019** • 6
- **2020** • 9
- **2021** • 4

National Nuclear Security Administration

NNSA Minority Serving Institutions Internship Program (NNSA-MSIIP)

Overview

NNSA Minority Serving Institutions Internship Program (NNSA-MSIIP)

MSIIP supports a mission priority of the National Nuclear Security Administration (NNSA) to strengthen key science, technology, and engineering capabilities, and enhance its career and leadership pipeline.

MSIIP offers talented undergraduate and graduate students internship positions within the Nuclear Security Enterprise (NSE). Interns may be assigned projects related to research, technical or policy, business and government relations.

Internships include student stipends, housing and commuting stipend supplements, and inbound/outbound transportation allowance.

Major Program Enhancements FY2022

Internship Duration	• Short – 12 weeks (full-time participation expected) • Long – One year (full-time during summer and full or part-time during academic year)
Flexibility	• In person, hybrid, and virtual positions based on site guidance
Needs Assessment	• Tailored to projects and organizational need
Eligibility	• Open to undergraduate and graduate students currently enrolled at a Minority Serving Institution • Open to all academic backgrounds
Clearances	• Possible for long-term interns ONLY, on a case-by-case basis, and if necessary

Program Benefits

Stipends	In-Person/Hybrid Interns	Virtual Interns
Full-time, based on 40-hour work week: • Undergraduate students: $750 p/w • Graduate Students: $950 p/w	• Inbound/Outbound Travel Allowance: Up to $1,000 • Housing Paid • Commuting Stipend Supplement: $30/week *(Relocating more than 50-miles, during the summer only)*	Remote Participation Stipend Supplement: $150/week *(during summer only)*

Program Timeline

- **Needs Assessment Closes** — December 8, 2021
- **Application Period Opens** — December 15, 2021
- **Application Period Closes** — February 1, 2022
- **Notification of Selections** — March 11, 2022
- **Students Submit Confirmation of Acceptance to Appointment** — March 15, 2022
- **Appointment Schedules and Housing Confirmed; Onboarding** — April 2022
- **Internships Begin** — June 6, 2022

Application

All applications are received and processed via the Zintellect online application system.

Applicants must meet the following requirements:

- Have a minimum undergraduate or graduate GPA of 3.0 on a 4.0 scale.
- Be a US citizen.
- Be enrolled as a full-time undergraduate or graduate student at an accredited Minority Serving Institutions (MSI). Applicants must provide proof of enrollment at the time of application.
- Be able to commit to the duration of their internship program: Short-term (12 weeks, full-time, during summer); Long-term (12-months, full-time during summer, part-time during the academic year)

POCs and Contact Information

- David Canty, MSIPP Program Manager, David.Canty@nnsa.doe.gov
- Alexander Godinez-Robinson, NNSA MSIIP Program Manager, msiip@nnsa.doe.gov

Amanda Joyce

Office of Cybersecurity, Energy Security and Emergency Response

Argonne National Laboratory

U.S. Department of Education

HTTPS://CYBERFORCECOMPETITION.COM

Argonne NATIONAL LABORATORY

CYBERFORCE COMPETITION

AMANDA JOYCE
Group Lead - Cyber Research
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November 30, 2021

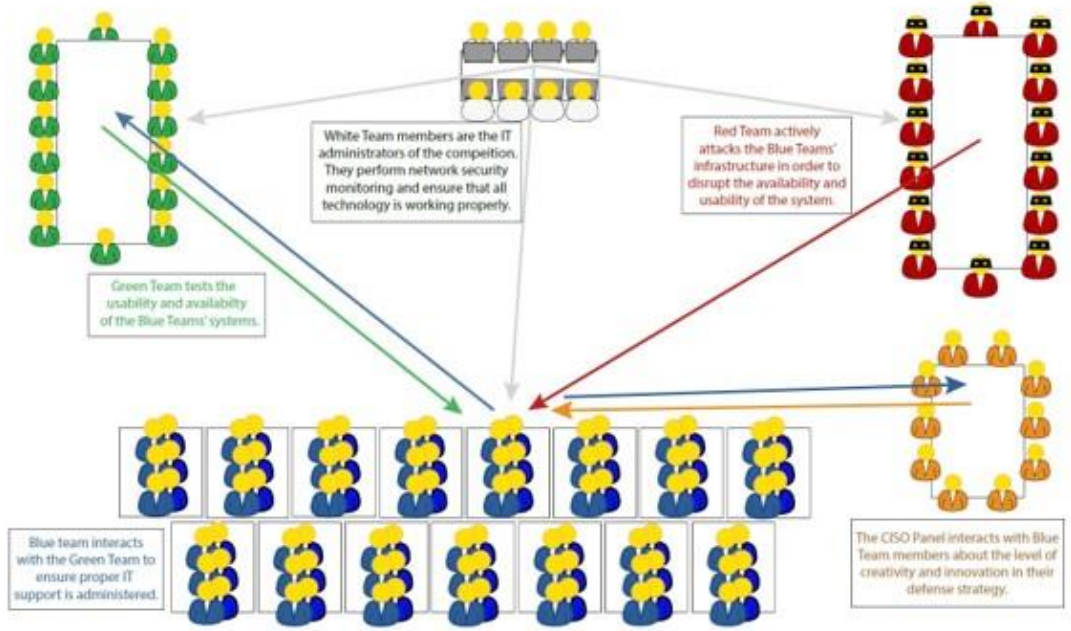
ACKNOWLEDGEMENT

- Argonne National Laboratory's work was supported by the U.S. Department of Energy, Office of Science, under contract DE-AC02-06CH11357 and the Office of Cybersecurity, Energy Security, and Emergency Response.

CYBERFORCE COMPETITION® OVERVIEW

Overview

- The CyberForce Competition is a day-long scenario-based competition that requires students to defend simulated cyber-physical infrastructure against professional red-team attackers with realistic anomalies and constraints.
- Team Structure
  - Blue Team (defenders)
  - Red Team (attackers)
  - White Team (administrators)
  - Green Team (users)
  - Orange Team (C-suite)

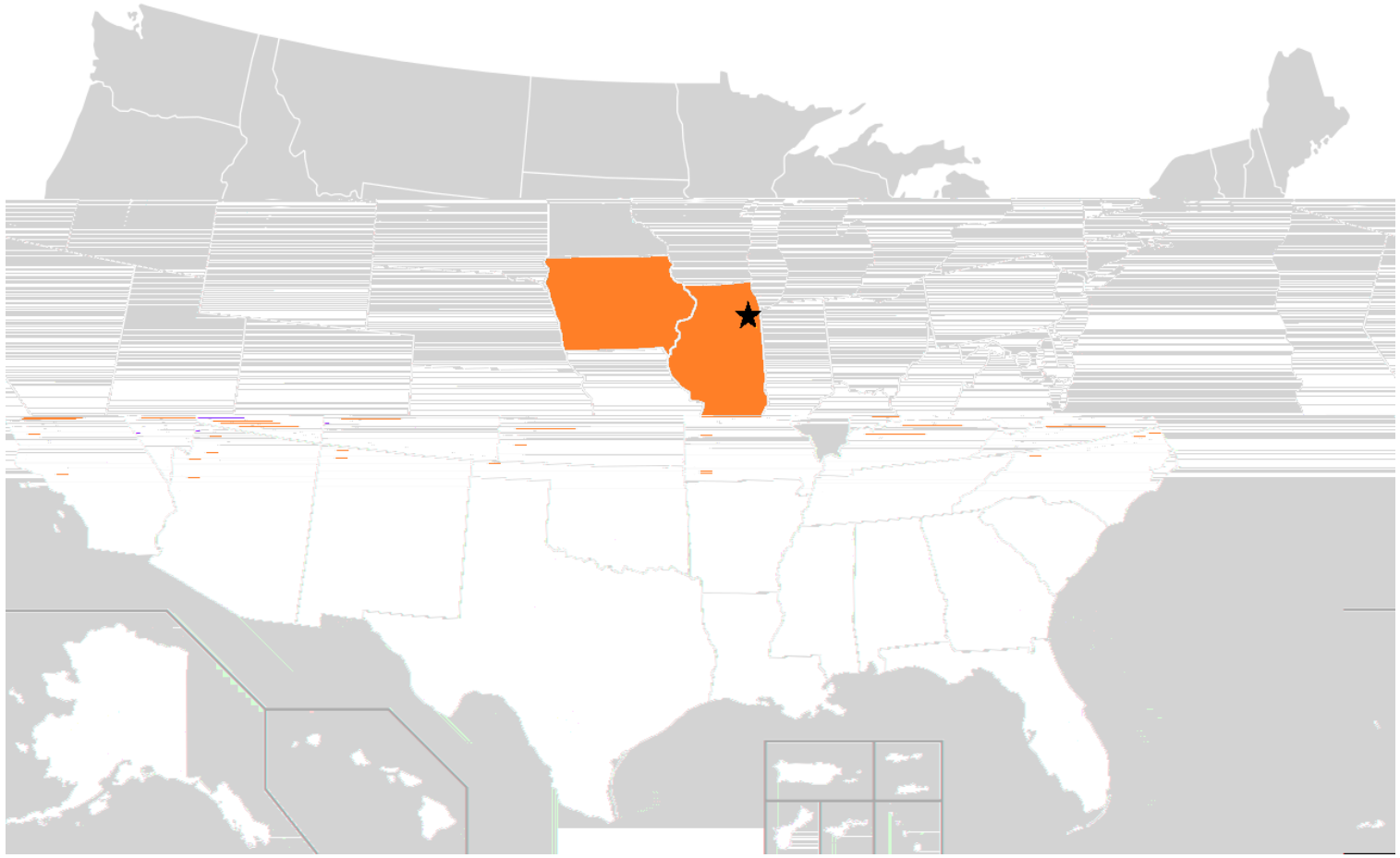


CYBERFORCE COMPETITION GOALS

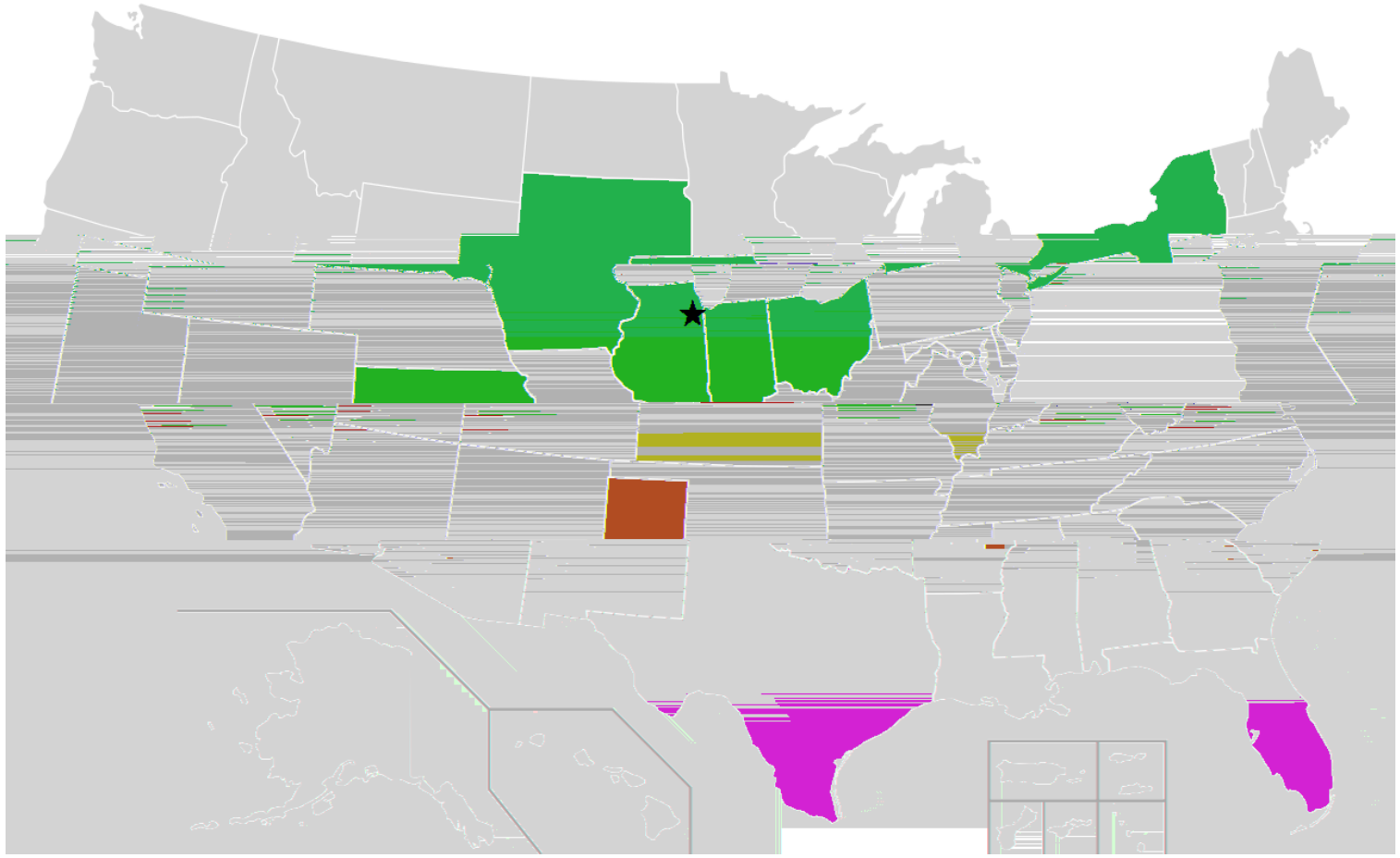
Goals

- Provide a workforce development platform not only for students, but also for industry and government professionals
- Increase awareness into the critical infrastructure and cyber security nexus
- Increase government/industry engagement
- Provide recruiting opportunities for top tier cyber talent

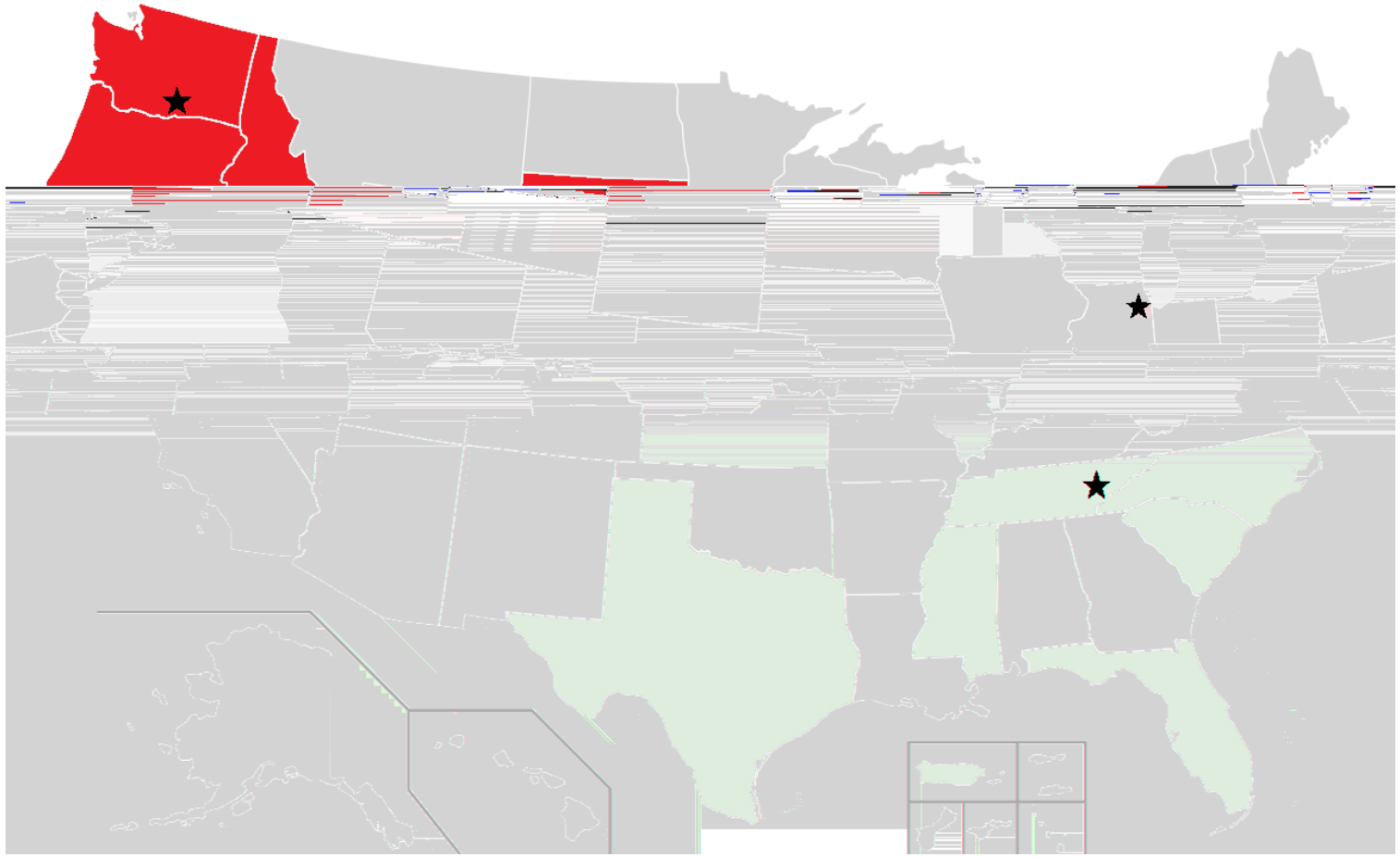
2016



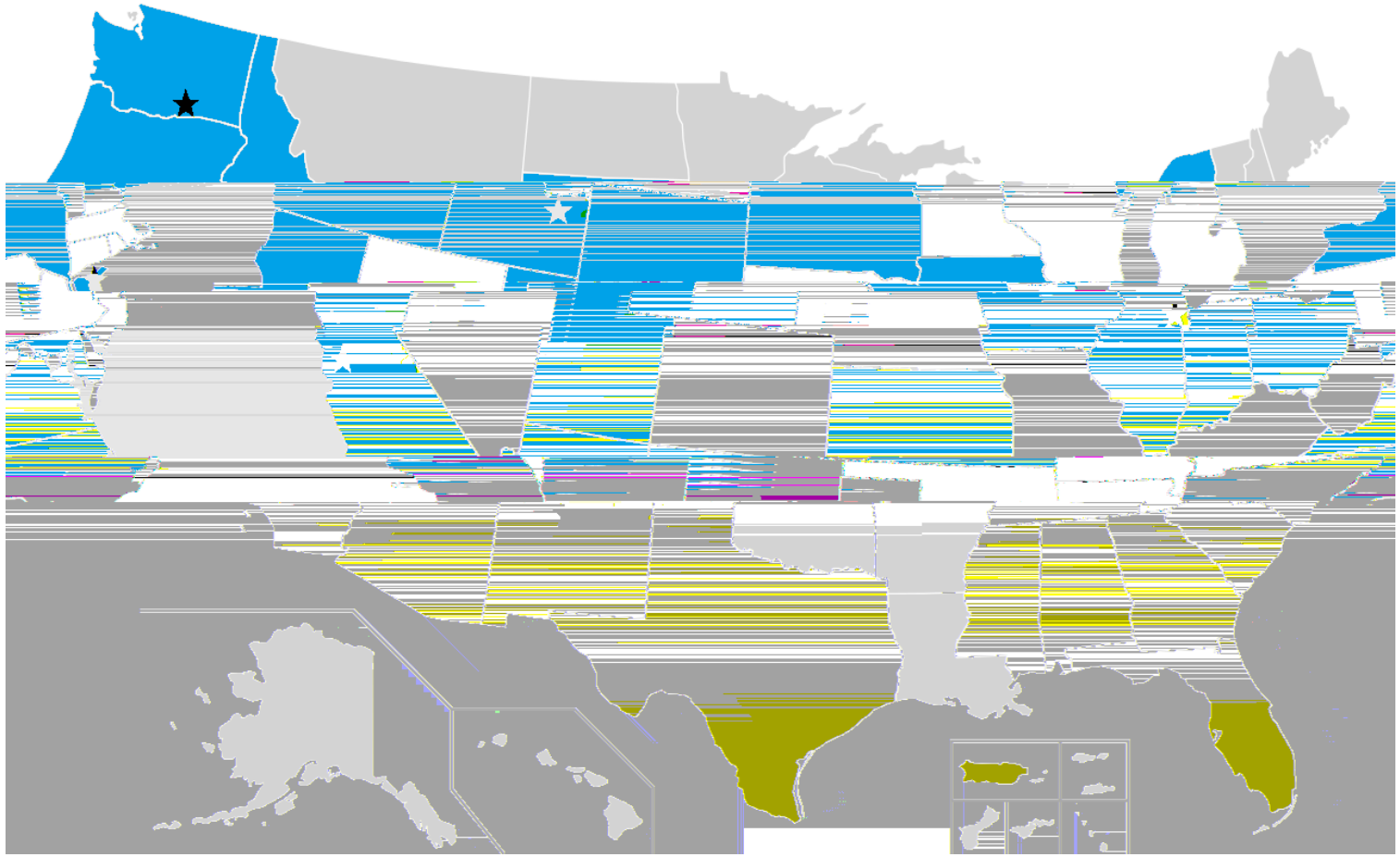
2017



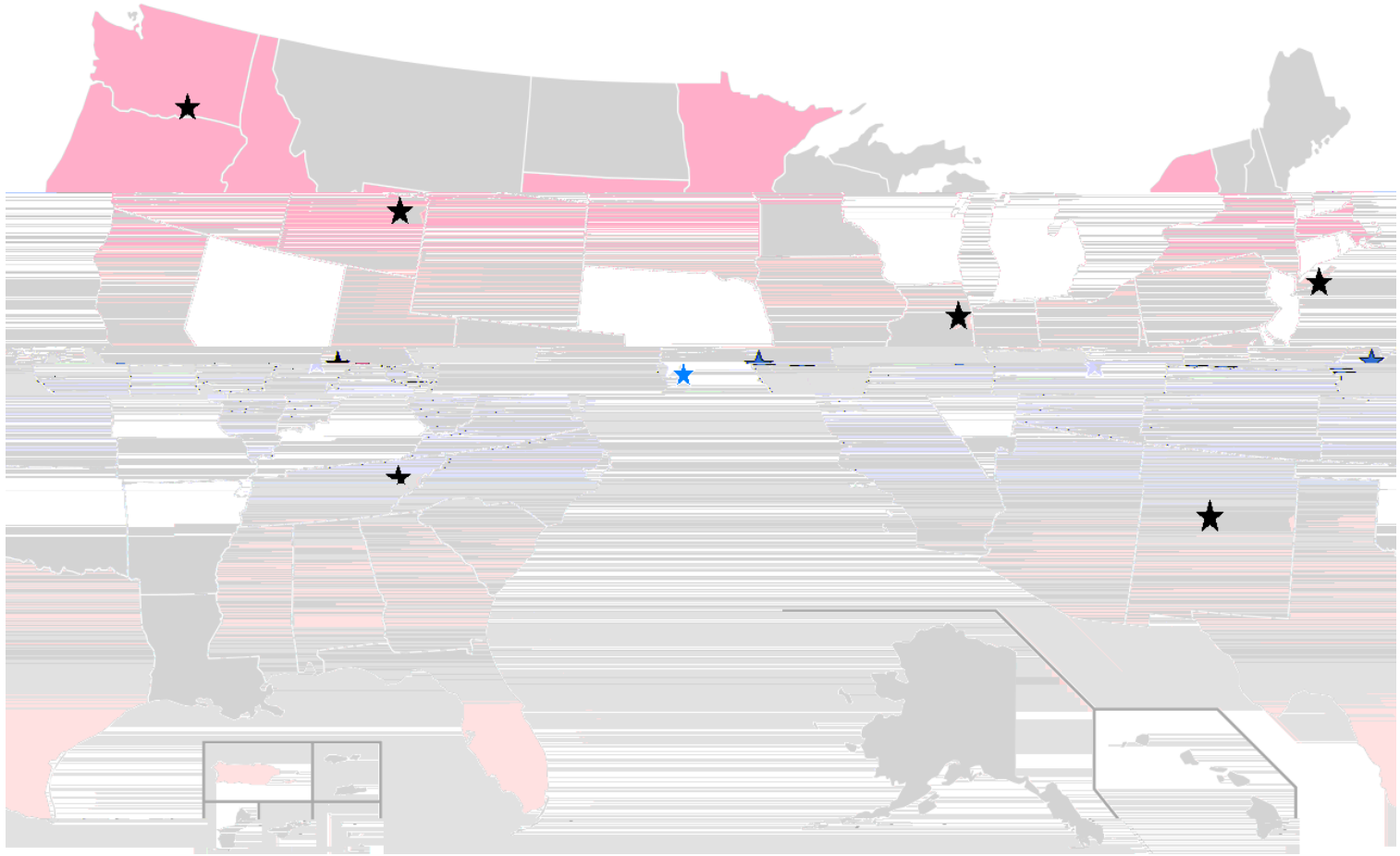
APRIL 2018



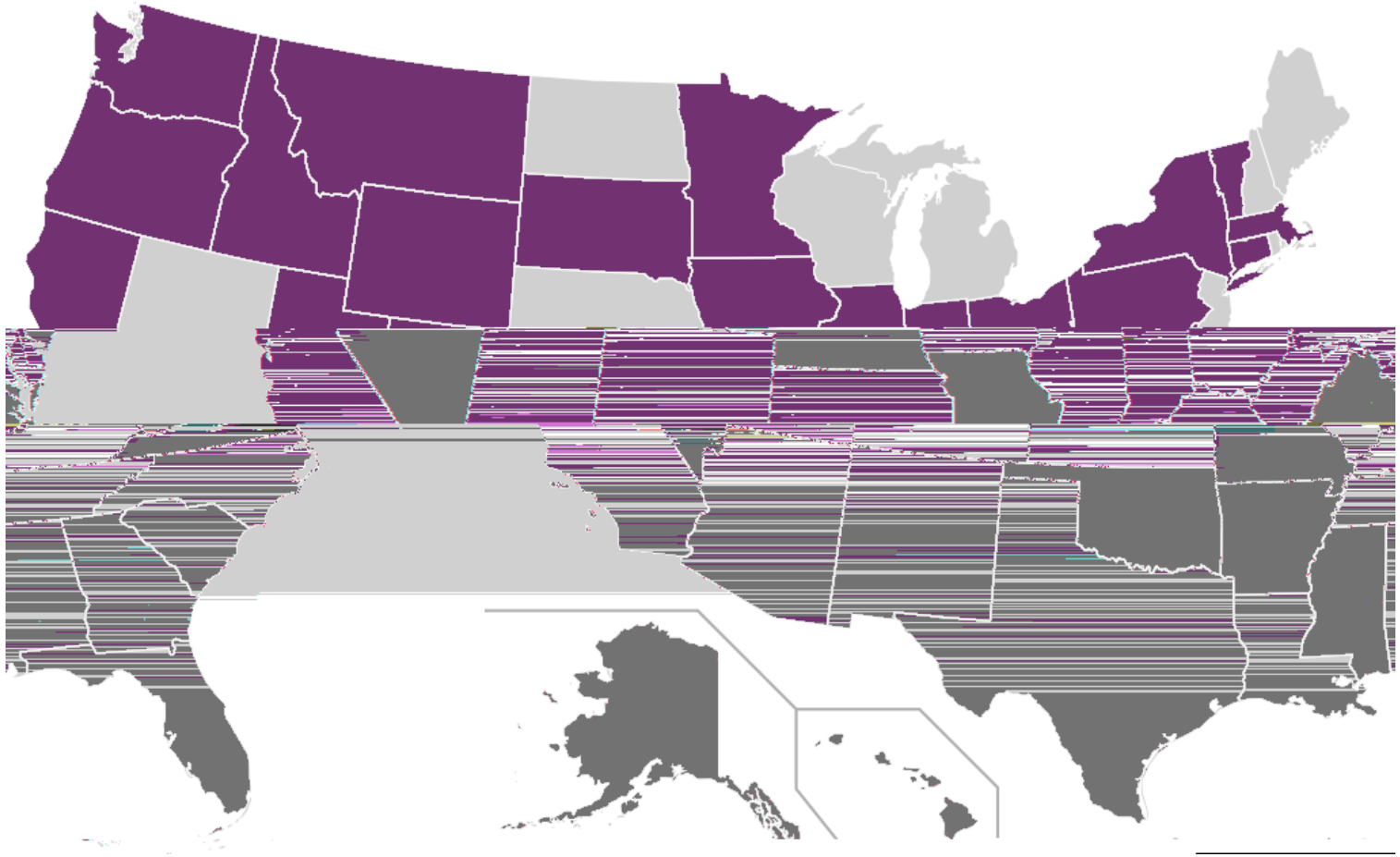
DECEMBER 2018



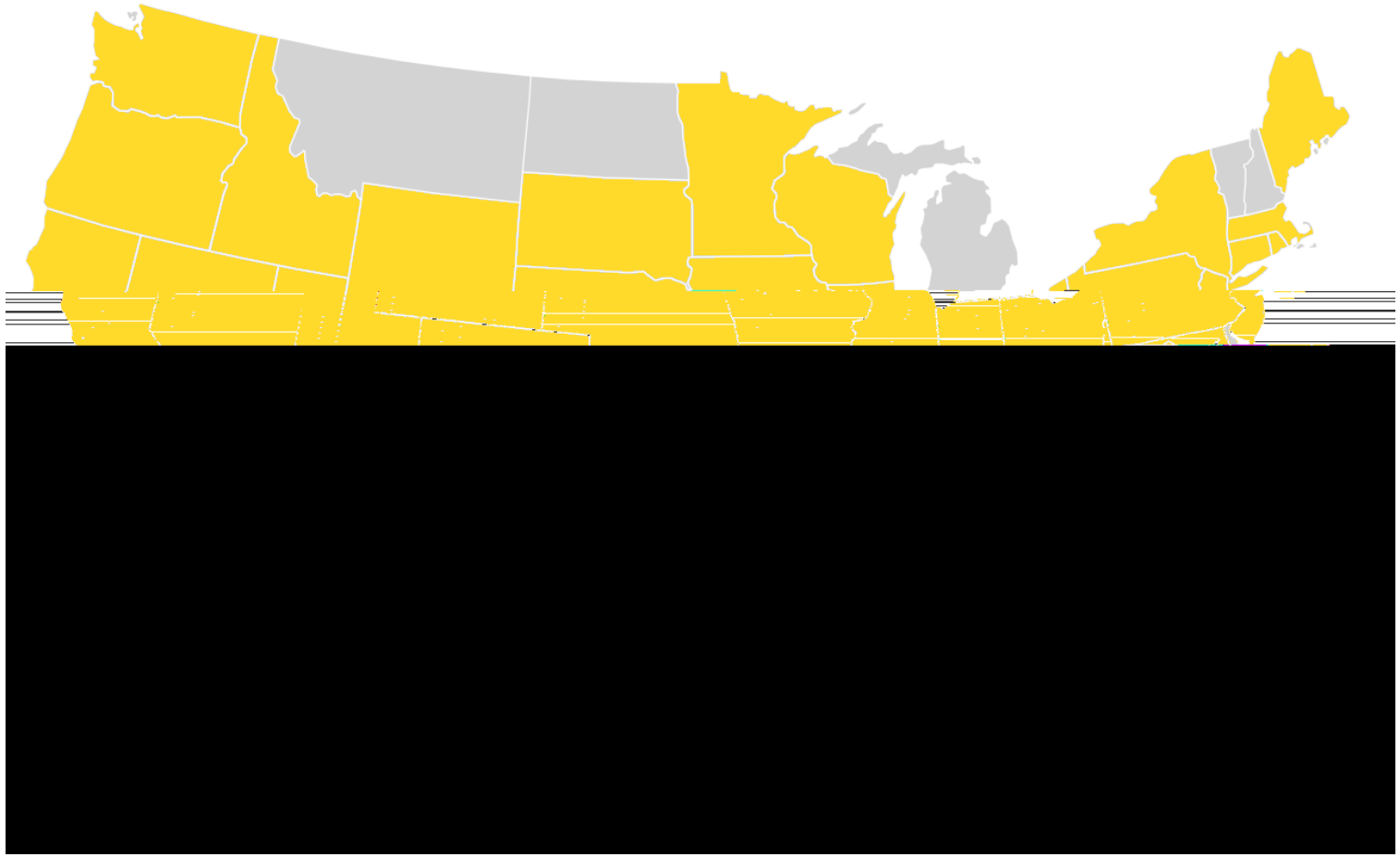
2019



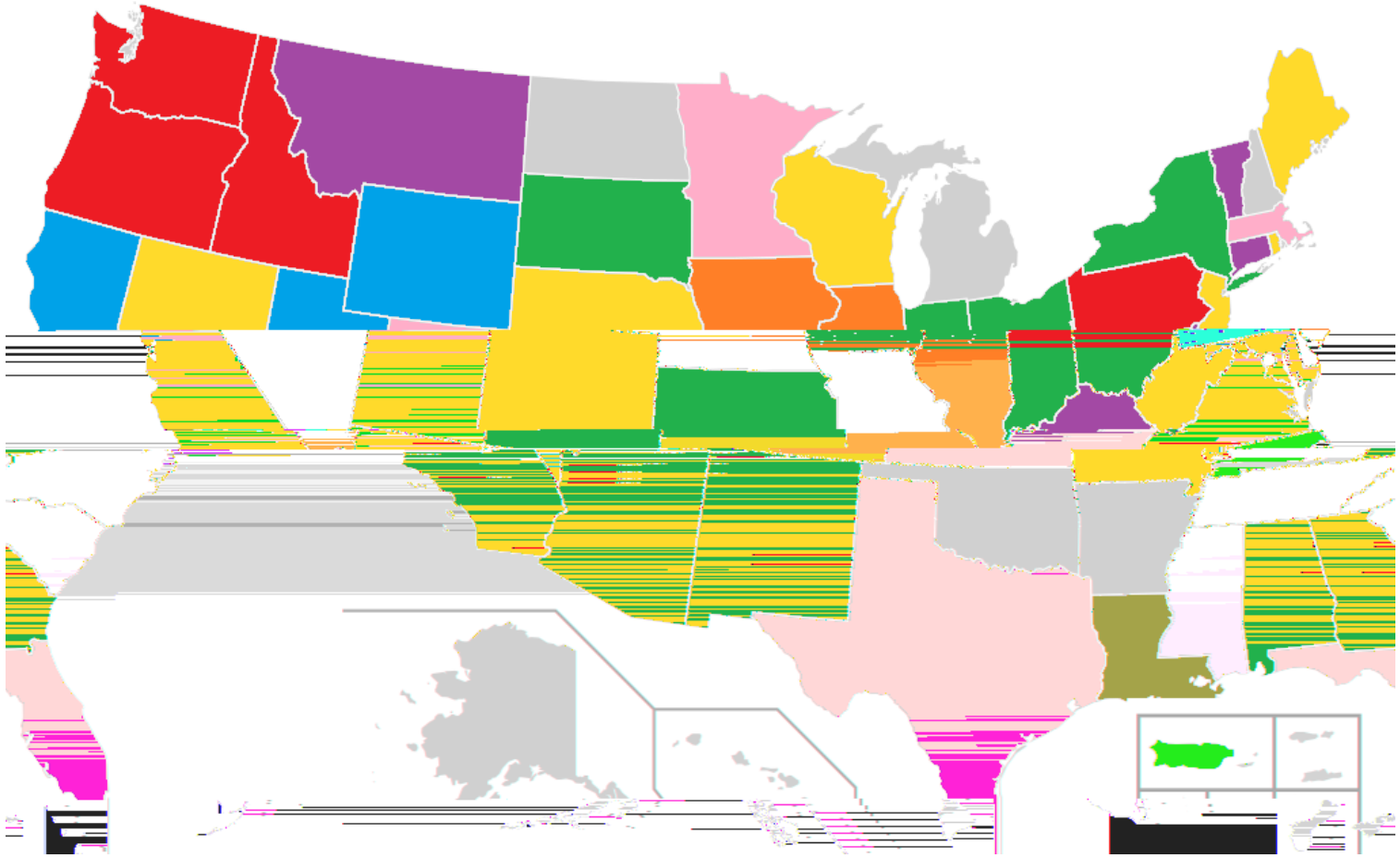
2020



2021

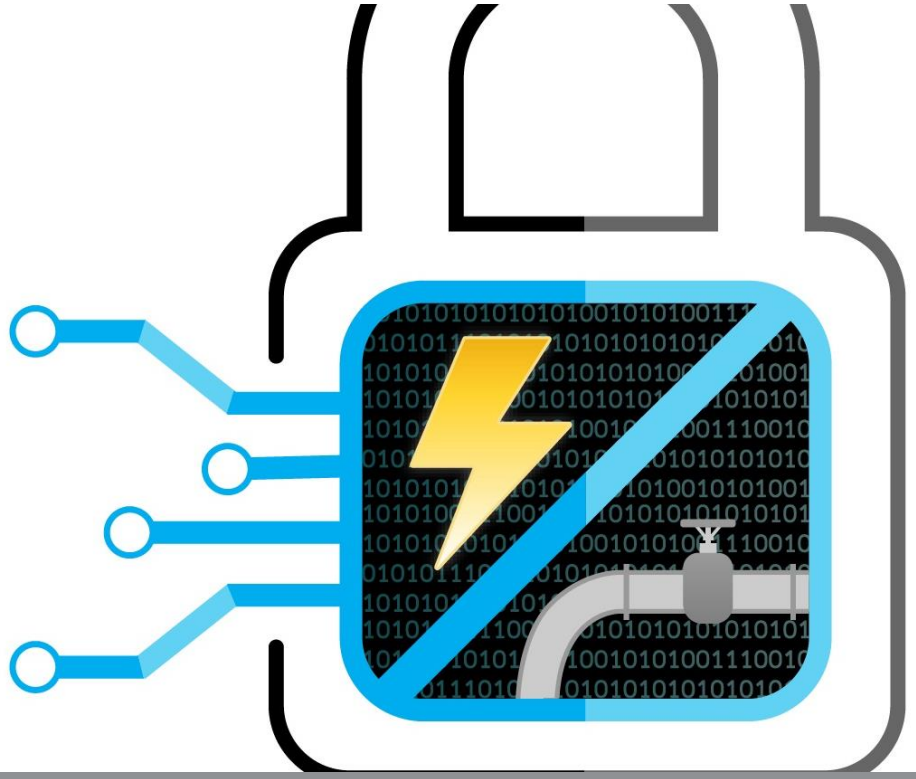


COMPETITION OVER TIME



NIST NICE FRAMEWORK

- The entire competition is mapped to the NIST NICE Framework competency areas.
- Students are provided report cards at the end of their proficiencies.



CYBERFORCE® COMPETITION

DEFENDING U.S. ENERGY INFRASTRUCTURE

Amanda Joyce

- CyberForce® Program Director
- amanda@anl.gov

Holly Jamesen Carr

Director

Solar Decathlon

Building Technologies Office

U.S. Department of Energy

U.S. DEPARTMENT OF ENERGY

SOLAR DECATHLON

Building the Next Generation

Solar Decathlon® is a collegiate competition that prepares the next generation of building professionals to design and construct high-performance, low-carbon buildings powered by renewables.

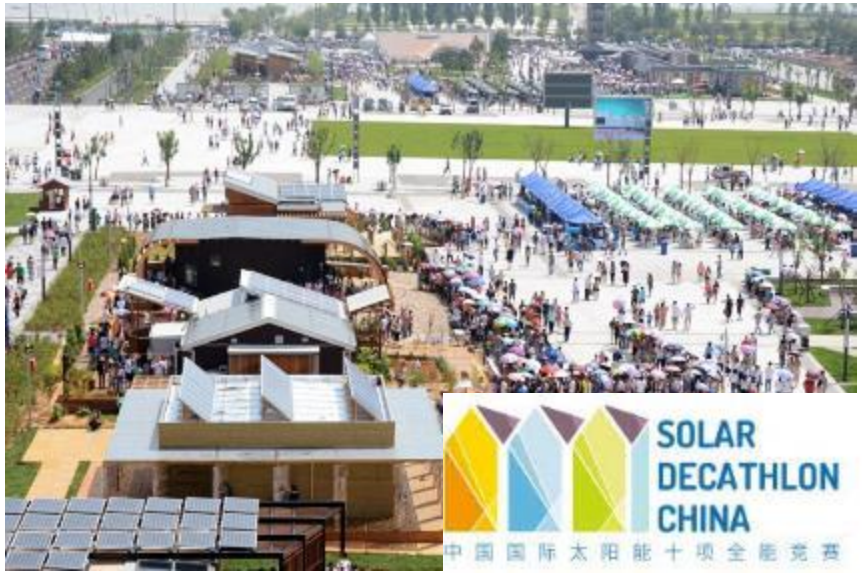
U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON 20th ANNIVERSARY

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON

Expanding Across the Globe

6 international competitions

50,000+ participating students



Solar™ Decathlon India

SOLAR DECATHLON
LATIN AMERICA & CARIBBEAN
CALI · DECEMBER 2019

solar decathlon europe

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON

Solar Decathlon Impact Fast Facts

272
Collegiate Institutions

35
Countries

25,000+
Collegiate Participants

657
Collegiate Teams

46
U.S. States

12
International Solar Decathlon events

20
Years of Impact!

U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON 20th ANNIVERSARY

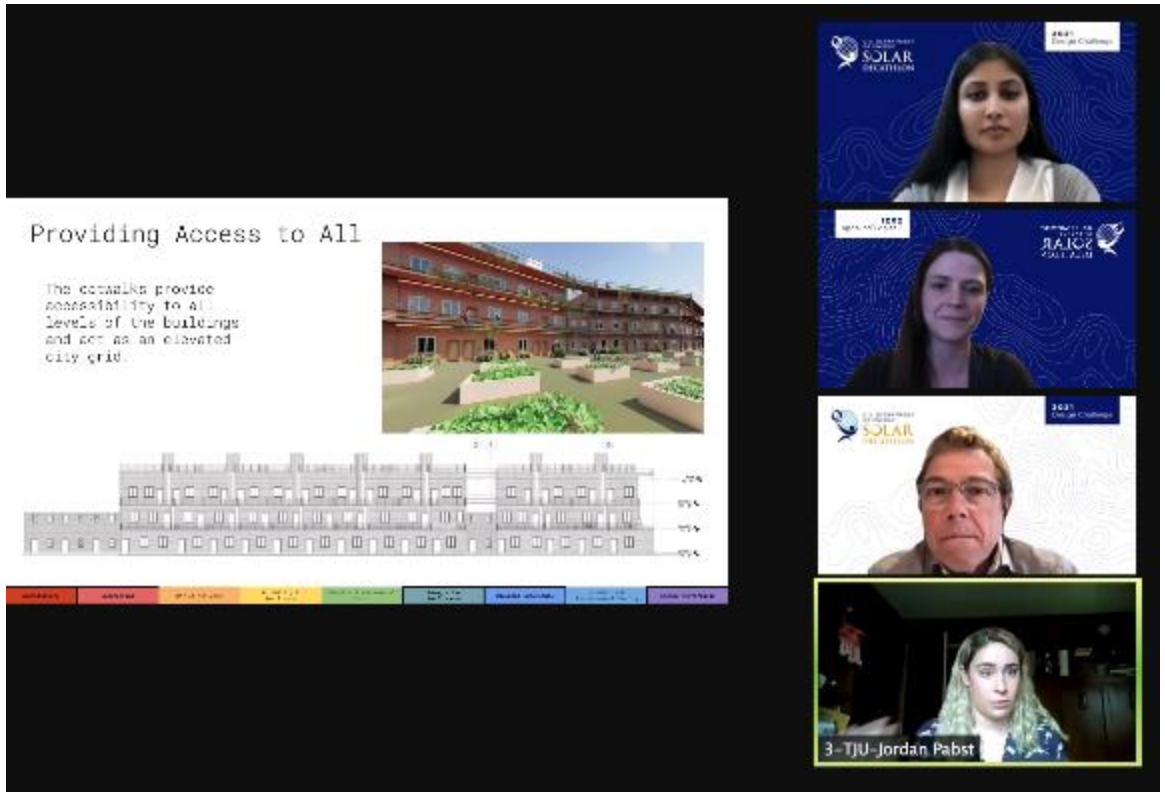
U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

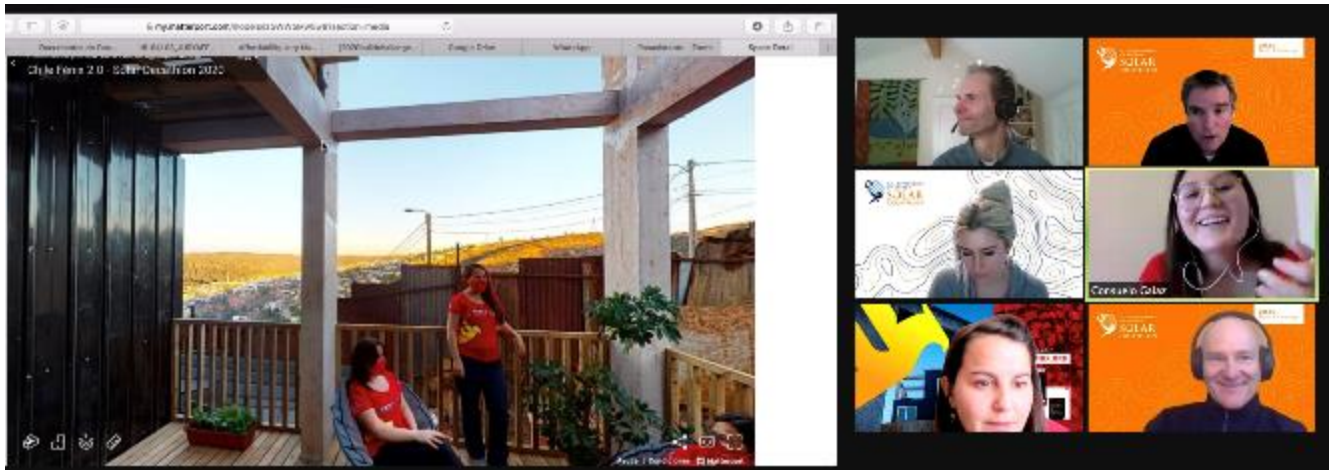
U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON
Building the Next Generation

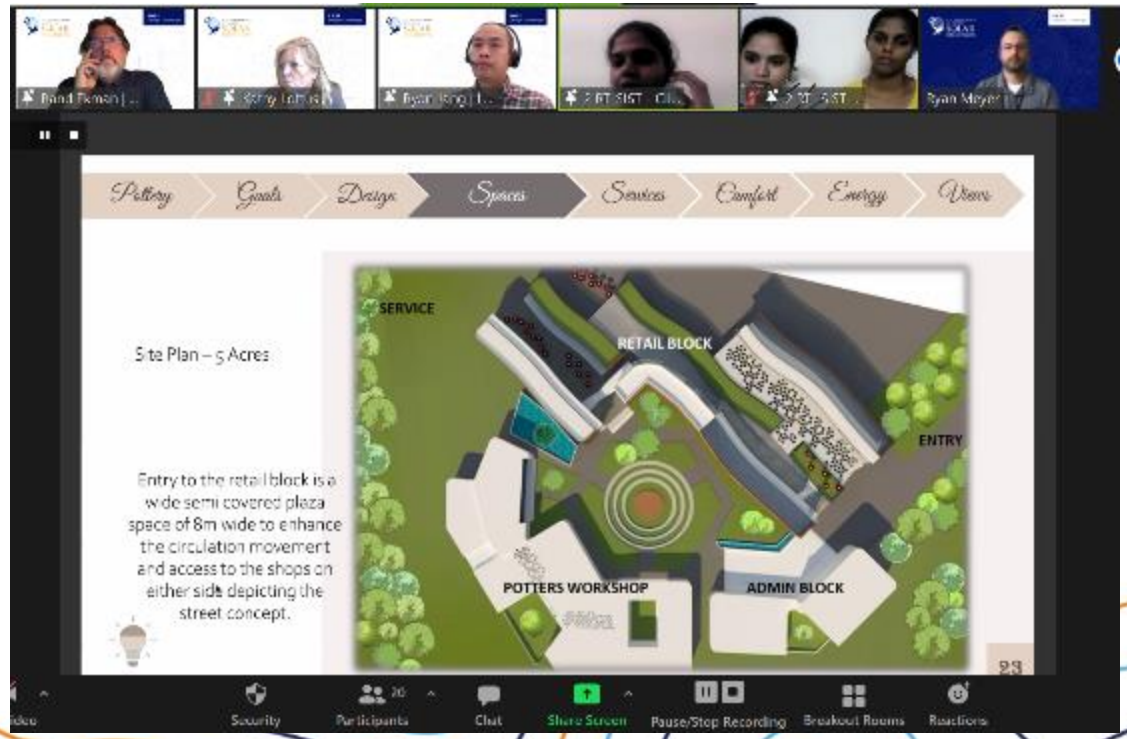
Build Challenge Houses

Onsite Measurements

Presentations to Juries







115 student team presentations to juries

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Solar Decathlon Virtual Village

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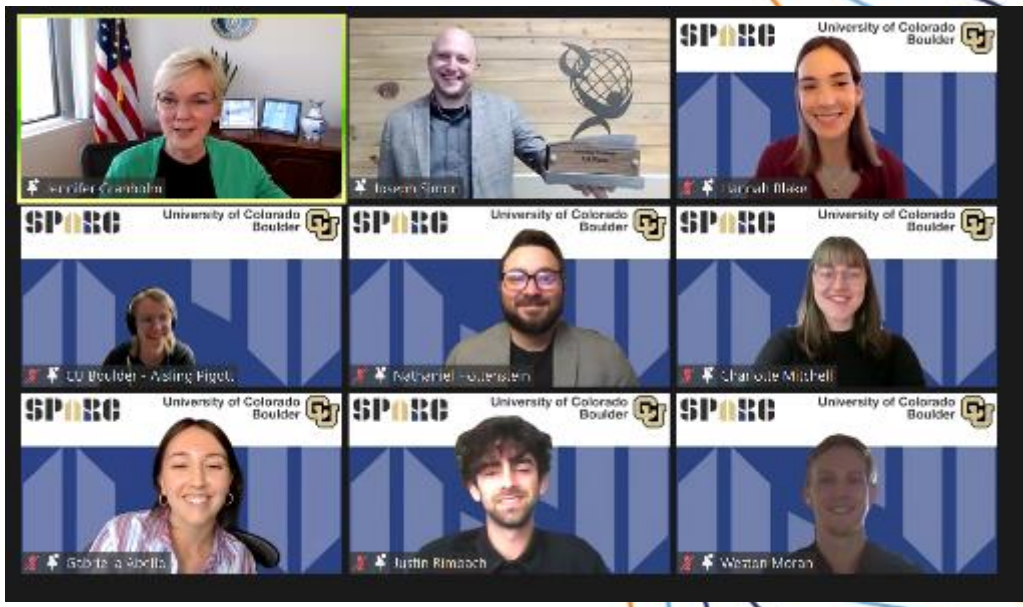
2020 Build Challenge Overall Winners



2nd Place

Warrior Home
University of Waterloo

1st Place

SPARC House
University of Colorado, Boulder

3rd Place

Mojave Bloom
University of Nevada, Las Vegas

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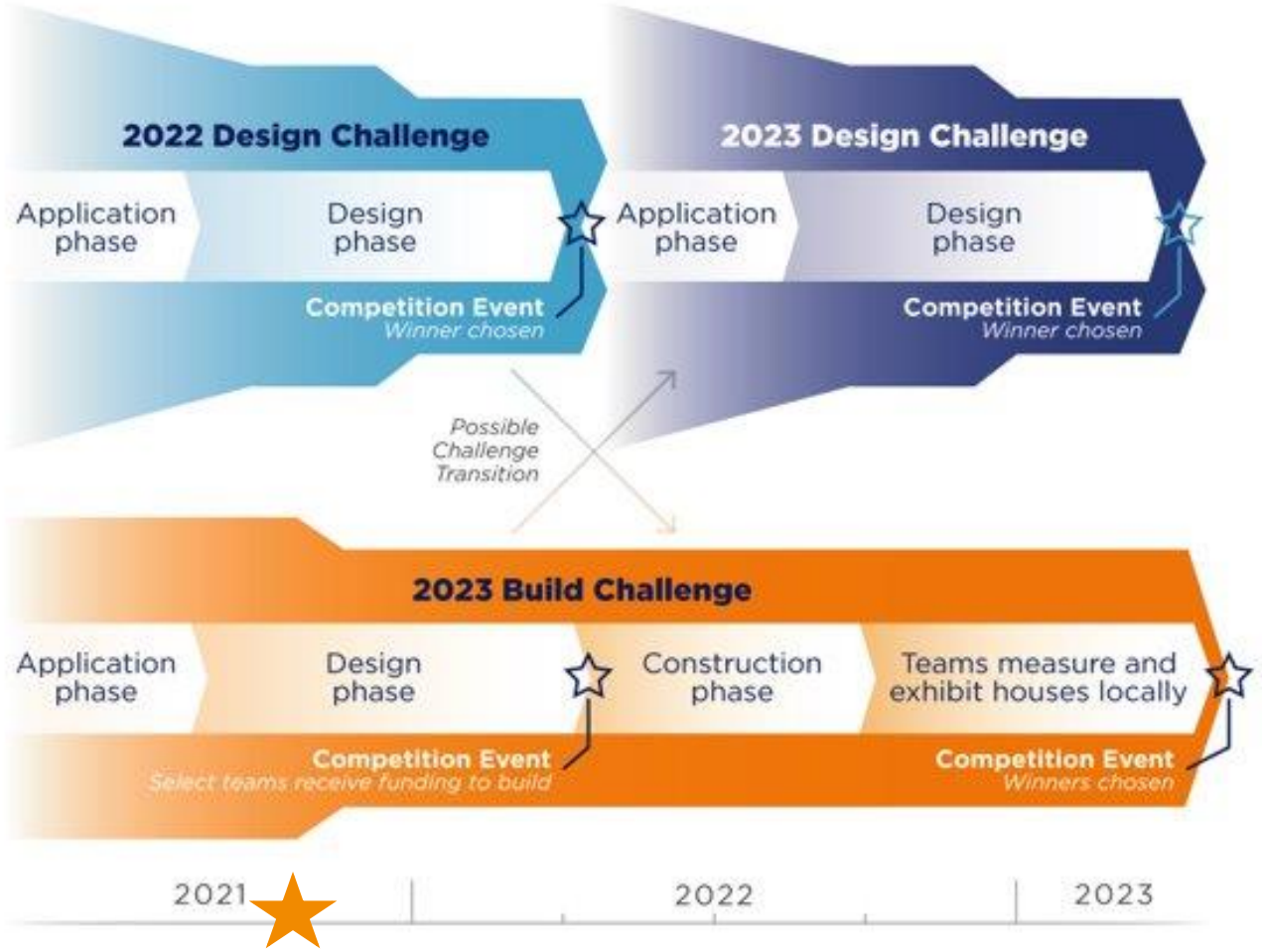
SOLAR DECATHLON

2020-2023 Solar Decathlon Timeline (U.S.)



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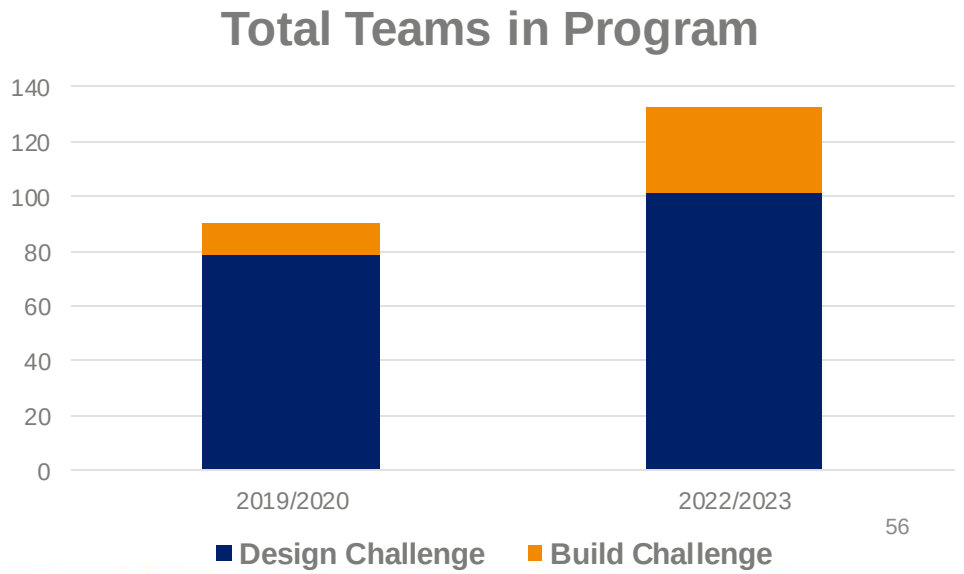
SOLAR DECATHLON

2022-23 Solar Decathlon Teams

Quick Stats	2019/2020 Solar Decathlon Program	2022/2023 Solar Decathlon Program
Teams	90	133
Institutions	75	107
New Institutions	17	38
Returning Institutions	58	69
Countries	17	20
US States	27	29
Minority-Serving Institutions	10	21
Community Colleges	2	4
Institutions Transitioned from Design Challenge	1	12



Thank you!

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#solardecathlon
#sdlivingthedream

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON

Melinda Higgins

Nuclear Energy Tribal STEM Advisor

CNI, LLC

Office of Nuclear Energy

U.S. Department of Energy

U.S. DEPARTMENT OF ENERGY | Office of NUCLEAR ENERGY

Clean. Reliable. Nuclear.

Energizing STEM

U.S. Department of Education Webinar

November 30 , 2021

Melinda Higgins

Tribal STEM Advisor

CNI LLC./Office of Nuclear Energy

U.S. Department of Energy

Tribal Perspectives

Rex Buck, Wanapum People

- The Wanapum People were most directly impacted by the Manhattan Project and the establishment of the Hanford Nuclear Site.
- In this interview, Rex Buck (an elder and leader of the Wanapum) recounts the long history of Wanapum ties to the land (present-day Hanford, WA) and the impacts of having to relocate in 1943, and subsequent activities since.

DOE-NE Mission and Tribal Working Groups

DOE-NE Mission

The Office of Nuclear Energy (NE) mission is to advance nuclear power to meet the nation's energy, environmental, and national security needs.

Tribal Working Groups and Office Lead

- State and Tribal Working Group (STGWG)/Office of Environmental Management
- Indian Country Energy and Infrastructure Working Group (ICEIWG)/Office of Indian Energy
- Nuclear Energy Tribal Working Group (NETWG)/ Office of Nuclear Energy

Nuclear Energy Tribal Working Group (NETWG)

Office of Nuclear Energy

- Build close government-to-government relationships with Tribal Nations
- Focus on consulting, collaborating, and communicating with Tribal leaders and Tribal representatives who are technical and cultural subject matter experts (SMEs)

NETWG

- DOE-chartered working group
- Engage federally-recognized tribal governments in DOE-NE activities
- STEM white paper

NETWG

NUCLEAR ENERGY TRIBAL WORKING GROUP

Tribal STEM Subcommittee

- The need for this subcommittee grew out of an expressed interest from all three DOE Tribal Working Groups to increase STEM opportunities for youth and the workforce in Indian Country.

- The focus is on improving access to STEM education and workforce development opportunities, while increasing site-specific tribal engagement.

- This collaborative effort will allow tribal working group members to identify and evaluate best practices to determine methods that suit individual tribal needs.

Tribal Survey on STEM

Questions from Survey:

- Today STEM is thought of as science, technology, engineering and math. These four technical disciplines are often rooted in tribal traditional and cultural activities. Which of the following activities do members of your Tribe participate in?
- In your tribal community, what are the key factors and preferred methods for transferring traditional knowledge (TK) and traditional ecological knowledge (TEK) to tribal youth?
- STEM (science, technology, engineering and math) is a broad term used to group and integrate several academic disciplines. How important is it to you that the tribe provide STEM programming/projects for K-12 students?
- Do you think most tribal youth in your community have adequate access to STEM education?

Navigating Nuclear STEM Resources

High School Resources:

- Digital Lesson Plans
- STEM Project Starters
- Virtual Field Trip of Idaho National Laboratory

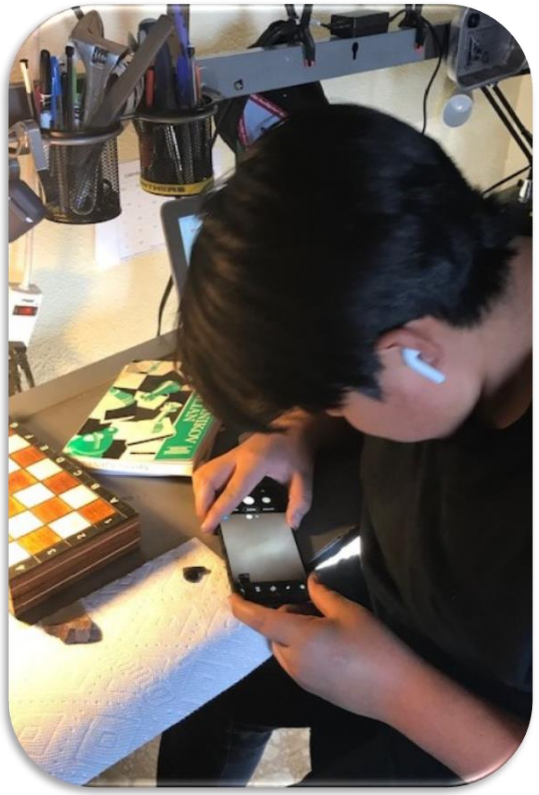
Middle School Resources:

- Digital Lesson Plans
- STEM Project Starters
- Career Profiles

Elementary Resources

DOE has partnered with American Nuclear Society (ANS) and Discovery Education (DE) to support High School Resources (2019-2020) and Elementary School Resources (2020-2021)

Nuclear Energy and Microscope Activity



SINGLE LENS—MULTIPLE PERSPECTIVES:
VIEWING NUCLEAR ENERGY IN A NEW LIGHT

Essential Question: How can we view things in our world in a different way?

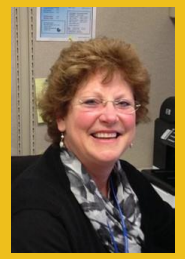
Supporting STEM Education in Tribal Communities @TribalSTEM

Talia Martin

Shoshone-Bannock Tribes

Regina Schofield

Battelle



Sheryl Sotelo

STEMovations

Melissa Thibault

PBS North Carolina

Jeff Schmidt

Ignited Education

Marie de Krieger

California Science Center

Wendy Hancock

ASTC

Kathy Hoppe

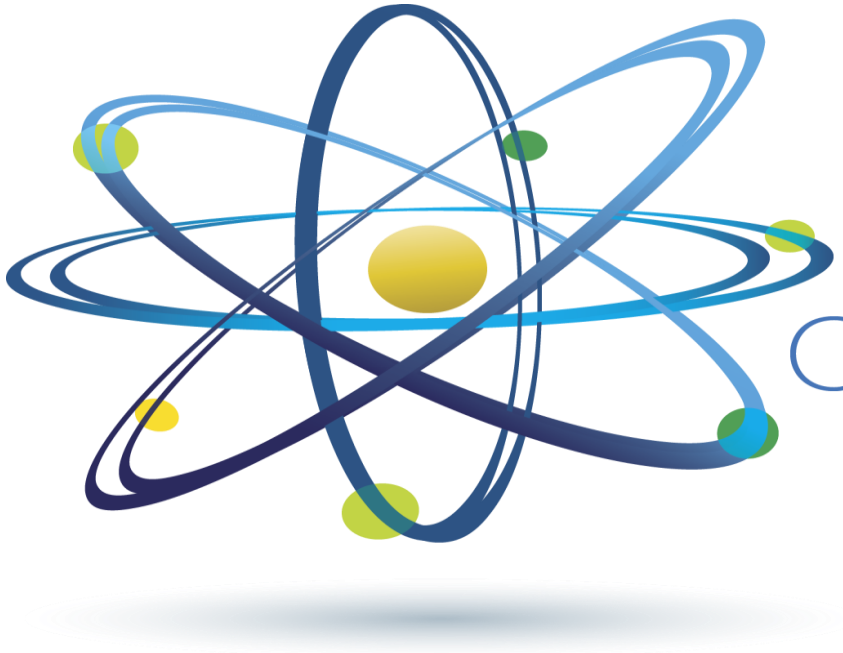
STEMisEd

Melinda Higgins

CNI/DOE

100K IN 10

Questions?



Clean. **Reliable. Nuclear.**

melinda.higgins@nuclear.energy.gov

Christy L. Jackiewicz

Chief

Minority Educational Institution Division

Office of Economic Impact and Diversity

U.S. Department of Energy

Additional Internship Programs

Minority Educational Institution Student Partnership Program (MEISPP)
James.Hendrix@hq.doe.gov
https://www.energy.gov/diversity/minority-educational-institution-student-partnership-program-meispp-internships
Agencywide Job Opportunities

Omni Alliance Internship Program
Christina.Addison@science.doe.gov
Website Being Developed
Cyber and Information Tech Focused Opportunities


STEM
RISING
U.S. DEPARTMENT OF ENERGY
ENERGY.GOV/STEMRISING

Q & A

Environmental Literacy

December 9, 2021 3:30 – 5:00 PM ET

Register at www.ed.gov/stem