ARRL EMC Committee Report – Doc. #17 **January 11, 2026**

for the ARRL Board Meeting
January 16 and 17, 2026

Submitted by Ned Stearns AA7A (Board Liaison) and
Carl Luetzelschwab K9LA (Chair, ARRL EMC Committee)

ARRL Lab Report by Steve W1EMI

Steve W1EMI submitted the ARRL Lab year-end review for 2025. See Appendix A for this report.

February 2026 QST

Article by Mike W1MG – IEEE Recommendations for Locating Power-Line Gap Interference Sources. This document is IEEE-1897-2024. Procedures are described in this recommended practice that may be used by electric utility companies and others to address complaints of interference caused by power line gap noise to radio, television, and other types of wireless communications. Modern noise-locating techniques, equipment, and protocols are also described, including the use of time-domain noise signatures (sometimes referred to as signature analysis) to investigate and identify radio noise in the field, allowing unassociated interference to be ignored unless it needs to be repaired for some other reason (e.g., safety concerns). The methods and techniques contained herein have been validated by decades of usage with positive results by a wide range of users, including utilities, professional interference investigators, radio engineers, and even the home hobbyist.

Article by Greg N9GL – Understanding the FCC Exposure Rules for Handheld Radios. By extrapolating from the SAR (Specific Absorption Rate) exposure limits of commercial radios, hams can adjust their operations to keep RF exposure in line with regulations when using handhelds very close to the body.

Standards

As reported in the September 18, 2025 minutes of the EMC Committee, the following standards are completed: IEEE-1897-2024, IEEE-1613-2023, IEEE-C37.90.1-2024, IEEE-C37.90.2-2024, IEEE-C37.90.3-2023 and C63.9-2025.

C63.10, C63.30, CISPR 32 and CISPR 35 will continue to be worked on in 2026.

ENAMS

The ENAMS system at W1RFI's (SK) QTH will be transferred to Kristen K6WX's residential location in the San Franciso Bay area.

The ENAMS system at K9LA's QTH is having an intermittent problem. Carl K9LA is working with Klaus DL6SES to resolve this problem.

W3IP 6-Meter Noise

Mike W3IP still experiences alleged power line noise on 6-Meters. For earlier details, review Appendix C in the September 18, 2025 EMC-C meeting minutes.

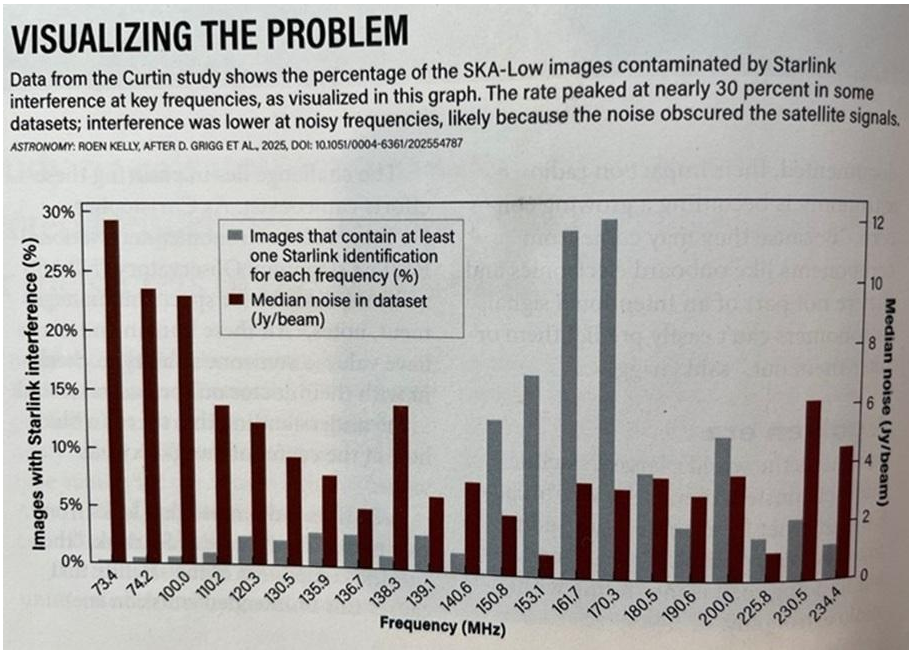
The ARRL Lab sent a letter to the CEO of Dominion Virginia last summer (one of the three power company entities that may be involved). Steve W1EMI will review this letter and will continue to work with Mike W3IP.

Noise in Wilmette. IL

An Amateur Radio operator in Wilmette, IL reported a wide band noise source. He lives next to a nursery, which may be the source of the noise. Weather and scheduling permitting, Kermit W9XA, Brian W9RFI and Greg N9GL plan to visit this site.

Satellite RFI

Gordon W2TTT reviewed an article in the February 2026 issue of the magazine Astronomy. The article focused on RFI generated by the Starlink system that interfered with radio astronomy activities. The following image shows the problem.



With the abundance of these LEO (Low Earth Orbit) satellites (Starlink, Iridium, etc.), this very well could be a burgeoning problem that could increase interference to Amateur Radio activities – especially at VHF and UHF frequencies. The EMC Committee will continue to track this.

RFI Teams

New England Division Teams by Rob K1UI.

> The NE RFI teams meet monthly (via Zoom) along with folks from other parts of the country. New cases arrive about one or two a month over and above what hams find and fix themselves. The most technically challenging cases are powerline related. A funding request to the ARRL foundation for ultrasonic test equipment exceeded their ability to fund as RE 251 dishes are custom made and very expensive. Rob K1UI is evaluating ARDC as a source of grant money for these as the team's credibility with the utilities is critical.
>
> The most non-technically challenging cases involve hams that expect the teams to intercede with neighbors where their relationships with neighbors have already soured. The ARRL Lab has written letters that have helped to get cooperation and Lab staff have helped with on-site visits. It has been reinforced with teams that their function is technical support for troubleshooting and not PR on behalf of a ham whose relationship with neighbors is adversarial.
>
> The ARRL requested modification of the New England RFI team website to clarify that the teams were not affiliated with the ARRL Lab. This was done. Similar language was incorporated into the ARRL Lab website.

LAX Team by Gary WA6MEM

> The CAOS 220 MHz interference has subsided with no reported issues in the past couple of months and the Team has had no requests to identify other noise sources.

Space Coast (FL) Team by Dan AI4GK

> Dan AI4GK reported that there were no recent major noise activities.

HF Trading by Dave K3ZJ

In response to complaints and suggestions, the FCC has started explicitly stating on some HFT experimental licenses that stock trading is prohibited. Using an experimental license for everyday business operations, such as stock trading, always has been prohibited under the FCC's experimental rules, but now at least in some cases it is being explicitly added to the license conditions.

In the case of experimental license WK2XJK (Bergen County, NJ), at renewal the FCC revoked a waiver of station ID requirements in addition to adding the explicit stock trading prohibition. The FCC Commission reminded the licensee that "an experimental radio station shall transmit its assigned call sign at the end of each complete transmission at least once every thirty minutes in clear voice or Morse code, with all digital encoding and digital modulation disabled during station identification".

The SMC (Shortwave Modernization Coalition) has re-invigorated its push to convince the FCC to issue an NPRM proposing to re-allocate spectrum for HFT purposes and adopt technical rules as it proposed that the ARRL analysis found would allow significant interference into the amateur bands.

In December, the SMC submitted to the FCC another report, this one stylized as an economic analysis by ex-FCC Commissioner Harold Furchtgott-Roth that was "partially" funded by the SMC. As one might expect since it was submitted to the FCC by the SMC, it concludes that "[t]he SMC members and the American public have benefitted substantially from the non-voice communications in the 2-25 MHz band over the past decade and that the SMC members' use of experimental licenses provides "empirical rather than purely theoretical evidence to demonstrate that a reallocation would not cause harmful interference…." and "imposes no costs on authorized incumbent users."

WPT-EV

The Purdue University WPT-EV system was tested to demonstrate that charging a moving vehicle on a highway is viable. EMC-C members were not present for this test as Purdue appeared to be worried that the EMC Committee's goal was to show that their system could cause interference. Purdue will proceed with working with the Society of Automotive Engineers (SAE) to evaluate this issue. See Appendix B for the public announcement of their tests.

Conrad N2YCH received permission from the NAB (National Association of Broadcasters) to copy Carl K9LA on their report on their testing of a stationary WPT-EV system and testing of a moving-vehicle WPT-EV system, both in Detroit. Their measurements were at harmonics of the 85 KHz charging system frequency up to 2 MHz. The url for this report (https://nabpilot.org/product/measurement-of-radio-frequency-emissions-from-electric-vehicles-and-electric-vehicle-charging-systems-in-the-am-broadcast-band/) was sent to Gordon W2TTT, and he plans to buy a copy (which costs $15 – this is not an open-to-the-public document). Carl K9LA will look into getting permission to send this to the EMC-C members.

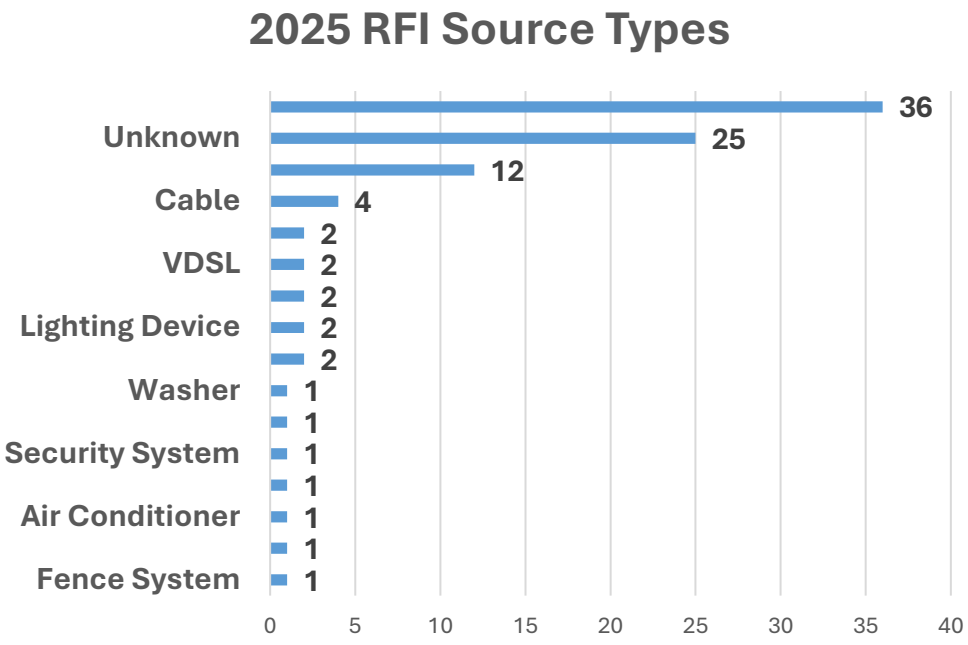
Goals of the EMC-C

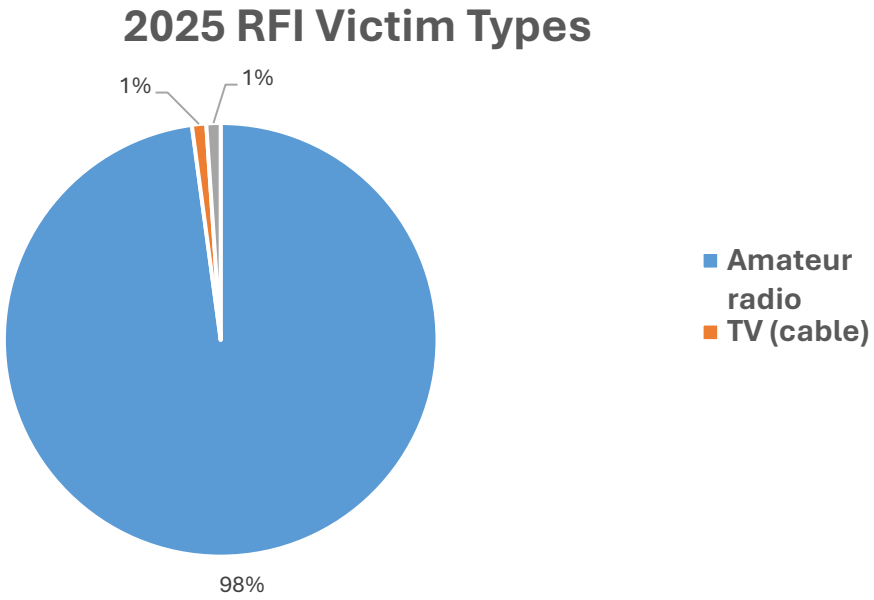
1) HF Trading – Try to take data at selected stations, get a screenshot of a transmission near a band edge and continue working with the Volunteer Monitors.
2) WPT-EV – Check on alleged Utah and Texas testing.
3) RFI Teams – Continue plans to implement more RFI Teams.
4) Standards – Continue work as necessary to address standards.

Appendix A

ARRL Lab Report for 2025

Following are the 2025 intake statistics for cases:





Highlights from above:

1) Power lines, devices (which generally come in as unknown) and solar continue to be the top contributors to the RFI cases coming through ARRL.

2) 98% of the cases that came to ARRL this year were from some source interfering with an amateur radio, not RFI from an amateur radio.

RFI Desk Personnel Status

Steve Anderson, W1EMI, retired from ARRL effective in July 2025. Conrad Trautmann, N2YCH, was hired as Steve's replacement, trained and worked in the position for a brief period before moving on to a Technical Editor position. Steve has continued to work as a 1099 consultant (approximately 10 hrs/week) since his departure, and has agreed to continue on a month-to-month basis until a permanent RFI Engineer is hired.

Letters

Letters/notices continue to go out to power companies and operators of noisy devices. Our process with the FCC requires that the ARRL and the radio amateur to try to work through RFI issues – then the FCC may get involved. In general, most cases can be worked through without formal notice, some get ARRL letters and far fewer get FCC notices. Over the course of 2025, we issued 20 ARRL letters, 11 FCC letters and 2 FCC second letters.

Power Line Cases

ARRL continues to maintain and develop productive relationships with power companies and RFI teams – some examples are FPL, PG&E, Dominion, Georgia Power, AEP. This allows us, in many circumstances, to forego the ARRL letter to a CEO, and go directly to a contact who has control over RFI investigators, or go directly to an RFI investigator.

This year, Conrad Trautmann, N2YCH, attended the RFI Services Power Line Interference workshop in Pigeon Forge, TN. The workshop was attended by several power company representatives and provided training on hunting for power line noise and other RFI sources. Power company attendees are generally aware of amateur radio, as amateurs oftentimes find noise sources and report them to utilities. ARRL also recommends workshop attendance to power companies who ask where they can receive training on equipment and techniques for hunting for RFI sources.

Solar PV Systems

While solar PV systems continue to be a significant issue for radio amateurs, especially those whose neighbors have a system installed on their home, complaints have dropped in recent years. This drop may be due to design changes (with SolarEdge in particular) and/or due to an improvement in solar company response to RFI reports from hams. Harmful interference cases from these systems can take months (or more) to get resolved, as solar companies have varying levels of expertise in addressing RFI. Further, harmful interference letters and/or FCC involvement in cases affecting a neighbor can easily become contentious.

Notable Device Cases

We continue to track several cases where we have had issues with device manufacturers, and these cases continue to work their way through the process:

1) Progressive Dynamics – they make a charger/converter unit for RV's. The unit (we believe the charger portion) is so noisy it can be picked up by the ham's mobile 2.5 blocks from the camper. They were unresponsive to the degree where we had to have the FCC get involved, and now we are about 3 years out from when the case came in, and the issue is still unresolved and with their EMC company.

2) Trimlight – These lights are customizable color LED house lights, and incorporate (at least) a power supply and controller (Chinese made). They appear to have an FCC certification, but like many solar PV systems, the issue is less about conducted emissions and more about radiated emissions in the HF bands (where there are no radiated emission limits). It's another case where the FCC had to get involved before the company began to take things seriously. During the case, the company stated, in part, "so we have 5 engineers in Asia working on this with their local FCC testing facilities trying to solve the problem that exists worldwide to all IC-RGB LED systems. Even their engineers state that the entire industry doesn't meet the criteria for FCC and all these types of controllers fail the testing."

   Over the course of last year, the company has provided ARRL with a set of lights to examine them in the lab. Steve Anderson and Conrad Trautmann have been able to perform some limited radiated emission testing to confirm the RFI reported by the hams impacted by these lights installed at their neighbors' homes. Neither of the hams wants to pursue FCC action at this time.

Notable Resolved Cases

Thanks to some follow-up work on the part of Conrad, 62 cases were reported to be resolved in 2025. Note, however, that many of these were determined to have essentially gone stale due to case inactivity - some taken in by Mike Gruber and Paul Cianciolo, previous RFI engineers. Some of our more notable resolved cases:

- A long-standing VDSL case which involved 2 FCC letters (for Jon Richins, KC0RR), was resolved (the noise just disappeared), although with no explanation as to how.
- A case involving golf cart chargers at a country club in Kentucky was resolved. After 2 FCC letters, FCC investigators found that the noise was apparently not from the country club. The case has been closed, and the ham, WM4MD continues to look for the source.
- After an ARRL letter and an FCC letter, a case involving a neighbor's string of LED lights was resolved, although the neighbor and the ham, KE1AV were still discussing the light replacement.

- A solar case that we took in back in 2023 for N4EFS (an Enphase case) was finally resolved this year – the ham reported that Enphase installed the necessary filtering and additional grounding to reduce the RFI from the system.
- A case involving HVAC equipment installed at a CVS was resolved by bypassing the variable speed motor (not sure on the details here). This case required an ARRL letter, and 2 FCC letters before getting resolved. This case was for Phil Lonzello, WA6LDI.
- A case involving RFI from a neighbor to a ham (Jim Crawford, KE8TFA) was resolved after much investigation locally, and an FCC letter. It turned out the cause was a television in the neighbor's home, conducting emissions onto power lines.
- A case involving a ham in North Chelmsford, MA (NU2W) was resolved after a site visit confirmed a compromised indoor antenna, and that there was no significant noise source around the ham's QTH. The RFI team lead and ARRL staff suggested improvements and provided our "Ham Radio from Indoors" publication to the ham.
- A case with a radio station (for W7NTT) was found to be operating at higher power than permitted after sunset. The station found that a daylight savings time clock had not been set properly. Once fixed, this resolved the issue.
- A case involving Comcast, a grounding/bonding issue with Comcast equipment, was resolved for KR9U, James Wolf. Ron Hranac was helpful in getting this resolved.

IEEE and ANSC C63

ARRL continues participation in the IEEE EMC Society, and in the standards development work that Ed Hare was historically engaged in. Given the lack of a permanent RFI engineer, this work is for all intents and purposes in somewhat of a holding pattern. There is also an IEEE hams group, which is considering formation of either a Technical Community or an Affinity Group within IEEE – that group is still meeting from time to time.

With respect to ANSC C63, where ARRL has an organizational membership, Conrad is currently the Primary representative. Conrad attended the most recent meeting in San Diego, held at the offices of Qualcomm. In addition to Main Committee work, there are numerous subcommittees that member organizations can be involved in.

National Association of Broadcasters AM Improvement Workgroup

ARRL has largely been involved in noise characterization work, due to our work with the amateur radio community concerning RFI issues.

RFI Presentations/Materials

The ARRL Lab continues to do RFI presentations as requested by clubs.

Appendix B
Public Announcement of the Testing of the Purdue WPT-EV System

First highway segment in U.S. wirelessly charges electric heavy-duty truck while driving

Research in Indiana lays groundwork for highways that recharge EVs of all sizes across the nation.

A team of Purdue University professors stands in front of an electric heavy-duty truck they equipped to receive power while driving across a system they designed within a quarter-mile highway segment. Pictured from left: Dionysios Aliprantis, Aaron Brovont, Nadia Gkritza, Steve Pekarek and John Haddock. (Purdue University photo/Kelsey Lefever)

DECEMBER 3, 2025 KAYLA ALBERT

WEST LAFAYETTE, Ind. — For the first time in the U.S., a roadway has wirelessly charged an electric heavy-duty truck driving at highway speeds, demonstrating key technology that could help lower the costs of building electrified highways for all electric vehicles to use.

The experimental highway segment tests a patent-pending system designed by Purdue University engineers. The segment, **built by the Indiana Department of Transportation (INDOT)**, is a quarter-mile stretch on U.S. Highway 52/U.S. Highway 231 in West Lafayette. Purdue researchers demonstrated the wireless charging system this fall using an electric semi-tractor provided by Cummins.

The team also partnered with AECOM; White Construction, Inc.; and PC Krause and Associates, Inc. on developing and implementing various parts of the system.

“With this breakthrough system, Purdue has shown that powering large commercial vehicles wirelessly is not just technically feasible but could be a practical and scalable solution for real-world highway transportation,” said **Nadia Gkritza**, a Purdue professor of **civil and construction engineering** and **agricultural and biological engineering**.

The demonstration is part of a multistage research project that Purdue and INDOT began in 2018. In addition to its funding from INDOT through the **Joint Transportation Research Program** at Purdue, the project is affiliated with a fourth-generation National Science Foundation Engineering Research Center called **Advancing Self-sufficiency through Powered Infrastructure for Roadway Electrification (ASPIRE)**.

“INDOT is proud to partner with Purdue on this project,” said INDOT Commissioner Lyndsay Quist. “While there is still more to explore, we are seeing what the future could hold for heavy-duty EV charging and transportation.”

The Purdue system demonstrates “dynamic wireless power transfer,” with “dynamic” referring to vehicles in motion. A few other states and countries have also begun testing roads designed to enable dynamic wireless power transfer. But making this possible for highways — and particularly for semis and other heavy-duty vehicles — is a unique challenge. Because vehicles travel so much faster on highways than city roads, they need to be charged at higher power levels.

An electric *Cummins heavy-duty truck charges as it drives along a test segment on U.S. Highway 52/U.S. Highway 231 in West Lafayette. (Purdue University photo/Kelsey Lefever)*

The Purdue-designed wireless charging system works at power levels much higher than what has been demonstrated in the U.S. so far. Using the test segment in West Lafayette, this system delivered 190 kilowatts to a truck traveling at 65 miles per hour.

“To put that in perspective, 200 kilowatts are on the scale of about a hundred homes,” said **Steve Pekarek**, Purdue’s Edmund O. Schweitzer, III Professor of **Electrical and Computer Engineering**.

Why design electrified highways for trucks first?

By accommodating the higher power needs for heavy-duty vehicles, the Purdue design is also able to support the lower power needs of other vehicle classes.

“This is a system designed to work for the heaviest class of trucks all the way down to passenger vehicles,” said **Aaron Brovont**, a research assistant professor in Purdue’s Elmore Family School of Electrical and Computer Engineering.

Since trucking **contributes the most to U.S. gross domestic product** compared to other modes of freight transportation, lowering costs for heavy-duty electric trucks could help attract more investment into electrifying highways that all vehicle classes would share. If electric heavy-duty trucks could charge or stay charged using highways, their batteries could be smaller in size and they could carry more cargo, significantly reducing the costs of using EVs for freight transportation.

Electrified highways could also allow the batteries of passenger cars to be smaller.

“Two of the big barriers to electric vehicle adoption, at least to the public, are range anxiety — ‘Oh, my gosh, where am I going to charge the battery on this car?’ — and the second thing is cost,” said **John Haddock**, a professor in Purdue’s Lyles School of Civil and Construction Engineering. “And a lot of that cost in electric vehicles is driven by the size of the battery packs that they have to have to get you that 250-to-300-mile range. With this system, you’d be able to drive your vehicle along the road and it would charge the battery”.

Highways that charge EVs like a smartphone

The system Purdue researchers designed allows highway pavement to provide power to EVs similarly to how smartphones use magnetic fields to wirelessly charge when placed on a pad.

“Transferring power through a magnetic field at these relatively large distances is challenging. And what makes it more challenging is doing it for a heavy-duty vehicle moving at power levels thousands of times higher than what smartphones receive,” said **Dionysios Aliprantis**, a Purdue professor of electrical and computer engineering.

The team installed transmitter coils in specially dedicated lanes within the concrete pavement. The coils send power to receiver coils attached to the truck's underside.

"Cummins is proud to play a role in this initiative by successfully adapting a prototype Class 8 battery-electric truck to integrate with Purdue's high-power dynamic wireless power transfer system," said John Kresse, chief technology engineer at Cummins. "The on-road testing went exceptionally well, thanks to strong collaboration between our teams. With its high power and promising cost structure, this technology represents a practical, and potentially game-changing, solution for the future of on-highway commercial transportation."

Other wireless EV charging efforts are also using transmitter and receiver coils, but they haven't been designed for the higher power levels that heavy-duty trucks need. The Purdue-designed coils accommodate a wider power range — larger vehicles wouldn't need multiple low-power receiver coils on the trailer to charge from the road, which has been proposed to meet the high-power demands. Instead, in the Purdue design, a single receiver coil assembly is placed under the tractor, greatly simplifying the overall system.

The Indiana Department of Transportation embedded these Purdue-designed coils before covering them with concrete highway pavement. The coils transmit power to receiver coils attached to the underside of an electric heavy-duty truck. (Purdue University photo/Kelsey Lefever)

Purdue researchers have also designed the transmitter coils to work within concrete pavement, which often carries the heaviest traffic even though it only makes up **20% of the U.S. interstate system**.

Most real-world deployments of wireless pavement charging in the U.S. are led by members of ASPIRE. Purdue is a founding member of ASPIRE, and Gkritza is the campus director of ASPIRE's Purdue location.

Headquartered at Utah State University, ASPIRE integrates academia, scientific research, and real-world tests and deployments across more than 400 members from 10 partner universities: Purdue, the University of Colorado Boulder, the University of Texas at El Paso, the University of Auckland in New Zealand, Colorado State University, the University of Colorado in Colorado Springs, Virginia Polytechnic Institute and State University, Cornell University, and the University of Utah. These universities are joined by more than 70 industry, government and nonprofit members across all sections of the electric transportation ecosystem, as well as community partners and advisors.

"This achievement reflects how our growing ecosystem connects public agencies, private industry and academic research to turn electrification goals into reality, demonstrating the kind of collaboration that strengthens the foundation for scaling intelligent electrified transportation systems nationwide," said Don Linford, ASPIRE's director of industry and ecosystem engagement at Utah State University.

Developing the industry standard for building electrified highways

The team's system has also been part of further testing to help develop industry standards for dynamic wireless power transfer. The hope is that these standards would encourage industry to adopt this technology, which is a critical step needed for roadway operators and departments of transportation in each state to consider investing in infrastructure enabling EVs to charge while driving. The researchers additionally plan to demonstrate their design for a variety of vehicle classes, including light-duty passenger cars and trucks.

Rectangular receiver pads are visible in the lane that an electric truck equipped with receiver coils would use to charge as it drives. (Purdue University photo/Kelsey Lefever)

In April, the Purdue team received the **Technology Innovation Award** at the **IEEE PES Energy and Policy Forum Innovation Showcase** for their work on this system.

“This project is a flagship example of a successful public-private partnership, positioning Purdue and ASPIRE for long-term leadership in electrified transportation,” Gkritza said. “It’s also been a remarkable ‘lab-to-life’ learning experience for our students — an opportunity to see how fundamental research can translate into real-world infrastructure.”

The researchers have disclosed their innovation to the **Purdue Innovates Office of Technology Commercialization**, which has applied for a patent on the intellectual property. Industry partners interested in developing or commercializing the work should contact Matt Halladay, senior business development manager and licensing manager, physical sciences, at **mrhalladay@prf.org** about track codes 2022-ALIP-69682, 2024-PEKA-70401 and 2024-PEKA-70402.