



PROJECT CALL

# Climate Change

JANUARY 2023



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## 1. Introduction to BioMADE

BioMADE is a Manufacturing Innovation Institute (MII) sponsored by the U.S. Department of Defense (DoD) with a vision to build a sustainable, domestic, end-to-end bioindustrial manufacturing ecosystem. Our mission is to enable domestic bioindustrial manufacturing, develop technologies to enhance U.S. bioindustrial competitiveness, de-risk investment in relevant infrastructure, and expand the biomanufacturing workforce to realize the economic promise of industrial biotechnology.

BioMADE is building a robust bioindustrial manufacturing ecosystem and has a national network of over 160 members spanning industry, academia, and non-profit organizations. BioMADE's primary aim is to accelerate the commercialization of new bioindustrial manufacturing technologies by guiding them through the pilot-scale Manufacturing Readiness Levels (MRL) 4-7. The direct outcome of these efforts will be to develop and expand industrial and defense-related biomanufacturing in the United States. BioMADE will drive advances by leveraging DoD funds and in-kind support from member organizations to complete projects critical to domestic bioindustrial manufacturing.

BioMADE is committed to promoting and advancing greater diversity, equity, and inclusion within the biomanufacturing field. BioMADE seeks partners who have a demonstrated ability to achieve biomanufacturing innovation and a commitment to advancing opportunities that foster a diverse, inclusive, and equitable workforce. BioMADE partners are expected to demonstrate their commitment and strategy for achieving a diverse workforce through their proposed implementation plan. A core feature of BioMADE's mission is advancing and integrating the pillars of safety, security, sustainability, and social responsibility (4S) throughout its work.

Together with the DoD, BioMADE is interested in accelerating technology development related to mitigating the causes and consequences of global climate change, particularly when these intersect with bioindustrial manufacturing. In summer 2022, BioMADE solicited climate change concepts from our member organizations. The Climate Change Project Call focuses on innovation priority areas identified in these submitted concepts. As described in the concept solicitation, all project proposals should identify the potential DoD relevance. Projects funded through this Project Call will require 1:1 cost share, but be treated as "Directed Research Projects" that do not fall under the invention sharing requirements in the Intellectual Property Management Plan, see additional details below. This packet describes the purpose, process, and eligibility criteria for the Climate Change Project Call.

## 2. Climate Change Project Call Overview and Eligibility

### Program Overview

Bioindustrial manufacturing offers the ability to create new molecules and materials with unique and desirable physicochemical properties, as well as cost-competitive drop-in replacements for petrochemicals with well-established markets. Further, it can leverage carbon-neutral or carbon-negative processes, thus mitigating the climate impact of manufacturing. Establishing the commercial viability of these product-markets is high risk, because vetting new material in an individual application can require 10-100 kg of material or more for testing and evaluation. Successful proposals will describe projects with the potential to mitigate the causes or consequences of global climate change. Proposals must highlight a DoD-relevant use-case of the innovation.

Successful proposals will focus on processes or technologies within Manufacturing Readiness Levels 4-7 (see below for MRL descriptions). Proposers must provide justification for the current MRL status and description of how the project will advance the MRL status for the given bioproduct or process.

### Eligibility

This funding opportunity is only open to BioMADE members in good standing. Membership is required at the time of full proposal submission for all participating organizations. Membership agreements must be signed by February 15, 2023 for the proposal to be considered for funding. It is the responsibility of the proposal lead to communicate this membership requirement to their prospective partners.

Training tier members are not eligible to participate in this technical project call. Descriptions of the membership tier benefits, and investment levels are available at [biomade.org/membership](https://biomade.org/membership). Questions about membership should be directed to [membership@biomade.org](mailto:membership@biomade.org).

### Funding Levels

BioMADE desires to fund large collaborative projects that bring together team members from multiple organizations and address multiple Roadmap priority areas. Total budgets from \$500K up to \$2 million per year of requested BioMADE funds are expected. The maximum project duration for Climate Change projects is two years (24 months). Additional Climate Change project calls are expected regularly during the next five years. Organizations with projects that will take longer than 24 months are expected to split the project into multiple discrete phases, with Phase I limited to 24 months. BioMADE reserves the right to make one, multiple, or no awards as a result of this solicitation. BioMADE cannot fund every proposal and priorities may change over time. BioMADE reserves the right to review unfunded proposals and reevaluate funding decisions should available funding streams and research priorities change.

### Cost Share Requirements

BioMADE funded projects must be matched at least 1:1 with in-kind/cash from awarded teams. Cost sharing includes cash and third-party in-kind contributions such as equipment use, facilities, and labor. State and Local funds, as well as private industry funding, can be used as cost share; however, Federal funds may not. The match can be divided between partnering entities at their discretion. More detailed cost share guidelines are attached in the appendix.



### Indirect Cost Rates

BioMADE encourages organizations without a current federally negotiated Indirect Cost Rate (IDC) to negotiate directly with BioMADE. If approved, this rate would be applicable to BioMADE projects for a period of two years. IDC rate negotiations must be complete at the time of full proposal submission. If an organization does not have a negotiated rate, a 10% de minimis rate is allowable. (Please note: If a federal rate is negotiated after a rate is approved by BioMADE, the federally negotiated rate will be used for all future BioMADE projects.) Queries regarding IDC negotiations should be directed to [finrequest@biomade.org](mailto:finrequest@biomade.org).

### Relevance to the Department of Defense

Successful proposals will identify a possible DoD use-case for the technology, process, or bioproduct developed as part of their project. Collaboration with a DoD-related laboratory or testing facility is not a requirement but is allowed under the terms of this project, however work done in DoD labs must come from a separate budget (i.e., it cannot use project funds nor be counted towards project cost-share). Relevance to the DoD is a scoring criterium during proposal review.

### Reporting Requirements

Project leads are expected to provide written reports to the BioMADE Program Manager monthly. Due dates for monthly reporting will be established prior to award of funds, and continued project funding is contingent on meeting reporting requirements. Modification of Statements of Work after onset of project funding will require written approval from the Program Manager.

### 3. Guidelines for Successful Proposals

The intent with of this Project Call is to solicit proposals that directly address research and development priorities that will have a direct impact on mitigating the causes and consequences of global climate change. Innovation areas that are within scope for this project call are listed below. The priority focus areas are given equal importance during proposal review. Compliant proposals must identify which priority focus area(s) is being addressed (e.g., sustainable production of military rations) and a specific description of the climate change impact realized by successful completion of the project. Projects may address one or multiple areas.

All successful projects will need to include tasks with intermediate Manufacturing Readiness (BioMRL4-7), according to the BioMRL definitions given below. It is acceptable for a project to contain some tasks that contribute fundamental knowledge or specialized measurement or modeling capabilities, but the overall project must focus on advancing an intermediate MRL process to a higher level of manufacturing readiness.

#### A. Bioindustrial Manufacturing Readiness Levels

The BioMADE Technical Working Group recently published a [formal description of the Bioindustrial Manufacturing Readiness Levels \(BioMRLs\)](#). Climate Change projects will focus on BioMRLs 4-7, which correlate with advancing a pilot-scale manufacturing process through at-scale, production-representative environments. Early Research and Development (R&D) efforts (BioMRLs 1-3) focused on metabolic pathway engineering and improvements are not likely to be mature enough to fit into BioMADE's scope. Exceptions may include strain engineering efforts that are specifically tailored to address known issues with Scale-up Production (SUP) or Downstream Processing (DSP).

As part of the proposal, an estimation is required of the project's current and ending BioMRL. A formal manufacturing readiness assessment is not required at this stage, but evidence to support the estimated BioMRL classification is an important part of successful proposals. We encourage proposers to allocate project funds or cost share to perform a rigorous BioMRL assessment of their process as part of the funded research effort. More information on how to perform these assessments can be found at [biomrl.org](http://biomrl.org). A description of the MRLs relevant to BioMADE projects follows:

**BioMRL3: *Proof-of-concept.*** Components of the biomanufacturing process have been proven in a laboratory environment. This includes genetic engineering efforts needed to create strains capable of producing the desired products in titers that support the transition to pilot-scale production (typically in excess of 1 g/L). Methods for the purification and analysis of the product of interest are also required but can rely on lab-scale equipment that is not suitable for larger scale DSP.

**BioMRL4: *Independent validation and verification of proof-of-concept.*** The proof-of-concept system has been demonstrated in a strain suitable for commercial-scale manufacturing and has been independently reproduced/validated/verified. Additionally, an initial assessment of the manufacturability is complete, including techno-economic analysis (TEA) and life-cycle analysis (LCA). This assessment should include plans for the scale-up production (SUP) and downstream-

processing (DSP) needed to produce sufficient quantities to allow testing and evaluation by downstream stakeholders. These plans incorporate production-relevant environments. Product quality risk and mitigation plans are documented.

**BioMRL5:** *Demonstration of prototype unit operations in a production relevant environment.* Identification of enabling/critical unit operations is complete. Prototype materials, tooling and test equipment, as well as personnel skills, have been demonstrated empirically for unit operations in a production relevant environment. Scale-up production and downstream processing has been performed at suitable scales to deliver sufficient quantities of end-product to downstream stakeholders for testing and evaluation. The TEA has been refined to assess projected manufacturing cost. A risk management plan to mitigate technical and economic risks is integrated with the manufacturing strategy.

**BioMRL6:** *Demonstration of a prototype system or subsystem in a production relevant environment.* Manufacturing processes have been selected for the end-to-end manufacturing pipeline, even if engineering and/or design variables still need to be optimized. Prototype manufacturing processes and technologies, materials, tooling and test equipment, as well as personnel skills, have been demonstrated on systems and/or subsystems in a production relevant environment. The TEA is refined based on system performance and is expanded to include inventory control, production scheduling, plant maintenance and production quality attributes (PQAs). Long-lead and key supply chain elements have been identified and supply chain risk mitigation strategies exist.

**BioMRL7:** *Demonstration of systems or subsystems in a production representative environment.* Detailed system design is complete. Manufacturing processes and procedures have been demonstrated in a production representative environment. Sufficient quantities of product have been made to test packaging and distribution systems. Unit cost reduction strategies, such as statistical process controls (SPCs), are underway in a production representative environment. Quality assurance of supply chains is in place, and procurement schedules for long-lead elements are established. The manufacturing process is sufficient to support low-level commercial manufacturing.

## B. Climate Change Priority Areas

In summer 2022, BioMADE solicited concept ideas that would mitigate the causes or consequences of Climate Change. Submitted concepts were reviewed by the DoD Government Program Management Team to assess their relevance to advancing the DoD mission. Below is a summary description of research and development activities that have been approved as appropriate for this funding call. Submitters will be asked to identify the Climate Change funding area relevant to their proposal when submitting their proposal. *If your organization plans to submit a proposal that does not directly align with one of the following funding areas, you must discuss your idea with a BioMADE Program Manager prior to submission.* Please contact [proposals@biomade.org](mailto:proposals@biomade.org) to schedule a meeting.

### 1. Sustainable food production

Innovations in food production that reduce the CO<sub>2</sub> footprint of food production at and/or transport to DoD operational environments are solicited. These could include, but are not limited to, production of nutrient-dense military rations via fermentation processes, utilizing C1 feedstocks for food production, and novel cell culture methods suitable for the production of cultivated meat/protein.

### 2. Converting waste to bioproducts

Valorizing waste streams by directly using them as feedstocks for bioindustrial manufacturing is within scope for this project call. Bioproducts produced should have relevant applications within the DoD, and higher priority will be given to projects that will develop technologies to displace current manufacturing pipelines with large carbon footprints.

### 3. Carbon capture technologies

Processes that convert greenhouse gases including CO<sub>2</sub> or methane into bioproducts that are of industrial use and are recalcitrant to degradation are encouraged through this project call. Priority will be given to projects that produce materials used in large quantities, to maximize the climate change impact. These could include but are not limited to biocement, biochar, and bioplastics.

### 4. Lowering the resource requirements for processing steps

Bioindustrial manufacturing often relies on unit operations that require substantial energy or utility inputs. Projects that develop innovations in scale-up production or downstream processing steps that substantially reduce these resource requirements to improve the net sustainability of biomanufacturing are eligible for this funding call. For example, downstream processing steps that replace energy-intensive distillation processes with separation methods that work well in ambient temperatures. For projects in this category, proposers must provide preliminary results or modeling that quantify the predicted resource savings afforded by their innovation during industrial-scale manufacturing.

### 5. Mitigating the impact of climate change

Projects that develop bioproducts useful in mitigating the negative impacts of climate change, either regionally or globally, are encouraged. Proposers should state in their application the particular region(s) that will benefit from the technology. For example, bioproducts that can be used to prevent or slow coastal erosion, or bioproducts that mitigate the impact of drought or



fluctuating weather patterns are encouraged. Innovations that decrease the water footprint of biomanufacturing processes or allow for biomanufacturing using saline or brackish water fit into this category. Higher priority will be given to proposals that outline the specific benefit to DoD interests or operations of the climate change impact mitigation technology.

### c. What is Bioindustrial Manufacturing?

Bioindustrial manufacturing is the use of whole cells or biomolecular catalysts for the at-scale production of a commodity. Excluded from our list of suitable projects are those focusing solely on medicines or therapeutic bioproducts. However, technical innovations that improve the production of therapeutics *and* non-medical commodity products are acceptable (i.e., application to medical products can be part of the translation or Intellectual Property (IP) strategy but cannot be the whole strategy). Having a project focused on bioindustrial manufacturing is necessary but not sufficient to be compliant to this project call. Specifically, biomanufacturing processes that do not directly address a known cause or consequence of climate change are not compliant. Examples of projects include, but are not limited to:

- Scale-up production of a novel bio-based material that replaces a carbon-intensive manufacturing process
- Scale-up production or down-stream processes that reduce the fresh-water usage of manufacturing plants
- Industrial production of a bioproduct that can be used to mitigate the consequences of climate change, including coastal erosion, availability of fresh water, or resilience of cropping systems to extreme weather events

### D. Cross-Institute Collaboration

BioMADE is one of 16 [Manufacturing Innovation Institutes](#) that span across several manufacturing sectors. Proposals that address intersectional areas between BioMADE and another Manufacturing USA Institute should be highlighted in the full proposal. In such cases, leveraging funding from both Institutes is allowable and encouraged, but cost share requirements must still be met. The budget justification must document funds from other sources that will be leveraged for attaining overall project goals.

### E. Team Composition

BioMADE is an industry-focused institute. Proposal teams are strongly encouraged to include at least one industry organization. BioMADE is focused on growing domestic manufacturing capabilities. International organizations are eligible to participate, however any team seeking to spend funds outside the U.S. or planning to incorporate foreign organizations as team members is required to discuss the plan and justification with a BioMADE Program Manager prior to submitting a full proposal, as foreign participation requires DoD approval. Details on what additional information will need to be included in the full proposal will be provided at that point. The 1:1 cost share requirement applies at the project-level, and cost share obligations can be divided within the project team at the team's discretion.

## F. Safety, Security, Sustainability, and Social Responsibility (4S)

A commitment to incorporating safety, security, sustainability and social responsibility (4S) is part of the fabric of BioMADE. Consequently, proposals for BioMADE projects must address how they will further this mission, by improving safety and security of biological engineering and/or by commitments to sustainability and societal issues in ways beyond revenue or capital growth. Each project proposal is expected to address integration of at least one component of 4S. A portion of the project budget is expected to be dedicated to addressing 4S.

To provide further guidance to BioMADE members as they integrate these 4S components into their work, we have developed the following definitions:

Component	Definition	Application
<b>Safety</b>	May refer only to worksite safety, or it may encompass environmental safety as well.	For which some standards exist in professional norms and regulation, please identify ways in which your project will help to improve compliance (e.g., by development of best practices or amendment of certain standards) or will advance these fields by identifying areas in need of additional or different guidance, particularly with respect to emerging areas of research and development.
<b>Security</b>	Refers to management of threats from nefarious actors.	Please describe how your proposal impacts the industry-wide or national scope of security in biotechnology.
<b>Sustainability</b>	Encompasses both environmental and economic sustainability of the workplace, the local environment, and the effects of any products developed pursuant to a BioMADE award.	Please describe how your project will meet or exceed emerging norms and standards for environmental protection, reduction of greenhouse gases, or development of business models that are adapted to long-term economic accessibility and stability for a wide range of users.
<b>Social Responsibility</b>	A broad concept which refers to fair distribution of both benefits and risks of the research, industrial processes, and products. It also includes equity goals in workforce development and social engagement, whether in the form of community consultation or as more imaginative projects to bring understanding of biotechnology to the public through the arts or other such efforts	Please describe your plans for community engagement, whether as education or consultation; or for workforce development that addresses the need for greater diversity and inclusion; or for creative initiatives to bring appreciation of biotechnology science and economic possibilities to the general public.

## 4. Proposal Submission Process and Timeline

### Concept Summary and Full Proposal Submission

Organizations that submitted concept paragraphs in summer 2022 will be contacted with an offer to receive formal feedback on the fit of their submission towards this Project Call. Organizations that did not submit a concept paragraph may submit a brief synopsis and receive technical feedback from a BioMADE program manager. Teams that would like to take this opportunity can find instructions in the [submission portal](#) and must submit no later than February 1, 2023. Receiving encouragement to submit a full proposal does not constitute an assurance of funding. This solicitation is open to all BioMADE members in good standing (except training tier members), and concept submission is not required in order to submit a full proposal.

### Timeline

Key dates for proposal submission and decisions for this Climate Change Project Call are as follows:

- **January 4, 2023:** BioMADE Climate Change Project Call is released
- **January 24, 2023 at 1:00pm CT/2:00 pm ET:** Proposer's Day
- **February 1, 2023:** Project Concepts due by 11:59pm PT (Optional)
- **March 1, 2023:** Full proposals due by 11:59pm PT
- **April 2023:** Notification of funding decision
- **April-May 2023:** Anticipated start date of projects

### Submission of Materials

[Full proposals should be submitted electronically via this submission portal.](#) instructions and templates for full proposal submission are provided on the [Climate Change Project Call page on BioMADE's website, found here.](#) Late submissions will not be considered. Project leads are expected to collect details on the budget and cost-share for all proposed sub-awardees. Please contact [proposals@biomade.org](mailto:proposals@biomade.org) should any issues with document submission arise.

### Confidentiality

Proposal packages submitted in response to this Project Call shall be labeled as "Confidential; Not for Distribution." This label is already in the provided template. Prior to the proposal decision and announcement to subawardees, the identity of the submitters and the content of the proposals will be limited to BioMADE staff and proposal reviewers within the U.S. Government. See more in the Proposal Evaluation section below.

### Proposal Formatting Requirements

Full proposals and attachments should be submitted electronically as a .docx file. Pages should be formatted with 1" margins on each side, single spaced, with 11-point minimum font (Times New Roman, Arial, or similar easy to read font). Smaller font size can be used in figures and figure legends. Technical

narratives should be a maximum of 13 pages in length. Using less than these maximum page limits is encouraged when possible.

## 5. Proposal Evaluation Criteria

### Full Proposals

Full proposals are evaluated by a panel of reviewers and will receive section scores and overall scores based on the criteria listed in the table on the following page. Each proposal will be read and evaluated by multiple reviewers and all reviewers on the panel will discuss each proposal prior to ranking for funding decisions. BioMADE Program Managers will use proposal ranking to guide funding of projects, but Program Managers have the flexibility to recommend projects based on innovation area to maintain a suitable balance of projects in each of the BioMADE technical modules.

### Confidentiality in Proposal Review

To protect confidential, proprietary, and strategic information of our member organizations, we will have an internal review process for submitted project proposals. All reviewers will be BioMADE staff or government employees who will protect the confidentiality of proposal content. Proposal information will be restricted to those individuals with a need to know during the review; however, proprietary information should be clearly marked and be limited to the minimum amount necessary to convey the highlights of the technical approach.

### Scoring Criteria

The following scoring criteria will be used to evaluate full proposals. Relative weights of scoring sections are noted in the table below.

Scoring Criteria	
Section (weight)	Scoring Criteria
Fit to BioMADE Mission and Climate Change Priority Areas (20)	<ul style="list-style-type: none"> <li>• Proposal addresses an important problem in bioindustrial manufacturing</li> <li>• Proposed solution addresses Technical Innovation area(s) and need identified in the Climate Change Priority Areas (above)</li> <li>• Has Department of Defense relevance</li> <li>• Project is clearly and demonstrably in MRL4-7</li> </ul>
Strength of Team (10)	<ul style="list-style-type: none"> <li>• Diverse team that includes an industry member</li> <li>• Project will clearly synergize to achieve goals that no single member could on their own</li> <li>• Solution addresses the selected funding priority and how successful completion of the project will impact the community</li> </ul>



Technical Approach (15)	<ul style="list-style-type: none"> <li>• Technical approach is sound and likely to yield interpretable results</li> <li>• Technical approach incorporates the best experimental methods available to generate data</li> <li>• For manufacturing projects, a process block flow chart is included in the proposal</li> </ul>
Project Schedule and Milestones (15)	<ul style="list-style-type: none"> <li>• Technical approach is appropriately scoped to the available time and funds, with intermediate milestones that will advance the project forward</li> <li>• Milestones are quantifiable such that progress on project can be objectively measured</li> </ul>
Impact (15)	<ul style="list-style-type: none"> <li>• Clear articulation of what the final outcomes will be upon successful completion of the project</li> <li>• Technical approach is sound and likely to yield interpretable results</li> <li>• Results will be of high impact to the entire field, regardless of what they are (i.e., even negative results would be impactful because of the design of the projects)</li> </ul>
Ecosystem Benefit (10)	<ul style="list-style-type: none"> <li>• Clear articulation of Intellectual Property (IP) that will be generated and made available from completion of the project. Note: While IP sharing is not a formal requirement of this funding opportunity, projects that elect to share IP or articulate a compelling benefit to the biomanufacturing community that will result from their work will be scored favorably.</li> </ul>
Safe, Secure, Sustainable, and Socially Responsible (4S) Integration (10)	<ul style="list-style-type: none"> <li>• Proposal clearly articulates an understanding of the 4S aspects of the proposed work</li> <li>• Proposal offers mitigation of any 4S concerns</li> </ul>
Budget and Cost share (5)	<ul style="list-style-type: none"> <li>• Budget is appropriate and aligned with tasks and deliverables</li> <li>• Value and quality of cost share</li> </ul>

## 6. Additional Information and Contact

### Intellectual Property (IP) Policy

This project call is distinct from typical BioMADE Project Calls and funded projects will be treated as “Directed Research Projects” that do not fall under the invention sharing requirements in the Intellectual Property Management Plan. Specifically, new IP generated on projects funded under this Climate Change Project Call will not be accessible to other BioMADE members as described in the IPMP unless the project specifically proposes to share selected IP with the BioMADE community. Project-specific IP considerations will be determined during contracting.

### Contact

Address all questions concerning the Climate Change Project Call by contacting [proposals@biomade.org](mailto:proposals@biomade.org).

## Appendix A: Cost Share Guidelines

Cost share is an important part of BioMADE, which is funded through a Cooperative Agreement with the United States Department of Defense. **Project awardees receiving funds from BioMADE are sub-recipients under the Cooperative Agreement.** This Appendix offers guidance for cost share required by BioMADE funded project awards. Guidance for cost share required as part of BioMADE's annual membership dues may be found on the BioMADE website.

The minimum cost share for BioMADE Institute-funded projects is 1:1. The cost share ratio must be maintained throughout the life of each Institute-funded project, as well as the overall BioMADE program. For a project with a 1:1 cost share ratio, for example: a sub-awardee provided \$250,000 in Institute funded project funds would be required to contribute \$250,000 in cost share, for a total project amount of \$500,000. The 1:1 match can be divided between partnering entities at their discretion but must adhere to Federal guidelines.

Project cost share is a contribution made towards the sub-recipient's project that is beyond the amount funded by BioMADE. Allowable cost share items include costs, such as salaries and equipment, that directly benefit the project. Cost share is used for expenses eligible to be charged to the project but are instead charged to the sub-recipient. Costs that are not allowable to be charged to BioMADE are not allowable for cost sharing. As with costs directly charged to BioMADE, allowable cost share expenses must be reasonable, allocable, and consistent with the terms of the award. Examples of unallowable cost sharing can include items such as alcoholic beverages and facility construction costs.

Eligible cost share must meet all the following criteria: verifiable from sub-recipient records; not from federal funding sources or included as contribution to any other federally-assisted program(s); necessary and reasonable for proper and efficient accomplishment of the project or program objectives; allowable as a direct cost under applicable federal cost principles; and falls within defined cost principles as defined in [2 CFR 200.306](#), and provisions of Chapter I, Subchapter C of Title 32, CFR, "DoD Grant Agreement Regulations" Other than part 33.

A detailed budget of how the funds will be distributed across various cost categories should be provided to allow BioMADE to review/approve any associated costs being used as cost share. The sub-recipient is responsible for providing the total amount and/or source of cost share accepted by the sponsor. Should the actual value, source, or type of cost share change, you will need to contact BioMADE as soon as possible.

### Cash and Cash Equivalent Cost Share

Any contribution of funds, services or materials for which the sub-recipient is required to pay cash and which would normally be authorized for reimbursement as a direct or indirect charge to the sub-award. Examples include paying labor (including benefits and direct overhead associated with that labor), acquiring materials and authorized travel. Equipment purchases over \$5,000 require approval by BioMADE. To the extent feasible, volunteer services shall be supported by the same methods used to support the allocability of regular personnel costs. Overhead and General and Administrative costs for project participants are also sources of cash cost share. Only the additional resources or monies spent that will be provided to carry out the current project can be counted. Independent Research and Development (IR&D) funds may also be used as cost share when provided in direct support of BioMADE. Cash contributions cannot include profit or fee.

## In-Kind Cost Share

In-kind cost share may include labor, authorized travel, materials, and equipment. In-Kind Cost Share is defined as the reasonable value of such cost items, loaned/provided equipment, materials or other property used in the performance of BioMADE and the resulting Institute-funded project statement of work. In-kind contributions are sometimes hard to value (such as space or use of equipment and intellectual property). The in-kind value of equipment (including software) cannot exceed its fair market value and must be prorated according to the share of its total use dedicated to carrying out the project. Outreach activities and tech transfer activities can be considered allowable cost share if they are necessary and reasonable for the proper and efficient accomplishment of project or program objectives (i.e., contained in a Statement of Work). The in-kind value of space (including land or buildings) cannot exceed its fair rental value and must be prorated according to the share of its total use dedicated to carrying out the project. Intellectual Property value should primarily be determined commensurate to its fair market value.

## Cost Share Reporting and Documentation

Documentation for all cost share expenditures must be included on each monthly sub-recipient invoice and provided to BioMADE quarterly/annually and at the conclusion of the project to ensure that the commitment has been fulfilled. Supporting documentation of all cost and cost share incurred must be maintained by the sub-recipient and provided to BioMADE. Supporting documentation must be available for audit by Government or BioMADE. An audit of cost share may be initiated at any time by the BioMADE or the federal funding agency.

## Quarterly Cost Share Reports

Reporting must be completed quarterly, on standard reporting templates to be provided by BioMADE. A link to current Federal Post-Award reporting form SF-425 is included in Exhibit I below.

## Quarterly Financial Status Reports

Sub-recipients shall submit Financial Status Reports to BioMADE quarterly using standard reporting templates provided by BioMADE. In addition to the Quarterly Cost Share Reports, this may include Standard Form 425. Subrecipient must maintain such books, records, documents and other supporting data to verify the in-kind contributions from the sub-recipient for 3 years from the date of the final payment by the Institute to the subrecipient. Quarterly reports are due 60 days after the end of each calendar quarter (March 31, June 30, September 30, December 31). A fillable version of the Standard Form 425 is linked in Exhibit I below.

## Compliance

Sub-recipients that do not comply with cost share requirements may be subject to payment garnishment commensurate with their cost share deficit. For instance, if a sub-recipient's cost share requirement is 1:1 and their current invoice reflects a cumulative total of \$10,000 federal funds incurred, their cumulative cost share contribution must meet or exceed \$10,000. Cost share contributions in excess of the ratio required by the member's sub-award are not grounds for additional payment using federal funds. Members will only be reimbursed for actual costs incurred, provided the sub-award's funded amount has not been exceeded and cost share requirements have been met.

### Sub-Award Modifications

When a modification to a sub-award incorporates additional scope or provides additional Government funds, the status of cost share should be evaluated to ensure that the project cost share ratio contained in the sub-award remains appropriate. If the amount of Government funds deviates from the original total, either by adding or deobligating Government funds, the cost share dollar amount must be adjusted by sub-award modification to ensure the original cost share ratio is maintained.

### Types of In-Kind Cost Share

Labor	Services furnished by professional and technical personnel, consultants or other skilled and unskilled labor that are not charged directly to a BioMADE project or other Government program. The service is an integral and necessary part of an approved project, or to BioMADE. Labor rates for services shall be consistent with those paid for similar work in the labor market in which the sub-recipient competes for the kinds of services involved. Paid fringe benefits that are reasonable, allowable and allocable may be included in the valuation.
Travel	Travel taken and donated in support of an approved BioMADE project, program, or meeting may be included as cost share, provided that all costs are reasonable, allowable, and allocable under the sub-recipient's applicable cost guidelines and not charged directly to a BioMADE project or other Government program.
Materials	Donated supplies or materials may include laboratory supplies or workshop and classroom supplies, provided that all costs are reasonable, allowable, and allocable under the sub-recipient's applicable cost guidelines and not charged directly to a BioMADE project or other Government program.
Equipment	For support activities that require the use of equipment, buildings or land, normally only depreciation or use charges for equipment and buildings may be made. However, the full value of equipment or other capital assets and fair rental charges for land may be allowed, provided that the charges are approved and an integral and necessary part of an approved project or the BioMADE program, provided that the equipment is not charged directly to a BioMADE project or other Government program. The value of donated equipment shall not exceed the fair market value of equipment of the same age and condition at the time of donation.
Indirect Costs	Unrecovered indirect costs may be included as cost share, provided that the costs are consistent with the sub-recipient's approved negotiated indirect cost rate, or other allowable rate such as the de minimis rate (10%), and evidence of such is provided.



## Exhibit I

[Link to Standard Reporting Form SF-425.](#)