

# OhioENGINEER

Volume 83/Issue 4

The Official Publication of the Ohio Society of Professional Engineers

2023

## Ohio's engineering schools deliver an A+ education to students & improve communities



### Education & Technology Issue:

EFO needs you, page 1

Upcoming CPD programs, page 4

All Ohio Future Fund, page 5

Feature: Ohio's engineering schools, page 6

NAE's Russ Prize for bioengineering achievement, page 10

State Board of Registration news, page 14

Ohio pioneers electric vehicle infrastructure, page 16

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The Ohio Engineer (ISSN 0194-9276) is published quarterly by the Ohio Society of Professional Engineers. **Postmaster:** Send address changes to Ohio Engineer, 400 South Fifth Street, Suite 300, Columbus, OH 43215. Annual subscription rate \$25 (included in NSPE-OH membership dues). The Ohio Society of Professional Engineers is not responsible for the authenticity or accuracy of information provided herein. Published opinions and statements do not necessarily reflect the opinion of NSPE-OH. Products and services advertised, other than those offered as NSPE-OH member benefits, do not carry the endorsement of NSPE-OH. Publisher reserves the right to decline any advertisement that is deemed inappropriate. The sales representative for Ohio Engineer does not have final authority to determine whether an advertisement may be placed in Ohio Engineer. The ultimate determination as to the appropriateness of any advertisement is subject to the discretion of the NSPE-OH Public Relations Committee and the publisher acting in accordance with the guidelines established by NSPE-OH.

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## LEADERSHIP VIEWS

by Tina L. Sutermeister, MBA, PE, FNSPE,  
*President, Engineers Foundation of Ohio*



# EFO needs you to bring math & engineering to kids

*Professional education programs will benefit you*

In this "education and technology" themed magazine, it is a reminder to all of us that the Engineers Foundation of Ohio (EFO) offers several educational opportunities from elementary school students through to retirement.

The educational programs help PEs effectively meet Ohio's continuing professional development (CPD) requirements while also providing opportunities for us to expand and introduce engineering to K-12 students.

We are in the middle of our outreach programs and, as always, our programs rely 100 percent on volunteers.

Please consider and strongly encourage your colleagues to participate in EFO's community outreach programs, including Imagine Engineering for second graders, Ohio MATHCOUNTS for middle school students, and the scholarship program for graduating high school seniors and college students. These EFO programs are not successful without your support!

My first volunteer event as an NSPE/NSPE-Ohio member was in the scoring room of the Franklin County Chapter MATHCOUNTS competition in the mid-1980s. I had volunteered on a Saturday to join the Chapter at Franklin University. I knew no one that was attending this event as either a participant or a volunteer, but I was welcomed as a scoring room volunteer and immediately put to work.

I volunteered for MATHCOUNTS because I remembered that back when I was in junior high school there were

no academic competitions available for student participation, but I had wished there were a math program. When I was in school, the academic competitions did not start until high school.

My senior high school was for tenth through twelfth grades and the junior high school had seventh through ninth grades.

When I was in ninth grade, my math teacher asked me and several other students if we wanted to go over to the senior high school and take a math test.

My math teacher, Mrs. Georgia Robinson, saw more opportunities for me in the future. I loved math and was very intrigued with all science topics.

When the day came for of the math competition, I took the test with several of my classmates. I thought no pressure with taking this test as my classmates and I were not expected to do well.

As you would expect, there were some questions that I found very easy to solve and others that I had no idea how to tackle.

Well, much to my surprise, a few days later the results of this math competition were announced and I had come in third place with only two seniors beating me for the first and second place in this competition.

This experience was wonderful for me and the main catalyst for why I have supported the MATHCOUNTS program for so many years.

See "EFO needs you," page 3

## On the cover:

Members of the University of Akron's Zips Racing Formula Combustion student design team worked tirelessly to prepare ZR22, a.k.a. "Silvia," to show in Europe. Silvia was the only American combustion car on the racetracks against other collegiate Formula race teams in Austria, Hungary and Germany last summer. The UA team finished 10th in Austria, 3rd in Hungary, and 9th in Germany.

See feature article, page 6. Photo Credit: The University of Akron





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**Look for the EFO check-offs on your  
NSPE-Ohio membership renewal.**



Please consider getting involved in MATHCOUNTS & volunteering at the Ohio competition on March 16!

In order to continue the EFO programs from year to year, EFO relies on contributions from the NSPE-Ohio members, businesses located in the state of Ohio, and the general community.

If you have not already contributed, consider contributing through the annual Pass-The-Hat campaign or the memorial/honor gift program. Contributions are accepted throughout the year for these fundraising programs.

The memorial and honor gift program allows your contribution to be in remembrance of a colleague or loved one; in honor of a fellow member, colleague or family member; or a planned gift where you are able to specify how funds are used in perpetuity.

Also, take advantage of the EFO-sponsored CPD conferences as an avenue for you to fulfill your biennial PE license requirement.

EFO's CPD hours are designed to meet the requirements of the Ohio Board of Registration for Professional Engineers and Surveyors and allow you to obtain managerial, technical and ethical hours to satisfy the 30-hour biennial requirement.

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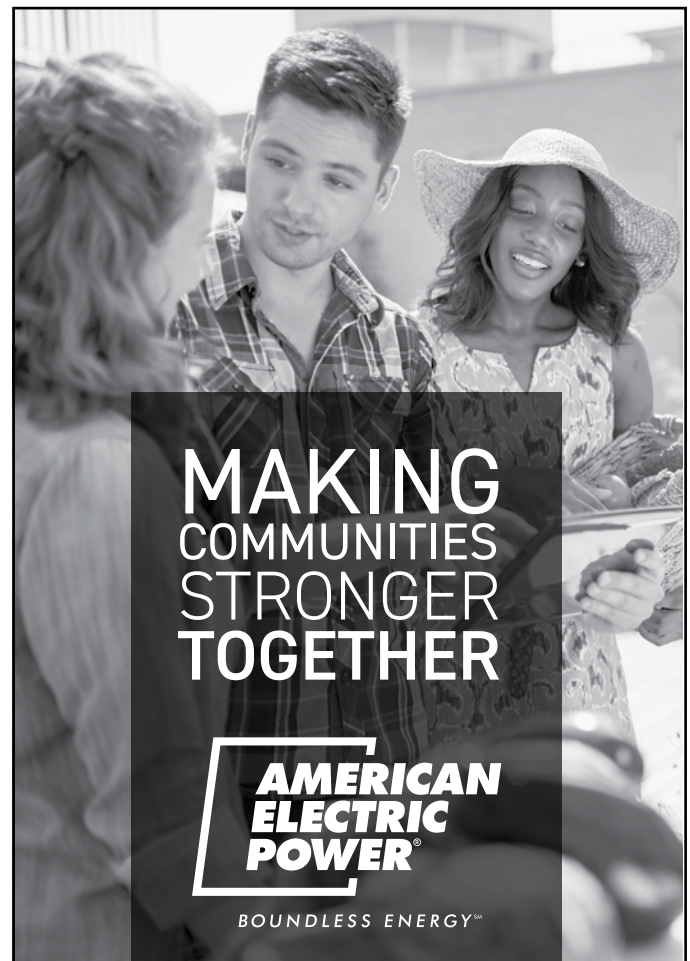


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## 2024 ALL-OHIO ENGINEERING CONFERENCE

  
 June 13-14 | 12 Virtual CPD Hours  
 June 15 | Embassy Suites Columbus Airport

**S**ave June 13-15 for NSPE-Ohio's 2024 All-Ohio Engineering Conference, and email [ospe@ohioengineer.com](mailto:ospe@ohioengineer.com) to register. NSPE-Ohio members will enjoy a 30 percent discount off the regular registration fee!

On Thursday and Friday, June 13-14, NSPE-Ohio is proud to present **12 virtual CPD hours** – education specifically designed for Ohio's PEs.

Saturday, June 15, features in-person activities. Join us at the **Embassy Suites Columbus Airport** for the Awards Luncheon honoring the 2023-2024 NSPE-Ohio & EFO engineering award winners and student award winners from Imagine Engineering, Ohio MATHCOUNTS & Scholarships! After lunch, NSPE-Ohio and EFO will host their Annual Member Meetings and a joint Installation Ceremony. The in-person program will end with a relaxing & celebratory Year-End Dinner in Greater Columbus.

*Special this year, we will honor the **Engineers Foundation of Ohio's 60th Anniversary** during the Awards Luncheon! Join us to celebrate EFO's many achievements!*

During the virtual CPD conference, engineers will hear from industry experts on timely

topics; it is education you can use. Seminars include:

**"Ohio DOT: Embracing New Technology & Advancing Federal Initiatives,"** by Rachel Lewis, PE, ODOT, Administrator, CADD & Mapping Services

**"Water Regionalization & One-Water Planning,"** by Chad Roby, PE, BCEE, PMP, Senior Project Manager & Joseph Danyluk, AICP, Director of OneWater, Jacobs

**"Engineering Ethics: Disparate Impacts of Engineering Solutions,"** by Daniel Lacks, PhD, PE, Associate Dean & Professor, Case Western Reserve University  
**(ETHICS TRAINING)**

**"2024 Ohio Building Code Updates,"** by Deborah Ohler, PE, Construction Codes Administrator, Ohio Board of Building Standards

**"How's the Weather Down There? Advanced Air Mobility & Its Low-Altitude Meteorological Challenges,"** by Chad Mourning, PhD, Assistant Professor, Ohio University

**"Will We See Fusion Power in the Next 10 Years?"** by Jay Brister, Managing Director, Blue Sky Nuclear

**"Signage: Traffic Control Devices,"** by Deb McAvoy, PhD, PE, PTOE, Ohio University

**"A Practitioner's Guide to the Application of Special Inspections,"** by Richard Allen, PE, President, Bowser-Morner, & Michael Mazzoli, Regional VP, Building & Construction, Intertek-PSI

**"The Ohio Ethics Law & Engineers: Putting the Pieces Together,"** by Susan Willeke, Training & Communications Manager, Ohio Ethics Commission  
**(ETHICS TRAINING)**

**"Causation of Deflection of a Conventional Podium Slab & the Consequential Damage: A Case Study,"** by Edward Fronapfel, MSCE, PE, CEO, SBSA, LLC

**"The Role of Professional Engineers for Utility Companies,"** by Nick Phillips, PE, PMP, Western Design Engineering Team Leader, NiSource

**"System Safety: A Fascinating Subdiscipline of Engineering Practice,"** by David West, PE, Examinations Director, Board of Certified Safety Professionals

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# State announces guidelines for \$750 million All Ohio Future Fund

Three-quarters of \$1 billion is being made available to prepare local sites for development.

The new **All Ohio Future Fund** was introduced by Governor Mike DeWine, Lt. Governor Jon Husted, and Ohio Department of Development (ODOD) Director Lydia Mihalik. The trio announced that \$750 million will be provided to local communities to help increase the state's inventory of project-ready economic development sites.

Funding awarded through the All Ohio Future Fund will be used toward one-time local infrastructure costs that are necessary to prepare sites for future economic development projects.



"Increasing our inventory of project-ready sites is imperative for continued economic growth," said Governor DeWine. "With the help of this program, we will usher in a new era of economic development for Ohio, fueling opportunity for generations to come," Governor DeWine continued.

The DeWine-Husted Administration created the All Ohio Future Fund in partnership with the Ohio General Assembly as part of the current operating budget.

"As more businesses look to create a domestic supply chain, and because Ohio is a great place to work and do business, there is a demand for job-ready sites for businesses to locate and grow," said Lt. Governor Husted.

"We are preparing Ohio to protect America's economic and national security by making more of the products we need to live and thrive," he continued.

ODOD will administer the program in coordination with the Office of Budget and Management. ODOD released detailed guidelines on the program, including project requirements and eligibility.

"Through the All Ohio Future Fund, communities can set themselves up to be the next great economic success story in Ohio," said ODOD Director Mihalik. "By fostering a landscape of opportunity across our state, we not only attract investments but lay the foundation for sustainable development, ensuring a prosperous future for Ohio communities and businesses alike."

The program application will open in early 2024 to local government entities, including counties, cities, villages, townships, port authorities, community improvement corporations, conservancy and park districts or other similar park authorities, land banks/land reutilization corporations, nonprofit organizations, transportation improvement districts, and for-profit organizations willing to develop project-ready sites.

Applications will be received and awarded on a rolling basis.

Awardees will be expected to find site occupants within five years.

Eligible costs include infrastructure costs such as public roadwork, water and wastewater infrastructure, design and engineering, demolition, wetland mitigation, utility gap funding, and one-time site enhancements.

Funding, which will primarily come in the form of 0% interest loans that may be partially forgivable, cannot be used for land/site acquisition.

ODOD will provide an "Indication of Interest" outline for interested applicants. These will be accepted following final Joint Committee on Agency Rule Review (JCARR) approval of the Rules.

"The All Ohio Future Fund is part of the bold vision from the collaboration of the DeWine Husted Administration and state legislature, which will continue the economic momentum our state's achieved since 2019," said JobsOhio President and CEO J.P. Nauseef.

## NSPE-OH<sup>®</sup>

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## WELCOME, NEW MEMBERS

Welcome to these new NSPE-Ohio members from January 5, 2024, through February 28, 2024:

### **Akron District Chapter**

Kristin Emilie Holland, PE  
Md Jarir Hossain

### **Dayton Chapter**

Leonard MacTunstall, Jr.

### **Franklin County Chapter**

Andrew Shane McNichols

### **Mahoning Valley Chapter**

Olivia Anne Mineo

### **Maumee Valley Chapter**

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### **Northeast Chapter**

Hogan Andrew Kern

### **Southwest Ohio Chapter**

Olusola Andrew Olatona  
Tyler Tepe, PE

### **Toledo Regional Chapter**

Ivie Otasowie

"The critical need for strategic sites throughout Ohio is key to success for both companies and communities building for today and investing for a prosperous tomorrow," Nauseef continued.

Detailed information is available on the Ohio Department of Development website, <https://development.ohio.gov/community/economic-development/all-ohio-future-fund>.

Those interested in applying should review the Indication of Interest checklist, narrative form, and data form for guidance on submitting a site development proposal.

Proposals may be submitted via email to [AOFF@development.ohio.gov](mailto:AOFF@development.ohio.gov), and will be accepted and reviewed on a rolling basis until funding is depleted.

# Ohio's engineering schools deliver an A+ education to students & improve communities

Ohio engineering schools are known for excellence. They are among the top-rated engineering schools in the U.S. and they deliver quality education to students and collaborate with industry to help communities thrive. To follow is OhioENGINEER's annual feature showcasing the exciting things happening in Ohio's engineering schools:

## **Kent State's students engineer aircraft for lighter-than-air competition**

At Kent State University, first-year engineering students are diving into hands-on learning through a unique challenge in the College of Aeronautics and Engineering. Teams design, build, and navigate helium balloon-suspended, propeller-driven aircraft through an obstacle course in the Timken Atrium of their newly expanded building in the "Lighter Than Air" competition. Students in all engineering disciplines work together for months in and outside of the lab from conception to completion of their aircraft.

Freshman mechatronics engineering student Lilly Kensicki said, "Having an assignment that I could see developing in front of me helps me truly understand a problem and find a better way to solve it."

This competition not only highlights creativity and problem-solving but also underscores the importance of teamwork and practical engineering skills for future innovators.

## **University of Akron students restore joy of fishing with creative medical device**

Last year, the University of Akron's Medical Device Design Team tackled a challenge faced by Willie Tresz, a local resident with muscular dystrophy who loves fishing but is hindered by hand controls on the rod and reel. The undergraduate student-led team, collaborating with Summit Developmental Disabilities, TechVerse and Inclusioners, developed an adaptive fishing pole for Tresz. It features a "sip-and-puff" switch activated by his breath to enable independent control of the fishing line. This partnership between biomedical engineering students, leaders and a deserving individual resulted in a successful

prototype that can improve Tresz's quality of life with a simple breath.

For more information visit <https://uakron.edu/im/news/restoring-the-joy-of-fishing-with-innovative-medical-device>.

## **Mount Union engineering students collaborate on international project**

As part of its required and dynamic Global Engineering course, 24 engineering students from the University of Mount Union traveled to Abu Dhabi, United Arab Emirates, during the 2023 spring break. The Mount Union students worked with peers and faculty from Al Ain University to build and test a flood detection system.

This faculty-led experience provided the Mount Union students with the opportunity to design and develop the system to make a real-world impact on a local community. The students also got to immerse themselves in local culture and hear from private and public sector professionals in Abu Dhabi.



University of Mount Union students collaborated with peers from Al Ain University in Abu Dhabi, United Arab Emirates during their spring break as part of Mount Union's unique Global Engineering course.

## **Ohio Northern College of Engineering is awarded a grant for new advanced metals lab**

The Don Wood Foundation has awarded Ohio Northern University's (ONU) T.J. Smull College of Engineering a grant to develop a new advanced metals laboratory to prepare students for careers in advanced manufacturing and to prepare graduates to meet the needs of regional manufacturing companies. In honor of this investment in the University, the new lab

will be named the Don Wood Foundation Advanced Metal Technology Lab and is anticipated to open in fall 2024.

Regularly ranked as one of the top undergraduate engineering programs in the country, ONU offers programs in civil engineering, computer engineering, computer science, electrical engineering, engineering education and mechanical engineering.



The new Don Wood Foundation Advanced Metal Technology Lab at Ohio Northern University is anticipated to open in fall 2024.

## **Wright State University & WinSupply partner to provide software engineering course**

The College of Engineering and Computer Science at Wright State University is partnering with WinSupply to provide a course that prepares students to hit the ground running in software engineering careers. Using the same tools, processes, and practices they use in their own workplace, WinSupply software engineers collaborate with Wright State faculty to teach students the principles of professional software design. Students learn



Senior biomedical engineering students at Wright State designed a voice-activated interface for radio-controlled model sailboat for use by quadriplegic RC sailboat hobbyists.



Kent State University College of Aeronautics and Engineering first-year students participating in the Lighter Than Air competition where teams are challenged to design, build and navigate helium balloon-suspended, propeller-driven aircraft through an obstacle course.

Photo credit: Kent State University



concepts like version control, agile software development, and human-computer interface design. Upon completion of the course, students are well-prepared to work as a part of a team developing professional software using the latest technology.

**Case engineering students are recognized on NBC Nightly News for adaptive camera device**

Case School of Engineering students completed a project that's helping a local man chase his passion for photography—and their efforts were recognized by NBC Nightly News. Using the resources in



Photographer Aurelian Barber (left) and Case School of Engineering students are interviewed by NBC Nightly News.

the Larry Sears and Sally Zlotnick Sears think[box]—a 50,000-square-foot maker-space at Case Western Reserve University—a group of students crafted a device to help photographer Aurelian Barber overcome arthrogryposis. The condition limits the muscles and joints in Barber's limbs, making it difficult for him to stabilize and position his camera.

The news segment shows footage of Barber taking photographs near the Cleveland Museum of Art—and follows the students, members of the Humanitarian Design Corps, as they demonstrate the tools they used throughout think[box] to create the device.

"This project was a great opportunity to use my interests to make someone's life better," one student shared.

**Cedarville University capstone project is headed toward FDA approval to save lives in seconds**

Saving lives in seconds is the goal of a proposed new arterial restrictive clamp (ARC), initially a capstone project by engineering students from Cedarville University. The device is on the brink of gaining FDA approval for nationwide distribution.

Born from the collaboration of students and Dr. Tim Norman, distinguished

professor of mechanical and biomedical engineering, ARC addresses life-threatening carotid artery injuries with unique precision. This groundbreaking device, different from conventional tourniquets, allows targeted pressure application while maintaining vital blood flow and airway access. With simulated testing showcasing remarkable results, the ARC device is now in the biological testing phase, targeting FDA approval in early 2024. This three-year journey by the team, forming ARC Trauma, LLC, exemplifies a commitment to innovation in trauma care.

Cedarville University is a Baptist university with undergraduate programs in arts, sciences, and professional pro-



Cedarville University Dr. Tim Norman, left, with the students who worked on the ARC project.

See "Ohio schools," page 8



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grams, and graduate programs. With an enrollment of 5,456 students in 175 areas of study, Cedarville is one of the largest private universities in Ohio. For more information about the University, visit [cedarville.edu](http://cedarville.edu).

**Central State students, faculty work with CCAT to reduce traffic congestion & improve air quality**

Students and faculty in the environmental engineering program at Central State University assessed air pollution from traffic-exhaust emissions (particulate matter, nitrogen oxides, sulfur oxides, and carbon monoxide) as a part of the Center for Connected and Automated Transportation, a consortium of sixteen Midwest institutions. They also evaluated greenhouse gases (carbon dioxide, nitrous oxide, and methane) across interstate interchanges where the traffic densities are high and the congestion in these areas leads to elevated levels of these pollutants. They developed a SmartAirRoad app to calculate and display these pollutants from their vehicles on predefined roads and intersections of Ohio approaching interstate interchanges. This work's long-term impact is reducing traffic congestion and improving air quality and public health.



ITS Michigan Scholar Award winners, Central State students Kimberly Smith and Jalen Smith, at the 2023 CCAT Global Symposium in Ann Arbor, Michigan, April 5, 2023, with their mentors Dr. Nedunuri (far left) and Dr. Kandiah (far right).

**Engineering study abroad opportunities take flight at University of Dayton**

A heavy course load shouldn't preclude University of Dayton engineering students from studying abroad. Offerings specific to UD engineering students can count seamlessly toward degree credits. First-year students heading to Costa Rica during spring break 2024 will learn how the country is moving toward carbon neutrality. Other students can pick up course credit in global project management, sustainability manufacturing or environmental history during a month-long summer trip to Germany to study sustainability. Other opportunities have included a summer session in Italy to learn about architecture and urban planning. More information can be found at <https://udayton.co/YPi>.



Ohio State engineers and University of Dodoma students visit the borehole drilling site in Njakati, Tanzania.

**Ohio State Buckeyes are committed to solving Marwa's water crisis**

In the Tanzanian village of Marwa, women and young girls spend up to five hours each day walking to collect the water their families need to survive.

Since 2016, The Ohio State University College of Engineering has been working to bring clean, sustainable water to the rural community of approximately 5,000 people.

More than 150 Ohio State students have traveled to the region to collaborate on project efforts with the community, government officials, the Kilimanjaro Hope Organization, and the University of Dodoma.

What began as a single student capstone project has evolved into a multi-faceted program encompassing the Global Capstone Design course, community-engaged learning courses, and undergraduate research projects.

Learn more: [go.osu.edu/marwa-water](http://go.osu.edu/marwa-water).



University of Dayton students Keeley Dryden and Michael Perrone perform a survey during their trip to Bolivia as part of UD's Ethos Center, which provides service-learning experiences through technical immersions, student activities, research and hands-on projects.

Credit: University of Dayton Ethos Center

**University of Toledo engineering students design smart glasses**

A team from the University of Toledo College of Engineering created smart glasses for their Senior Design Expo team project. The Expo, a long-standing tradition and a requirement for graduation in the College of Engineering, featured 338 senior engineering students offering hands-on demonstrations and answering questions about 80 innovative projects.

The Smart Glasses Team's augmented reality holographic glasses tackled the challenges of the communication gap for those with hearing loss and for linguistic barriers between people of different languages.

The smart glasses integrate translation, real-time speech-to-text transcription, AI holographic displays, 3D image illusion with floating captioned text, and voice assistance.



At the University of Toledo Senior Design Expo, an engineering student shows off the Smart Glasses Team's augmented reality holographic glasses.

**Youngstown State University trains engineers in microelectronics & works with microstrip antennas**

The Youngstown State University College of Science, Technology, Engineering & Mathematics' Assured Digital Microelectronics Education & Training Ecosystem (ADMETE) seeks to develop a pipeline of trained engineering professionals with skills in assured and trusted microelectronics solutions. Researchers, Sanjee Lamsal and Vamsi Borra, PhD, are investigating the use of additive manufacturing to create microstrip antennas on a flexible substrate. The antennas provide a broad spectrum of uses. At lower frequencies, they can be used for health

See "Ohio schools," page 9





Youngstown State University's microstrip antenna is printed on a flexible substrate.



Cleveland State University engineering students test an assistive robotic feeding device.

monitoring systems such as glucose monitoring and early detection of breast cancer cells. At higher frequencies, they can be employed in wireless network applications.

**Cleveland State gets \$2 million NSF grant for human-machine systems in rehabilitation**

Cleveland State University's interdisciplinary team has secured a \$2 million grant from the National Science Foundation (NSF) for human-machine systems in physical rehabilitation. Led by Eric M. Scheerer, PhD, PE, the team aims to enhance assistive technologies for people with disabilities, addressing issues like fall prevention and motor function restoration. The NSF Research Traineeship program in the grant fosters collaboration between developers and users, overcoming barriers such as privacy concerns and stigma. The team envisions long-term collaboration among engineers, therapists, psychologists, and urban experts to create inclusive technologies for people with disabilities, promoting cross-functional approaches to physical rehabilitation. The Washkewicz College of Engineering now offers an undergraduate program in biomedical engineering further enhancing this initiative.



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# The Russ Prize spotlights invaluable bioengineering achievement, spurs R&D 'that improves the human condition'

Alfred Nobel signed his third and last will in Paris in November 1895. In it, he specified that the bulk of his fortune should be divided into five parts to be used for prizes in physics, chemistry, physiology or medicine, literature and peace. He died a little more than one year later in December 1896, and in December 1901 the first Nobel Prizes were awarded.

The Nobel Foundation makes it clear that Nobel did not employ a lawyer to help him write his will, which has caused enormous complications since his death. It makes sense; there have been people, historical and modern, who have questioned how his final wishes were executed.

Was Nobel's intent shortchanged?

"Back then, more than 128 years ago, these disciplines were not defined as they are today," said NSPE-Ohio President Dennis Irwin, PhD, PE, FNSPE. "The discipline names were not set the way we understand them now."

Irwin and other engineers maintain if Nobel did not explicitly name an "engineering" prize, he also never intended to exclude engineering. After all, Nobel himself was as an engineer as we define the term today.

Yes, some people with engineering backgrounds have received the Nobel Prize in Physics. However, the lack of a specific engineering prize was keenly felt by many in engineering.

Fritz J. Russ, PhD, felt strongly that a prize with a significant cash award should be made available for achievements in bioengineering, a field in which he took a keen and personal interest. He knew that a notable prize would help the public understand how engineers improve the human condition. He also knew that the large



Dennis Irwin, PhD, PE, FNSPE, Ohio University

cash award would allow recipients to advance vital research, which would benefit the public health, well-being and quality of life, or it would let them endow scholarships for the next generation of engineering innovators.

In this story, Irwin takes OhioENGINEER readers back to pay tribute to **Dr. Fritz and Mrs. Dolores Russ**, the namesakes of the Russ College of

Engineering and Technology at Ohio University, and to share his narrative of the invaluable **Fritz J. and Dolores H. Russ Prize**. The one-of-a-kind bioengineering prize with a \$500,000 cash award is jointly administered by Ohio University's Russ College, which holds the funds, and the National Academy of Engineering (NAE), which selects a winning achievement biennially.

As the former dean of Ohio University's Russ College, Irwin spent a great deal of professional and social time with the Russes. He got to know them well, and they became close friends.

Irwin first met Russ in 1987 when Irwin was new at Ohio University and an assistant professor.

Irwin recalled, out of the gate, Russ asked him: "How can I help you?"

Cheekily, Irwin pointed out his boss and said, "Tell him to give me tenure."

To this, Russ responded earnestly asking Irwin, "Do you deserve tenure?"

Russ was studying electrical engineering at Ohio University in the early 1940s when his sister, Midge, introduced him to her friend, Dolores Houser, who worked nearby at a hair salon in Athens.

As Irwin said, "She attended Ohio University at one time, too."

Soon after meeting, Russ and Dolores were married. Irwin noted that

they always shared an immense love between them.

"Fritz graduated in 1942 and they both worked in naval research labs in the 1940s," said Irwin.

Russ was an electronics expert for the United States. During World War II, he designed data collection equipment for the first U.S. post-war nuclear tests and traveled to Bikini Atoll in the Marshall Islands to witness the hydrogen bomb test.

Irwin recalled, "He got on a practically destroyed ship to retrieve data."

Russ engaged in a lot of classified projects for the military. At Wright-Patterson Air Force Base, he invented a firing error indicator to measure the precise distance by which an aircraft gun misses its target and then adjusts the gun in time for the next shot.

"Tech booms weren't relegated to the 1990s," said Irwin. "There was a huge amount of tech developed after World War II." Irwin pointed to the tremendous amount of basic research in math, chemistry, physics, and systems theory that came out of the war.

"The research into navigation systems – radar, you name it – was started in WWII," said Irwin. "In the civilian and military aviation worlds it led quickly to jet airliners and transatlantic travel. Fritz was doing work for this."

"Fritz was working for the Air Force – as a contractor probably – and he went on a trip with one of the generals who was stationed in Dayton," said Irwin. The general and Russ found themselves with only one overnight room available for the two of them.

"The general took the room," Irwin recalled. "Fritz slept on the floor. That's what motivated him to start his own company."

After the war, Fritz and Dolores Russ relocated to Dayton. In the early 1950s,

See "Russ Prize," page 11





Dolores H. Russ & Fritz J. Russ, PhD

the couple founded Knollwood Electronics and developed the first known transistorized wireless electric guitar.

In 1955, Russ established Systems Research Laboratories in Beavercreek, and before it was sold in 1987, it grew to become one of the nation's largest independent engineering and high-tech research firms. Dolores was always involved serving in business and managerial roles.

Irwin said Russ designed and developed the first system to monitor and report a host of information, including patients' vitals, to a central location within the hospital where professionals could track and analyze the data. His system was implemented at a hospital in the Dayton area.

At the Naval Research Laboratory in Washington, DC, he helped build the world's first high-voltage, RF-generated power supply, later used in every television set. He also oversaw development of the first electronic control system for large diesel generators, resulting in two patents.

Fifty-five years' worth of engineering innovation is credited to Russ.

And sometimes Russ helped launch essential innovation by spinning off companies in support of other people's work.

His friend and biochemist Leland Clark – who invented an indispensable blood-oxygen sensor – was funded by Russ and another engineer and friend, Hardy Trollander of the Yellow Springs

Instrument Company, to commercialize dissolved oxygen sensors.

"These sensors are vital for heart-lung surgeries," Irwin explained. "You can't perform these surgeries without this sensor. Leland won the Russ Prize for that." Indeed, Clark is famously known as the "father of biosensors."

In their lives, the Russes valued education, hard work and family. They were highly active in their community, including the Dayton Engineers Club and politics to an extent.

"They were tremendous advocates for the engineering profession," Irwin remembered. "The Russ Prize was Fritz's premier contribution for supporting the profession. Fritz was interested in improving the human condition, and the Russ Prize reflects that interest."

Russ was inspired by Clark's work.

"Through his friendship with Leland, Fritz developed an interest in bioengineering," Irwin said.

"That interest," he continued, "was strengthened by the fact that Fritz had developed Parkinson's disease, which is incurable." This was a difficult reality for Russ who was a proficient pilot and, as Irwin recalled, a strong presence in every room he entered.

"Fritz knew he was going to give Ohio University his entire estate – a large gift that has grown to about \$140 million," said Irwin, "and \$124 million was solely for the benefit of the Russ College."

"He made it clear he wanted an engineering prize to be funded as well," Irwin continued. The Russ Prize money is held by Ohio University's Russ College and disbursed to the National Academy of Engineering for Prize expenses."

Irwin said Ohio University's engineering dean at the time, Richard Robe, contacted the NAE president in 1999 to get started. The first prize was awarded in 2001.

Fritz Russ passed away in November 2004 and his beloved Dolores followed in January 2008.

The National Academy of Engineering offers a total of eight prizes, including these three major prizes:

- **The Russ Prize** for bioengineering
- **The Gordon Prize** for engineering education
- **The Draper Prize** for general engineering

Established to recognize an outstanding bioengineering achievement, the Russ Prize includes a \$500,000 cash award, a commemorative medallion, a certificate, and a presentation ceremony and awards gala at NAE in Washington, DC. In addition, a trip to Athens, Ohio, is encouraged so that the Russ Prize recipient can offer a lecture to the public and interact with students socially and at an academic luncheon.

The selection of the achievement is a two-year process. In January of even years, NAE announces the Russ Prize's availability to NAE, the National Academy of Science, foreign academics, American Society of Civil Engineers, IEEE, and others. Some people nominate their own achievements. The winning achievement is announced in odd years.

The NAE Russ Prize selection committee looks for candidates as well. This committee includes two people from Ohio University: Irwin and David Scholl, PhD, an alumnus who started Diagnostic Hybrids, Inc., now Quidel Corp, a company that makes diagnostic tools for viruses.

As Irwin explained, any achievement that is nominated for the Russ Prize should bring together engineering and medicine. Furthermore, any nominated achievement must be in widespread use and improve the human condition.

Irwin clarified the term "widespread use" explaining, "The achievement's impact must be significant in scale; the product must help millions of people, or it must have the potential to do so immediately."

No criteria require that the people involved in the achievement must be trained as engineers or hold any license or certification, he said.

"Certainly, there is promising tech that hasn't been out there long enough to have an impact," Irwin commented. "Almost every winner has been nominated multiple times."

"There are all sorts of nomination questions about 'who,'" said Irwin. "Was it one person or were there collaborators involved?"

Next, the Russ Prize selection committee wants to know, "Where else can this achievement lead?"

See "Russ Prize," page 13

## NSPE-Ohio leaders represent state at 2023 NSPECon in Louisville, KY



L-R: NSPE-Ohio leaders Chett Siefing, PE, Rodney Wilson, PE & Travis Rhoades, PE



NSPE-Ohio Past President Travis Rhoades, PE, is second from left.



EFO Past President Aurea Rivera, PE, is second from left.



NSPE-Ohio Past President Angela Newland, PE, FNSPE



NSPE-Ohio Executive Director Tim Schaffer

## Fall CPD Conference is the biggest yet



Photo 1

EFO President **Tina Sutermeister, MBA, PE, FNSPE**, hosted the largest ever Fall CPD Conference, November 2-3, 2023. Several hundred engineers attended the two-day program worth 15 CPD hours, including two hours of ethics training. In photo 1, Sutermeister films sponsor recognition in studio. In photo 2, she introduces the next speaker. In photo 3, she moderates a speaker's Q+A.



Photo 2



Photo 3

## NSPE-Ohio members share their pride on PE Day

For the fifth annual Professional Engineers Day, August 2, 2023, NSPE-Ohio members celebrated by sharing across social media brief videos highlighting the importance and value of the PE license and demonstrating their PE pride.



NSPE-Ohio President-Elect **Rodney Wilson, PE**, said, "It is an honor to serve the people of this state and our country. PEs have a responsibility to ensure the public is protected by the work that is produced. My career with the Ohio Department of Transportation was greatly enhanced by becoming a professional engineer." Now retired, Wilson added, he keeps his license to encourage students to consider an engineering career.



EFO President-Elect, consultant and University of Akron Professor **Scott Dilling, PE**, said two of his career dreams were to own a consultancy and become a professor of mechanical engineering technology, and PE licensure allowed him to pursue both. Dilling said, "Being a professional engineer can open up the doors to your career that otherwise may not be available." He encourages engineering graduates to start the path to licensure.



NSPE-Ohio Citation winner (2023), NSPE-Ohio Past President, and Shaffer, Johnston, Lichtenwalter & Associates President **Jeff Kennedy, PE**, said, "I'm thankful to be a licensed professional engineer for the past 33 years." He credits his PE license for the financial benefits it has afforded his career and because it has allowed him to serve his neighbors, community and profession, including through his daily work and his leadership with NSPE and NSPE-Ohio. He concluded saying the PE license "has given purpose and significance to my career."



"Fritz's purpose was to inspire the continuance of tech development," Irwin explained. "It needs to meet the richness criteria, which means that the achievement has further applications." To qualify for the Russ Prize, the nominated achievement cannot be the ultimate expression of something; it must further research or development.

Irwin asked, "If achievement leads to diagnosis, then what does diagnosis lead to?"

Irwin estimates that the NAE selection committee reviews 12 viable/complete nominations each biennial cycle, and the Russ Prize is awarded for a single achievement. (Any year in which there has been multiple winners, the achievements were related.)

"The first Russ Prize was awarded for the heart pacemaker," Irwin said. "Earl Bakken was CEO of Medtronic, the largest medical devices company in the world. His co-winner was Wil-son Greatbatch."

Another Russ Prize recipient was Leland Clark for his blood-oxygen

sensor. Irwin said that Prizes were also given to others for LASIK surgery and cochlear implants for hearing.

In 2021, there was no award due to the pandemic, but in 2023, the Russ Prize was awarded once again: Dr. David R. Walt, PhD, Hansjörg Wyss Professor of Biologically-Inspired Engineering at Harvard Medical School, received the Russ Prize for microwell arrays to advance genomics and proteomics.

Some applications of Walt's achievement include screening embryos for genetic defects before in vitro fertilization, studying disease in preserved/frozen tissues, improving crop disease resistance, and identifying individuals' metabolic profiles to ensure proper drug dosage.

To conclude his OhioENGINEER interview, Irwin made special mention of a particularly notable recipient of the Fritz J. and Dolores H. Russ Prize: **Willem J. Kolff, MD, PhD.**

In 1943, in the Netherlands during World War II, Kolff invented and built the first kidney dialysis machine using

wooden drums, cellophane tubing, and laundry tubs.

Irwin recalled: "When Willem's achievement was nominated for the Russ Prize, we learned he was in assisted living in Philadelphia."

"He was penniless," Irwin continued.

Kolff's story really highlights the two quintessential reasons this bioengineering achievement award is unequivocally needed: The Russ Prize brings important recognition to engineers who work to improve the human condition, and the cash prize gives them the ability to develop their critical research to better human lives.

Imagine: The engineer who invented this life-saving device – who was known as a trailblazer in the field of artificial organs – was fading away with no means. That is, until his achievement was selected for the Russ Prize in 2003.

Thanks to the Russ Prize, "Willem continued his research," Irwin was pleased to report. "He called me often to tell me about it."



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# Twenty-four State Board of Registration cases are resolved with settlement agreements

*Settlement agreements result in one license surrendered, two licenses suspended, various fines ranging from \$500-\$20,000 & other disciplinary actions*

The Ohio State Board of Registration for Professional Engineers and Surveyors accepted four settlement agreements in August 2023, 13 in October 2023, and seven in November 2023. Details from those cases follow.

## License surrendered

### **PE falsely attests to meeting CPD requirement**

It was discovered during a CPD audit that a Cuyahoga County PE who attested on his license renewal application that he had completed the CPD requirement in accordance with Ohio Revised Code Section 4733.151, did not complete the requirement, which is a violation of Ohio Revised Code Sections 4733.151(A), 4733.20(A)(1), and 4733.22. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, he entered into a settlement agreement through which he voluntarily **surrendered** his Ohio PE license, and he agreed to comply with the laws and rules governing the practice of engineering and surveying in Ohio.

## Large fines & a two-year suspension

### **Unlicensed man offers & provides surveying services while a licensed PS aids & abets his illegal practice**

A Mahoning County resident was found to have unlawfully offered and provided surveying services in Ohio individually and through his firm at a time when he did not possess an Ohio PS license and the firm did not possess an Ohio certificate of authorization (CoA). The man also affixed the PS seal and signature of an Ohio-registered surveyor from Columbiana County to mortgage location surveys that were not prepared under the registered surveyor's direct supervision, as required pursuant to Ohio Revised Code 4733-35-07. The man was charged with violations of Ohio Revised Code Sections 4733.02, 4733.16, 4733.20(A)(2), (5), 4733.22 and 4733.99. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, the Mahoning County man entered into a settlement agreement. He agreed to pay a **\$15,000** fine, immediately cease offering and providing surveying services in Ohio through his firm, and comply with the laws and

rules governing the practice of engineering and surveying in Ohio. In addition, he agreed that all surveying experience previously submitted to the State Board of Registration that was not obtained in accordance with Ohio law would not be accepted, and he must complete two years of qualifying boundary survey experience after the date the State Board of Registration accepts the settlement agreement.

In a related case, the Columbiana County PS was found to have aided and abetted the illegal practice of surveying by the unlicensed Mahoning County man and his firm from 2018 to 2023. The Columbiana County surveyor also affixed his PS seal and signature to surveying work performed and prepared by the unlicensed man without having personal professional knowledge and direct supervisory control and responsibility of surveying work performed by the unlicensed Mahoning County man and his firm. The registered PS also permitted the unlicensed man to affix his electronic seal and signature to surveying work product that was not prepared under the registered PS's supervision. The Columbiana County PS was charged with violations of Ohio Revised Code Sections 4733.20(A)(2), (3) (5), and Ohio Administrative Code Section 4733-23-01(B) and (D), 4733-35-02, and 4733-35-07(A). In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, the registered PS entered into a settlement agreement, which included the following: pay a **\$20,000 fine**; accept a **two-year suspension** of his Ohio PS license; and agree to comply with the laws and rules governing the practice of engineering and surveying in Ohio.

## Nine-month PS license suspension

### **Surveyor is not authorized to use his employer's resources for private work & fails to complete ethics CPD**

A Medina County resident used his employer's equipment and resources to perform private surveying work without the employer's knowledge or authorization. This individual also failed to complete two hours of CPD in professional ethics and State Board of Registration rules. These actions violated Ohio Revised Code Sections 4733.151(C)(2), 4733.20(A)

(2), (5) and Ohio Administrative Code Section 4733-35-02. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, this individual entered into a settlement agreement, which included a **nine-month suspension** of his Ohio PS license and he also agreed to comply with the laws and rules governing the practice of engineering and surveying in Ohio.

## Fines & other disciplinary actions

### **Four PEs falsely attest to meeting CPD requirement**

In four separate cases, two Cuyahoga County PEs, a Summit County PE, and a PE residing in Abilene, Texas, each attested on his respective license renewal application that he had completed the CPD requirement, but it was discovered during audits that, in each case, the PE did not complete the CPD requirement. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, each PE entered into his own settlement agreement. Through the settlement agreement, each PE agreed to pay a fine (ranging from \$500-\$2,000), submit to CPD audits for the years 2022-2025, and comply with the laws and rules governing the practice of engineering and surveying in Ohio. In such cases, the State Board of Registration's staff explained, the amount of the fine can vary depending on the number of CPD hours that the registrant did *not* complete, as well as the registrant's prior offenses and cooperation.

## Fines & other disciplinary actions

### **PE aids & abets unlicensed practice**

A Cuyahoga County PE aided and abetted the unlicensed practice of engineering and architecture when he contracted to provide review and stamp services to an unlicensed firm that had contracted to provide, and provided, engineering and architectural services in Ohio. The engineer affixed his PE seal and signature to work product that was not prepared under his supervision, a violation of Ohio Revised Code Sections 4733.20(A)(2), (3) and (5), and Ohio Administrative Code Sections 4733-23-01(B) and (D), 4733-35-

See "State Board News," page 15



02, and 4733-35-07(A). In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, the PE entered into a settlement agreement, through which he agreed to pay a \$1,000 fine, accept a public reprimand, and comply with the laws and rules governing the practice of engineering and surveying in Ohio.

#### Fines & other disciplinary actions

##### **Firms offer and/or provide services without an active CoA**

As part of their settlement agreements, a number of registrants and firms received fines and disciplinary action for offering and/or providing services without an active Ohio certificate of authorization (CoA). State Board of Registration staff explained that the amount of the fine depends on the length of time the firm operated without a CoA, the number of projects the firm engaged in while the CoA was inactive, past contact with the State Board of Registration or prior disciplinary actions in Ohio. Second and third offenses receive higher fines.

In three separate cases, a Medina County PE, a Kentucky PE, and a Stark County PS each offered and provided engineering or surveying services in Ohio at a time when they did not possess active certificates of authorization (CoA) for their firms, which is a violation of Ohio Revised Code Sections 4733.16, 4733.20(A)(2) and 4733.22. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, each registrant entered into a settlement agreement, which included a fine and an agreement to comply with the laws and rules governing the practice of engineering and surveying in Ohio. The PEs each received a \$1,000 fine while the PS received a \$2,000 fine.

A Guernsey County engineering and surveying firm offered and provided services in Ohio at a time when the firm did not possess an active CoA in the state. In violation of Ohio Revised Code Sections 4733.16 and 4733.22, the firm provided engineering services in Ohio after its CoA expired on July 1, 2022. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, the firm entered into a settlement agreement, through which it agreed to pay a \$1,000 fine and comply with the laws and rules governing the practice of engineering and surveying in Ohio.

In four separate cases, a Massachusetts firm, an Indiana firm, an Illinois firm, and a New Jersey firm each provided engineering services in Ohio at a time when the firm did not possess an active Ohio

CoA, which is a violation of Ohio Revised Code Sections 4733.16 and 4733.22. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, each firm entered into a settlement agreement, through which the firm agreed to pay a \$1,000 fine and comply with the laws and rules governing the practice of engineering and surveying in Ohio.

A California firm offered to provide engineering and surveying services in Ohio at a time when the firm did not possess an Ohio CoA, which is a violation of Ohio Revised Code Sections 4733.16 and 4733.22. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, the firm entered into a settlement agreement, including agreeing to pay a \$5,000 fine and comply with the laws and rules governing the practice of engineering and surveying in Ohio.



#### Fines & other disciplinary actions

##### **PE applicant & four firms fail to report disciplinary action**

A Massachusetts resident failed to report disciplinary action taken against him by the Massachusetts Board of Professional Engineers and Land Surveyors on his application to become a professional engineer in Ohio, a violation of Ohio Revised Code Sections 4733.20(A)(1) and 4733.22. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, this individual entered into a settlement agreement, through which he agreed to pay a \$1,000 fine and to comply with the laws and rules governing the practice of engineering and surveying in Ohio.

Four firms failed to report disciplinary action:

- A Franklin County engineering firm failed to report disciplinary action taken against an affiliated firm as required on a CoA application the firm submitted to the State Board of Registration.
- A North Dakota firm also failed to report disciplinary action taken

against the firm as required on a CoA application the firm submitted to the State Board of Registration.

- A California firm failed to report disciplinary action taken against the PE listed on a "firm affidavit of responsibility" required in the Florida Board of Professional Engineers' CoA application.
- A Vermont engineering firm failed to report prior disciplinary action taken against the firm as required on a CoA application.

In each case the firms violated Ohio Revised Code Sections 4733.20(A)(1) and 4733.22. In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, each firm entered into a settlement agreement, through which they agreed to pay a \$1,000 fine and comply with the laws and rules governing the practice of engineering and surveying in Ohio.

#### Fines & other disciplinary actions

##### **Surveyor fails to comply with minimum standards & unlawfully practices without active CoA**

A Hancock County PS performed a boundary that failed to comply with the minimum standards for boundary surveys and unlawfully offered and provided surveying services through the firm he manages, at a time when the firm did not possess an Ohio CoA. These actions constitute violations of Ohio Revised Code Sections 4733.16, 4733.20(A)(2) and (5), 4733.22 and Ohio Administrative Code Sections 4733-37-05(C)(1), (3), (5), (6), (7) and (11). In order to avoid further administrative action for violations of Ohio Revised Code Chapter 4733, the PS entered into a settlement agreement, through which he agreed to pay a \$2,000 fine, accept a public reprimand, correct all deficiencies found in the plat of survey he prepared, and comply with the laws and rules governing the practice of engineering and surveying in Ohio.

*The Ohio State Board of Registration for Professional Engineers and Surveyors is the state agency that regulates and licenses the professions of engineering and surveying in Ohio. The State Board of Registration licenses approximately 30,000 registered professional engineers and professional surveyors, 3,600 registered engineering and surveying firms and evaluates more than 2,200 licensing applications yearly. The State Board of Registration's mission is to safeguard the health, safety, property, and welfare of the citizens of Ohio by providing effective licensure and regulation of professional engineers, professional surveyors and engineering and surveying firms.*

by Travis L. Rhoades, PE, Vice President, Legislative & Government Affairs,  
Ohio Society of Professional Engineers



# Ohio pioneers electric vehicle infrastructure: A charging revolution begins

In a groundbreaking milestone, Ohio Governor Mike DeWine and Ohio Department of Transportation (ODOT) Director Jack Marchbanks have set a precedent for the nation by unveiling the first-ever electric vehicle (EV) charging station constructed as part of the National Electric Vehicle Infrastructure (NEVI) program.

Ohio, historically celebrated for its automotive heritage, is now a front runner in the EV movement, with a dedicated commitment to shaping a sustainable and electric future for its citizens.

Ohio's journey to becoming a beacon for EV infrastructure began with strategic initiatives and innovative decisions that have propelled the state to the forefront of the electric vehicle revolution. In 2022, Ohio was the first state in the nation to release a request for charging station proposals, a strategic move aimed at securing critical equipment and specialized technicians for the installation of these stations. This proactive approach ensured Ohio's head start in the electrification of its transportation infrastructure, effectively leapfrogging other states in the race to a green future.

Furthermore, Ohio took the lead by becoming the first state in the country to announce the locations of its inaugural round of EV charging stations. This calculated move underscores the state's unwavering commitment to spearhead the electric mobility sector.

Governor DeWine aptly remarked, "Ohio continues to lead in this rising sector. From securing investments by manufacturers to building key infrastructure, we are truly positioning Ohioans for the electric future."

The focal point of this milestone achievement is the NEVI charging station, strategically situated at the Pilot Travel Center along Interstate 70 at U.S. Route 42, west of Columbus. The selection of this location was deliberate, aiming to provide a convenient and

accessible charging solution for travelers on a major highway. Once completed, the station will be equipped with fast chargers installed by EVgo, capable of delivering up to 350 kW of power when charging a single vehicle. This level of charging power ensures that EVs can be replenished quickly and efficiently, making it more practical for drivers to consider electric vehicles as their mode of transportation.

When four vehicles are charging simultaneously at the station, each port will receive up to 175 kW of power, allowing for an 80 percent charge within just 20-40 minutes, depending on the vehicle's battery. This rapid charging capability addresses one of the major concerns for potential EV adopters – the fear of long charging times.

However, the NEVI charging station goes beyond just the technical aspects of charging. It is designed with the user experience in mind, offering 24/7 access to essential amenities such as restrooms, Wi-Fi, food, beverages, and various convenience items available for purchase. Additionally, an overhead canopy will shield drivers from inclement weather, ensuring that charging an EV is as convenient as filling up a traditional gasoline-powered vehicle.

Preeti Choudhary, executive director of DriveOhio, emphasizes the importance of user experience, stating, "It's not enough to just add chargers at the required increments – recognizing that drivers will spend a bit of time at these locations, we need to ensure users feel safe and comfortable while charging their vehicles."

This approach demonstrates Ohio's dedication to making EV charging an enjoyable and seamless experience for all, further encouraging EV adoption.

Ohio's aspirations for electric mobility are not confined to this groundbreaking station. The state is gearing up to expand its electric vehicle infra-

structure by initiating the construction of more than two dozen fast charging stations across the state, all funded by the NEVI program. The ambitious goal is to have all these charging stations operational by the end of 2024, marking a significant step in making Ohio an EV-friendly state.

Ohio's second phase of charging infrastructure development encompasses 25 additional locations along interstates, U.S. routes, and state routes. ODOT will soon solicit proposals from companies to construct the next wave of charging stations. With a commitment to investing \$140 million in NEVI funds over the next five years, Ohio is resolutely cementing its dedication to electric mobility.

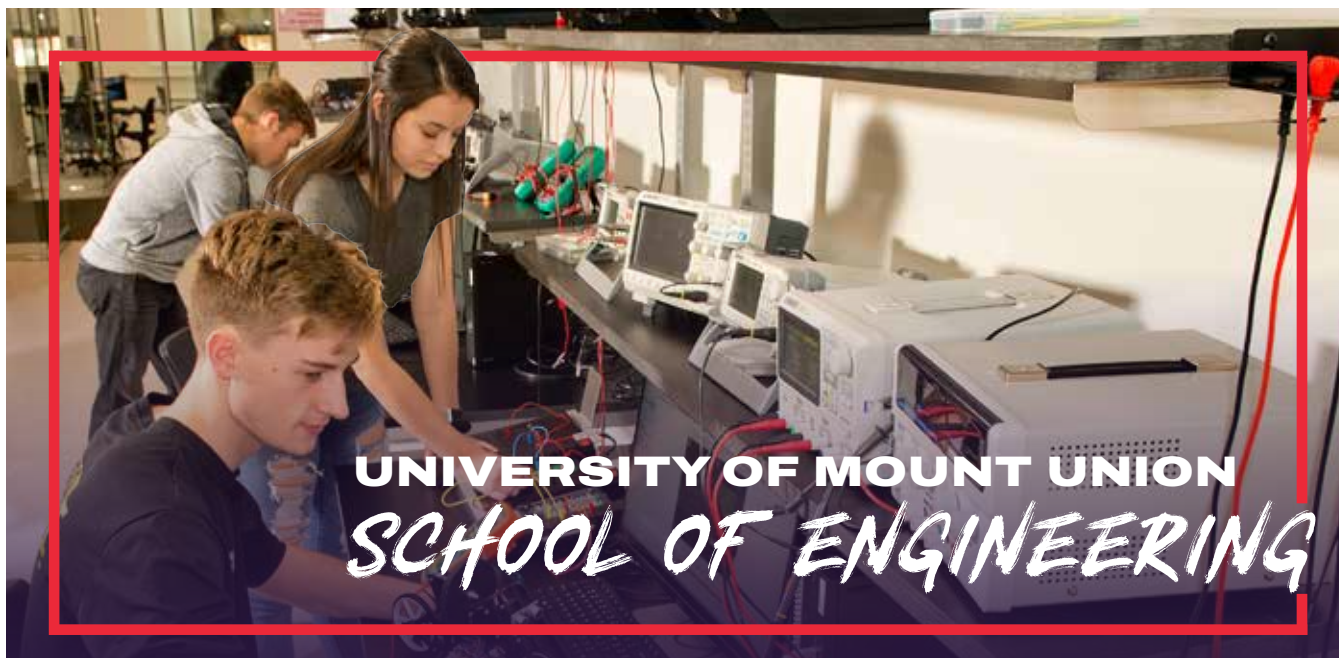
Furthermore, Ohio is taking proactive steps to incorporate electric vehicles into the state-owned vehicle fleet, showcasing its commitment to sustainability at the governmental level.

The Ohio Department of Administrative Services is set to install six EV charging stations at three state-owned office buildings, laying the foundation for the expansion of the state's electric vehicle fleet. This multifaceted approach to promoting electric mobility within Ohio sets the stage for a greener and more sustainable future.

Ohio's pioneering achievement of unveiling the nation's first NEVI charging station signifies the commencement of an electrifying future filled with innovation, convenience, and accessibility. The state's strategic initiatives, dedication to user experience, and unwavering commitment to electric mobility position Ohio as a trailblazer in the EV revolution.

As Ohio continues to lead the way, it not only secures its place at the forefront of sustainable transportation but also serves as a guiding light for other states embarking on the journey toward a greener and more electrified future.





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