



PAWR Project Office

Platforms for Advanced Wireless Research (PAWR) Round III Letter of Intent (LOI) Submission Process

<https://www.advancedwireless.org/>

October 10, 2019

1:00 pm Eastern

NOTE: This webinar will be in listen-only mode. Please mute yourself and stay muted throughout the entire webinar. Thank you.



PAWR Project Office

PAWR Introduction

What is PAWR and the PAWR Project Office?

- The Platforms for Advanced Wireless Research (PAWR) program is enabling experimental exploration of new wireless devices, communication techniques, networks, systems, and services that will revolutionize the nation's wireless ecosystem while sustaining US leadership and economic competitiveness
- The [PAWR Project Office](#) (PPO), led by US Ignite and Northeastern University, is managing this \$100 million public-private partnership to deploy up to 4 city-scale research testbeds
- PAWR is funded by [NSF](#) and a [wireless Industry Consortium](#) of 30 companies and associations
- The PAWR initiative will accelerate research and commercialization of wireless technologies
- In this round, the PPO is specifically seeking proposals that:
 - Support research in novel technologies and architectures to reduce the cost of delivery of broadband to rural communities



PAWR PPO Contacts

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Please send any RFP-related questions to info@advancedwireless.org. This webinar is meant to touch on the Round III RFP LOI basics. You must read the RFP in its entirety to fully comprehend the RFP expectations and requirements

PAWR is funded by NSF and 30 Industry Consortium Members

The RFP offers up to \$8 million in cash from NSF and up to \$8 million of in-kind contributions from the PAWR Industry Consortium



Consortium members and industry share testbed time with academics on an equal time-basis

Merit Review Criteria

When crafting your proposal, you should consider the following merit review criteria. The below criteria will be used by the Full Proposal Review panels during the Full Proposal phase to evaluate proposals:

1. Vision and Technical Merit	<ul style="list-style-type: none">• Is the research platform focused on important wireless technologies that target the operating range identified in the RFP?• Is the platform able to support innovations in network architecture?• Is the platform development plan technically sound?• Are in-kind contributions from the Industry Consortium used creatively and fully ?
2. Research Community	<ul style="list-style-type: none">• Does the plan show commitment and evidence of capability to attract a broad and diverse group of academic and industry researchers in both the short and long term?• Is there broad research community support for the proposed platform? Who are the early users?• Will innovative, advanced wireless research be uniquely enabled by the proposed platform?
3. Community Engagement	<ul style="list-style-type: none">• Is there close alignment with local stakeholders?• Does the platform development plan leverage local support with contributed deployment and operations resources?• Is the PAWR deployment connected to the broader innovation and economic development organizations and plans of the proposed region?
4. Alignment with PAWR Vision	<ul style="list-style-type: none">• Does the proposal provide convincing evidence that the proposed platform will support: 1) Reproducibility of research 2) Usability; 3) Programmability; 4) Interoperability; 5) Open Access; and, 6) Diversity
5. Implementation plan	<ul style="list-style-type: none">• Does the project team have the right expertise and experience to implement the vision – including project management experience – as well as details of the research platform?• Does the proposing team have a track record of operating experimental testbeds that can help assess their ability to manage this project?• Does the plan follow the timeline suggested by the PPO, with sites operational within one year and platform fully operational by year 3?• Is the deployment plan feasible, with clearly designed goals, timelines, and deliverables?
6. Sustainability	<ul style="list-style-type: none">• Are there long-term plans to evolve the platform beyond the 5 years of initial operations?• Is the operational model sound? Is it financially sustainable? How will research on the platform be funded (e.g., user fees, local financial support)?

Currently Funded PAWR Platforms

The PPO has completed two rounds of PAWR RFPs and issued awards to three platforms: Salt Lake City, UT, New York City, NY, and Raleigh/Cary, NC

Salt Lake City

The Platform for Open Wireless Data-driven Experimental Research (POWDER) led by the University of Utah, in partnership with the Reconfigurable Eco-system for Next-generation End-to-end Wireless (RENEW) team at Rice University

New York City

Cloud Enhanced Open Software Defined Mobile Wireless Testbed for City-Scale Deployment (COSMOS), led by researchers at Rutgers University, Columbia University, and NYU

Raleigh/Cary, NC

Aerial Experimentation and Research Platform for Advanced Wireless (AERPAW), led by North Carolina State University (NCSU)

7 You can learn more about these platforms at <http://advancedwireless.org/platforms>

Round III RFP – Rural Broadband Focus

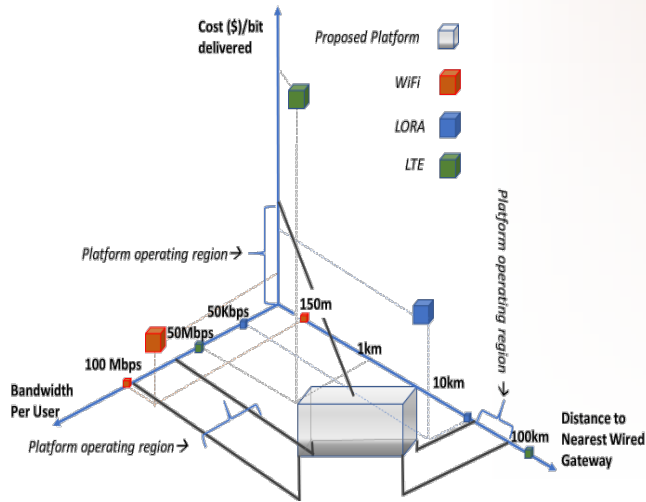
In this round, the PPO is specifically seeking proposals that can support research in novel technologies and architectures to reduce the cost of delivery of broadband to rural communities

- **Rural Focus:** This third-round RFP seeks to focus on applying advanced wireless technologies to transform the deployment and operations of fast, low-latency, and reliable broadband networks in rural and other low-density geographic areas in an efficient and affordable way
- **Innovative Technology:** Proposers should create a testbed for experimenting with advanced wireless technologies and network architectures – combined with existing technologies – that may transform the existing rural broadband deployment cost curve through innovations in technologies and engineering processes
- **Novel Network Architectures:** Proposers are asked to envision solutions that combine novel network architectures supporting wireless transmission technologies and end-to-end protocol solutions



Round III RFP – Rural Broadband Focus

Desired Platform Operating Regions



- A desired platform solution would fall into a “platform operating region” that, for example, might offer bandwidth per user comparable to current Wi-Fi, range comparable to and beyond that offered by LORA, and cost/bit delivered significantly lower than current LTE-based solutions but comparable to LORA and Wi-Fi
- Proposers are free to choose technologies included in the upcoming 5G rollout, as well as to consider other different, innovative solutions that currently do not appear in a standardization roadmap
- Since the platform is aimed toward enabling rural broadband, proposers can leverage additional degrees of freedom not possible in urban deployments

Round III RFP – Rural Broadband Focus

The PPO seeks RFP responders propose a platform that allows users to experiment with some combination of the following wireless-enabled solutions:

- A robust, multi-modal, high-capacity, long-distance, low-cost wireless backhaul
- Novel architectures that can simplify deployment costs (such as RF-in-the-middle to connect fiber islands)
- Integrated Access and Backhaul (IAB), or multi-hop relay and mesh networks with a very large coverage space and sparse deployment density
- Creative engineering in terms of tower architectures, modular systems, and novel infrastructure to overcome limitations posed by the wireless propagation environment that constrain current deployments from providing higher throughput
- Multi-antenna (beamforming and MIMO) systems to combat low signal-to-noise ratio (SNR) conditions and increase spectrum utilization

Round III RFP – Rural Broadband Focus

The PPO seeks RFP responders propose a platform that allows users to experiment with some combination of the following wireless-enabled solutions (continued):

- Spectrum bands that include, but are not limited to:
 - TV White Spaces;
 - 6-7 GHz, 12 GHz (licensed for microwave backhaul);
 - mmWave (a subset of 24, 38, 60, 95 GHz, but focusing on backhaul)
 - Optical and Laser LOS/NLOS links; and
 - mmWave or sub-THz NLOS communications (using reflectors in air or ground towers);
- Tethered airborne platforms (balloons/drones) that can act as relays and/or base stations; and
- Satellite backhaul (a backhaul transmission mechanism that is reliable, quickly deployable, and cost-effective) including, but not limited to, satellites in Geostationary Equatorial Orbit (GEO), Middle Earth Orbit (MEO), and Low Earth Orbit (LEO) orbits



Round III RFP – Rural Broadband Focus

Proposers should consider how the proposed wireless technology breakthroughs made on their testbeds might provide benefits to residents in rural communities like those in urban neighborhoods, including:

- Connected first responders
- Remote health providers
- Semi- or fully-autonomous vehicles and farming equipment
- IoT-enabled precision farming, livestock, and dairy management
- Utility grid management (e.g., power, pipelines, water)



Round III RFP – Rural Broadband Focus

Other things to consider:

- Within the Full Proposal, proposers will be required to describe overall deployment plans that will clearly lay out timelines and costs associated with:
 - Location, site plans, and costs
 - Permitting, licensing, and other permissions necessary for deployment
 - Partners/vendors responsible for deployment, keeping in mind any federal or local requirements for open bidding and competition
 - Any risks and contingencies that might delay or alter deployment in any way
- The ability and commitment of local partners to deploy a platform, and their willingness to lower costs or speed up deployment, is critical to the feasibility and sustainability of a platform proposal
- The PPO expects some basic testing functionality to be available for external experimenter use within one year of award and expects the platform to be fully available and operational within three years
- Sustainability of the platforms for the duration of the program and beyond is a critical factor in the success of the platform. Every effort should be made to partners who can provide additional operational support that will increase the likelihood of long-term platform success



PAWR Project Office

RFP Basics

Key Dates to Remember



Eligibility Information

Proposals may only be submitted by the following:

Institutions of Higher Education (IHEs): Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members.

Non-profit, non-academic organizations: Local governments, community-owned utilities, non-profit utilities, research labs, foundations, economic development organizations, research and startup incubators, professional societies and similar organizations in the US associated with economic development, educational or research activities.

Other Basics

- **Limit on Number of Proposals per Organization:** 1
- **Who May Serve as Project Director and/or Principal Investigator (PI)?** Project Directors/PIs may be affiliated with universities/colleges or with non-profit, non-academic organizations as defined in the previous slide. An individual who is PI on one proposal may not participate in this role on any other proposal, but may participate in other proposals in another role, such as “senior personnel”
- **Additional Institutional Eligibility Information:** The RFP restricts eligibility to research activities using the facilities, equipment, and other resources of the campus(es) located in the United States only
- **For-profit Organizations:** For-profit organizations that are not members of the PAWR Industry Consortium may also participate on proposing teams (as a vendor), but may not lead proposing teams
- **Type of Award:** One Cooperative Agreement
- **Anticipated Funding Amount:** Up to \$8 million in cash from NSF and up to \$8 million of in-kind contributions from the PAWR Industry Consortium per platform over five years, subject to the availability of funds/contributions



PAWR Project Office

RFP Partnering

Teaming

Teams comprising three types of partners – academic institutions, local non-profit/municipal leadership, and the local Internet Service Provider (ISP) – will be considered the strongest and most sustainable teams

- For this round, there is an emphasis on local ISP or network partners
- The success of the PAWR program ultimately rests on collaboration among three important stakeholders within the information technology innovation ecosystem: **university researchers, private sector companies such as local ISPs and network providers, and local communities/tribes**
- In the Full Proposal platform design description, proposers should incorporate overall community and local ISP or network provider commitment and engagement, and the level of community and network facilities, resources and services made available for the project
- Demonstration of support from each community's Chief Technology Officer (CTO), Chief Information Officer (CIO) or equivalent leader, and from any ISP or network partner representatives will be particularly important

Teaming

To facilitate potential partner matchmaking, the PPO has launched PAWRMatch

- Interested proposers populate their private [PAWRMatch](#) profile (note that PAWRMatch profiles are private and only viewable to the PPO)
- The PPO reviews the PAWRMatch submissions and redacts any sensitive information from the PAWRMatch profile submissions
- The PAWR PPO posts a google sheet of redacted PAWRMatch profile information (continuously updated).
 - Email addresses will be kept private and will be shared directly with an interested PAWRMatch proposer if he/she expresses that they would like to be “matched” with a specific PAWRMatch proposer
 - Matchmaking requests should be sent to info@advancedwireless.org
- The PPO will then make introductions, leaving it up to the matched proposers whether or not they want to continue the relationship and partner together




PAWR Project Office

Letter of Intent (LOI) Submission Details

LOI – LOI Basics

- Download and LOI Template at www.advancedwireless.org and populate
 - Follow LOI instructions noted in RFP
 - Provide Title, Organizational Attribute, Point of Contact Information (PI), Budget Information, Senior Personnel, Participating Organizations, & Synopsis
- Upload LOI to EDAS and submit no later than 6 PM on October 25, 2019
- LOIs are not subject to merit review. PIs should not expect to receive any feedback on their LOI
- The lead PI and institution must remain the same for the Full Proposal
- The composition of the team (e.g., co-PIs, Senior Personnel, partner institutions, and community organizations) may change at the discretion of the lead PI


LETTER OF INTENT (LOI) TO THE PAWR PPO
Platforms for Advanced Wireless Research (PAWR)

PROJECT TITLE
A proposal title must begin with PAWR Platform LOI: Your Project Name

ORGANIZATION ATTRIBUTE
Please confirm that the submitting organization is not a FFRDC or For-Profit organization
Choose an item.

POINT OF CONTACT FOR PPO INQUIRIES
The point of contact for PPO inquiries must be the PI, with the PI's e-mail address
NAME:
TELEPHONE NUMBER:
EMAIL ADDRESS:
ORGANIZATION:
TITLE:

BUDGET INFORMATION
Enter the intended budget (up to \$8M). This figure is intended for internal planning purposes
Budget Information \$

SENIOR PROJECT PERSONNEL
List the full names and institutional affiliations for all co-PIs and Senior Personnel on the project, including subawardees. Please add additional rows as necessary

NAME	ORGANIZATION	TITLE	EMAIL ADDRESS

LOI – LOI Submission

- EDAS Registration
 - Click [here](#) if you have not already registered for the EDAS submission system
 - Click [here](#) if you have already registered for EDAS
 - Note that proposal submissions are referred to as "papers" within EDAS. You can search for "Round 3 (2019): Platforms for Advanced Wireless (PAWR) Proposal Submission" via the Submit Paper mechanism to register your LOI in EDAS
- Submitting LOI in EDAS
 - There should be one upload within EDAS for your LOI submission – your completed [LOI](#). The LOI template is available for download on the [PAWR website](#)
 - Within EDAS, you should add all Senior Personnel associated with the proposed project within the "Add or Delete Authors" section

REMINDER: LOIs are due by October 25, 2019 at 6 pm eastern. Potential proposers may not submit a Full Proposal without first submitting a LOI compliant with the instructions included in the RFP, by the LOI deadline



PAWR Project Office

Q&As

Question 1 (LOI and Full Proposal)

Question: There are a few proposed team members are principal investigators (PI and co-PIs) on a small subaward affiliated with a future year of an awarded PAWR platform. Are these team members allowed to serve as PIs/Co-PIs for a prospective Round III proposal?

Answer: A PI, co-PI, or Senior Personnel can only be funded on one PAWR award at a time. Your organization may proceed with your Round III PAWR LOI and Full Proposal submission. Should your organization be selected as a finalist for the Site Visit stage and ultimately be considered for a PAWR award, then your organization will need to select association with only one PAWR Platform.

Question 2 (LOI and Full Proposal)

Question: We are planning to partner with a non-profit electric cooperative that is a broadband provider for rural areas in town. The electric cooperative is not classified within any of the non-profit, non-academic examples described in the RFP. Is the non-profit electric cooperative eligible to participate in the Round III proposal?

Answer: The electric cooperative is an eligible partner institution. As the electric cooperative is a non-profit, they are also eligible to participate as the lead institution, provided that an academic partner is also involved in the proposed platform.

Question 3 (LOI and Full Proposal)

Question: Are for-profit companies, which are not part of the Industry Consortium, eligible to participate as the lead organization?

Answer: For-profit organizations that are not members of the PAWR Industry Consortium may participate within proposing teams (Senior Personnel or Consultants) but may not submit proposals as the lead organization.

The proposal may request funds under any of the categories listed so long as the item and amount are considered necessary, reasonable, allocable, and allowable per 2 Code of Federal Regulations (CFR) § 200, Subpart E. For-profit entities are subject to the cost principles contained in the Federal Acquisition Regulation, Part 31.

Question 4 (Full Proposal)

Question: Are there PPO guidelines for budgeting Principal Investigator (PI) time for the proposed platform?

Answer: The PPO does not have set guidelines regarding the budgeting of PI time. As a historical example, most PIs/Co-PIs associated with an awarded PAWR Platform had a yearly calendar appointment of 0.5-1.0 per year (per PI).

Question 5 (Full Proposal)

Question: How do we plan resource allocation for project management? Are there any recommended guidelines for teams?

Answer: Should your proposal be selected to advance beyond the Site Visit stage, your team will be provided detailed guidelines regarding the PPO's expectations for project management. For example, your team will be asked to create a 5-year Gantt Chart that includes activities, milestones, deliverables, and critical path items. As a reminder, one of the co-PIs or senior personnel must be a qualified project manager with demonstrated, relevant experience - the PPO recommends allocating grant dollars for this project manager.

Question 6 (LOI and Full Proposal)

Question: My organization has a PAWR platform idea, though the focus is not on rural broadband technology. Should we apply to the Round III RFP?

Answer: If the proposed PAWR Platform does not have a rural broadband technology focus, then the PPO does not recommend applying to the Round III RFP. Instead, we recommend that you explore other funding avenues.

Question 7 (LOI and Full Proposal)

Question: Our project seeks contacts with Industry Consortium members more senior than our local company representatives. How should we make that contact?

Answer: The PPO has received a number of questions from proposers regarding introductions to Industry Consortium members for various aspects of the proposed platforms. The guidance issued during this round for interaction with PAWR Industry Consortium members only restricts access to the Consortium board member(s) of those companies. Those members have been advised to refrain from interacting with proposers. Proposers are free to interact with other company employees and obtain engineering guidance or product details to include in their proposal. However, the PPO is not mediating or facilitating access at this stage for detailed design discussions with consortium members. Proposers are advised to reach out to member companies at their own initiative. At the site visit stage, these design consideration questions will be discussed with the identified Consortium members.

Question 8 (LOI)

Question: My project may miss the LOI deadline of October 25. Can we still submit a Full Proposal?

Answer: Potential proposers may not submit a proposal without first submitting a LOI compliant with the instructions detailed in the RFP, by the LOI deadline. Failure to submit a required LOI will result in a Full Proposal being returned without review.

Question 9 (Full Proposal)

Question: The RFP specifies that we shall include the biographical sketches of no more than 10 project team members in the full proposal submission, but it does not specify whether there is any upper limit on the number of project team members we may discuss in Section X, Contributions of Key Personnel in the Past Five Years of the full proposal. Our project team has more than 10 members. Please advise whether we may include information about more than 10 team members in Section X, Contributions of Key Personnel in the Past Five Years of the full proposal?

Answer: There is no upper limit on the number of project team members you may include in Section X, Contributions of Key Personnel in the Past Five Years.

Question 10 (LOI)

Question: Is there a limit to the number of project partners and the number of Senior Personnel that can be included within the LOI form?

Answer: There are no limits to the number of project partners and the number of Senior Personnel that can be included within the LOI form. You may feel free to add additional rows to the LOI form as needed.

Question 11 (LOI)

Question: Can we change the lead PI and lead institution after a LOI has been submitted?

Answer: The lead PI and institution must remain the same for the Full Proposal. However, the composition of the team (e.g., co-PIs, Senior Personnel, partner institutions, and community organizations) may change at the discretion of the proposer.

Question 12 (Full Proposal)

Question: We are working closely with a faculty member at a foreign (non-US) university. He is contributing heavily to the proposal preparation and will be an excellent source of ideas if we get funded. We recognize that no PAWR money or equipment can flow from the United States to foreign universities, but we definitely want to continue to include the faculty member on our team. How should he be listed in the proposal?

Answer: The foreign faculty member should be listed as an unpaid consultant or collaborator or project-level advisory committee member in the Project Personnel and Partner Institutions section of the Full Proposal.

Question 13 (Full Proposal)

Question: How is the PPO ensuring that full proposal panelists are not conflicted with key personnel associated with a proposed project?

Answer: The PPO will be conducting a conflict of interest review to ensure that there are no conflicts. In any situation of actual or perceived conflict, the concerned panelists recused themselves from being assigned a proposal, reading or reviewing the proposals, being present in the room during discussions, influencing the panel decision, or contributing to the panel summary. Proposers should ensure that EDAS conflict information is updated for ALL key personnel associated with your project (i.e., please be sure to enter the names of all personnel in EDAS when you enter the name of the PI).

Question 13 (LOI and Full Proposal)

Question: What if I encounter EDAS submission issues?

Answer: We would be happy to help. Please send us an email at info@advancedwireless.org.

Question 14 (LOI and Full Proposal)

Question: Our city is interested in responding to the RFP, but we are wondering if you are limiting this to rural communities? Our city doesn't fit the Federal definition of rural.

Answer: The community and testbed area do not have to meet any technical definition of "rural," but they do have to credibly claim to address the problem of long distance, high bandwidth coverage challenges. Any community is open to respond and to propose hosting a testbed, provided that the testbed area can be credibly described as rural and addresses the technical goals and requirements described in the RFP.