FA8650-23-S-5020

Defense Production Act Investments (DPAI) Program
Request for Information

Domestic Industrial Capability for Distributed Manufacturing Enabled by Modular Bioindustrial & Reusable Assets

CONTRACTING OFFICE ADDRESS

Department of the Air Force, Air Force Research Laboratory (AFRL) – Wright Research Site, Manufacturing Technology Contracting Section, AFRL/RXKMS, Area B, Bldg 45, 2130 8th Street, Wright-Patterson AFB, OH, 45433-7541.

SCOPE

The intent of this Request for Information (RFI) is to gather information about U.S. national security industrial base shortcomings, risks, and opportunities that may be addressed by investments made under provisions in Title III of the Defense Production Act (DPA). Of particular interest are the technical, manufacturing, and market barriers to establishing a viable business for the technologies of interest described in Products, Processes, and Investments sub-sections under Request Details, below.

REQUEST DETAILS

The Defense Production Act Investments (DPAI) Office, part of the Office of the Assistant Secretary of Defense (OASD) for Industrial Base Policy (IBP) and responsible for overseeing the exercise of the DPA Title III authorities, is seeking information related to the production of biomanufactured materials used in DoD systems and supply chains as this is essential to national security. Relying on foreign sources for essential materials poses a risk to the Department's readiness to deter and defeat adversaries. The objective of this RFI is to assess what biomanufactured materials or products can fulfill essential national defense needs and specifically what investment, if any, toward future state production capabilities may be of benefit to the DoD and are addressable by the DPAI.

RESPONSES CONTENT

NOTE: Respondent's information on products and project needs may be tied to one or more of the product(s), process(es), or investment areas shown below. The following comments and questions are intended to communicate the range and types of information of interest to the government; the government anticipates that most responders **will not address all** of the following. Tailor your response to address some, all, or more than the questions posed as germane to your product, process, and investment needs.

PRODUCTS:

Biomanufactured products of interest include those that enable capabilities within the following application and operational spaces of interest, and will bring revolutionary changes to military capabilities, the operations environment, and supply chain resiliency. Such application and operational spaces may include, but are not necessarily limited to:

- manufacture **specialty chemicals and materials** that are needed by the DoD in an available and affordable manner (e.g., biomanufactured fuels and energetic precursors, biosynthetic fibers such as but not limited to spider silk, polymers, natural rubber/latex rubber, solvents)
- enable **reduced logistic costs, time, and energy** through bio-composite and living materials (e.g., tunable materials with enhanced properties, self-healing materials)
- maintain **persistent sensing** capabilities for sustained human and environmental intelligence (e.g., sensors for water quality monitoring, bio-based energy harvesting in maritime systems)
- augment **human systems** by impacting performance and protection (e.g., tailored proteins, but specifically excluding biopharma and probiotics)
- enable manufacturing defense relevant materials in a manner to **reduce the impact on the environment** while meeting or exceeding product performance requirements

PRODUCTS QUESTIONS TO CONSIDER:

1. What is your current or intended product for defense, and/or commercial applications? Is it a biomanufacturing process constituent (e.g., processed feedstock, enzyme, chemical precursors), complete but intermediate material (e.g., bulk resin, biosynthetic fibers, protein), or finished product for sale (e.g., food/cultivated meat, agricultural item such as fertilizer replacement, industrial product that streamlines processes, reduces waste, is more sustainable or environmentally friendly novel material like biocement)?
2. If known (or estimated), what is the current Technology Readiness Level of your product? [Note: refer also to the article on BioMRLs by Smanski et. all[1], available at https://pubmed.ncbi.nlm.nih.gov/36150719/]
3. What price(s) per unit volume for the material would you likely target once capacity is established (i.e., what is the competitive market price)? What is the magnitude of reduction required from your current state to achieve a competitive price?
4. Please describe the intended markets (both DoD and Commercial) that your company would target if you had/have the capability to manufacture the material.
    a. Have you engaged, coordinated, or collaborated with any national defense customers/projects regarding your item? If yes, please explain the nature of the involvement and with whom (please provide as much information as possible, including Department, directorate/lab, office identifiers, and/or names and contact information)?

[1] Smanski MJ, Aristidou A, Carruth R, Erickson J, Gordon M, Kedia SB, Lee KH, Prather D, Schiel JE, Schultheisz H, Treynor TP, Evans SL, Friedman DC, Tomczak M. Bioindustrial manufacturing readiness levels (BioMRLs) as a shared framework for measuring and communicating the maturity of bioproduct manufacturing processes. J Ind Microbiol Biotechnol. 2022 Oct 13;49(5):kuac022. doi: 10.1093/jimb/kuac022. PMID: 36150719; PMCID: PMC9559305.

5. Highlight any known or presumed market acceptance challenges for your item, such as meeting existing product specifications, extended testing/certification requirements, and/or establishing new specifications.

PROCESSES:

In addition to the fundamentals of current and future potential process capacities and capabilities as described by the questions below, in line with the EO and NDAA as referenced below establish two additional factors of interest to the Government:

- **Geographical diversity** – to mitigate the potential for natural disasters and other risks to resiliency, potential projects may consider the geographic location of the investment, within the context of establishing a broad portfolio of industry capabilities that is well distributed across the domestic landscape
- **Supply chain proximity** – in support of reducing manufacturing environmental footprints that is a key tenet of the referenced initiatives, projects that minimize the supply chain distances of the end-to-end operations (that is, feedstock to final product) may be of greater interest than those that have long distances of travel between major process element locations

PROCESSES QUESTIONS TO CONSIDER:

1. Describe your current in-house production process capabilities and capacity. Where is it located? What increased capability/capacity is needed?
2. Do you currently, or have you historically, relied on sources external to your company for some or all process development, test-scale or limited production manufacturing (i.e., contract manufacturing aka CMO)? If yes, from where, and how much product/capacity have you required in what time period?
3. If known (or estimated), what is the current Manufacturing Readiness Level of the manufacturing process for your product? [Note: refer also to the article on BioMRLs by Smanski et. all[2], available at https://pubmed.ncbi.nlm.nih.gov/36150719/]
4. Is (are) your product(s) and processes suitable to flexible (modular) manufacturing, such that more than one item can be produced from shared or substantially shared production equipment in a single facility?
5. Does your process generate any side-stream material (by-products)? If yes, please describe the material, and address if it is waste, potentially reclaimed, or of secondary value? (e.g., do those by-products have, or can they be 'tuned' to have, value as a secondary product stream?)
6. If your product is not a finished item, what type of downstream processing is required, and what is the current state of your or other industry capability to complete processing/integration?
7. Do you currently make or acquire relevant inputs, constituents or materials?
    a. In what yearly quantities, from what level of manufacturing capability, or from what source?

[2] Ibid.

    b. Is this a long-term viable solution to support low-rate initial production (LRIP) or full-scale production? If internal investment will be necessary, describe what would be needed – e.g., what IP, equipment, process development, scale up, may be required?
8. What is/would be the origin of feedstocks, critical equipment, and key constituents for your manufacturing capacity and product at increased scale?
9. Please describe ideal geographic location of CMO, LRIP, and/or full-scale production of your product, and what advantage is gained by your preferred location.

INVESTMENTS (conceptual project objectives):

Viable DPAI project investment ideas include those that bridge the manufacturing (capacity and capability) gap between product demonstration and adoption, in compliance with the Program criteria identified in the DPA TITLE III BACKGROUND below. The development and advancement of biomanufacturing and closely related capacities considered may include, but are not limited to, activities such as:

- Scale-up of prototype or pilot processes, such as increased production capacity to low-rate initial production (LRIP) or full-scale production
- Development, test, and evaluation, and acquisition, installation, and validation of unique equipment and processes for scaled up capacities [Note: DPAI projects are not interested in solely development, test, and evaluation capabilities, rather those necessary steps that are contributory to an overall project that results in increased throughput and output]
- Establishment or improvement of downstream processes (DSP) that transform biomanufactured materials into usable/consumable materials; preferrable are those DSPs that are physically localized to the production of the biomanufactured constituent
- Establishment, improvement, or scale up of key biomanufacturing process components, such as flexible production of an array of enzymes required in multiple bioproduction streams
- Establishment, improvement, or scale-up of secondary process streams that are shared in some degree with production lines for commercial items, but produce products of military/national security interest from the secondary stream

INVESTMENTS QUESTIONS TO CONSIDER:

1. Identify the types of investments/activities needed to increase or improve your production capability and raise your production readiness (e.g., process development, production scale-up, equipment purchase, business development, process optimization, infrastructure, etc.). Provide Rough Order of Magnitude (ROM) estimates for all costs.
    a. Include a rough time-phased plan for major activities needed to implement your production investment plans.
2. Estimate the amount of cost share investment industry (you) would be likely to make to implement your production investment plans.
    a. Note: The extent of cost sharing between the Government and industry is considered important. It indicates industry understands that government investments will position a domestic firm to make substantial returns after the

government investments cease, and it also indicates industry's commitment to being a long-term supplier to the DoD and other government customers.

3. If you do not currently have manufacturing capability, what barriers to entry exist to your establishing that capability?
4. Describe any site challenges (space, environmental compliance, etc.) that may need to be overcome to establish production capability.

GENERAL INTENT

DESCRIPTION

The Air Force, as the DoD Executive Agent for DPA Title III authorities, provides this RFI as an invitation to Industry to provide information on technology of interest for the DPAI Program. Industry responses to the RFI will be assessed and may assist in potential future Title III actions. This invitation is derived from Administration action on domestic bioindustrial manufacturing capabilities. On September 12, 2022, President Joseph R Biden, Jr. signed Executive Order (EO) 14081 on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy. The EO directed the Secretary of Defense to "incentivize the expansion of domestic, flexible industrial biomanufacturing capacity for a wide range of materials that can be used to make a diversity of products for the defense supply chain." The EO enumerates policy and approach "to advance biotechnology and biomanufacturing towards innovative solutions in health, climate change, energy, food security, agriculture, supply chain resilience, and national and economic security." Included in this policy is the imperative to "improve and expand domestic biomanufacturing production capacity and processes, while also increasing piloting and prototyping efforts in biotechnology and biomanufacturing to accelerate the translation of basic research into practice."

Furthermore, on December 23, 2022, President Biden signed the Fiscal Year 2023 National Defense Authorization Act, which includes Section 215 "Support for Research and Development of Bioindustrial Manufacturing Processes." Section 215 authorizes the Secretary of Defense, subject to the availability of appropriations, to "provide support for the development of a network of bioindustrial manufacturing facilities," and to "validate, and scale new, innovative bioindustrial manufacturing processes for the production of chemicals, materials, and other products necessary to support national security or secure fragile supply chains." Sec. 215 includes activities that align wholly or in part with the authorities of the DPAI Program, activities that may include, but are not limited to: the test and evaluation of innovative bioindustrial manufacturing processes; the scaling of bioindustrial manufacturing products to higher levels of production; strategic planning for infrastructure and equipment for bioindustrial manufacturing of defense-related materials; analyses of bioindustrial manufactured products and validation of biological materials used as input to new and existing processes; and the selection, construction, and operation of pilot and intermediate scale bioindustrial manufacturing facilities.

Note: There is no guarantee that this topic area will become a Title III project, and responders to this RFI will have no competitive advantage in receiving awards related to the submitted topic area. The information submitted in all responses may be utilized to help the Government further define all the requirements, including but not limited to, business and

technical. If the Government develops a Title III project that addresses any submitted or similar topic, the resulting procurement will address technology and business specific requirements as defined by the Government to achieve Title III program objectives.

DPA TITLE III BACKGROUND

Title III of the DPA of 1950, as amended (50 U.S.C. App. § 4501 et seq.) grants the President of the United States the authority to provide appropriate incentives to create, maintain, protect, expand, or restore domestic industrial base capabilities essential for the national defense and for critical infrastructure protection and restoration. Incentive forms available under Title III of the DPA include purchases to create or expand (scale-up) production capacity; improve quality and yield; purchase test quantities for process validation and qualification testing; for development and implementation of business and marketing plans, and to purchase and install production equipment.

The DPA itself contains three criteria that every Title III project must meet before any funds may be obligated on a Title III activity. The DPA stipulates that the President must certify to the Congress that the activity satisfies the criteria. The statutory criteria state that: (1) The industrial resource, material, or critical technology item is essential to the national defense; (2) Without Presidential action under the DPA Title III, United States industry cannot reasonably be expected to provide the capability for the needed industrial resource, material, or critical technology item in a timely manner; and (3) Actions taken under Title III are the most cost-effective, expedient, and practical alternative for meeting the need. (The problem/issue should be amenable to Title III business solutions. Title III authorities and funding are not intended to be used as supplemental to the normal DoD materiel acquisition or R&D programs).

Note: The DPA is concerned with only domestic sources. Foreign capabilities will not be considered. Title III cannot be used to create or expand a foreign source, regardless of the essentiality of the technology to U.S. defense requirements. *The DPA defines domestic source to be a business concern that performs in the United States or Canada substantially all of the research and development, engineering, manufacturing, and production activities required of such business concern under a contract with the United States* relating to a critical component or a critical technology item and that procures from such concerns substantially all of any components and assemblies required under a contract with the United States relating to a critical component or critical technology item. Territories and possessions of the United States, and the District of Columbia are considered part of the domestic United States.

Title III investments are most appropriate to address pervasive (benefiting more than just a single service, agency, or program office) industrial base manufacturing shortfalls that can be typically remedied within a 5-year timeframe. Title III investments are not intended for basic or applied research or for technologies with limited or no DoD advocacy. Typical Title III tasks include the procurement, installation, and qualification of production equipment; modernization of manufacturing capabilities and capital upgrades to the plant; manufacturing line prove-out; production of samples for customer and/or Government evaluations; implementation of quality systems and practices; manufacturing cost reduction and yield improvement activities; and the implementation of business and marketing plans. Title III investments typically have a broad,

enterprise-wide impact on a sub-tier defense supplier. The overall goal is to secure and assure a viable, domestic merchant supplier for the long-term.

ADDITIONAL GENERAL INFORMATION

This is a RFI only as defined in FAR 15.201(e) to obtain information about U.S. national security industrial base shortcomings, risks, and opportunities which may be addressed by investments made under provisions in Title III of the DPA. Of particular interest are the technical, manufacturing and market barriers to establishing a viable business for the technology of interest. This RFI is not a request for competitive proposals; therefore, responses to this notice are not considered offers and cannot be accepted by the Government to form a binding contract. Companies that respond will not be paid for the information submitted except as an allowable cost under other contracts as provided in FAR 31.205-18, "Bid and Proposal Costs." The Government will be utilizing non-government personnel under this RFI. The role of these non-government personnel is to function as technical advisors to the Government reviewers. These non-government personnel will have access to the information submitted in response to the RFI and will provide technical expertise and/or advice as required. All non-government personnel have Non-Disclosure Agreements on file with the Government.

CLARIFICATION OF INTERESTS

The DPAI Office is aware that there are multiple requests and inquiries being issued from various Government entities and offices pertaining to bioindustrial and biomanufacturing capabilities and recommendations. It is not the intent of this Office to create a burden on industry to craft and submit multiple responses, nor is it the intent to confuse industry with multiple requests. Therefore, we offer the following general clarification and characterization of two known and thematically related notices of Government inquiry. Respondents to this RFI may submit the same, substantially similar, or substantially different inputs as compared to other similar Government requests; it is incumbent on the respondent to determine the suitability of their response content based on the nature of the requests.

> **OFFICE OF SCIENCE AND TECHNOLOGY POLICY RFI; National Biotechnology and Biomanufacturing Initiative** – open, broad, information gathering to assess and report on bioindustry capabilities, interests, and recommendations for short-, medium-, and long-term opportunities or development; open to any application market (e.g., consumer, agricultural, health); reporting generated may be used by a host of Departments or Agencies to help guide future programs; ref. https://www.govinfo.gov/content/pkg/FR-2022-12-20/pdf/2022-27600.pdf
>
> **DPA Title III RFI** (this release) – information gathering to assist the Government in designing targeted investment program opportunities, for defined and discrete products and capabilities, wherein the product must have national defense or dual-use application and meets the Program requirements as described herein. Note that:

- Publication of this RFI, and receipt, review, or follow-up inquiry to any response gathered as a result of this RFI, does not guarantee or obligate the Government to initiate or commit to any funding opportunities.
- For purposes of this RFI, IBPNDPOL and the DPAI Office are not interested in the domestic production of renewable biofuels such as sustainable aviation fuel (SAF), nor in bio-pharma products. Any responses substantially related to SAF-type or bio-pharma products will not be assessed.

SUBMISSION OF DOCUMENTATION

Documentation shall be delivered to the Contracting Office via e-mail to the following:

AFRL/RXKMS
Ms. Gabrielle Sherer
Contract Negotiator
E-mail: gabrielle.sherer@us.af.mil

AFRL/RXKMS Alternate POC
Mr. Charlotte Chumack
Contracting Officer
Email: charlotte.chumack@us.af.mil

E-mail responses are preferred but if you have large files or information that is proprietary in nature to send, you may provide your submission using the DoD SAFE site (https://safe.apps.mil/). You must request a submission email for the DoD SAFE site via the listed Contracting POCs. You will then receive an email from DoD SAFE with a secure link and password to upload and submit your documents via the DoD SAFE site.

The cover material (not included in the page count) shall include the following at a minimum:

- Interested Party Name, mailing address, overnight delivery address (if different from the mailing address), phone number, and fax number;
- North American Industry Classification System (NAICS) code under which the company traditionally does business and the Business type (e.g., large business, small business) based upon that NAICS code;
- A designated point of contact of the Interested Party, including that contact's name, title, direct phone number, and e-mail address.

Responses shall be submitted electronically, in Microsoft Word (Office 2010 compatible) format or in PDF, **not later than 19 April 2023, 12:00 PM (Noon, Eastern Time)**. If late information is received, it may be considered by the Government reviewers, depending on agency time constraints.

Please note: the Government is not required to provide feedback to RFI Responders.

FORMAT & PAGE LIMITATION

RFI responses shall be provided on standard letter size 8-1/2 by 11-inch paper, limited to a maximum of 10 **single-sided, double-spaced pages**. The font for text should be Times New Roman 12-point or larger. Respondents may use oversize pages (including "foldouts") where appropriate to contain graphic presentations. Oversize pages do not count as extra pages within the page limitations. Responses shall be submitted electronically in Microsoft Word (Office 2010

compatible) or Adobe Acrobat format. Existing commercial documentation, technical specifications, and product literature can also be submitted and are not subject to a page limitation. Note: **Responses must be unclassified. Reponses may contain proprietary information but must be appropriately marked.**

INFORMATION APPROACH

The DPAI Office may or may not select any of the listed technology areas for use as a Title III project. Projects developed from these topics, as with all Title III projects, may be competed in a full and open competition. The Air Force, as the DoD Executive Agent for DPA Title, is not required to provide feedback to responders. The Air Force may respond directly to obtain additional or clarifying information.

DISCLAIMER

This RFI is not a request for competitive proposals; therefore, responses to this notice are not considered offers and cannot be accepted by the Government to form a binding contract. Companies that respond will not be paid for the information submitted except as an allowable cost under other contracts as provided in FAR 31.205-18, "Independent Research and Development and Bid and Proposal Costs."

No telephone calls will be accepted requesting a bid package or solicitation. There is no bid package or solicitation at this time.

All information received for this DPAI RFI shall be safeguarded from unauthorized disclosure. Responses must be unclassified. Responses to this RFI may constitute proprietary information, Controlled Unclassified Information (CUI) or export-controlled information. Respondents are directed to contact the Contracting Office for supplemental instructions related to the submission of proprietary information, CUI, or export-controlled data.

OPERATIONS SECURITY (OPSEC) REQUIREMENTS

The contractor shall participate in all activities associated with the disciplines of the organization's Industrial Security, Information Security, Personnel Security, Operations Security (OPSEC), and Antiterrorism programs, following appropriate measures in each program as required for this particular request. Security measures are required to reduce program vulnerability from successful adversary collection, exploitation of critical information, and violations of export control requirements. The prime contractor shall ensure all subcontractors, if applicable, conform to these requirements as required by the prime contractor.

PROGRAM PROTECTION PLAN (PPP) REQUIREMENTS

Any potential critical program information (CPI) generated as part of this response will be reviewed to determine the need for a PPP or to be included as part of an existing PPP.

ADDITIONAL INFORMATION

Additional DPAI information is available on the following website:
https://www.businessdefense.gov/ai/dpat3/index.html

Direct all inquiries to the Contracting Office Point of Contacts listed in the Additional Required Responses paragraph above.