Nuclear Power Institute

Annual Report 2019 - 2020
NPI Mission Statement

The mission of the Nuclear Power Institute is to develop “the necessary workforce” in the state of Texas to support the continuing and emerging clean industry and nuclear science and technology needs across the State of Texas.

This includes enhancing Science, Technology, Engineering, and Math (STEM) education and professional development at all levels.

NPI will establish, expand, and maintain a network of engagement to enhance STEM awareness and consideration for students, education professionals, and industrial employers.

This network enables engagement, enhancement, and enrichment opportunities for students, educators, and professionals in K-12 schools, community colleges, universities, and stakeholder industries across Texas.
2019-2020 Overview

Created in 2007, NPI has impacted tens of thousands of elementary, middle, and high school students through its efforts, programming, and relationships. The 2019 - 2020 academic year, was a particularly pivotal year for NPI amid changes in the institute’s staffing, mission, focus, and COVID-19 challenges. Through these changes, NPI continued to make significant growth and impacts in the lives of Texas students.

The 2019 – 2020 academic year was a year of constant change, prolific achievements, and constant growth. There were many staffing changes made to the NPI team as well as a shift in the NPI mission statement to include clean energy.

In the Workforce Industry Training (WIT) program, NPI increased the amount of partnered schools, and dramatically increased the amount of student participation and membership from that of previous years. Even through the COVID-19 pandemic and a pivot to virtual experiences, NPI made huge impacts with its available funds and resources.

NPI is also adding several new programs including the following: “The Path of Most Persistence Podcast”, “The Catalyst” Newsletter, “Nuclear Science Week Student Competition”, “Clean SMARTS Master Class”, “Science in the Kitchen – Cooking up Curiosity”, and virtual tour resources for students.

During the COVID-19 pandemic, much of the State of Texas was impacted financially. Funding was reduced in higher education institutions across the State of Texas to counter the financial impact from closing businesses and social distancing. This reduction significantly impacted NPI and its partners. Unfortunately, NPI was forced to cancel the 2020 – 2021 academic year contracts with its higher education partners and restructure the WIT requirements and budgets.
Staffing

With the restructuring in June of 2019, came the need for staff restructuring to direct more focus on the state-wide STEM outreach efforts as well as the emerging clean industry and nuclear science and technology needs across the State of Texas.

The appointment of Dr. Sean McDeavitt on June 14, 2019 marked the beginning of a new path for NPI. Dr. McDeavitt assembled a new NPI team to support a recalibrated focus of programs specifically and intentionally impacting the State of Texas. This new NPI team would go on in the 2019 – 2020 academic year to surpass prior NPI participation numbers, engagements, and impacts.

<table>
<thead>
<tr>
<th>Staffing</th>
<th>Date</th>
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<tbody>
<tr>
<td>Appointment of Dr. Sean McDeavitt as Center Director</td>
<td>June 14, 2019</td>
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<td>Appointment of Miriam Brown as Program Specialist</td>
<td>August 1, 2019</td>
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<td>Re-hire of Dr. Valerie G. Segovia as Program Leader</td>
<td>August 14, 2019</td>
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<td>Hiring of Rebecca Hernandez as Business Coordinator</td>
<td>September 16, 2019</td>
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<td>Hiring of Cindy Wall as Interim Associate Director</td>
<td>October 1, 2019</td>
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<td>Hiring of Brian Salge as Regional Coordinator</td>
<td>Oct. 1, 2019</td>
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<tr>
<td>Hiring of Mollie Huber as Regional Coordinator</td>
<td>Oct. 1, 2019</td>
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<tr>
<td>Hiring of Travis Burks as Program Specialist</td>
<td>Feb. 1, 2020</td>
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<tr>
<td>Hiring of Gianna Colson as Program Specialist</td>
<td>Mar. 15, 2020</td>
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<tr>
<td>Hiring of Valerie Wingerson as Regional Coordinator</td>
<td>Apr. 1, 2020</td>
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<tr>
<td>Hiring of Chris Page as Regional Coordinator</td>
<td>Apr. 1, 2020</td>
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<tr>
<td>Hiring of Sherri Seaman as Regional Coordinator</td>
<td>Apr. 1, 2020</td>
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NPI’s Workforce Industry Training (WIT) program is for high school students who are interested in expanding their knowledge and understanding of careers in STEM. More specifically, the purpose of WIT is to mentor, encourage, and prepare students for STEM-rich programs at universities, two-year technical colleges, and technician certificate programs. In order to re-double efforts and reach more high schools and students across the State of Texas, the former “POWERSET” program was absorbed into the WIT program starting in Fall 2019.

Through the NPI restructure, the 2019 – 2020 academic year was a major year of growth for NPI. As shown in the WIT graphs, NPI more than tripled student participation compared to previous years and significantly increased high school partnership numbers across the State of Texas.
Like many across the country, NPI was also significantly impacted by the COVID-19 crisis. Traditionally, the outreach programs offered by NPI are based on face-to-face interactions, visits, or tours. The crisis “allowed” NPI to demonstrate its creativity, flexibility, and adaptability to support the needs of partners impacted quickly and efficiently.

During this crisis, NPI productively adjusted programs, altered requirements, and provided assistance to schools in order to quickly transition to virtual teaching and learning. School partners were allowed to use NPI funds to offer virtual access to their WIT students. These funds helped to provide students the ability to continue their education and opportunities and stay involved in WIT programs remotely.
K-12 Program Comparison
2018-2019 vs. 2019-2020

2018-2019 WIT School Partners: 18

2019-2020 WIT School Partners: 30

2018-2019 WIT Membership: 987

2019-2020 WIT Membership: 1,916

2018-2019 WIT Participation: 7,179

2019-2020 WIT Participation: 13,694
COVID Support: 14,113
Total: 27,807

2018-2019 K-8 Mentoring Participation: 893

2019-2020 K-8 Mentoring Participation: 1,161
Workforce Industry Training (WIT) Logo

- Color Scheme – Primary Colors (red, yellow, blue) plus Green for “green energy”
- Represents green energy – center of diagram
- Lightning bolt / electricity – represents energy and energy transmission
- Nuclear trefoil – represents nuclear power and radiation science
- Red Lasers – red represents intensity of power
- Gears – indicates mechanical engineering and implementation of energy
- Windmill – represents clean energy technologies
- Elements - Hydrogen (simplest atom, fundamental to many industries and energies), zirconium (nuclear fuel cladding), and uranium (nuclear fuel)
- Methane molecule (natural gas) – represents petroleum/fossil fuel industry
Achieving Together through Optimistic Mentoring (ATOM) Logo

- Represents green energy – center of diagram
- Lightning bolt / electricity – represents energy and energy transmission
- Nuclear trefoil – represents nuclear power and radiation science
- Yellow Lasers – these lasers represent a measure of power
- Gears – indicates mechanical engineering and implementation of energy
- Windmill – represents clean energy technologies
- Elements - Hydrogen (simplest atom, fundamental to many industries and energies), zirconium (nuclear fuel cladding), and uranium (nuclear fuel)
- Methane molecule (natural gas) – represents petroleum/fossil fuel industry
- 3D Printing – Advanced manufacturing is enabling clean technology development around the world
- Refinery Skyline – Petroleum is the most prominent energy resource in the current era
- Graphene – Represents innovation enabled through nanomaterials and advanced material technologies
- Texas – NPI commitment to the State of Texas workforce
- Transportation – Represents technology advances across all modes of transportation (land, air, sea, and space)
- Agriculture – Represents advances in agricultural technology and methods
- Solar Panels – Clean and renewable energy resources
- The “O” in “ATOM” is a graphical representation of the Bohr Model of the hydrogen atom
Nuclear Power Institute

Nuclear Science Week Student Competition “Get to Know Nuclear”

NPI initiated this Nuclear Science Week Student Competition as another avenue for students to engage virtually, while still utilizing their creativity and challenging their knowledge with science projects and activities. This competition was brought on to coincide with Nuclear Science Week (NSW), an international, broadly observed week-long celebration to focus local, regional, national, and international interest on all aspects of nuclear science. During the week, educators, students, employers, and the community participate in a national recognition of how nuclear science plays a vital role in the lives of Americans—and the world. Activities during the week are intended to build awareness of the contributions of the nuclear science industry and those who work in it every day.

Texas K-12 students are invited to create an original project on current or future impacts and applications of nuclear science and technology in our lives. Projects should promote discussion and increase awareness around nuclear science and technology in their local communities.

SUBMISSION CRITERIA

The selection criteria for the competition are:
• Projects should demonstrate an understanding of nuclear science and technology applications as it relates to their project
• Projects can combine theoretical and practical content in a creative way
• Content needs to be as scientifically accurate as possible
• The project should be originally created by identified individual(s) making the submission
• No copyrighted material (such as music, images or videos not created by students) can be used
• Drawings and comic strips are illustrated on a standard letter sized paper, 8.5” x 11”.
• Videos are a maximum of 3 minutes long with an abstract maximum of 300 words.
• Parents, guardians, and educators can be advisors only.

For participation details email npi-info@tamu.edu

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<thead>
<tr>
<th>Grade Band</th>
<th>Competition</th>
<th>Submission Deadline</th>
<th>Awards</th>
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<tbody>
<tr>
<td>K-2</td>
<td>Drawing</td>
<td>October 9, 2020 By 11:59 PM</td>
<td>1st Place: $100 2nd Place: $50 3rd Place: $25</td>
</tr>
<tr>
<td>3-5</td>
<td>Comic Strip</td>
<td>October 9, 2020 By 11:59 PM</td>
<td>Winner: $200 (Per category and Grade band)</td>
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<td>6-8</td>
<td></td>
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<tr>
<td>9-12</td>
<td></td>
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<td></td>
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<tr>
<td>6-8</td>
<td>Video with required abstract</td>
<td>October 9, 2020 By 11:59 PM</td>
<td>Winner: $1,000 Runner-up: $500 (Per category and grade band)</td>
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<tr>
<td>9-12</td>
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The Texas Food Industry is typically not thought of when students think of “STEM”. However, there are millions of jobs around Texas and the United States dedicated to STEM in this industry. From automation to production, and food science to workforce, NPI designed this “Science in the Kitchen” program to highlight the Texas Food Industry and the STEM applications often overlooked within.

This program will help students learn the science behind cooking while creating delicious meals with step by step instructions. The “Science in the Kitchen – Cooking up Curiosity” video series explores the science, production, automation, distribution, and workforce behind the Texas food industry using the “kitchen” and “cooking” as alternative platforms to convey STEM knowledge and information. Each “cooking” episode “peppers” science factoids throughout the demonstrations and each “in the field” episode “unearths” the STEM before food enters the kitchen.
The NPI “Clean SMARTS Master Class” is designed to provide a virtual outlet for students to engage with high-profile experts in Texas. Due to COVID-19, virtual experiences are critical in engaging high school students across the State of Texas. This video series is completely FREE for all and gives participants an opportunity to hear, learn, and be inspired by experts in the areas of Security, Manufacturing, Automation, Radiation science, Technology, and Success skills (SMARTS). These experts will share their knowledge and expertise, providing an opportunity to acquire skills, up-skill, and even learn the importance of retraining in an age of constant change.

Meet the Experts

Chrisma Jackson
Senior Manager, National Security Programs / Texas A&M University Campus Executive

Rob Gorham
Executive Director of Manufacturing Initiatives

Aaron Demerson
Commissioner Representing Employers, Texas Workforce Commission (TWC)

Dr. Sean McDeavitt
Director, Nuclear Engineering & Science Center (NESC); Director, Nuclear Power Institute (NPI); Principal Investigator, Fuel Cycle & Materials Laboratory; Professor, Texas A&M University, Department of Nuclear Engineering

Suzanne Jaworowski
Senior Advisor, U.S. Dept. of Energy, Office of Nuclear Energy; Chair, International Framework for Nuclear Energy Cooperation (IFNEC)

Shayla Rivera
Professor of Practice, Director of ENGR[x]

Why Should Students and Educators Participate?

- Enrich their understanding of Clean SMARTS through access to world-class experts
- Earn a Clean SMARTS Master Class Certificate of Completion
- Create & submit a Clean SMARTS inspired project into the Grand Finale competition
- Apply to attend the Grand Finale in College Station
  - Two categories: Educator and Student
  - 1st Place: $3,000; 2nd Place: $1,500; 3rd Place $750
“The Path of Most Persistence”, highlights and shares the tenacious stories of our partners with all whom listen providing inspiration, motivation, and appreciation throughout the great State of Texas. We believe the experiences and storytelling of our guests will illuminate our “Path”.

The objective of this podcast is to educate and inspire, serving as a window into the people we engage and our world of developing the necessary workforce to support continuing and emerging nuclear applications and clean technology needs across the State of Texas.

Listen to our podcasts on our [website](#) or [YouTube channel](#)
In the Spring 2020 semester, NPI wanted to start a recurring quarterly newsletter that would highlight recent NPI news, events, new programs, and successes. Thus, a naming competition of this newsletter was announced to NPI partners across the State of Texas. NPI received many submissions, and eventually chose “The Catalyst” as the contest winner. Submitted by then-junior Palacios High School WIT member, Patricia Castanon, who explained the reasoning behind her submission:

“A catalyst may be defined as “an agent that provokes or speeds significant change or action” and that is exactly what NPI is designed to do. NPI endeavors to be a catalyst that creates a network of engagement in the State of Texas between students, educators (at all levels), and industrial/professional employers to inspire and educate the emerging generation to consider science, technology, engineering, and math (STEM) as possible educational paths leading into STEM focused careers. We want students to become knowledgeable and comfortable in navigating the numerous and rewarding Texas higher education and workforce opportunities.”

Each issue includes:

- K-12 Outreach
- Impacts and Engagement
- Student Highlights
- Serve and Inspire
- “Do Try This At Home” science projects
Virtual Tours

Virtual learning experiences have been a critical pivot during the current COVID-19 pandemic. NPI has compiled a list of resources from around the State of Texas that provide virtual tours of their facilities and labs. These resources will be used in lieu of the normal face-to-face interactions students participate in during this COVID era.

With the use of virtual tours, students will have a wider array of industry “visits” to experience, regardless of school budget or geographical location in Texas. This will also allow students who would not be able to attend face-to-face visits to off-campus locations due to other commitments an opportunity to participate.
Higher Education Collaborations

Through the 2019 – 2020 academic year, NPI introduced the encouragement of K-12 outreach programs along with other traditional requests for proposal submissions from higher education institutions across the State of Texas. NPI received and accepted over $1.8 million in higher education contracts to start the 2020 – 2021 academic year. These contracts included activities ranging from developing outreach programs, internships, technology and equipment expenses, and summer camps.

During the COVID-19 pandemic, much of the State of Texas was impacted financially. Funding was reduced in higher education institutions across the State of Texas to counter the financial impact from closing businesses and social distancing. This reduction significantly impacted NPI and its partners. Unfortunately, NPI was forced to cancel the 2020 – 2021 academic year contracts with its higher education partners. Even so, NPI allowed support for three higher education partners were able to implement their planned programs for the Summer of 2020.

Prairie View A&M University, Texas A&M University - Kingsville, and the University of North Texas were able to provide STEM-related programs and activities for high school students. These programs included an outreach STEM camp, summer internships, a research experiences program, and K-12 STEM catch-up summer program. A total of 271 students were impacted over the 2020 summer because of the programs NPI supported through its higher education partners.
Social Media

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www.youtube.com/user/NuclearPower01/