

DEPARTMENT OF THE ARMY
DoD 24.4 Small Business Innovation Research (SBIR)
Annual Broad Agency Announcement (BAA)
Component-Specific Proposal Instructions
Release 3

December 5, 2023: Topics issued for pre-release
December 20, 2023: Army begins accepting proposals via DSIP
January 9, 2024: DSIP Topic Q&A closes to new questions at 12:00 p.m. ET
January 23, 2024: Deadline for receipt of proposals no later than 12:00 p.m. ET

INTRODUCTION

The future Army must be capable of conducting Multi-Domain Operations (MDO) as part of an integrated Joint Force across an array of situations in multiple theaters by 2035. The MDO concept describes how the Army will support the Joint Force in the rapid and continuous integration of all domains of warfare – land, sea, air, and cyberspace – to deter and prevail as we compete short of conflict, and fight and win if deterrence fails. The Army must provide game-changing capabilities to our Soldiers. To capitalize on small business innovation, the Army has implemented an approach to advertise SBIR funding opportunities through the Department of Defense (DoD) Annual BAA process, outside of the three pre-determined BAA cycles. This approach also strives to reduce the time from solicitation to award.

Proposers are encouraged to thoroughly review the DoD Program BAA and register for the DSIP Listserv to remain apprised of important programmatic and contractual changes.

- The DoD Program BAA is located at: <https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/#announcements>. Be sure to select the tab for the appropriate BAA cycle.
- Register for the DSIP Listserv at: <https://www.dodsbirsttr.mil/submissions/login>.

CONTACT INFORMATION

Direct specific questions pertaining to the administration of the Department of the Army SBIR Program and proposal preparation instructions to the Point of Contact identified in the Topic announcement. General questions can be directed to the following:

Email: usarmy.pentagon.hqda-asa-alt.mbx.army-applied-sbir-program@army.mil

Website: <https://www.armysbir.army.mil/>

Mailing Address:

Army Applied SBIR Office 2530 Crystal Dr.; Ste 11192

Arlington, VA 22202

RESPONSIVENESS AND TIMELINESS

Proposals will only be evaluated in response to an active, corresponding Army topic. Proposals will be initially screened to determine responsiveness and timeliness. Proposals passing this initial screening will be technically evaluated by engineers or scientists to determine the most promising technical and scientific approaches. Assessment of responsiveness may continue during technical evaluation and after selection. If at any point the proposal is deemed untimely, unresponsive, ineligible, or non-responsible, the proposal will be disqualified/rejected, and a contract will not be awarded.

Interested firms shall follow the DoD Program BAA instructions as well as the Army's component-specific proposal instructions herein, when preparing and submitting proposals. The DoD 24.4 SBIR Program BAA can be found here: <https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/>.

The Government reserves the right to disqualify proposals for failing to meet any of the requirements of the SBA SBIR/STTR Policy Directive, the DoD Program BAA instructions, the Army's component-specific proposal instructions herein, and/or in the topic itself. The following include, but are not limited to, the common reasons for which proposals are disqualified/rejected:

- System for Award Management is not properly updated at time of proposal submission.
- The proposal is missing required number of signatures and/or content.
- Minimum Performance Percentage of Work is not allocated properly.
- Work as proposed does not meet the definition of Research and Development required for funding.
- Proposal submitted beyond deadline.
- Commercialization Plan is submitted in a format other than the prescribed template at Appendix D – Commercialization Plan Template, enclosed herein.
- Price exceeds the stated award guideline limitation identified within the corresponding SBIR opportunity.
- Proposal exceeds the stated page count(s) or formatting requirements
- Firm is NOT an eligible small business.
- Firm does NOT meet the ownership and control requirements.
- Firm is 50% or more owned or managed by a corporate entity that is not a small business.
- Firm will NOT perform the prescribed percentage of the research and/or analytical work.
- Primary employment of the Principal Investigator for this project is NOT with the firm.
- Firm has been convicted of a fraud-related crime.
- Principal Investigator or Corporate Official has been convicted of a fraud-related crime.
- Firm and affiliates have employed, on average over the last 24 months, more than 500 employees.
- Firm has been awarded a contract from the US Government for essentially equivalent work.
- Claiming data rights assertions without including a Data Rights Assertions Table.
- Lack of proper documentation for research utilizing human/animal subjects or recombinant DNA.
- Lack of information or negative information concerning use of foreign nationals.
- Offeror requests to award to a different firm/entity after proposal submission.
- Failure or refusal to submit certified or other than certified cost data in accordance with DFARS 252.215-7010.
- Proposal is for a topic other than that which is identified.

SYSTEM FOR AWARD MANAGEMENT (SAM)

Interested firms are required to be registered and active in SAM (www.sam.gov) before submitting a proposal and shall continue to be registered until time of award, during performance, and through final payment of any contract. The proper North American Industry Classification System (NAICS) code and Product and Service Code are as follows:

NAICS: 541715, Research and Development in the Physical, Engineering, and Life Sciences
(except Nanotechnology and Biotechnology)
PSC: AC12, National Defense R&D Services; Department of Defense - Military; Applied Research

Proposing firms with no SAM registration, inactive SAM registration(s), or SAM registration(s) with improper representations and certifications will be disqualified.

A firm may NOT submit an offer on behalf of another entity. The proposed firm's Entity Information shall match the Entity Information (Cage Code/DoDAAC/UEI) contained in the proposal to be eligible for award.

ELIGIBILITY

The eligibility requirements for the SBIR/STTR programs are unique and do not correspond to those of other small business programs. Please refer to Section 4.2, Proposing Small Business Concern Eligibility and Performance Requirements, of BAA 24.4 for full eligibility requirements.

Ownership in Part by Multiple Venture Capital, Hedge Fund, and Private Equity Firms

Proposing small business concerns that are owned in majority part by multiple venture capital operating companies (VCOCs), hedge funds, or private equity funds are eligible to submit applications or receive awards for this topic.

- Proposing small business concerns shall identify each foreign national, foreign entity, or foreign government holding or controlling greater than a 5% equity stake in the proposing small business concern, whether such equity stake is directly or indirectly held.
- The proposing small business concern shall also identify any and all of its ultimate parent owner(s) and any other entities and/or individuals owning more than a 5% equity stake in its chain of ownership.

Venture capital operating companies, hedge funds and private equity firms are allowed to hold minority shares of SBIR/STTR awardee so long as they do not have control of the awardee company and so long as their affiliation with the awardee, if any, does not put the awardee firm over the size limit. If the VCOC is itself more than 50% directly owned and controlled by one or more individuals who are citizens or permanent resident aliens of the United States, the VCOC is allowed to have majority ownership and control of the awardee. In that case, the VCOC and the awardee, and all other affiliates, shall have a total of 500 employees or less.

Anticipated Structure/Award Information

For this topic, Department of the Army will accept Phase I proposals for the cost of up to \$250,000 for up to a 6-month period of performance.

Proposals that do not comply with the requirements detailed in the DoD Program BAA, these Component Instructions, and the research objectives of the topic are considered non-conforming and therefore are not evaluated nor considered for award.

In response to this topic Phase I proposals shall include the following:

- Volume 1: Proposal Coversheet
- Volume 2: Technical Volume (breakdown below)
 - Technical Proposal (5 pages maximum)
 - Commercialization Plan (8 slides maximum saved as PDF – Offerors shall utilize the template found at Appendix D – Commercialization Plan Template)
- Volume 3: Cost Volume

- Volume 4: Company Commercialization Report (Auto generated for prior Federal SBIR or STTR awardees)
- Volume 5: Supporting Documents (Please see requirements outlined in the DoD Program BAA for more information)
 - Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment
 - Disclosures of Foreign Affiliations or Relationships to Foreign Countries
 - Disclosure of Funding Sources
- Volume 6: Fraud, Waste, and Abuse Training Certificate

PHASE I PROPOSAL INSTRUCTIONS

The Defense SBIR/STTR Innovation Portal (DSIP) is the official portal for DoD SBIR/STTR proposal submission. Proposers (also referred to herein as “offeror(s)”) are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Detailed instructions regarding registration and proposal submission via DSIP are provided in the DoD SBIR Program BAA.

Volume 1 - Proposal Coversheet

The proposal coversheet shall follow the instructions and requirements provided in the DoD SBIR Program BAA.

The offeror shall certify that to the best of its knowledge and belief, its eligibility information under the SBIR Program is accurate, complete, and current as of the date of the offer.

Volume 2 - Technical Volume

These following instructions supersede those stated in section 5.3.c of the DoD Program BAA.

The technical volume shall not exceed 5 pages and shall follow the formatting requirements provided in the DoD SBIR Program BAA. Proposing small business concerns shall also submit an eight (8) slide Commercialization Plan, utilizing the template found at Appendix D – Commercialization Plan Template attached hereto. The Commercialization Plan shall be converted to a pdf and attached to the end of the five (5) page technical volume, resulting in one pdf file to be uploaded to DSIP as Volume 2. The Commercialization Plan does not count towards the technical volume 5-page limit. Any proposals submitted without a Commercialization Plan, or in a format other than the template provided at Appendix D – Commercialization Plan Template, shall be deemed unresponsive, and will not be considered for review.

Volume 2a - Part One Technical Proposal

The technical proposal shall contain two key sections – technical approach and team qualifications. The technical approach section shall contain details on how the proposer is going to solve the problem. It shall detail key elements of the firm’s approach, any risks, relevant past work and how success is measured. The team qualifications section shall highlight the key personnel working on the project, and the resources that will be brought to bear on solving the problem.

Volume 2b - Part Two Commercialization Plan

Offerors shall refer to and utilize the eight (8) slide template found at Appendix D – Commercialization Plan Template, attached hereto, when preparing the commercialization plan.

Volume 3 - Cost Volume

The Cost Volume shall follow all instructions and requirements provided in the DoD SBIR Program BAA. Supplemental requirements are as follows:

Unless otherwise noted in the topic, the Phase I award amount shall not exceed \$250,000 for a 6- month period of performance. Phase I Options are not anticipated at this time. If an option is identified in the topic posting, costs for the Base and Option shall be separated and clearly identified on the Proposal Cover Sheet (Volume 1) and in Volume 3.

For pricing purposes, offerors should assume a contract or agreement start date of approximately ninety (90) days after submission of the proposal. Awards are executed as FAR-based firm-fixed-price contracts. Fixed price payments shall be tied to measurable milestones, as agreed to by the Government.

In the event that adequate price competition, as defined in FAR 15.403-1(1), is not realized, the Government will conduct additional proposal analysis, in accordance with the techniques identified at FAR 15.404-1. In accordance with FAR 15.402(a), Contracting officers shall purchase supplies and services from responsible sources at fair and reasonable prices. If the Contracting Officer is unable to deem the offeror as responsible (FAR 9.1), the offeror will be disqualified. Proposals lacking a fair and reasonable price will be eliminated.

Volume 3 - Content of the Cost Volume

ALL proposed costs should be accompanied by documentation to substantiate how the cost was derived. For example, if you proposed travel costs to attend a project-related meeting or conference, and used a travel website to compare flight costs, include a screenshot of the comparison. Similarly, if you proposed to purchase materials or equipment, and used the internet to search for the best source, include your market research for those items. You do not necessarily have to propose the cheapest item or supplier, but you should explain your decision to choose one item or supplier over another. It's important to provide enough information to allow evaluators and contracting personnel to understand how the proposer plans to use the requested funds. Some items in the cost breakdown may not apply to the proposed project. If that is the case, there is no need to provide information on each and every item.

ALL proposed costs should be accompanied by documentation to substantiate how the cost was derived. Substantiating documentation guidance is as follows:

- **LABOR:**
 - List all key personnel by name as well as by number of hours dedicated to the project as direct labor.
 - Explain the basis of proposed labor hours, including required tasks, and substantiating documentation for the costs (e.g. payroll reports).

- **MATERIAL/TOOLING/EQUIPMENT:**
 - Explain the basis of proposed material and equipment costs. This support should include a consolidated priced summary of individual material and equipment quantities and substantiating documentation for the costs (e.g. vendor quotes, invoice prices, competitive bids, etc.). If your choice isn't

the lowest cost available, explain the decision to choose one item or supplier over another.

- Ensure all materials are American-made to the maximum extent practicable. Offerors who propose to use a foreign-made product in its technology may be required to find an American-made equivalent.
- While special tooling and test equipment and material cost may be included, it will be carefully reviewed relative to need and appropriateness for the work proposed. The purchase of special tooling and test equipment shall, in the opinion of the Procurement/Government Component Contracting Officer, be advantageous to the Government and should be related directly to the specific topic. These may include such items as innovative instrumentation or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with the DoD Component, unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by the DoD Component.
- TRAVEL:
 - Explain the basis of proposed travel, including to/from locations, number of trips, number of travelers per trip, and number of days/nights per trip. Include substantiating documentation for the costs (e.g. screenshots of flight cost comparison, rental car quotes, etc.). NOTE: Virtual meetings shall be utilized to the maximum extent practicable.
 - In accordance with FAR 31.205-46 Travel costs incurred shall not exceed the maximum per diem rates set forth in Federal Travel Regulation, Joint Travel Regulation, or standard regulations, unless the travel is special or considered unusual. Any special or unusual travel costs shall be supported with substantiating documentation for review and consideration. Per diem rate lookup can be located at <https://www.gsa.gov/travel/plan-book/per-diem-rates?gsaredirect=perdiem>.
- SUBCONTRACTS: A subcontract is any agreement, other than one involving an employer-employee relationship, entered into by the prime contractor (awardee) calling for supplies or services for the performance of the contract.
 - All subcontractor costs and consultant costs shall be detailed at the same level as prime contractor costs in regard to labor, travel, equipment, etc.
 - Explain the basis of proposed subcontract costs. Include documented support of the offeror's price analyses and degree of competition of all subcontractor proposals. All subcontractor costs and consultant costs, such as labor, travel, equipment, materials, shall be detailed at the same level as prime contractor costs. Provide detailed substantiation of subcontractor costs in your cost proposal.
 - Certify that the following requirements are met: For Phase I, the offeror shall perform a minimum of two-thirds of the research and/or analytical

effort. One third may be subcontracted to another firm or research organization/facility. The percentage of work is measured by both direct and indirect costs.

- Offerors shall not propose to subcontract to the issuing agency, to any other Federal Government agency, or to other units of the Federal Government, except Federal Laboratories in rare circumstances. As defined in 15 U.S.C. 3703, Federal Laboratory means any laboratory, any federally funded research and development center, or any center established under 15 U.S.C. 3705 and 3707 that is owned, leased, or otherwise used by a Federal Agency and funded by the Federal Government, whether operated by the Government or by a contractor.
 - Offerors shall not propose to subcontract to any prohibited sources. Proposals identifying a subcontractor/vendor arrangement with a prohibited source may be rejected.
 - Offerors shall ensure subcontracting arrangements are with United States Small Businesses to the maximum extent practicable. Offerors proposing a subcontractor arrangement with other than a United States Small Business (such as, a large business, foreign firm, foreign government, educational institution, unit of Federal Government, etc.) may be required to submit further explanation, and/or have the submitted proposal disqualified.
- **INDIRECT COSTS:**
 - Explain the basis of the proposed indirect expense rates including overhead, general and administrative, material handling, and fringe benefits.
 - If a Defense Contract Audit Agency (DCAA) Audit has been conducted within the last five (5) years, include the audit compliance documentation in the cost proposal documents. The documentation should also include the offeror's DCAA Point of Contact (if applicable).
 - Offerors shall provide any current Forward Pricing Rate Agreements (FPRA) in effect at time of proposal submission.

If selected for award, failure to include the documentation with your proposal **may delay any potential contract award**, as the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs. It is important to respond as quickly as possible to the Contracting Officer's request for documentation. Failure or refusal to provide documentation may result in dissolution of the contract action.

Volume 4 - Company Commercialization Report (CCR)

Completion of the CCR as Volume 4 of the proposal submission in DSIP is required for prior SBIR/STTR awardees. Please refer to the DoD SBIR Program BAA for full details on this requirement. Information contained in the CCR will be considered by the Department of the Army during proposal evaluations.

Volume 5 - Supporting Documents

Volume 5 is provided for proposers to submit additional documentation to support the Cover Sheet (Volume 1) and the Technical Volume (Volume 2).

All proposing small business concerns are REQUIRED to submit the following documents to Volume 5:

1. Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment
2. Disclosures of Foreign Affiliations or Relationships to Foreign Countries
3. Disclosure of Funding Sources - Please refer to the DoD Program BAA for more information.

In addition to the Volume 5 requirements outlined in the DoD Program BAA, the Department of the Army may accept the following documents in Volume 5:

- Additional Cost Information
- Funding Agreement Certification
- Technical Data Rights (Assertions)
- Lifecycle Certification
- Allocation of Rights
- Other (only as specified in the topic)

Please only submit documents that are identified immediately above and in the DoD Program BAA. All other documents submitted will be disregarded.

Volume 6 Fraud, Waste and Abuse Training

Follow instructions provided in the DoD Program BAA for completion of the Fraud, Waste and Abuse training in DSIP.

DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE

The Army, at its discretion, may provide Technical and Business Assistance (TABAs). The Army will select a preferred vendor(s) for the Army SBIR TABA program through a competitive process.

Alternately, a small business concern may, by subcontract or otherwise, select one or more vendors to assist the firm in meeting the TABA goals. The Applicant must request the authority to select its own TABA provider in its Army SBIR proposal and must demonstrate that the vendor is uniquely postured to provide the specific technical and business services required by providing documentation in Volume 5, Supporting Documentation. TABA funding will be denied if the offeror fails to include the cost and detailed explanation in its proposal. If you prefer to use the Army preferred vendor, you may opt for that support after selection if chosen to receive a contract award.

Participation in the Army SBIR TABA program is voluntary for each Army SBIR awardee. Services provided to Army SBIR firms under the auspices of the TABA program may include, but are not limited to:

1. Access to a network of scientists, engineers, and technologists focused on commercialization and transition considerations such as protected supply chain management, advanced manufacturing, process/product/production scaling, etc;

2. Assistance with intellectual property protections, such as legal considerations, intellectual property rights, patent filing, patent fees, licensing considerations, etc;
3. Commercialization and technology transition support such as market research, market validation, development of regulatory or manufacturing plans, brand development;
4. Regulatory support such as product domain regulatory considerations, regulatory planning, and regulatory strategy development.

The Army SBIR program sponsors participation in the TABA program. The resource limitation for each firm is as follows:

- Phase I Firms:
 - Army-Preferred Vendor: If approved, the contractor may receive up to \$6,500 worth of assistance services per project (in addition to the base SBIR award amount).
 - Firm-Selected Vendor: If approved, the contractor may receive up to \$6,500 in contract obligation (in addition to the base SBIR award amount) per project.
- Phase II Firms:
 - Army-Preferred Vendor: If approved, the contractor may receive up to \$50,000 worth of assistance services per project (in addition to the base SBIR award amount).
 - Firm-Selected Vendor: If approved, the contractor may receive up to \$50,000 in contract obligation (included in the base SBIR award amount) per project.

EVALUATION AND SELECTION

The Army will conduct an evaluation of each responsive, timely, eligible proposal in accordance with the evaluation criteria listed in the DoD Program BAA. It is the policy of the Army to ensure equitable and comprehensive proposal evaluations based on the evaluation criteria and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Designated support contractors may review submissions for the purposes of technical evaluation. All support contractors are bound by appropriate non-disclosure agreements.

As previously stated herein, timeliness, responsiveness, and eligibility will be assessed upon initial screening, during evaluation, and after selection. Proposals that do not comply with the instructions and requirements detailed in this document, the DoD Program BAA, or the corresponding Topic posting (including the research objective(s)), will be considered ineligible, nonresponsive, untimely, or non-conforming and therefore will not be evaluated or considered for award.

Using the evaluation criteria, the Government will evaluate each responsive, timely, eligible proposal in its entirety. Proposals will not be evaluated against each other during the evaluation process, but rather evaluated on their own individual merit to determine how well the proposal meets the criteria stated in this BAA and the corresponding opportunity.

Consistent with the instructions and evaluation criteria specified in the DoD Program BAA, the

component-specific instructions herein (e.g. Appendix A, B & C, as applicable), and the corresponding Topic posting, selected proposals are those that, through a peer or scientific review, have been determined to be a best value to the Government as they have demonstrated the strongest understanding of the problem to be solved and offered the most capable solutions with the greatest overall benefit and potential to meet the Government's requirement determined to be the most advantageous to the Government.

Proposing firms will be notified via email of selection or non-selection status for a Phase I within 90 days of the closing date of the Topic. The notification will be sent to the Corporate Official listed on the proposal cover sheet from the Army SBIR Program Office mailbox. The Army promotes transparency regarding the technical evaluation for all Army SBIR proposals. The Army will provide a technical evaluation narrative to the proposer in accordance with the SBA Policy Directive, Appendix I, paragraph 4. The selection decision notice contains instructions for retrieving the technical evaluation narrative.

Selected proposals are not guaranteed a contract award. Proposers shall not regard the notification email (selection decision notice) as an authorization to commit or expend funds. Upon selection, proposals are forwarded to a Government Contracting Officer for contract negotiation and further consideration. The Government Contracting Officer shall evaluate selected proposal(s) for price reasonableness utilizing the various proposal analysis techniques described at FAR 13.106-3, or 15.404-1, to ensure a fair and reasonable price is paid. A Government Contracting Officer may contact the proposer in order to discuss and request additional information required for award. This may include representations and certifications, certified or other than certified cost data, subcontracting plan for small businesses, and/or other information as applicable to the proposed award. Proposers shall not regard these communications as an authorization to commit or expend funds. In the event that an Offeror has not provided fair and reasonable pricing, the Offeror shall be eliminated from further consideration for award. Upon an affirmative determination of price reasonableness and responsibility, the Contracting Officer may proceed with an award, subject to the availability of funds. Unless a Government Contracting Officer signs an award document (e.g., contract), no obligations to provide funding are made. The Government may reject the proposal or dissolve award of the contract action at any time.

If signed by the Government Contracting Officer, the award document is the official and authorizing instrument, thereafter referred to as the "contract". The period of performance will begin upon award of the contract. The Contracting Officer will email the signed contract to the principal investigator (PI) and/or an authorized organization representative.

PROTESTS

Refer to the DoD SBIR Program BAA for procedures to protest the Announcement.


Feedback will be provided to applicants that are not selected for further consideration. A notification letter will include instructions for obtaining feedback in the form of a ValidEval Report. Offerors are entitled to no more than one feedback per proposal. NOTE: Feedback is not the same as a FAR Part 15 debriefing. Acquisitions under this solicitation are awarded via "other competitive procedures (FAR 6.102(d)(2))." Therefore, offerors are neither entitled to nor will they be provided FAR Part 15 debriefs. As further prescribed in FAR 33.106(b), FAR 52.233-3, Protests after Award shall be submitted to the Point of Contact identified in the topic solicitation:

Email: usarmy.pentagon.hqda-asa-alt.mbx.army-applied-sbir-program@mail.mil

Mailing Address:

Army Applied SBIR Office
2530 Crystal Dr.; Ste 11192
Arlington, VA 22202

Appendix A Phase I Evaluation Criteria

Applied SBIR Phase I Proposal Review v2-0-3 Evaluation Criteria Defined		
		DEFINITION
INTRODUCTION	weight 5%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	OPERATIONAL IMPACT	At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?
	weight 25%	POTENTIAL SCALE OF IMPACT Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.
TECHNICAL FEASIBILITY	SCIENTIFIC FEASIBILITY	Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.
	ENABLING TECHNOLOGIES	Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army fielded) underlying technologies and techniques helps to lower technical risk.
	ALTERNATIVE TECHNICAL APPROACHES	From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?
	weight 25%	TECHNICAL RISK MITIGATION No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.
TRANSITION	ARMY TRANSITION PATHWAY	Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.
	weight 20%	SBIR MILESTONE SCHEDULE Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.
FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
	OTHER PEOPLE'S MONEY	Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.
	weight 10%	FINANCIAL PROFIT POTENTIAL Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.
TEAM ABILITY	weight 10%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
	weight 5%	DATA QUALITY & ATTRIBUTION Support your arguments with relevant, properly attributed data to enhance your credibility.

Appendix B Direct to Phase II Evaluation Criteria

Applied SBIR D2P2 Proposal Review v2-0-4 Evaluation Criteria Defined		DEFINITION
INTRODUCTION	weight 2%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	weight 20%	<p>OPERATIONAL IMPACT At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?</p> <p>POTENTIAL SCALE OF IMPACT Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.</p>
TECHNICAL FEASIBILITY	weight 30%	<p>SCIENTIFIC FEASIBILITY Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.</p> <p>ENABLING TECHNOLOGIES Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army-feldded) underlying technologies and techniques helps to lower technical risk.</p> <p>ALTERNATIVE TECHNICAL APPROACHES From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?</p> <p>TECHNICAL RISK MITIGATION No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.</p>
TRANSITION	weight 20%	<p>ARMY TRANSITION PATHWAY Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.</p> <p>SBIR MILESTONE SCHEDULE Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.</p>
FIRM CASH FLOW	weight 15%	<p>FIRM SURVIVAL RISK SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.</p> <p>OTHER PEOPLE'S MONEY Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.</p> <p>FINANCIAL PROFIT POTENTIAL Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.</p>
TEAM ABILITY	weight 10%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	weight 3%	<p>QUALITY OF PROSE Prove you write clearly. Prove you argue convincingly.</p> <p>DATA QUALITY & ATTRIBUTION Support your arguments with relevant, properly attributed data to enhance your credibility.</p>



Appendix C Phase II Evaluation Criteria

Applied SBIR Phase II Proposal Review v2-0-3 Evaluation Criteria Defined		DEFINITION
INTRODUCTION	weight 2%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	OPERATIONAL IMPACT	At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?
	POTENTIAL SCALE OF IMPACT	Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.
TECHNICAL FEASIBILITY	SCIENTIFIC FEASIBILITY	Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.
	ENABLING TECHNOLOGIES	Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army-fielded) underlying technologies and techniques helps to lower technical risk.
	ALTERNATIVE TECHNICAL APPROACHES	From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?
	TECHNICAL RISK MITIGATION	No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.
TRANSITION	ARMY TRANSITION PATHWAY	Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.
	SBIR MILESTONE SCHEDULE	Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.
FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
	OTHER PEOPLE'S MONEY	Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.
	FINANCIAL PROFIT POTENTIAL	Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.
TEAM ABILITY	weight 5%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
	DATA QUALITY & ATTRIBUTION	Support your arguments with relevant, properly attributed data to enhance your credibility.



Appendix D Commercialization Plan Template

General Instructions/Guidance:

1. As stated above, proposing small business firms shall prepare an eight (8) slide commercialization plan, utilizing the template and format below. The commercialization plan shall be converted to a pdf and attached to the end of the five (5) page technical volume, resulting in one pdf file to be uploaded to DSIP as Volume 2.
2. Font size shall be no smaller than 10-point font.
3. Slides should display the slide number in bottom right corner
4. All text (including tables, charts, plots, axis labels, legends, captions) shall be readable without zooming and understandable without voice-over
5. For plots and charts:
 - a. Include title/bullet describing importance of plot/chart, and/or data (be specific)
 - b. Axis shall be meaningfully labeled (to be understandable by non-experts) and include scale
6. Avoid jargon; define technical terms
7. To insert images, capture a screenshot of the image and paste it into the slide. Please do not drag-drop a file into the presentation or use the Insert Pictures menu function.
8. Use PowerPoint's "Compress Pictures" feature to reduce file size
 - a. Select 96ppi resolution
 - b. Uncheck "For this picture only"
9. Replace the boilerplate footer below with distribution markings as appropriate, i.e. sensitive, proprietary, intellectual property

To be considered valid proposals, Commercialization Plan submissions shall follow the number and content of each slide as contained in the attached template.

Appendix D
Commercialization Plan Template cont.

Firm Name

SBIR Project Title

Principal Investigator Name / Title
Key (or other relevant) Personnel, and
Subcontractors

.....
Insert Topic Number
Insert Proposal Number

Distribution markings as appropriate for your organization

BLUF: Bottom Line Up Front

- **BLUF:**
 - 1. Company information and background** : Core competencies, significant sales, previous funding, commercialization successes.
 - 2. Customer and Competition** : Clear description of key technology objectives, current competition, and advantages.
 - 3. Market:** Plan to obtain market share.
 - 4. Intellectual Property:** Patent status, technology lead, trade secrets or other demonstration of a plan to protect the company's technical advantage.
 - 5. Financing/Revenue:** Plans for securing necessary non -SBIR funding.
 - 6. Assistance and mentoring** : Plans for securing needed technical or business assistance.

Distribution markings as appropriate for your organization

Appendix D

Commercialization Plan Template cont.

Company Information and Background

- Core competencies and areas of specialization.
- Products with significant sales.
- Concise history of previous Federal and non -Federal funding/investments.
- Regulatory experience (if applicable).
- Past commercialization successes.
- Past failure and how you overcame .

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Customer & Competition

- Description of key technology objectives.
- Current competition and/or alternative solutions.
- Advantages of company's offer compared to competing products or services.
- Hurdles to acceptance of the proposed innovation.
- Description of possible areas where your technology may be utilized or is under utilized.

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Appendix D

Commercialization Plan Template cont.

Market

- Analysis of market size and 1 and 5 year forecasted market share.
- Explanation of milestones and target dates of plan to obtain that market share.
- What experience do you have with marketing to this target market?
- What commercialization strategy appears to be the best for bringing this product to the target market?
- What experience do you have with bring products to market – either through this company or through other companies with which you have worked.
- Does the company currently market, manufacture, or license technology? Describe what you do.

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Intellectual Property

- Patent status, technology lead, trade secrets or other demonstration of a plan to achieve sufficient protection to realize the commercialization stage and attain at least a temporary competitive advantage .
- Describe how you will protect the intellectual property that enables commercialization of its products while keeping competitors at bay. Note any actions you may consider to attain at least a temporary competitive advantage. Also consider your company's prior record in this area. Comment on your company's strategy to build a sustainable business through protection of intellectual property.

Distribution markings as appropriate for your organization

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Appendix D

Commercialization Plan Template cont.

Financing

- Plan for securing non-SBIR, private or government funding necessary to enter low rate of production of anticipated technical solution.
- Describe your revenue stream generation to include but not limited to:
 - Manufacture and direct sales
 - Sales through value added resellers or other distributors
 - Joint venture

Distribution markings as appropriate for your organization

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Assistance & Mentoring

- Plans for securing needed technical or business assistance through mentoring, partnering, or arrangements with government sponsored (e.g., SBIR funded Discretionary Technical and Business Assistance (TABAs), State assistance programs, Federally-funded research laboratories, Manufacturing Extension Partnership centers), not-for-profits (e.g., Small Business Development Center (SBDC) or Small Business Technical Development Center (SBTDC)), commercial accelerators, DOD Prime Contractors, SBA Mentor - Protégé program, Procurement Technical Assistance Center (PTAC) or other assistance provider.

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**Army SBIR 24.4 Topic Index
Release 3**

A244-004 YTC Full Load Cooling

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Advanced Computing and Software

OBJECTIVE: To develop modernized data processing techniques to accurately assess the cooling capabilities of automotive platforms with electronically controlled powertrains, to include performance limiting controls (e.g., engine derating). Most modern automotive and combat vehicles have transitioned from mechanically to electronically controlled transmissions which present the need to update testing methodologies and data processing techniques for the extrapolation of fluid temperature data in critical systems of military vehicles. Current extrapolation methods of critical component fluid temperature data were developed before electronically controlled transmissions were introduced and cannot be used for assessing these new types of transmissions, reference Test Operating Procedure (TOP) 2-2-604, Drawbar Pull, dated 26 September 2007. When testing a vehicle at temperatures below 120°F, derating features within electronically controlled drivetrains may not be triggered during testing and the true performance characteristics of the vehicle remain unreported. The intent is to modernize the test methodology and utilize synthetic data generation data processing techniques for Full Load Cooling (FLC) testing. The new test methodology and data processing techniques should accurately characterize the performance of the vehicle, when operating in environments at 120°F even though testing is performed when the ambient temperature is below 120°F. Synthetically generated data should identify derating trigger points (engine governing/retarding, transmission shifting, etc.) and their effect on system's performance, even though these events would not have been experienced during the test event. The synthetically generated data should also identify the extrapolated critical component fluid temperature values.

DESCRIPTION: The approach for this topic is innovative as it is leveraging commercial industry data and expertise about behaviors of electronically controlled powertrains. Electronically controlled powertrains have been widely used throughout the commercial automotive industry for more than 30 years. However, application of this technology to military vehicles is relatively novel and requires a knowledge transference to Department of Defense (DoD) testing experts as the "third-party" evaluators of military equipment. A small business with experience assessing automotive powertrain and cooling systems will be able to develop a new FLC test methodology and mathematical formulae for advanced data processing techniques to appropriately assess vehicle powertrain performance in extreme natural environments across various military ground vehicles. Current automotive industry practice is vehicle specific assessments whereas there is not an agnostic model for predicting cooling system performance using test data. Testing for cooling system performance is anticipated to be more relevant for military vehicles due to increasing ambient environmental conditions due to climate change.

PHASE I:

4QFY24-3QFY25

- Contractor will perform an initial site visit and give Yuma Test Center (YTC) government representatives an initial presentation identifying their plan of execution to include what unique methodologies are initially proposed for conducting the FLC test, what their initial plan for instrumenting vehicles under test, what mathematical or engineering background/concepts are being applied to approach the problem, and what their proposed data processing methodology to assess cooling system performance will be.
- Contractor will develop FLC test methodology, instrumentation requirements, and mathematical formulae for advanced data processing techniques for FLC testing.
- Contractor will develop methodology to characterize powertrain derating and build usable vehicle derate schedules based on observed test data.
- Contractor will submit final report identifying the following:

- Newly proposed FLC test methodology in detail. Methodology will not require additional test capabilities of the test center (e.g., No need for a Dynamometer chamber to simulate extreme natural environments) and will not require the use of proprietary information from the manufacturer of the item that is to be tested.
- Industrial precedence or applicable test standards are being leveraged to support their theory development.
- Instrumentation requirements and assessment by the contractor of additional resources or impact to typical test event with their proposed methodology (e.g., how many extra sensors will be needed to support their testing vs. legacy sensor counts).
- Conceptual estimate of how a de-rate schedule for the powertrain impacts the overall FLC test and the impact to the overall vehicle under test (e.g., this engine de-rate would reduce the vehicle's ability to ascend a 40% longitudinal grade at its existing weight).
- Proposed data processing techniques for synthetic data generation AI model to infer system performance under varying environmental conditions and assess cooling system performance.

PHASE II:

4QFY25-3QFY26

- Contractor will refine FLC test methodology, instrumentation requirements, and mathematical formulae and advanced data processing techniques for FLC testing that were previously developed in Phase I portion of the SBIR contract.
- Contractor will develop a software program and Graphical User Interface (GUI) that utilizes the mathematical formulae and advanced data processing techniques to perform synthetic data generation to infer vehicle performance under varying environmental conditions and assess cooling system performance. Software program will ingest data from DEWESoft software directly or through the import of data via a CSV file format. Software program will synthetically produce powertrain de-rate features and show their effect on the vehicle's performance and effect on critical system fluid temperatures.
- Contractor will develop test plan for the execution of the developed methodology in field conditions on a military vehicle to analyze the drive train performance characteristics and cooling capabilities with the data processing software.

PHASE III DUAL USE APPLICATIONS:

- Academic and corporate research underscores the efficacy of instituting modeling & simulation (M&S) capabilities for engine and energy cooling. AI integration as well as digital twin integration. Both are underpinned by AI/ML solutions.
- Moreover, M&S capabilities, namely digital twin solutions, can augment cooling systems and powertrains during the manufacturing process, per corporate R&D literature.
- Current market applications, including start-up usage, for FLC M&S include:
 - Augmenting traffic cycles by analyzing driver behavior.
 - EV battery lifecycle improvement and integration.
 - Utility asset cooling and management SaaS products.

REFERENCES:

1. <https://apps.dtic.mil/sti/pdfs/ADA640254.pdf>

KEYWORDS: Combat Vehicles; Powertrains; Data Processing; Electronics; Testing; Methodology; Transmission; Automotive; Front Load Cooling (FLC); Drivetrains

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