Ohio Federal Research Network

Driving Innovation Through Strategic Partnerships

Round 5 – Pre-Release Opportunity Announcement

Issued October 29, 2020

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Ohio Federal Research Network (OFRN)
Pre-Release Opportunity Announcement

1 OPPORTUNITY DESCRIPTION

1.1 General Overview Information

State Program:	Ohio Federal Research Network (OFRN)
Funding Opportunity Title:	Round 5 - Sustaining Ohio's Aeronautical Readiness and Innovation in the Next Generation (SOARING)
Announcement Type:	Pre-Release Announcement
Funding Opportunity Number:	Parallax -xx-xxx

1.2 Key Dates

Event	Key Date
Opportunity Announcement Pre- Release	Oct. 28, 2020
Opportunity Announcement Informational Session and Q&A with Federal SMEs (2 virtual sessions)	Nov. 10, 2020 (10:00am– 12:00pm ET)* Nov. 18, 2020 (1:00pm-3:00pm ET)*
Opportunity Announcement Formal Release	Nov. 20, 2020
Proposal Training	Dec. 2, 2020*
Proposal Questions Accepted Through	Jan. 6, 2021
Due date for Volume 2 (Technical), 2A (Supplemental), and 2B (Slide Deck)	Jan. 29, 2021, by 5:00pm ET
Notification of Selection for Final Pitch Day	Feb.17, 2021
Due date for Volume 1 (Business and Cost Proposal)	March 17, 2021
Pitch Day	March 23- 24, 2021
Proposal Review	Apr. 2, 2021
Awards Announced	Apr. 7, 2021
Projects Start	Apr. 22, 2021
Student Intern Orientation	Apr. 29, 2021

information for sessions will be posted to https://ohiofrn.org

1.3 Description of the funding opportunity

The OFRN Round 5 Opportunity Announcement is focused on expanding Ohio's research and development capabilities across the state's academic institutions and business in support of Ohio-based federal partner needs, which ultimately promotes Ohio's economic growth. OFRN Round 5 Areas of Interest (AOIs) include topics in Unmanned Aerial Systems (UAS), Artificial Intelligence, Human Factors, Data Analytics and Space Commercialization. This announcement seeks to leverage Ohio's unique research capabilities and its federal partner's expertise to accelerate technology development and innovation by increasing collaboration across government, academic, and industry organizations.

1.4 Funding availability

The Round 5 Opportunity Announcement is ***subject to funding availability*** based upon a pending review and final determination of the Program Objectives from the Ohio Department of Higher Education (ODHE). **This is a Pre-Release notification and NOT a formal solicitation**. OFRN will not reimburse

interested parties for any costs incurred in the review and/or response to this document. This notification will accomplish two objectives:

i.) First, advise the OFRN network and interested parties of a pending and possible release, for an upcoming Round 5 SOARING Program Solicitation;

ii.) Second, this release will enable interested parties to evaluate and comment on the Program Areas of Interest (AOI's) contained herein;

iii.) OFRN reserves the right to accept or reject any comments or requests that result from this document;

iv.) OFRN reserves the right to determine how or whether a final Round 5 SOARING solicitation will occur and the timing, if any of a final solicitation.

v.) AGAIN, THIS IS A PRE-RELEASE NOTIFICATION AND MAY OR MAY NOT RESULT IN A FORMAL SOLICITATION. ANY SUBSEQUENT INFORMATION OR FORMAL SOLICITATION WILL BE SUBJECT TO THE AVAILABILITY OF FUNDING AS DETERMINED BY THE OFRN.

Total amount to be awarded:	**Up to $7.5 million**
Anticipated individual awards:	$750k to $1.5M each
Cost share:	Cost share is optional, but favored
Project Period:	18 Months
Award Type:	Contract

1.5 Program Contacts

Title	Name	Email
Executive Program Director	Robert Tanner	bob.tanner@wright-research.org
Contracting Questions	Amy Schear	amy.schear@wright-research.org
Administrative Questions		OFRN-Question@wright-research.org

1.6 OFRN Background

The Ohio Federal Research Network (OFRN) first received funding from the Ohio General Assembly in the fiscal year 2016-2017 biennial operating budget that was signed into law by the Governor on July 1, 2015 as a strategic priority initiative identified by the Ohio Federal and Military Jobs Commission (OFMJC).

The goal of OFRN is to enhance the Ohio Industrial base while also increasing research funding, talent, and capabilities development in Ohio to support future Federal, State, and Industry aerospace requirements. The OFRN established a novel approach to technology based economic development with a focus on aggregating, integrating, and leveraging federal, academic and private sector capabilities and resources in Ohio to develop proactive and innovative solutions to address emerging federal and state requirements and emerging market opportunities. OFRN research projects are intended to advance priority research thrust areas of the Air Force Research Lab (AFRL), National Air and Space Intelligence Center (NASIC), Naval Medical Research Unit – Dayton (NAMRU-D), and National Aeronautics and Space Administration Glenn Research Center (NASA-GRC). OFRN also engages with the State of Ohio's Adjutant General (TAG) and the Ohio Department of Transportation (DOT) regarding their respective organizational mission needs.

The Ohio Department of Higher Education (ODHE) coordinates all education in Ohio, allocates funds to higher education institutions, initiates and oversees the implementation of workforce development and adult education programs. It is the mission of the ODHE to promote Ohio's university system and the economic competitiveness of the State of Ohio and their support of the OFRN that has enabled the development of the Round 5 Project Announcement. Together, the ODHE and OFRN are providing students and faculty with new and extraordinary educational opportunities through research and innovation that support Ohio's federal missions and that create economic impact for Ohio.

1.6.1 Funding

Funding for the Round 5 Opportunity Announcement is being provided through the Ohio Department of Higher Education (ODHE). A key part of these funds will further enable faculty to continue to teach, and students continue to learn as part of our continuing investment in Ohio's research and technology ecosystem.

1.7 Program Description

1.7.1 Introduction

The Round 5 Opportunity Announcement focuses on research and technologies that will further enable and accelerate Ohio's national leadership role in both the defense and commercial sectors relating to aerospace, aviation, bioscience, human factors, artificial intelligence, and communications, among other disciplines and industries driving our local, state and national economies.

OFRN has used input from Federal and State stakeholders as well as industry guidance to develop research focus areas that reflect defense mission priorities and shape commercial opportunities that will create job growth in Ohio.

Also included in this funding Round is the creation of Student Experience and Engagement Initiative (SEE). This initiative is intended to provide experiential learning for students enrolled within any STEM related 2-year or 4-year program in any Ohio college or university.

The OFRN Round 5 organizational structure is shown in Figure 1. The OFRN plans to use this team to prioritize, select, and review investments and monitor project progress for the Round 5 SOARING Initiative.

Figure 1: OFRN Round 5 Organizational Structure and Review Teams.

As part of the Round 5 Project development process, OFRN undertook a continuous improvement process, taking the lessons learned from past cycles to improve outcomes of future rounds. A key focus area was increased engagement with Federal Partners to maximize project objectives and ensure that project teams are expanding their knowledge and understanding of Federal Program processes and opportunities.

OFRN Federal Partners convened a working group to examine past engagement practices between proposal participants and the Federal Partners. Considerable time was devoted to determining how the information exchange process during proposal development could be made more effective and efficient, in order to improve project definition and ultimate research outcome. It was determined that there should be more access to Federal Partner Subject Matter Experts (SMEs), in order to answer questions during work scope development and throughout the lifecycle of the project. While all involved would prefer to have more time to develop, write, evaluate, award and execute these projects, there exists several time constraints that force a more compressed program schedule, including academic and State budget calendars and of course the mission critical objectives that are the focus of this research.

The federal partners also spent considerable time developing and refining the Areas of Interest (AOI's). The focus was on fewer, higher priority research needs and topics that had cross-organizational interest/application. This enables maximum impact of OFRN investment by the Federal Partners. Commitments were made to ensure that each AOI would have organizational SME's available to support project development and evaluation throughout the Round 5 Program. Scheduled sessions for technical questions and answers will be developed and communicated as part of the Proposal process. Contact information and details regarding these activities will be communicated in advance of the formal release of the Round 5 Solicitation.

The following information is provided as an overview of each of the organizational missions of the OFRN government partners.

NASA Glenn Research Center (NASA GRC)

NASA Glenn's mission is to drive research, technology, and systems to advance aviation, enable exploration of the universe, and improve life on Earth. They do that through the following core competencies: Air-Breathing Propulsion; In-Space Propulsion and Cryogenic Fluids Management; Communications Technology and Development; Power, Energy Storage and Conversion; Materials for Extreme Environments; and Physical Sciences and Biomedical Technologies in Space.

Air Force Research Laboratory (AFRL)

The Air Force Research Laboratory (AFRL) is a scientific research organization operated by the United States Air Force Materiel Command dedicated to leading the discovery, development, and integration of aerospace warfighting technologies, planning and executing the Air and Space Forces science and technology program, and providing warfighting capabilities to United States air, space, and cyberspace forces.

National Air and Space Intelligence Center (NASIC)

The National Air and Space Intelligence Center (NASIC) is the United States Air Force unit for analyzing military intelligence on foreign air and space forces, weapons, and systems. NASIC assessments of aerospace performance characteristics, capabilities, and vulnerabilities are used to shape national security and defense policies and supports weapons treaty negotiations and verification.

Naval Medical Research Unit – Dayton (NAMRU-D)

The Naval Medical Research Unit Dayton is a major DoD medical research command, as well as the home of the Naval Aerospace Medical Research Laboratory and the Environmental Health Effects Laboratory. As a subordinate command to Naval Medical Research Center, NAMRU-D conducts aerospace medical and environmental health effects research to enhance warfighter health, safety, performance, and readiness. NAMRU-D's research addresses identified Fleet needs, and results in products and solutions ranging from basic knowledge, to fielded technologies.

The Ohio National Guard

The Ohio National Guard serves the citizens of Ohio and the nation by fulfilling the state and federal military role of providing public safety when directed by the Governor, or supporting the national military strategy when requested by the President. In either scenario, its focus is "Always Ready, Always There." Its unique mission encompasses protecting the homeland by responding to natural disasters or cyber-attacks here and by consistently answering the call of duty to defend the nation at home and abroad. Ohio National Guard - https://ong.ohio.gov/.

1.7.2 Federal Customer Requirements

OFRN Round 5 seeks to fund projects that align with needs identified by its Federal, State, and commercial stakeholders. Broadly, these relate to performance, safety, and FAA flight certification across diverse classes, target applications, and technology domains.

Examples of high-level research priorities and requirements of each Federal partner are listed in Table 1:

Table 1: Federal Partner High-Level Priorities

Partner	Interest
AFRL, NASA	Vertical Take-Off & Landing (VTOL)
AFRL, NASIC	Situational Awareness & Proliferated Surveillance Systems
AFRL, NAMRU-D	Patient care in austere and contested environments
AFRL, NAMRU-D	Personal Exposure Devices
AFRL, NAMRU-D	Acceleration effects
AFRL	Enabling Human-Machine Teaming Using Brain-Machine Interfaces
AFRL, NASA	Advanced Power Systems Applicable to Aviation Propulsion, Micro-Grids, and Lunar Surface Operations
NASA	Quantum Computing
NASIC	Applications of commercial satellites to humanitarian, disaster, and defense topics
NASIC	Large Data Set Triage
NASIC	Journal Article Warning and Correlation

Additionally, projects are encouraged to also satisfy research needs of State of Ohio stakeholders as well as industry. Examples of high-level requirements from these groups are listed in Table 2:

Table 2: Non-Federal Interest Areas

Partner	Interest
Air National Guard	• Detect and Avoid systems • Persistent full-spectrum communication repeater • Mobile ad hoc networks • UAS deployable launch and recovery kit • Command and Control liaison kit • Joint Incident Site Communication Capability and Block III Incident site data service extension
DOT	• Ground-based Detect and Avoid

	• UAS operations over moving traffic and risk mitigation
	• UTM/UAM
	  • System health monitoring and operational support
	  • Integration into existing transportation management centers
	• VTOL/eVTOL noise mitigation and supply chain logistics
	• Vertiport/Vertipad
	  • Geographic locations and Infrastructure requirements
	  • Autonomous communication

Industry and Other Areas	• Field swappable UAS variants/plug and play UAS payloads • Automated support for human analysis of flight data • Onboard Safety Technologies • Rapid prototyping, system integration, and certification

Beyond these high-level priorities, potential applicants should be aware of priorities in programs such as the AFRL STAT BAA, a summary of which is included as Appendix 1 to this Opportunity Announcement.

OFRN projects must address a research priority of one of the OFRN's Federal Partners. Projects that also address research priorities of non-Federal partners are desirable.

1.7.3 Areas of Interest

Applicants are encouraged to address specific AOIs. Teams may also propose any topic or combination of topics, listed or unlisted, that are directly relevant to federal and industrial needs. Live tests and demonstration are strongly encouraged where possible.

Not all topic areas are expected to be funded. OFRN is seeking to create a broad portfolio of projects to address multiple needs.

Areas of Interest (AOIs) are listed in no particular order.

1.7.3.1 AOI #1: Vertical Take-Off & Landing (VTOL)

There has been an explosion of interest in the 'flying car' concept to the Air Force due to the lack of need for runway. The ability to land wherever, whenever greatly eases the logistic burden of resupply and minimizes trends in terms of operational footprints. Building off the extensive commercial drone market, a number of key technologies are needed to enable such concepts at an order of magnitude larger in scale in order to address the areas and challenges for military / civil VTOL systems. These include for large VTOL capabilities:

a) Battery Energy Storage
   - Battery/recharging designs, which facilitate safe, rapidly recharge systems without overheating or degrade longevity and reliability, to provide high-rate recharge (5-10 min) for multiple cycles (50-100 per day), and to support the demands of the appropriate lift/weight ratios *(Note: This is not about developing a new battery chemistries but enabling battery consistency in government / commercial sectors (e.g. Lithium/Ion/Polymer types)).*
   - Power supply – recharging stations which should be able to run safely and effectively off commercially available circuits/wattage/amperage in a residential or office building

b) Propulsion sources to provide the appropriate lift/weight ratio and decrease ambient noise

c) Sensing hardware/software and platform designs to enable both manned and unmanned flight operations addressing
   - Reliable, Controllable Flight in Three-Dimensional Flow Fields

i. Design objectives accounting for wind turbulences (e.g., up, down, cross drafts) in congested urban settings, and maintaining reliable flight control
ii. Air data sensors to detect and avoid “clear day” wind shears (e.g., updrafts, downdrafts, crosswinds)
iii. MS&A of air currents will lead to enhancements to stability controls of aircraft to ensure safety, security, and reliability in these settings. This is essential for Air Worthiness certification

- Human Factors / Human-Machine Interfaces
  i. On-board passenger interaction with “virtual pilot” for situational awareness of impending maneuvers and phases of flight. Dealing with onboard passenger emergencies (e.g., sickness, etc.) and ability to reroute to emergency care; activation of 911 system at destination or alternate land sites, etc.
  ii. External interface with passengers while on ground – awareness and communication with passengers and non-passengers in proximity to the vehicle, and maintenance personnel
- Modeling and Simulation of air traffic management system for airspace deconfliction, route planning and approval, protocols for degraded visibility, weather / darkness

1.7.3.2 AOI #2: Situational Awareness and Proliferated Surveillance Systems

Building upon technological advances in sensors and sensor suites, DoD is looking for unique affordable solutions for surveillance on the ground, in the air, and in space. Proposals may include but are not limited to, a complete surveillance system for ground, air, and/or space; affordable sensor suites, data visualization tools to display complex data simply and quickly; and the ability to analyze images. Technical approaches should focus on the “find, fix, and track” part of the kill chain. Electro-optical (EO) and radio frequency (RF) sensing strategies such as:

- Advanced EO and IR sensing systems that balance cost and performance are needed for new expendable and attritable air systems, and replenish space
- Technologies that address flexible high resolution, long range EO/IR imaging along with multi-mode LIDAR (3D shape, vibration sensing, and synthetic aperture imaging) for stand-off and penetrating ISR.
- Technologies for a compact hyperspectral imaging (HIS) system and staring infrared search and track for attritable platforms for use in highly contested environments.
- Technology that addresses the need for low cost, size, weight, and power (C-SWaP) RF sensors for attritable and expendable platforms. This would include such things as additive manufacturing techniques to reduce cost over traditional fabrication techniques, as well as the use of commercial off-the-shelf components, including transmit/receive modules, RF system-on-chip, FPGAs, and software-defined radio (SDR) technology to build low-cost RF sensors.
- RF sensing concepts that take advantage of the diversity (spatial, temporal, power, frequency and polarization) made possible via wideband, dual-polarized and software-defined RF systems to enhance sensor capability to find, fix and track targets of interest and improve situational awareness. Techniques that use multiple, proliferated RF systems to improve performance via geometric diversity are also of interest.

Solutions/concepts addressing these technical needs are preferred, but others will also be considered.

1.7.3.3 AOI #3: Patient care in austere and contested environments

Technologies to enhance patient recovery, transport, and care to include autonomous recovery of injured service members in contested environments, UAV-based casualty evacuation (CASEVAC). Operations and enabling technologies may include autonomous/remotely commanded robotic casualty recovery and stabilization in contested environments, casualty monitoring, integrated smart medical equipment, autonomous and/or remote care en route, secure data streaming to receiving facility, medical sensor fusion and diagnostics, robotics, artificial intelligence, and other technologies.

1.7.3.4 AOI #4: Personal Exposure Devices

Development of personal exposure monitoring devices, such as personal dosimeters, to measure and report exposure to biological and toxic industrial chemicals and compounds. Devices should report exposure levels in real-time.

1.7.3.5 AOI #5 Acceleration Effects

Military operations including ground, sea, air, and space-based missions expose service members to various unusual or extreme accelerative forces, presenting threats to health, safety, readiness, and mission performance. There is broad interest and need for better understanding and mitigation of such accelerative threats as whole-body vibration, impact acceleration (i.e., crash), high-g acceleration, and dynamic acceleration. Mitigations for fatigue, neck and back pain and injury, impact injury, g-loss of consciousness, spatial disorientation, and motion sickness are of particular interest.

1.7.3.6 AOI #6: Improving Human-Machine Teaming Performance Using Brain-Machine Interface (BMI) Technologies

Intelligent autonomous systems can provide valuable tactical information to the warfighter. However, this has also led an overabundance of information the warfighter/operator has to sift through to identify potential threats and make effective decisions. We seek proposals that can design, develop, and validate a multi-modal brain-machine interface (BMI)-enabled technology platform that operates for active and/or reactive control for enabling decision making in information dense environments, and facilitating human-machine cooperative intelligence. Proposers may consider ‘hybrid’ BMI architectures that facilitate the integration with other physiological and behavioral (e.g., eye tracking) technologies to inform the BMI if necessary to achieve the multi-modal interface.

1.7.3.7 AOI #7: Advanced Power Systems Applicable to Aviation Propulsion, Micro-Grids, and Lunar Surface Operations

There is an increasing demand for electrical power to be available independent of the current Electrical Power Grid(s) found on Earth. This includes critical aviation, space, and terrestrial applications where crew well-being, productivity, critical infrastructure (data servers, etc.), and security are involved. These applications require high efficiency power management and distribution systems delivering highly reliable power (>0.999999) and includes diverse power source and energy storage integration strategy to meet the needs of the consumer. These future systems require development of key technologies and capabilities:

a) System control – Solutions that can integrate regulators and interface converters and result in a collaborative system instead of a competitive system. For example, being able to integrate and equally consume power from different types of power sources without having the two regulators fight each other and having to switch between the sources.

b) System Protection – Methods enabling robust specification and assurance of safety critical functions, despite mission and fault transients, within and beyond the electrical power system. Develop system protection approaches using regulators to reduce fault energy and provide fast detection, isolation, and reconfiguration of electrical network elements.
c) System Stability - A solution to reduce the influence and destabilizing effects of nonlinearities such as constant power, change to constant current, fold back, pulsed loads, and system bifurcation modes.
d) Thermal - An integrated power and thermal management system which can be used to provide enhanced monitoring, diagnostic, and prognostic understanding of power system states and avoid thermal constraints by restricting power to avoid exceeding thermal limits. The intended solution would provide superior power management capability including predictive thermal operational issues and provide time to change power management directions.
e) Energy Storage – Understanding usage of distributed energy storage (batteries, capacitors, inductors, supercapacitors, flywheels, etc.) and hybrid energy storage and control methods to enable advanced power system control approaches. This can include power architectures that enable advanced methods of control and integration of energy storage.

1.7.3.8 AOI #8: Quantum Communications

NASA seeks highly secure communications technologies for mission and safety critical aviation and spacecraft applications. Quantum communications use entangled photons for transmissions, enabling highly secure communication systems. NASA is interested in the development and demonstration of quantum communications technologies such as high-efficiency photon entangled sources, quantum repeaters, high-efficiency quantum detectors, and quantum cryptography. Advances in these technologies will enable quantum communication networks with unlimited security.

1.7.3.9 AOI #9: Applications of commercial satellites to humanitarian, disaster, and defense topics

With recent growth in commercial satellite availability the DoD is interested in tools and data management processes using these commercially available sensors. How might these resources be rapidly tasked and exploited in a time sensitive crisis to support humanitarian, disaster relief, and defensive efforts.

1.7.3.10 AOI #10: Large Data Set Triage

With the advent of large file storage systems, the DoD is interested in tools and techniques aimed at the timely triage of large computer file collections (i.e. potentially terabytes of data). The need to determine the most useful files (e.g. relevancy) to be examined by analysts is critical for managing resources to allow for timely translation and analysis of the data.

1.7.3.11 AOI #11: Journal Article Warning and Correlation

In trying to determine the most disruptive and critical emerging technologies the DoD is interested in tools that can read, and correlate people, places, and technologies that will allow us to set alerts for breaking or new technologies (i.e. a sudden 50% increase in a specific area could be one example of an alert), and capable of reading and processing in multiple languages (i.e., structured data, multiple databases).

1.7.3.12 AOI #12: Other Topics

Proposers may suggest any relevant topic(s) not listed but that have clear application and utility for SOARING focus areas. Proposers will be expected to provide the same level state of the art context, metrics, description of an emergency demonstration, federal alignment, and long-term benefits.

1.7.4 Areas Specifically not of Interest

The following types of projects are considered misaligned with the aims of the Round 5 initiative and will not be competitive if submitted.

- Basic research work without a clear application or flight/flight-related demo
- Programs focused on proprietary air platforms, software, or technology
- Loosely associated teams or multiple, disparate projects submitted as a single submission
- Projects that do not include a student focused learning program

1.8 End of Project Demonstrations

Technology tests and demonstrations are strongly encouraged. These tests and demonstrations are used to verify performance and completion of a project, and also to showcase the technology to stakeholders and potential customers. Demo delivery requirements for non-flight AOIs can be found in Appendix 9.

Costs directly associated with the utilization of a test site (i.e., costs originating from the site, not the material, labor, or other costs associated with a project team) may be paid for by OFRN subject to funding availability and may use non-project funds.

OFRN has one location for test demonstrations available, as noted in the following section. Project teams can propose other test locations and environments that best showcase their project capabilities.

1.8.1 Demonstration Grounds

Flight demonstrations should be based on using the Ohio/Indiana UAS Center (UASC, see http://www.dot.state.oh.us/divisions/uas/Pages/default.aspx) in Springfield, OH (Figure 2). The UASC facility has the only ground-based Sense and Avoid test facility in Class E and Class G airspace currently available in the U.S.

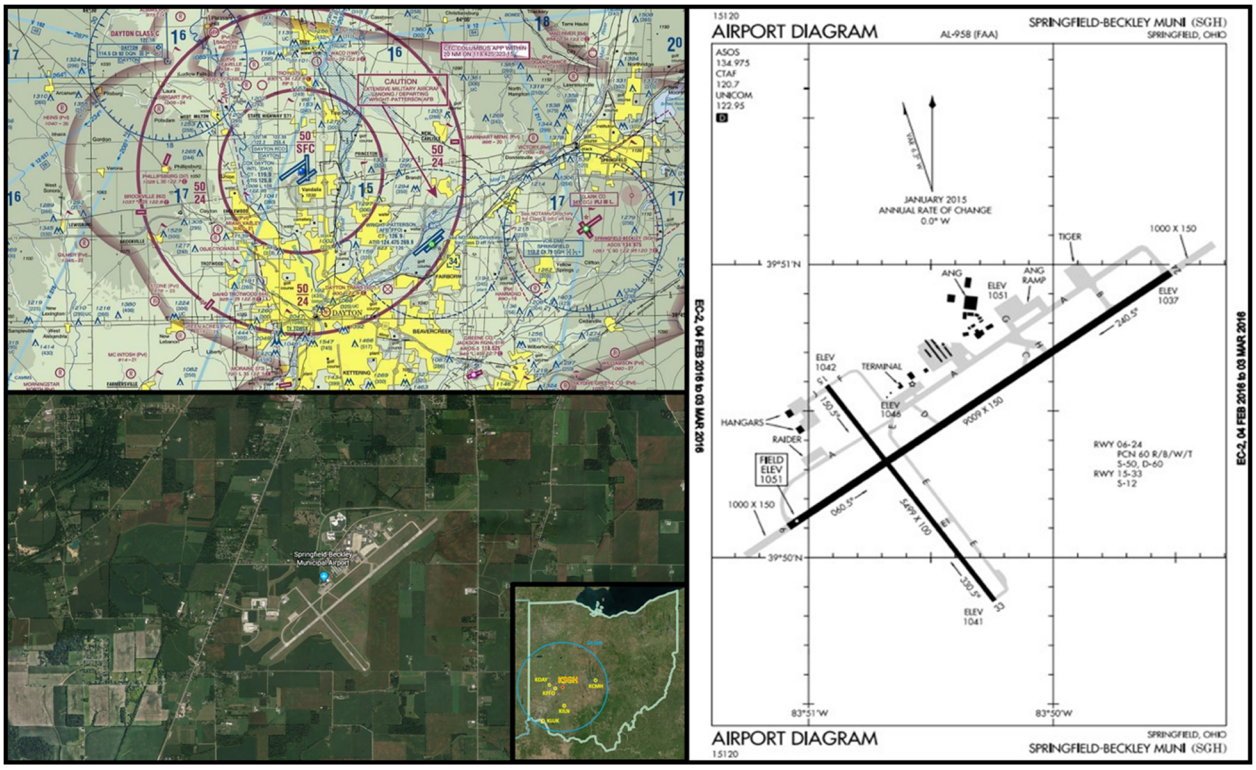

Figure 2: KSGH Springfield-Beckley Municipal Airport - Springfield, OH

Figure 2 shows the airspace available for the demonstration scenarios. There are two operational volume airspaces defined, one for Visual Line of Sight (VLOS) operations and another for Beyond Visual Line of Sight (BVLOS) operations. The VLOS airspace is surface to 3,500 feet AGL and an area of approximately 7 NM². The BVLOS airspace is 1,000 feet AGL to 8,000 feet MSL covering an area of over 200 NM². Additional details of the UASC flight requirements including air worthiness, pilot qualification, and additional facility and airspace details will be provided after proposal selection. Site questions that impact proposal submissions may be addressed through Q&A.

Applicants must describe their proposed demonstration in the Supplemental Volume (Volume 2A) Respondents are invited to be creative with their flight demonstration plan and focus on using the emergency response to showcase their technology's utility in civilian use.

2 AWARD INFORMATION

2.1 Estimated Funding and Availability of Funds

It is anticipated that total funding for Round 5 projects is $(TBD) Million will be available under this announcement, contingent on and subject to receiving appropriated funds from the State of Ohio. OFRN reserves the right to determine when or whether a final solicitation will occur and the award criteria in any final solicitation.

2.2 Number of Awards

The exact number and size of awards will depend on the number of meritorious proposals and the availability of funds.

2.3 Anticipated Award Date and Notice to Proceed

As discussed on the cover page of this announcement, awards are anticipated to be made in April 2021. Note that this anticipated date does not obligate OFRN to make any awards.

After award notification, the Parallax Contracts Manager will then provide a Notice to Proceed (NTP) authorization to allow for the commencement of work with a limitation of funds level to commence work immediately. The Applicant may not begin work until after the NTP is formally provided.

2.4 Period of Performance

Period of performance for the awards made as a result of this announcement will be for a period no less or more than 18 months.

2.5 Contractual Arrangement

All Subcontract(s) issued under this announcement will be made as cost reimbursable contract(s). Appendix 5A and 5B of this announcement provide terms and conditions for the proposed contract(s). Note that two versions of terms and conditions are provided, one for industry, either for-profit or not-for-profit organizations, and another for State Universities or State Colleges. These terms and conditions will become contractual upon OFRN's acceptance of the Applicant's proposal. Please see Section 3.2.1.5 of this Opportunity Announcement regarding taking exception to these terms and conditions.

2.6 Eligibility Information

A Prime Applicant is the entity that submits a proposal and will be legally and financially responsible for the administration of any resulting award of OFRN funds. Proposed projects can be led by either industry (either for-profit or not-for-profit) or an Ohio college or university. Regardless of the leading organization, project teams must include:

- at least two Ohio colleges or universities;
- at least one commercial/ industry organization (either for-profit or not-for-profit);
- at least one partner from an Ohio-based federal lab (Please do not solicit letters of support from Federal Centers); and
- Proposals must include a Student Experiential Engagement (SEE) program in accordance with Appendix 6.
- Proposals that include participation from the Air Force Institute of Technology (AFIT) are eligible for submission to this Opportunity Announcement. Applicants are expected to demonstrate how funding for AFIT research will directly support job creation across the State of Ohio. One example might be including non-government researchers ("outside the fence") in the AFIT graduate education system. Growing talent outside the Wright Patterson AFB and NASA-GRC is critical for Ohio to better compete going forward.

Prime Applicants that become contract awardees must maintain eligibility while the contract is open. A contract awardee that loses eligibility forfeits its award and may be required to repay OFRN the full amount of the monies it has received, plus interest.

Note: Where possible, OFRN staff will help facilitate the formation of teams by posting a spreadsheet of individuals or organizations interested in participation with teams. The spreadsheet will be available in the OFRN document repository at http://data.ohiofrn.org (See Appendix 7).

2.6.1 Cost Share Requirements and Guidelines

Cost share can directly demonstrate the level of commercial and academic support for a project; meaningful cost share will be viewed favorably in the evaluation of proposals. Factors in assessing cost share can include:

- Magnitude
- Any conditions associated with the cost share
- Type of cost share

2.6.2 Limitation on Submissions

There are no limits on the number of proposal submissions that an Applicant can submit.

2.7 Public Information

Prime Applicants are reminded that all information submitted in response to this Opportunity Announcement is considered public information unless a statutory exception exists that exempts it from public release (See Ohio Public Records Act in Section 149.43 of the Ohio Revised Code).

Exempted information (i.e., trade secrets, etc.) shall bear the marking "Proprietary Information". To the extent possible, proposals shall contain this marking in the header and footer of each page where proprietary information is included.

Applicants are strongly discouraged from including any proprietary information in their proposal(s). If it is included, the proposal should contain an attachment that lists all instances of proprietary information.

3 OPPORTUNITY ANNOUNCEMENT

3.1 General Instructions

3.1.1 Submission Guidelines:

For Round 5, OFRN is instituting a simplified submission process similar to Air Force SBIR/STTR Open Topics, Pitch Days and Direct to Phase II. Submission requires a 15-page Technical Volume and a 15-slide Pitch Deck. More detailed information is included in the technical volume and higher-level information is included in the slide deck. In the sole determination of OFRN, Proposals that exceed these page limitations may be disqualified from further review.

Applicants selected to move forward in the process will be required to physically present an updated and reduced version of the slide deck that was included in the proposal submission. Pitch presentations will be made to the Technical Review Committee which will base proposal scoring holistically on the Technical Volume, Pitch Deck and Pitch Presentation. Awards will be decided after the Pitch Presentations which will take place on TBD at a location to be announced.

NOTE: OFRN projects are intended to be TRL 3 and higher, or applied research rather than basic research. Technical feasibility is understood to have been already established. Applicants are required to provide information demonstrating that the scientific and technical merit and feasibility has been established. Proposals will not be evaluated that fail to demonstrate that technical merit and feasibility has been established or the Applicant has failed to demonstrate that work submitted in the feasibility documentation was substantially performed by the Applicant and/or the principal investigator (PI), or that the project utilizes COTS components in an innovative configuration or application.

Applicants shall submit the Business and Cost Proposal and the Technical Proposal to the OFRN general inbox: OFRN-Submission@wright-research.org. with a carbon copy (CC) to Becky Mescher at becky.mescher@wright-research.org.

Deadlines:

- Volume 2 (Technical), 2a (Supplemental), and 2B (Slide Deck) submit no later than 5:00pm Eastern Time (TBD)
- Volume 1 (Business and Cost Proposal) submit no later than 2:00 pm on TBD.

Proposals received after the due date and time may be rejected. It is the responsibility of the Applicant to ensure submission of a complete proposal based on all requirements of this

Opportunity Announcement. If possible, Applicants are encouraged to submit their proposals early.

3.1.2 General Formatting Requirements:

The Proposal must be written in English and adhere to the following format. Proposals in noncompliance may be rejected without review:

- Proposals are to be submitted on 8.5 x 11-inch page size with type no smaller than 10-point, single spaced.
- Margins must not be less than one (1) inch on all sides,
- Fonts used must be one of the following: Arial, Helvetica, or Times New Roman, and used uniformly throughout.
- All pages must be numbered consecutively using the format “Page [#] of [total number of pages]” (e.g., Page 2 of 6).
- The proposal title and Prime Applicant organization name must appear in the footer of each page.
- The Technical Volume must include the area(s) of interest (AOI) in the header of each page
- Proposals should not include color figures that cannot be understood when photocopied in black and white.
- The first page of the proposal must be the Application Information Cover Page using the template. This Application Information Page will NOT COUNT toward the 15-page limit for the Technical Volume
- Do not include a cover or cover letter other than the Application Information Page.
- Slide Deck must be no more than 15 slides in length.
- Proposals must be submitted in PDF format.

3.1.3 Amendments:

Should there be any changes to this Opportunity Announcement, a formal Amendment will be issued. All Amendments to the Opportunity Announcement will be published on the OFRN website.

3.1.4 Parallax Points of Contact:

Contractual:
Amy Schear, Parallax Contracts Administrator
937-705-1096
Amy.schear@wright-research.org

3.1.5 Questions:

All questions are to be submitted to the OFRN general inbox: OFRN-Question@wright-research.org by no later than 4:00pm Eastern Time, fourteen (14) days prior to the formal proposal submission date.

3.2 Volume 1: Business and Cost Proposal

3.2.1 Business Proposal

The Applicant shall complete the following information pertaining to the Business and Cost Volume STRICTLY LISTED IN THIS ORDER, utilizing the Template provided in Appendix XX. Volume 1 of the proposal must be submitted by TBD. Note that earlier submission of Volume 1 is allowed.

3.2.1.1 Cover Page

The Applicant shall provide a cover page introducing OFRN to the proposal submission.

The Applicant shall complete the following information, which shall not exceed one page in length. This Cover Page is considered the first formal page of the Business and Cost Proposal:

Prime Applicant Organization Name:	
Dun and Bradstreet Number:	
Taxpayer Identification Number:	
Lead PI Name:	Lead PI Name, Email Address, Phone
Contractual Point of Contact:	Name, Email Address, Phone
Project Name:	
1. Summary description of project being proposed	
2. Description of Federal research requirement (s)	
3. Government POC	Name, Title, Department, Agency -- Phone, Email Address
4. University Team Members	Institution, Lead Contact Name, Email Address, DUNS Number -- Institution, Lead Contact Name, Email Address, DUNS Number
5. Industry Team Members	Company, Lead Contact Name, Email Address -- Company, Lead Contact Name, Email Address
6. Cost share listed by source (Industry, University, Other)	Source, $N,NNN,NNN
7. Potential Follow-On Funding	List by organization and timing -- Funder, $N,NNN,NNN, Year: NNNN -- Funder, $N,NNN,NNN, Year: NNNN
8. Funding requested by calendar year	2021: $NNN,NNN; 2022: $NNN,NNN; Total Requested: $NNN,NNN
9. New jobs created by the end of 2025	NNN
10. Background IP contributed	(State what it is and who owns it)
11. Anticipated Project IP Created	(Describe what may be generated, and how it will be protected/shared)
12. Statement indicating that your firm is not debarred, suspended or proposed for debarment as the result of performance under any federal contract, grant, or cooperative agreement	
13. Prior, current, or Pending Support of Similar Proposals or Awards: (see Technical Volume instructions)	

3.2.1.2 Vendor Profile

The Applicant shall complete the Vendor Certification Form (Appendix 2) and provide as a part of its proposal submission.

3.2.1.3 Negotiators and Authorized Signature

The Applicant shall provide the name, title, telephone number of the person(s) authorized to negotiate on its behalf. The Applicant shall also provide the name and title of the person authorized to sign the awarded contract.

3.2.1.4 Organizational Conflict of Interest (OCI) Certification

The Applicant shall provide a statement identifying any known or potential Conflicts of Interest related to this work and provide an OCI Mitigation Plan outlining actions to be taken to avoid, neutralize, or mitigate known or potential conflicts of interest prior to award of subcontract pursuant to this opportunity. If no known or potential conflicts of interest exist, state so on official organization letterhead. Note: successful Applicant(s) shall have an ongoing duty to report any OCI that arises or is discovered to the Parallax Contracts Administrator.

3.2.1.5 Exceptions

Exceptions to the terms and conditions of the Opportunity Announcement, including Appendix 5 A and B, Contract Terms and Conditions, are **NOT** sought and OFRN/Parallax is under no obligation to enter into negotiations related to such exceptions. However, if the Applicant choses to take exceptions, such exceptions shall be clearly listed as an Appendix to the Business and Cost Proposal Volume.

3.2.1.6 Data Rights Assertion

Applicants are advised to submit a listing of asserted restrictions on data rights in the following table:

Technical Data to be Furnished with Restrictions*	Basis for Assertion**	Asserted Rights Category***	Naming of Person Asserting Restrictions****
(LIST)	(LIST)	(LIST)	(LIST)

*If the assertion is applicable to items, components, or processes developed at private expense, identify both the data and each such item, component, or process.

**Generally, the development of an item, component, or process at private expense, either exclusively or partially, is the only basis for asserting restrictions on the Government's rights to use, release, or disclose technical data pertaining to such items, components, or processes. Indicate whether development was exclusively or partially at private expense. If development was not at private expense, enter the specific reason for asserting that the Government's rights should be restricted.

***Enter asserted rights category (e.g., government purpose license rights from a prior contract, rights in SBIR data generated under another contract, limited or government purpose rights under this or a prior contract, or specifically negotiated licenses).

****Corporation, individual, or other person, as appropriate.

3.2.1.7 Proposal Validity Period

The proposal shall designate a validity period. This period shall not be less than 120 days from the date of submission.

3.2.1.8 Expenses Related to Proposal Submission

This Opportunity Announcement does not commit Parallax to pay any costs incurred in the submission of any proposal or acquiring or contracting for any services relating thereto.

3.2.2 Cost Proposal

The Prime Applicant is responsible for developing a cost proposal that provides appropriate understanding of the proposed use of funding, cost share contributions (optional but favored), and indirect charges being applied. The cost proposal should contain the following information and **MAY NOT EXCEED $1,500,000** in total cost:

3.2.2.1 Cost Worksheet

The Applicant shall complete the Excel Cost Worksheet (Appendix 4) for the basis of its cost proposal. The Applicant shall complete each worksheet tab by cost element, to include optional Cost Share, further defined below where applicable. Costs must be separated out for each period, and the Applicant shall add lines where needed. When completing these worksheets, please ensure all formulas remain intact.

3.2.2.2 Cost Narrative

The Applicant shall describe the basis of estimate in narrative form for each of the proposed cost elements.

Direct Labor – For Direct Labor, the Applicant shall provide a narrative rationale for the labor categories selected and hours proposed for the project period (18 months). The Applicant shall also provide labor category descriptions (e.g. job duties, years of required experience, education level etc.) for all positions. Finally, the Applicant shall provide resumes for all named Key Personnel.

Supplies, Materials, Equipment, Tuition Costs (Designated as "Other Direct Costs" in the Cost Worksheet) – The Applicant shall provide narrative rational for the proposed items, and each items role in relation to project completion. The Applicant shall support the proposed cost with quotations, detailed engineering estimates, or other past historical pricing information to support such proposed amounts. If proposing IT equipment, the Applicant shall state why such equipment cannot be provided through currently present resources. For tuition costs, **ONLY APPLICABLE TO UNIVERSITIES**, the Applicant shall provide a copy of the University policy supporting reimbursement of such cost.

Travel – The Applicant shall provide a narrative description/justification for each proposed travel trip, which states the purpose, location, number of travelers, duration. Travel costs shall be priced by individual cost element (e.g. airline, car rental, lodging, and per diem] in accordance with the State of Ohio Office of Budget and Management (OBM) Travel Rule. This Travel Rule can be located at: https://obm.ohio.gov/wps/portal/gov/obm/areas-of-interest/agency-overview/obm-travel-rule. Travel to international conferences, including applicable registration, is not authorized and shall not be proposed. Travel to conferences specifically related to work performed under this requirement is not prohibited if such costs are allocable, allowable under the State of Ohio OBM Travel Rule, and reasonable.

Indirect Costs – The Applicant shall provide detailed information regarding its proposed indirect cost buildup and application to direct cost pools. Indirect costs are those that support general business operations but are not attributable to one cost objectives. Indirect Costs are specific to accounting systems, but commonly Indirect Costs include, General and Administrative (G&A) or Facility and Administrative (F&A), Overhead, Fringe Benefits, etc.

The Applicant shall support its proposed indirect costs by providing its approved provisional indirect rate letter, a forward pricing rate agreement by a cognizant audit agency, or any other evidence that its indirect rates have been reviewed by a third party accounting or financial firm.

If the Subcontractor does not have approved provisional indirect rates, a forward pricing rate agreement, or its rates have not been reviewed by a third party accounting or financial firm, the Applicant shall use a de minimis indirect rate of 10% against its direct costs.

Furthermore, the Applicant shall provide support that its accounting system has been approved by a cognizant audit agency or a third-party accounting or financial firm. If the Applicant has not had its accounting system reviewed and approved, the Applicant shall complete the Accounting System Survey indicating that its accounting system can support proper segregation of costs required for cost reimbursement type contracts/subcontracts.

Lastly, the Applicant shall confirm that no portion of the OFRN funding is used to provide bonuses, incentive compensation, or rewards.

Subcontracts – If proposing lower tier Collaborators/Subcontractors, the Applicant shall require they also provide the same cost detail and narrative information as described above applicable to the Applicant. These costs are to be provided at least to a summary

level in the Applicant's prime Excel Worksheet. The Applicant shall provide a narrative supporting the basis of the lower tier Collaborator/Subcontractor costs. If proprietary Subcontractor cost proposals are not included as a part of the prime Applicant's Cost Proposal, the Subcontractor shall provide an unsanitized copy of its Cost Proposal directly to OFRN-Submission@wright-research.org. Email messages must include "Subcontractor Cost Proposal" in the subject line and identify the prime Applicant organization in the body of the message.

3.2.2.3 Cost Sharing

Proposed Cost Share shall be provided in narrative form, along with completion of the appropriate tab in the Cost Worksheet. Cost Share is an evaluation criterion for OFRN projects for two reasons. First, it shows that the Prime Applicant and its partners are fully committed to the success of the proposed projects. Second, it increases the level of resources that are available to support the execution of a project. For example, if the Prime Applicant is granted $500,000 in funding by the OFRN and the Prime Applicant has been able to arrange for $500,000 in committed cost share, then the total effective budget to perform the work is $1 million. Accordingly, each proposal must clearly describe how the identified cost share will be used to support execution of the project.

If awarded a contract, Prime Applicant will adhere to the following Cost Share requirements governing its identification and use for project expenditures. Ideally OFRN leadership would expect Industry cost share to pay for its expenses related to the project research.

3.2.2.3.1 Types of Cost Share

For additional guidance, see the Cost Share Appendix 3.

3.2.2.4 Definitions

The following definitions are provided to the Applicant to support development of the Cost Proposal. The examples provided are for illustrative purposes only.

Direct Labor: Is labor involved in the production of the project. It is also labor categories directly employed by the Applicant on the Project(s). Direct labor is built based on labor hours, rates, and cost by appropriate labor category. Does not include subcontractor labor. Direct labor is not fully burdened with indirect expenses (e.g. Fringe Benefits, Overhead, General and Administrative Costs, or MTDC).

Other Direct Costs (ODC): Incidental services for which there is not a labor category specified. For the purposes of the Applicant's proposal submission, ODCs include Equipment, Materials, and Supplies. These are individually defined as:

Equipment: is tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or $5,000. Equipment does not lose its identity or become a component part of another article when put into use.

Materials: is personal property that may be consumed or expended during the performance of a contract, component parts of a higher assembly, or items that lose their individual identity through incorporation into an end item. Material does not include equipment, special tooling, special test equipment or real property. Material includes supplies.

Indirect Costs: Costs incurred by the awardee in support of general business operations such as F&A, G&A and overhead but which are not attributable to one cost objective. Indirect Costs + Direct Costs = Total Project Costs. (a) If the Indirect Cost Rate is calculated on a Total Direct Cost (TDC) basis, then all budget items are included in the

Indirect Cost calculation. If the Indirect Cost Rate is determined on a Modified Total Direct Cost (MTDC) basis, then some costs are excluded when the Indirect Costs are calculated. So long as documentation is provided, an Applicant may charge its federally approved Indirect Cost Rate.

Modified Total Direct Cost (MTDC): All direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel, and up to the first $25,000 of each subcontract (regardless of the period of performance of the subcontract under the award). MTDC excludes equipment, capital expenditures, charges for patient care, rental costs, tuition remission, scholarships and fellowships, participant support costs and the portion of each subcontract in excess of $25,000. Other items may only be excluded when necessary to avoid a serious inequity in the distribution of indirect costs, and with the approval of the cognizant agency for indirect costs.

Travel: Self-explanatory. Travel costs shall be priced in accordance with the State of Ohio Office of Budget and Management (OBM) Travel Rule https://obm.ohio.gov/wps/portal/gov/obm/areas-of-interest/agency-overview/obm-travel-rule. Travel to international conferences, including applicable registration, is not authorized and shall not be proposed. Travel to conferences specifically related to work performed under this requirement is not prohibited if such costs are allocable, allowable under the State of Ohio OBM Travel Rule, and reasonable.

Tuition: Costs associated with training and education provided for employee development. Includes associated fees but does not include textbooks, materials, salary or other costs that are ancillary to the tuition/education cost. **These costs are ONLY APPLICABLE TO UNIVERSITIES.**

3.3 Volume 2: Technical Volume

Unless otherwise noted, the proposal must address all the elements listed in this section in the order requested.

3.3.1 Cover Page

The Applicant shall include a duplicate cover page from the Business and Cost Proposal for the Technical Volume. This cover page does not contribute towards the Technical Volume's page limits.

3.3.2 Executive Summary

Executive summaries are limited to 1 page that precisely describes the innovation, proposed project objectives, and commercial goals. Executive summaries may include figures. This section must minimize the use of jargon and technical language and be written so that a non-expert can understand the specific innovation and impact of proposed project around that innovation.

3.3.3 Table of Contents

A table of contents should be located immediately after the Executive Summary.

3.3.4 Glossary

Include a glossary of acronyms and abbreviations used in the proposal.

3.3.5 Milestone Identification

Include a program schedule with all key milestones identified. If options are proposed, the schedule should provide notional option start date and period of performance.

3.3.6 Identification and Significance of the Problem or Opportunity

Briefly reference the specific technical problem/opportunity that will be pursued, and the Federal Partner contact and identified needs under this effort.

3.3.7 Technical Objectives

Detail the specific objectives of the proposed work, and describe the technical approach and methods to be used in meeting these objectives. The proposal should also include an assessment of the potential commercial application (government or non-government) for each objective.

3.3.8 Proposer-Prepared Statement of Work (SOW)

The SOW shall be a separate and distinct part of the proposal package, using a page break to divide it from the technical proposal. The SOW does NOT count towards the page limitations of the Volume 2: Technical Volume. The proposed SOW must contain a summary description of the technical methodology and task description in broad enough detail to provide contractual flexibility. The following is the recommended format for the SOW; begin this section on a new page. **DO NOT include proprietary information in the SOW.**

1.0 – Objective: This section is intended to provide a brief overview of the specialty area. It should explain why it is being pursued and the expected outcome
2.0 – Scope: This section should provide a concise description of the work to be accomplished, including the technology area to be investigated, goals, and major milestones. However, the key elements of this section are task development and deliverables, i.e., the anticipated end result and/or product of the effort. This section must also be consistent with the information in 4.0 (below).
3.0 – Background: The proposer shall identify appropriate specifications, standards, and other documents applicable to the effort. This section includes any information, explanation, or constraints to understanding the requirements. It may include relationships to previous, current, and/or future operations. It may also include techniques previously found to be ineffective.
4.0 – Task/Technical Requirements: The detailed description of the individual tasks to accomplish the work to be performed is considered to be legally binding on the proposer. Therefore, it must be developed in an orderly progression with sufficient detail to establish overall program requirements and goals. The work effort must be segregated into major tasks and identified in separately numbered paragraphs.

Each numbered major task should delineate by subtask the work to be performed. The SOW MUST contain every task to be accomplished; they must be definite, realistic, and clearly stated. Use “shall” whenever the SOW expresses a binding provision. Use “should” or “may” to express a declaration or purpose. Use “will” when no contractor requirement is involved, i.e., “... power will be supplied by the Government.”

3.3.9 Deliverables

Include a section clearly describing the specific sample/prototype hardware/ software to be delivered, as well as data deliverables, schedules, and quantities. The end-of-project demonstration must be included in this listing of deliverables.

3.3.9.1 Scientific and Technical Reports

Rights in technical data, including software, developed under the terms of any contract resulting from this Opportunity Announcement generally remain with the contractor. See Terms and Conditions for details on IP.

3.3.9.2 Final Report:

The draft is due 30 days after completion of the technical effort. The format of the Final Report will be at the discretion of OFRN. The report will contain a summary that may be published by OFRN; therefore, it must not contain any proprietary or classified information.

3.3.9.3 Status Reports:

Status reports are due quarterly at a minimum. Reporting templates will be provided. Quarterly presentations will be scheduled.

3.3.9.4 Additional Reporting:

OFRN may require additional reporting or documentation including:

1) Software documentation and users' manuals;
2) Engineering drawings;
3) Operation and maintenance documentation;
4) Safety hazard analysis when the project will result in partial or total development and delivery of hardware; and
5) Updates to the commercialization results.

3.3.10 Related Work

Describe significant activities directly related to the proposed effort, including any previous programs conducted by the principal investigator, proposing firm, consultants, or others, and their application to the proposed project.

3.3.11 Commercialization Potential/Plan:

OFRN emphasizes the importance of leveraging federal customers in pursuing sustainable commercial outcomes for the projects it funds. Viable commercial enterprises can be supported by sale of research and development and other services or articles to the government or to commercial entities.

Provide a narrative explaining the strategy and business model planned for how commercial sustainability will be achieved for the technology being pursued. Provide specific examples of products and customers that will be targeted, and how offering funding will help catalyze these opportunities. Provide additional detail about commercial expertise within your applicant team including sales, manufacturing, capital access, or other skill sets necessary to advance beyond the proposed project.

Applicants are encouraged to provide any additional discussion or evidence of commercial viability, including any additional relevant assets for the commercialization strategy, and not limited to the specific items listed in this section.

3.3.12 Federal Partner Applications

Briefly describe the existing/potential Federal Partner requirement and the Federal Government potential of the project results. Identify the government agency/organization most likely to benefit from the project. State if any government agency has expressed interest in, or commitment to a Federally funded follow-on effort. This section should involve not more than one to two (1-2) paragraphs. This section should not be duplicative of information contained in the Identification and Significance of the Problem or Opportunity section. Include agency point of contact names and telephone numbers.

3.3.13 Relationship with Future Research or Research and Development (R/R&D) Efforts:

- State the anticipated results of the proposed approach, specifically addressing plans for further development, if any.
- Discuss the significance of this effort in providing a basis for further development effort, if planned.

3.3.14 Key Personnel:

In the technical volume, identify all key personnel involved in the project. Include information directly related to education, experience, and citizenship. A technical resume for the principal

investigator, including publications, if any, must also be included. Concise technical resumes for subcontractors and consultants, if any, are also useful. You must identify all non-U.S. citizens expected to be involved in the project as direct employees, subcontractors, or consultants. For these individuals, in addition to technical resumes, please provide countries of origin, type of visas or work permits under which they are performing, and explanation of their anticipated level of involvement in the project.

3.3.15 Facilities/Equipment

Describe instrumentation and physical facilities necessary and available to carry out the proposed effort. Justify equipment to be purchased (detail in cost proposal). State whether proposed performance locations meet environmental laws and regulations of Federal, state, and local Governments for, but not limited to, airborne emissions, waterborne effluents, external radiation levels, outdoor noise, solid and bulk waste disposal practices, and handling and storage of toxic and hazardous materials.

3.3.16 Subcontractors

Private companies, consultants, or universities, all considered herein as Subcontractors, may be involved in the project. All should be described in detail and included in the cost proposal. **In accordance with OFRN eligibility requirements, proposals must include a minimum of two Ohio public or private universities or colleges and one industry partner each with significant contribution to the proposed effort.** Signed copies of all subcontractor letters of intent must be attached to the proposal. These letters should briefly state the contribution or expertise being provided. Include a SOW and detailed cost proposal. Include information regarding consultant or subcontractor unique qualifications. Subcontract copies and supporting documents do not count against the page limit and should be submitted as an appendix. Identify any subcontract foreign citizens per (3.3.14) above.

3.3.17 Prior, Current, or Pending Support of Similar Proposals or Awards

WARNING: While it is permissible, with proper notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous Federal (or State) program Announcements, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. Any potential for this situation must be disclosed before award. If a proposal submitted in response to this Announcement is substantially the same as another proposal previously, currently, or in process of being funded by another Federal or State agency the company must so indicate on the Cover Page and provide the following:

a) The name and address of the Federal or State agency(ies) to which proposals were or will be submitted, or from which an awarded is expected or has been received;

b) The date of proposal submission or date of award;

c) The title of the proposal;

d) Name and title of the principal investigator for each proposal submitted or award received; and

e) Title, number, and date of Announcement(s) under which the proposal was or will be submitted, or under which an award is expected or has been received.

f) If award was received, provide the contract number.

g) Specify the applicable topics for each SBIR proposal submitted or award received.

NOTE: If this section does not apply, state in the proposal, “No prior, current, or pending support for proposed work.”

3.4 Volume 2A: Supplemental Volume

The bulk of the Technical Volume requirements are meant to mimic the requirements of an SBIR Direct to Phase II Pitch Day proposals. A 3-page Supplemental Volume is also necessary to address OFRN-specific concerns including:

- projected economic impacts,
- technology demonstration plan, and
- a budget narrative and table.

3.4.1 Economic Impact Metrics

This section of Volume 2A must address the projected economic impact metrics that are anticipated as a result of the project. The Prime Applicant should specifically address the following primary metrics:

- New job creation
- Federal Follow-on funding
- Creation of Spin-out companies

Job creation should be realistic and supportable. Federal follow-on funding and any other identified opportunities must include pertinent details--agency, BAA, etc. (see New Opportunities table below). The Prime Applicant should document how these projections were developed and key assumptions used in the analysis. For example, if the projections are based on capturing a particular share of the market, the Proposal should indicate the magnitude of the addressable market and the basis for the estimated market share. The Prime Applicant should report only direct impacts, not secondary or tertiary impacts derived from economic models.

Proposals may also include a description of any relevant secondary metrics, including:

- possible Industry-sponsored research
- talent recruitment;
- enhanced national and/or international recognition which leads to further interest and potential sources of funding and collaboration.

The following tables must be completed and included in this section of Volume 2A (add rows as needed to the New Opportunities table):

	At Project End	By 2025
New Jobs to be Created		
Total Federal Follow-on Funding		

New Opportunities/ Investments	Amount	Type (BAA, Sponsor, etc.)	Timing of Opportunity

3.4.2 Demonstration Plan

Applicants must describe their proposed technology demonstration. The following information is found elsewhere in this Opportunity Announcement, but included here for easy reference:

Respondents are invited to be creative with their demonstration plan and focus on using the emergency response to showcase their technology's utility in civilian use. Applicants should assume the entire area in and around the test site is "dark", simulating a combined terrestrial (chem/bio) and space-based disruption (cyber). Going "dark" is not required for all projects and depends on the proposal focus area. Features could include:

- intermittent cellular, satellite, and data access,
- limited energy in field, and
- potentially crowded airspace.

Vehicles must show how the proposed technology could improve the ability of the National Guard to respond in emergency scenarios. For example, fully independent and onboard Detect and Avoid systems would be useful in crowded, uncontrolled airspace after an event. They may also support non-disaster flight corridors, away from established flight paths, for LDAV landing in residential areas. Other examples include but are not limited to:

- Communication system miniaturization for flight,
- Plug-and-play in-flight sensors systems enabling emergency water or regular package delivery
- Safe operation of a Class III autonomous personnel system in an area of constant cyberattacks or disrupted service,
- More efficient energy systems,
- Propulsion that allow longer endurance flights, or
- Increased onboard computation.

3.4.3 High Level Budget and Cost Share

Using the tables that follow, provide a high-level budget for the project. Provide a brief narrative that explains how the funds will be deployed over the life of the project. Add additional columns or copies of the cost share table as needed.

	OFRN Awarded Funds	Cost Share Funds
Personnel/Fringe		
Supplies		
Purchased Services		
Travel		
Other Direct Costs		
Subcontracts		
Indirect		
Total		

	Cost Share Provider #1	Cost Share Provider #2	Cost Share Provider #3	Cost Share Provider #4
Personnel/Fringe				
Supplies				
Purchased Services				
Travel				
Other Direct Costs				
Indirect				
Total				

3.5 Volume 2B: Pitch Deck

A slide deck, maximum 15 pages in length, must also be submitted with the other Volumes. A suitable template will be available on OFRN's website.

Slide decks must include a quad chart describing the project (the format of the quad chart found in the template and Appendix 8 must be utilized), and should generally be designed to answer the questions of DARPA's Heilmeier Catechism:

- What are you trying to do? Articulate your objectives using absolutely no jargon.

- How is it done today, and what are the limits of current practice?
- What is new in your approach and why do you think it will be successful?
- Who cares? If you are successful, what difference will it make?
- What are the risks?
- How much will it cost?
- How long will it take?
- What are the mid-term and final “exams” to check for success?

4 EVALUATION CRITERIA (OFRN)

4.1 Award evaluation criteria

Only the most meritorious proposals are sought for funding. Proposals will be evaluated by the OFRN’s Technical Review Council based on responsiveness to all the requirements of this Opportunity Announcement. Implicit in those requirements and evaluation criteria is the quality of the statement of work and budget. Parallax is under no obligation to award any Subcontracts.

4.1.1 Go/No Go Criterion: Federal Alignment

The proposal demonstrates how applications/user driven requirements are derived from and aligned with the emerging mission and research focus areas of AFRL, NASIC, NAMRU-D, and NASA-GRC, and federal related requirements of the Ohio National Guard.

The project has an identifiable Government Sponsor at AFRL, NASIC, NAMRU-D, and/or NASA- GRC.

There is a demonstrated relationship with the Government Sponsor and Project Lead Organization, either as the result of documented development meetings or previous relevant working engagements.

4.2 Additional Factors

The following elements will be specifically considered in the review of the proposals.

- Business and Cost Proposal: An award will not be made to a firm whose costs are not supported, and not determined to be reasonable and realistic. An unreasonable, unrealistic, inconsistent or incomplete cost proposal may be deemed to be evidence of the Applicant’s poor understanding of the requirements.
- Technical approach: proposals must provide a clear description of the project’s technical objective, expected outcomes, and how those outcomes benefit Federal research centers and industry members. Specific factors that will be considered include, but are not limited to:
    - If the research objective advances knowledge and extends the state-of-the-art
    - Quality and reasonableness of the proposed technical approach with quantitative metrics connected
    - Deliverables, major milestones, and costs along with potential risks and mitigation strategy
    - The viability of a project team’s plan to integrate their enabling technologies into existing platforms
    - Appropriateness and feasibility of the proposed demonstration of the technology

- Cost Share (State expectation is typically 1 to 1 cost share), is optional, however if provided it should include:
    - Magnitude of the cost share
    - Any conditions associated with the cost share
    - Type and nature of cost share
- Alignment of the Proposal with Round 5 SOARING's purpose, goals, objectives, eligibility and funding requirements
- Quality and reasonableness of the commercialization strategy
- Experience, qualifications, and commitment of the project team
- Project's plan to capitalize on Ohio assets – personnel, small businesses, test capabilities, university assets
- Project's plan for federal follow on funding and/or industry sponsored research or commercial market opportunities
- Degree to which a proposal leverages or links with Ohio's aerospace supply chain
- Project's presentation during Pitch Day
- Reasonableness of the proposed project schedule, budget, and SOW