



STEM and Workforce Development: Engaging Multiple Perspectives

National Tribal Energy Summit
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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

NETWG STEM white paper

- Identified gaps for STEM opportunities
 - Coordination on nuclear activities and utilization of subject matter expertise
 - Facilitation of STEM opportunities for youth in Tribes to generate interest in nuclear energy
 - National labs interactions with and response to Tribal communities and their concerns
- White Paper Priorities
 - Recommendations for increasing STEM education in Indian Country
 - STEM subcommittee
 - [STEM white paper](#)



NETWG STEM White Paper Priorities

- Nuclear Energy Education → ANS/Discovery Education--
[“Navigating Nuclear”](#)
- Integration of place-based Traditional Ecological Knowledge (TEK) with DOE mission-focused STEM— [Culturally-Situated Design Tools](#)
- Career Opportunities for Native Americans/Workforce Needs for DOE-- [Supporting STEM Education in Tribal Communities Project Team](#)
- Incorporation of strategy for tracking data from programs—
[Federal STEM Plan Interagency groups](#)



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.
- Two virtual meetings have been held with members from all three working groups Nuclear Energy, State and Tribal Government, and Indian Country Energy and Infrastructure Working Groups.
- The subcommittee discussed framework for standing up this group including organizational structure, mission statement, and individual expectations.



Federal STEM Strategic Plan

Federal Alignment: Federal STEM Strategic Plan (2018-2023)

- ❖ Goals of Plan
 - STEM-literate society
 - STEM workforce of future
 - Promote diversity and inclusion in STEM
- ❖ DOE Implementation Strategy
- ❖ Federal STEM Strategic Plan



DOE's National Laboratories



STEM Engagement and Outreach

- **Expose, Engage, and Inspire** historically underrepresented and underserved populations in STEM fields for economic empowerment, especially in the energy fields
- Employ Navigating Nuclear, STEM Role Model Rounds, STEM Role Model Workshop, and the Smartphone Microscope as tangible tools to translate the science and technology of the DOE complex to educators, students, and communities in a relevant way



Navigating Nuclear STEM Resources

Middle School Resources:

- Digital Lesson Plans
- STEM Project Starters
- Career Profiles

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)



STEM Role Model Rounds



STEM Role Model Workshop

- The primary purpose of the STEM Role Model Workshop is to empower STEM professionals and STEM support colleagues from across the Department of Energy to effectively serve as confident role models, particularly for historically underrepresented students in STEM fields.
- It will also provide a space for building cross-Department connections and relationships that may be useful in future STEM outreach-related activities.
- Facilitators equip participants with research-based training, tools and strategies to take back and apply in their communities.



Tribal STEM Engagement

DOE staff and stakeholders facilitate energy activities at the Nez Perce Tribe during their summer “Preparing Students for Academic Success (PACE)” camp.



Smartphone Microscope Demonstration



[Video of Inventor Rebecca Erikson](#)

[Download Free Open Source 3D files for Microscope](#)

STEM Engagement in Alaska



Villages in Alaska—DOE STEM Engagement

Number of cities/villages: 16

Number of educators/students impacted: 2,180

City/Village	Population	City/Village	Population
Anchorage	298,695	Whittier	220
Tareh	88	Gravine	194
Chenega Bay	76	Kwigillingok	321
Utqiagvik	4212	New Stuyahok	510
Kongiganak	439	Mekoryuk	191
Savoonga	671	Upernivik	5003
Nanwalek	254	Seldovia	276
Port Graham	177	Tyonek	171

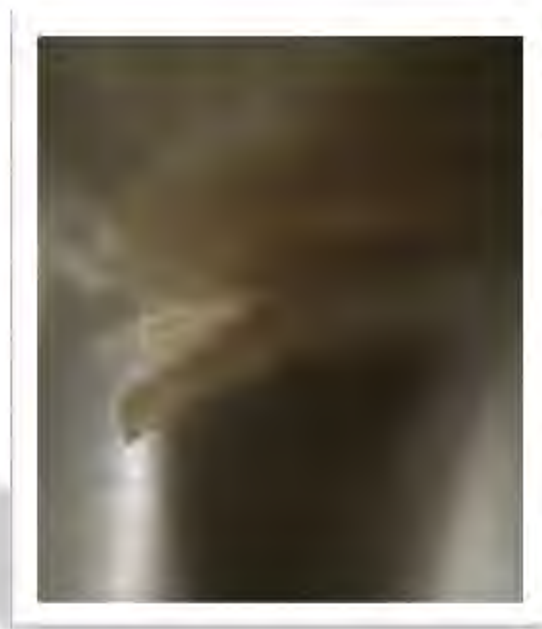
All population figures are from the 2010 Census, except Anchorage whose population was taken from the 2015 Census. There is an interactive map at https://maphub.net/mmhiggins/DOE_STEM_AK, which is integrated with the villages and their population data.

Transport of STEM Materials to Rural Alaska



Culturally Responsive STEM Work in Alaska

Polar Bear Hair (Village of Savoonga) using Smartphone Microscope (100x)



Culturally Responsive STEM Work in Alaska

Fox Claw (Village of Konginganak) using Smartphone Microscope (100X)



Culturally Responsive STEM Work in Alaska

Whale Bone (Village of Utqiagvik) using Smartphone Microscope (100X)



STEM in Formal Settings in Alaska

Students from Village of Tatilek and Chenega Bay using Smartphone Microscope (SM)



STEM in Digital Settings in Alaska



Building STEM Capacity

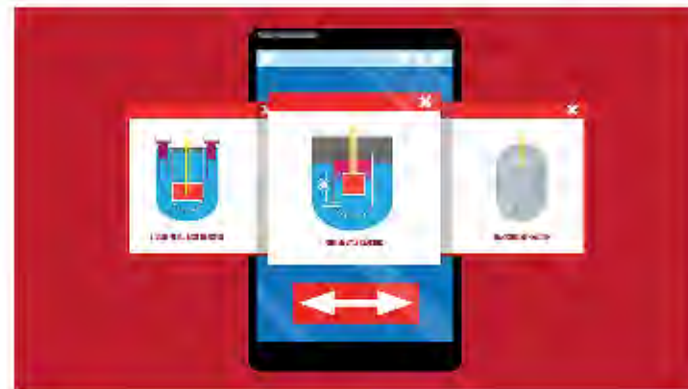


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- Advanced Nuclear Matching Game:

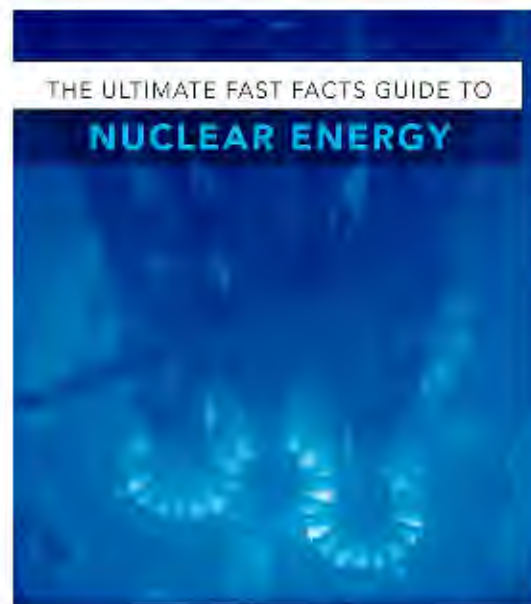


- Nuclear Reactor Swipe Right and Match Game



Nuclear Energy Resources

- [The Ultimate Fast Facts Guide to Nuclear Energy](#)



- [5 Fast Facts About Nuclear Waste](#)

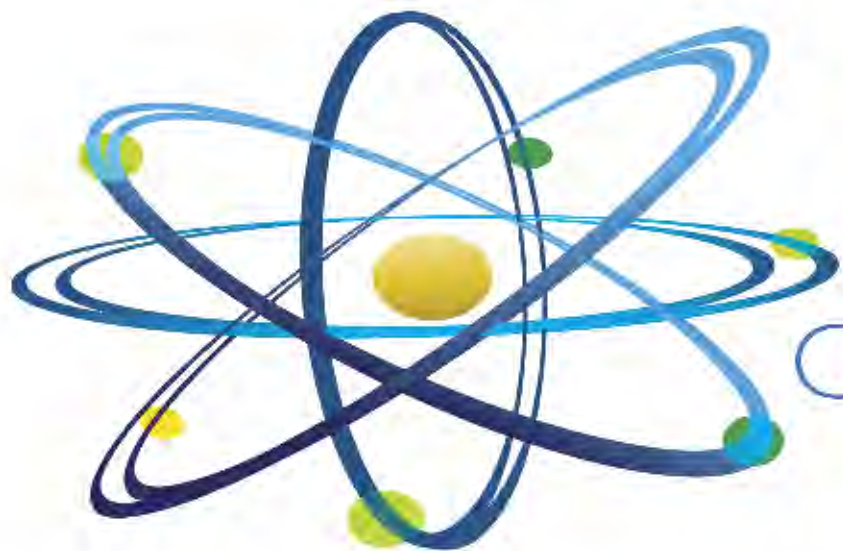


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EM's Oak Ridge Site has decommissioned and demolished some of the largest nuclear facilities in the world. Now, employees there are helping train the next generation entering the nuclear field through a new University of Tennessee minor degree.

Questions?



Clean. **Reliable. Nuclear.**

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