

**DEPARTMENT OF THE NAVY (DON)**  
**20.1 Small Business Innovation Research (SBIR)**  
**Direct to Phase II Announcement and Proposal Submission Instructions**

**IMPORTANT**

- DON is soliciting proposals against three distinct types of SBIR topics:
  - Accelerated Delivery and Acquisition of Prototype Technologies (ADAPT): N201-X01 and N201-X02
  - Standard: N201-001 through N201-087
  - Direct to Phase II (DP2): N201-D01

Each set of topics has a separate and unique set of proposal submission instructions.

**The following instructions apply to Direct to Phase II (DP2) only.**

- **The information provided in the DON Proposal Submission Instruction document takes precedence over the DoD Instructions posted for this Broad Agency Announcement (BAA).**
- DON provides notice that Basic Ordering Agreements (BOAs) or Other Transaction Agreements (OTAs) may be used for Phase II awards.
- Discretionary Technical Assistance (DTA) was renamed Discretionary Technical and Business Assistance (TABAs).
- The optional Supporting Documents Volume (Volume 5) is available for the SBIR 20.1 BAA cycle. The optional Supporting Documents Volume is provided for small businesses to submit additional documentation to support the Technical Volume (Volume 2) and the Cost Volume (Volume 3). Volume 5 is available for use when submitting Phase I and Phase II proposals. DON will not be using any of the information in Volume 5 during the evaluation.
- A DP2 Phase I Feasibility proposal template, unique to DP2 topics, will be available to assist small businesses to generate a Phase I Technical Volume (Volume 2). The template will be located on [https://www.navysbir.com/links\\_forms.htm](https://www.navysbir.com/links_forms.htm).

## INTRODUCTION

The Director of the DON SBIR/STTR Programs is Mr. Robert Smith. For program and administrative questions, contact the Program Manager listed in [Table 1](#); **do not** contact them for technical questions. For technical questions about a topic, contact the Topic Authors listed within the topic during the period **10 December 2019 through 13 January 2020**. Beginning **13 January 2020**, the SBIR/STTR Interactive Technical Information System (SITIS) (<https://sbir.defensebusiness.org/>) listed in Section 4.15.d of the Department of Defense (DoD) SBIR/STTR Program Broad Agency Announcement (BAA) must be used for any technical inquiry. For general inquiries or problems with electronic submission, contact the DoD SBIR/STTR Help Desk at 1-703-214-1333 (Monday through Friday, 9:00 a.m. to 6:00 p.m. ET) or via email at [dodsbirsupport@reisystems.com](mailto:dodsbirsupport@reisystems.com).

**TABLE 1: DON SYSTEMS COMMAND (SYSCOM) SBIR PROGRAM MANAGERS**

<u>Topic Numbers</u>	<u>Point of Contact</u>	<u>SYSCOM</u>	<u>Email</u>
N201-D01	Mr. Jeffrey Kent	Marine Corps Systems Command (MCSC)	jeffrey.a.kent@usmc.mil

The DON SBIR/STTR Programs are mission-oriented programs that integrate the needs and requirements of the DON's Fleet through research and development (R&D) topics that have dual-use potential, but primarily address the needs of the DON. Firms are encouraged to address the manufacturing needs of the defense sector in their proposals. More information on the programs can be found on the DON SBIR/STTR website at [www.navysbir.com](http://www.navysbir.com). Additional information pertaining to the DON's mission can be obtained from the DON website at [www.navy.mil](http://www.navy.mil).

During government fiscal years (FY) 2012 through 2022, the Department of Defense (DoD) including the Department of the Navy (DON) may issue an award to a small business firm under Phase II of the SBIR program with respect to a project, without regard to whether the firm was provided an award under Phase I of an SBIR program with respect to such project. Prior to such an award, the head of the agency, or their designee, must issue a written determination that the firm has demonstrated the scientific and technical merit and feasibility of the technology solution that appears to have commercial potential (for use by the government or in the public sector). The determination must be submitted to the Small Business Administration (SBA) prior to issuing the Phase II award. As such, DON issues this portion of the BAA in accordance with the requirements of the Direct to Phase II (DP2) authority. Only those firms that are capable of meeting the DP2 proposal requirements may participate in this DP2 BAA. No Phase I awards will be issued to the designated DP2 topic.

Each eligible topic requires documentation to determine that Phase I feasibility described in the Phase I section of the topic has been met.

The DON SBIR DP2 is a two-step process:

**STEP ONE:** Prepare and Submit a Phase I Feasibility Proposal (instructions and link to template provided below). The purpose of the Phase I Feasibility Proposal is for the firm to provide documentation to substantiate that both Phase I feasibility and the scientific and technical merit described in the topic have been met. **The Phase I Feasibility Proposal must:** demonstrate that the firm performed Phase I-type research and development (R&D) and provide a concise summary of Phase II objectives, work plan, related research, key personnel, transition/commercialization plan, and estimated costs. Feasibility documentation **MUST NOT** be solely based on work performed under prior or ongoing federally funded SBIR/STTR work. The government will evaluate Phase I Feasibility Proposals and select firms to submit a Full DP2 Proposal. **Demonstrating proof of feasibility is a requirement for a DP2 award. The firm must submit a Phase I Feasibility Proposal to be considered for selection to submit a Full DP2 Proposal.**

**STEP TWO:** Prepare and Submit a Full DP2 Proposal. **If selected, the cognizant SYSCOM Program Office will contact the firm directly to provide instructions on how to submit a Full DP2 Proposal.**

DON SBIR reserves the right to refuse to make any awards under this DP2 BAA. All awards are subject to availability of funds and successful negotiations. Proposers are to read the topic requirements carefully. The Government is not responsible for expenditures by the proposer prior to award of a contract. For 20.1 topics designated as DP2, DON will accept only Phase I Feasibility Proposals (described below).

## **DP2 PROPOSAL SUBMISSION REQUIREMENTS**

The following MUST BE MET or the proposal will be deemed noncompliant and may be REJECTED.

- **Eligibility.** Each proposing firm must:
  - Have demonstrated feasibility of Phase I-type R&D work
  - Have submitted a Phase I Feasibility Proposal for evaluation
  - Meet Offeror Eligibility and Performance Requirements as defined in section 4.2 of the DoD SBIR/STTR Program BAA
  - During the Phase II award, primary employment of the principal investigator (PI) must be with the firm at the time of award and during the conduct of the proposed project. Primary employment means that more than one-half of the PI's time is spent in the employ of the firm
  - Register in the System for Award Management (SAM) as defined in section 4.16 of the DoD SBIR/STTR Program BAA. To register, visit [www.sam.gov](http://www.sam.gov)
- **Proposal Cover Sheet (Volume 1).** As specified in DoD SBIR/STTR BAA section 5.4(a).
- **Technical Volume (Volume 2).** Technical Volume (Volume 2) must meet the following requirements:
  - Not to exceed **50** pages, regardless of page content
  - Single column format, single-spaced typed lines
  - Standard 8 ½" x 11" paper
  - Page margins one-inch on all sides. A header and footer may be included in the one-inch margin.
  - No font size smaller than 10-point\*

\*For headers, footers, listed references, and imbedded tables, figures, images, or graphics that include text, a font size smaller than 10-point is allowable; however, proposers are cautioned that the text may be unreadable by evaluators.

Volume 2 is the technical proposal. Additional documents may be submitted to support Volume 2 in accordance with the instructions for Supporting Documents Volume (Volume 5) as detailed below.

The Technical Volume (Volume 2) should include the following sections:

- Phase I Proof of Feasibility (NTE 35 pages)
  1. Introductory Statement
  2. Phase I Proof of Feasibility
  3. Assertions
  4. Commercialization Potential/Transition Plan Summary
- Snapshot of Proposed Phase II Effort (NTE 15 pages)
  1. Description of Proposed DP2 Technical Effort and Objectives
  2. DP2 Work Plan
  3. Key Personnel Resumes – should be submitted for the Principal Investigator and up to 4 additional individuals. Resumes are limited to one page per person, and should be limited to only information relevant to the work to be performed under the project

4. Subcontractors/Consultants
5. Order of Magnitude Cost Estimate Table (example provided below in the Cost Volume (Volume 3) section).

It is recommended that proposers follow the DP2 Phase I Feasibility Template as a guide for structuring the DP2 Phase I Feasibility proposal. The template is located on [https://www.navysbir.com/links\\_forms.htm](https://www.navysbir.com/links_forms.htm).

**Disclosure of Information (DFARS 252.204-7000)**

In order to eliminate the requirements for prior approval of public disclosure of information (in accordance with DFARS 252.204-7000) under this or any subsequent award, the proposer shall identify and describe all fundamental research to be performed under its proposal, including subcontracted work, with sufficient specificity to demonstrate that the work qualifies as fundamental research. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons. Simply identifying fundamental research in the proposal does NOT constitute acceptance of the exclusion. All exclusions will be reviewed and noted in the award. NOTE: Fundamental research included in the technical proposal that the proposer is requesting be eliminated from the requirements for prior approval of public disclosure of information, must be uploaded in a separate document (under “Other”) in the Supporting Documents Volume (Volume 5).

- **Cost Volume (Volume 3).** The text fields related to costs for the proposed effort must be answered in the Cost Volume of the DoD Submission system (at <https://www.dodsbirsttr.mil/submissions/>), however, proposers DO NOT need to download and complete the separate cost volume template for the DON SBIR Phase I Feasibility Proposal. Proposers are to include a cost estimate in the Order of Magnitude Cost Estimate Table (example below) within the Technical Volume (Volume 2). Please refer to Table 2 below for guidance on cost and period of performance. Costs for the Base and Option are to be separate and identified on the Proposal Cover Sheet and in the Order of Magnitude Cost Estimate Table in the Technical Volume (Volume 2).

<b>Order of Magnitude Cost Estimate Table</b>			
<b>Line Item - Details</b>	<b>Estimated Base Amount</b>	<b>Estimated Option Amount</b>	<b>Total Estimated Amount Base + Option</b>
Direct Labor (fully burdened) – Prime			
Subcontractors/Consultants			
Material			
Travel & ODC			
G&A			
FCCM			
Fee/Profit			
TABA (NTE \$25K, included in total amount)			

Total Estimated Costs			
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**TABLE 2: COST & PERIOD OF PERFORMANCE**

Base		Option One		Total (NTE)
Cost (NTE)	POP (NTE)	Cost (NTE)	POP (NTE)	
\$1,000,000	24 mos.	\$500,000	12 mos.	\$1,500,000

- **Company Commercialization Report (Volume 4).** Vol 4 not in use for 20.1 BAA
- **Supporting Documents Volume (Volume 5).** DoD has implemented a Supporting Documents Volume (Volume 5). The optional Volume 5 is provided for small businesses to submit additional documentation to support the Technical Volume (Volume 2) and the Cost Volume (Volume 3). Volume 5 is available for use when submitting Phase I and Phase II proposals. DON will not be using any of the information in Volume 5 during the evaluation. Volume 5 must only be used for the following documents:
  - Letters of Support relevant to this project
  - Additional Cost Information - The “Explanatory Material” field in the online DoD Cost Volume (Volume 3) is to be used to provide sufficient detail for subcontractor, material, travel costs, and Discretionary Technical and Business Assistance (TABAs), if proposed. If additional space is needed these items may be included within Volume 5.
  - SBIR/STTR Funding Agreement Certification
  - Technical Data Rights (Assertions) - If required, must be provided in the table format required by DFARS 252.227-7013(d) and (e)(3) and be included within Volume 5.
  - Allocation of Rights between prime and subcontractor
  - Disclosure of Information (DFARS 252.204-7000) (see Technical Volume 2 above)

NOTE: The inclusion of documents or information other than that listed above (e.g., resumes, test data, technical reports, publications) may result in the proposal being deemed “Non-compliant” and REJECTED.

A font size smaller than 10-point is allowable for documents in Volume 5; however, proposers are cautioned that the text may be unreadable.

- **Fraud, Waste and Abuse Training Certification (Volume 6).** DoD has implemented the optional Fraud, Waste and Abuse Training Certification (Volume 6). DON does not require evidence of Fraud, Waste and Abuse Training at the time of proposal submission. Therefore, DON will not require proposers to use Volume 6.

**DON SBIR PHASE I PROPOSAL SUBMISSION CHECKLIST**

- **Subcontractor, Material, and Travel Cost Detail.** In the Cost Volume (Volume 3), proposers must provide sufficient detail for subcontractor, material and travel costs. Enter this information in the “Explanatory Material” field in the online DoD Volume 3. Subcontractor costs must be detailed to the same level as the prime contractor. Material costs must include a listing of items and cost per item. Travel costs must include the purpose of the trip, number of trips, location, length of trip, and number of personnel. When a proposal is selected for award, be prepared to

submit further documentation to the SYSCOM Contracting Officer to substantiate costs (e.g., an explanation of cost estimates for equipment, materials, and consultants or subcontractors).

- **Performance Benchmarks.** Proposers must meet the two benchmark requirements for progress toward Commercialization as determined by the Small Business Administration (SBA) on June 1 each year. Please note that the DON applies performance benchmarks at time of proposal submission, not at time of contract award.

**Discretionary Technical and Business Assistance (TABA).** If TABA is proposed, the information required to support TABA (as specified in the TABA section below) must be added in the “Explanatory Material” field of the online DoD Volume 3. If the supporting information exceeds the character limits of the Explanatory Material field of Volume 3, this information must be included in Volume 5 as “Additional Cost Information” as noted above. Failure to add the required information in the online DoD Volume 3 and, if necessary, Volume 5 will result in the denial of TABA. TABA may be proposed for a DP2 effort, but the total value may not exceed \$25,000 under this DP2 contract.

#### **DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)**

The SBIR Policy Directive section 9(b) allows the DON to provide TABA (formerly referred to as DTA) to its awardees. The purpose of TABA is to assist awardees in making better technical decisions on SBIR/STTR projects; solving technical problems that arise during SBIR/STTR projects; minimizing technical risks associated with SBIR/STTR projects; and commercializing the SBIR/STTR product or process, including intellectual property protections. Firms may request to contract these services themselves through one or more TABA providers in an amount not to exceed the values specified below. The Phase II TABA amount is up to \$25,000 per award. The TABA amount, of up to \$25,000, is to be included as part of the award amount and is limited by the established award values for Phase II by the SYSCOM (i.e. within the \$1,600,000 or lower limit specified by the SYSCOM). The amount proposed for TABA cannot include any profit/fee application by the SBIR/STTR awardee and must be inclusive of all applicable indirect costs. A Phase II project may receive up to an additional \$25,000 for TABA as part of one additional (sequential) Phase II award under the project for a total TABA award of up to \$50,000 per project.

Approval of direct funding for TABA will be evaluated by the DON SBIR/STTR Program Office. A detailed request for TABA must include:

- TABA provider(s) (firm name)
- TABA provider(s) point of contact, email address, and phone number
- An explanation of why the TABA provider(s) is uniquely qualified to provide the service
- Tasks the TABA provider(s) will perform
- Total TABA provider(s) cost, number of hours, and labor rates (average/blended rate is acceptable)

TABA must NOT:

- Be subject to any profit or fee by the SBIR applicant
- Propose a TABA provider that is the SBIR applicant
- Propose a TABA provider that is an affiliate of the SBIR applicant
- Propose a TABA provider that is an investor of the SBIR applicant
- Propose a TABA provider that is a subcontractor or consultant of the requesting firm otherwise required as part of the paid portion of the research effort (e.g., research partner, consultant, tester, or administrative service provider)

TABA must be included in the Cost Volume (Volume 3) as follows:

- Phase II: The value of the TABA request must be included in the Order of Magnitude Cost Estimate Table in the Snapshot of Proposal Phase II Effort section of the Technical Volume (Volume 2). The detailed request for TABA (as specified above) must be included as a note in the Order of Magnitude Cost Estimate Table and be specifically identified as “Discretionary Technical and Business Assistance”.

Proposed values for TABA must NOT exceed:

- A total of \$25,000 per award, not to exceed \$50,000 per Phase II project

NOTE: The Small Business Administration (SBA) is currently developing regulations governing TABA. All regulatory guidance produced by SBA will apply to any SBIR contracts where TABA is utilized.

If a proposer requests and is awarded TABA in a Phase II contract, the proposer will be eliminated from participating in the DON SBIR/STTR Transition Program (STP), the DON Forum for SBIR/STTR Transition (FST), and any other assistance the DON provides directly to awardees.

All Phase II awardees not receiving funds for TABA in their awards must attend a one-day DON STP meeting during the first or second year of the Phase II contract. This meeting is typically held in the spring/summer in the Washington, D.C. area. STP information can be obtained at: <https://navystp.com>. Phase II awardees will be contacted separately regarding this program. It is recommended that Phase II cost estimates include travel to Washington, D.C. for this event.

## **EVALUATION AND SELECTION**

The DON will evaluate and select Phase I Feasibility and DP2 proposals using the evaluation criteria in Sections 6.0 and 8.0 of the DoD SBIR/STTR Program BAA respectively, with technical merit being most important, followed by qualifications of key personnel and commercialization potential of equal importance. As noted in the sections of the aforementioned Announcement on proposal submission requirements, proposals exceeding the total costs established for the Base and/or any Options as specified by the sponsoring DON SYSCOM will be rejected without evaluation or consideration for award. Due to limited funding, the DON reserves the right to limit awards under any topic.

Approximately one week after the DP2 BAA closing, e-mail notifications that proposals have been received and processed for evaluation will be sent. Consequently, the e-mail address on the proposal Cover Sheet must be correct.

Selected Phase I Feasibility proposers will be notified to submit Full DP2 Proposals. SYSCOM-specific Full DP2 Proposal guidance will be provided at the time of this notification.

Requests for a debrief must be made within 15 calendar days of select/non-select notification via email as specified in the select/non-select notification. Please note debriefs are typically provided in writing via email to the Corporate Official identified in the firm proposal within 60 days of receipt of the request. Requests for oral debriefs may not be accommodated. If contact information for the Corporate Official has changed since proposal submission, a notice of the change on company letterhead signed by the Corporate Official must accompany the debrief request.

Protests of the Phase I Feasibility evaluations and DP2 selections and awards must be directed to the cognizant Contracting Officer for the DON Topic Number, or filed directly with the Government Accountability Office (GAO). Contact information for Contracting Officers may be obtained from the DON SYSCOM Program Managers listed in Table 1. If the protest is to be filed with the GAO, please refer to instructions provided in section 4.11 of the DoD SBIR/STTR Program BAA.

## **CONTRACT DELIVERABLES**

Contract deliverables are typically progress reports and final reports. Required contract deliverables must be uploaded to <https://www.navybirprogram.com/navydeliverables/>.

## **AWARD AND FUNDING LIMITATIONS**

Awards. The DON typically awards a Cost Plus Fixed Fee contract for DP2; but, may consider other types of agreement vehicles, such as an Other Transaction Agreement (OTA) or a Basic Ordering Agreement (BOA) as specified in 10 U.S.C. 2371/10 U.S.C. 2371b and related implementing policies and regulations. DP2 awards can be structured in a way that allows for increased funding levels based on the project's transition potential. To accelerate the transition of SBIR/STTR-funded technologies to Phase III, especially those that lead to Programs of Record and fielded systems, the Commercialization Readiness Program was authorized and created as part of section 5122 of the National Defense Authorization Act of Fiscal Year 2012. The statute set-aside is 1% of the available SBIR/STTR funding to be used for administrative support to accelerate transition of SBIR/STTR-developed technologies and provide non-financial resources for the firms (e.g., the DON STP).

## **TOPIC AWARD BY OTHER THAN THE SPONSORING AGENCY**

Due to specific limitations on the amount of funding and number of awards that may be awarded to a particular firm per topic using SBIR/STTR program funds, Head of Agency Determinations are now required (for all awards related to topics issued in or after the SBIR 13.1/STTR 13.A solicitations) before a different agency may make an award using another agency's topic. This limitation does not apply to Phase III funding. Please contact the original sponsoring agency before submitting a Phase II proposal to an agency other than the one that sponsored the original topic. (For DON awardees, this includes other DON SYSCOMs.)

## **TRANSFER BETWEEN SBIR AND STTR PROGRAMS**

Section 4(b)(1)(i) of the SBIR Policy Directive provides that, at the agency's discretion, projects awarded a Phase I under a BAA for SBIR may transition in Phase II to STTR and vice versa. Please refer to instructions provided in section 7.2 of the DoD SBIR/STTR Program BAA.

## **ADDITIONAL NOTES**

Human Subjects, Animal Testing, and Recombinant DNA. If the use of human, animal, and recombinant DNA is included under a DP2 proposal, please carefully review the requirements at: <http://www.onr.navy.mil/About-ONR/compliance-protections/Research-Protections/Human-Subject-Research.aspx>. This webpage provides guidance and lists approvals that may be required before contract/work can begin.

International Traffic in Arms Regulation (ITAR). For topics indicating ITAR restrictions or the potential for classified work, limitations are generally placed on disclosure of information involving topics of a classified nature or those involving export control restrictions, which may curtail or preclude the involvement of universities and certain non-profit institutions beyond the basic research level. Small businesses must structure their proposals to clearly identify the work that will be performed that is of a basic research nature and how it can be segregated from work that falls under the classification and export control restrictions. As a result, information must also be provided on how efforts can be performed in later phases if the university/research institution is the source of critical knowledge, effort, or infrastructure (facilities and equipment).

## **PHASE III GUIDELINES**



A Phase III SBIR/STTR award is any work that derives from, extends, or completes effort(s) performed under prior SBIR/STTR funding agreements, but is funded by sources other than the SBIR/STTR programs. This covers any contract, grant, or agreement issued as a follow-on Phase III award or any contract, grant, or agreement award issued as a result of a competitive process where the awardee was an SBIR/STTR firm that developed the technology as a result of a Phase I or Phase II award. The DON will give Phase III status to any award that falls within the above-mentioned description, which includes assigning SBIR/STTR Technical Data Rights to any noncommercial technical data and/or noncommercial computer software delivered in Phase III that was developed under SBIR/STTR Phase I/II effort(s). Government prime contractors and/or their subcontractors must follow the same guidelines as above and ensure that companies operating on behalf of the DON protect the rights of the SBIR/STTR firm.

**NAVY SBIR direct to Phase II 20.1 Topic Index**

N201-D01      DIRECT TO PHASE II Exportable Power for Ultra Lightweight Tactical Vehicle (ULTV)

## NAVY SBIR 20.1 DP2 Topic Description

N201-D01            TITLE: DIRECT TO PHASE II Exportable Power for Ultra Lightweight Tactical Vehicle (ULTV)

TECHNOLOGY AREA(S): Ground/Sea Vehicles

ACQUISITION PROGRAM: USMC PEO Land Systems, PM Ground Based Air Defense (GBAD), SMC PEO Land Systems, PM LTV

OBJECTIVE: Develop a compact, lightweight, engine-driven power generation system for vehicle and export electrical power with high specific power (kilowatts per kilogram) that fits within the confines of the chassis of recreational off-highway vehicles (ROVs) to meet expected power and energy demands and allow for future mission growth.

DESCRIPTION: Currently available vehicles capable of being internally transported in rotary wing aircraft have insufficient export power capabilities to meet power and energy demands of current Counter-Unmanned Aerial Systems (C-UASs) and allow for future mission growth. The current Light Marine Air Defense Integrated System (LMADIS) uses a 5 kilowatts (kW) diesel generator weighing 300 lbs. that results in the vehicle weighing 15 lbs. over the maximum gross vehicle weight (GVW) of the current ULTV. Future mission growth to add additional communications equipment to LMADIS is expected to increase the power demands to 10 kW. Currently available diesel generators that meet the higher power requirements weigh close to 500 pounds (lbs). and would result in the vehicle weighing 100 to 150 lbs. over maximum GVW. Compact and lightweight power generation systems are needed to power C-UAS and C2 systems and keep the vehicle safely within its allowable GVW. The system requirements are:

- Integrated system using the existing vehicle engine (current engine is approximately 85 horsepower)
- Export power output of 5 kW at idle Threshold (T); 10 kW at idle Objective (O) at 24 volts direct current (VDC)
- Reduced physical size of export power system (same approximate size as an alternator, 8 inches wide x 10 inches long x 8 inches high)
- Physical weight of export power system less than 225 lbs.
- Compatible with 24-VDC tactical electrical systems and 12-VDC vehicle electrical systems
- Electrical component and connections with an ingress protection rating of Ingress Protection (IP67) or higher in accordance with (IAW) American National Standards Institute (ANSI) / International Electrotechnical Commission (IEC) 60529-2004
- Modular design that can be inspected, serviced, and repaired in the field
- Full power output across the range of engine speeds, 400-4,000 Revolutions Per Minute (RPM)

PHASE I: For this Direct to Phase II (DP2) topic, the Government expects that the small business would have accomplished the following in a Phase I-type effort. It must have developed a concept for a workable prototype or design to address at a minimum the basic requirements of the stated objective above.

Documentation showing an engine driven power generation system concept is feasible and that the system requirements discussed in the description are in the realm of possible. The small business should have produced a model to evaluate different approaches to optimize on vehicle generator technologies. The small business should show they have identified higher power density electrical generator/alternator designs to at least double power output in a similar form factor when compared to existing military alternators.

FEASIBILITY DOCUMENTATION: Proposers interested in participating in Direct to Phase II must include in their responses to this topic Phase I feasibility documentation that substantiates the scientific and technical merit and

Phase I feasibility described in Phase I above has been met (i.e., the small business must have performed Phase I-type research and development related to the topic, but feasibility documentation MUST NOT be solely based on work performed under prior or ongoing federally funded SBIR/STTR work) and describe the potential commercialization applications. The documentation provided must validate that the proposer has completed development of technology as stated in Phase I above. Documentation should include all relevant information including, but not limited to: technical reports, test data, prototype designs/models, and performance goals/results. Work submitted within the feasibility documentation must have been substantially performed by the proposer and/or the principal investigator (PI). Read and follow all of the DON SBIR 20.1 Direct to Phase II Broad Area Announcement (BAA) Instructions. Phase I proposals will NOT be accepted for this BAA.

PHASE II: Based on the Phase I equivalent effort and the Phase II plan, develop and use analytical modeling to assist in design and integration. Build prototypes for both fitment and functionality of power generation system. Support evaluation of prototypes to determine if the performance goals defined in the Phase II development plan and the requirements outlined in MIL-STD-1275E and MIL-STD-810H have been met. Demonstrate system performance through modeling and dynamometer testing. Refine the design based on the results of testing/modeling and support on vehicle testing. Prepare a Phase III plan to transition the technology to the Marine Corps and the commercial marketplace.

PHASE III DUAL USE APPLICATIONS: Upon successful completion of Phase II, provide support to the Marine Corps in transitioning the technology for Marine Corps use. Refine a power generation system for evaluation and determine its effectiveness in an operationally relevant environment. Support the Marine Corps test and evaluation program to qualify the system for the Marine Corps use.

Commercial applications include law enforcement vehicles, search and rescue vehicles, tractor trailers, and general automotive to reduce vehicle weight and improve fuel economy.

#### REFERENCES:

1. "MIL-STD-810H - Environmental Engineering Considerations and Laboratory Tests". U.S. Army Test and Evaluation Command, January 31, 2019. [https://quicksearch.dla.mil/qsDocDetails.aspx?ident\\_number=35978](https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=35978)
2. "MIL-STD-1275E Characteristics of 28 Volt DC Input Power to Utilization Equipment in Military Vehicles." U.S. Army Tank automotive and Armaments Command, March 22, 2013. <https://quicksearch.dla.mil/Transient/CFF7229D4AE841AA8C3229140257B53A.pdf>
3. "Test Operations Procedure (TOP) 2-2-601 Electrical Systems (Vehicles and Weapon Subsystems)". U.S. Army Developmental Test Command Test Operations Procedure, US Army Aberdeen Test Center, June 20, 1977. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a045343.pdf>
4. "ANSI/IEC 60529-2004 Degrees of Protection Provided by Enclosures (IP Code)". <https://www.nema.org/Standards/ComplimentaryDocuments/ANSI-IEC-60529.pdf>

KEYWORDS: Tactical Vehicle; Power Generation; Weight Reduction; Size Reduction; ULTV; UTV; LMADIS; NOTM-UTV; Permanent Magnet Generator; Exportable Power; Power

Questions may also be submitted through DOD SBIR/STTR SITIS website.