



Bioindustrial Manufacturing and Design Ecosystem

EDUCATION AND WORKFORCE DEVELOPMENT

An open request for proposals

APRIL 2021
www.biomade.org

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1. Introduction to BioMADE

BioMADE is a DoD-led Manufacturing USA Innovation Institute (MII) 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 new pilot-scale bioindustrial manufacturing infrastructure and has a national network of over 100 members spanning industry, academia, and non-profit organizations. Its primary aim is to accelerate the commercialization of new bioindustrial manufacturing technologies by guiding them through the pilot-scale Manufacturing Readiness Levels (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.

Education and workforce development (EWD) priorities will be established and updated annually by the BioMADE EWD Committee, a working group composed of representatives from member organizations and other relevant stakeholders. The Bioindustrial Manufacturing EWD Roadmap will lead directly to BioMADE Project Calls focused on the most pressing needs of the community. In a continuing effort to advance the needs of the member organizations, BioMADE is establishing a separate funding mechanism via an Open Request for Proposals (RFP) to give member organizations an opportunity to identify short-term, but still high-impact projects that will benefit the community. This packet describes the purpose, process, and eligibility criteria for the Open RFP mechanism.

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.

2. Open RFP program overview and eligibility

Program Overview: Part of the BioMADE mission is to leverage a cross-section of stakeholder expertise to create, bolster, and adapt education and workforce development programs and platforms to grow the domestic bioindustrial manufacturing workforce. BioMADE will take a multifaceted approach to education and workforce development, supporting professional development of instructors and educators, project-based classroom programs integrating cutting-edge research, and community-based outreach programs. This ensures that the next-generation workforce *and* much needed entry-level workers can be engaged and trained in response to industry needs. BioMADE's EWD programs will provide comprehensive training and mentorship experiences that not only prepare a future generation of highly skilled workers for the bioindustrial workforce, but also include opportunities for cutting-edge continuing education and professional development for the current workforce. To facilitate this process, BioMADE is releasing the following project call to solicit proposals that will further BioMADE's education and workforce development mission and priorities.

Eligibility: This funding opportunity is only open to BioMADE members. Membership is required at the time of proposal submission for the lead organization, and will be required for each team member prior to receiving BioMADE funds. Only suppliers from whom standard parts, components, or materials are acquired based on a part number from their catalog are exempted from this requirement. It is the responsibility of the project lead(s) to communicate this requirement to their respective partners, and coordinate their membership with BioMADE. Descriptions of membership information is available from BioMADE upon request (hello@biomade.org). **Funding is intended for the development of new educational workforce development materials or programs, not for continued operation of existing programs.**

Funding availability: A total of \$2,000,000 is available for this program to fund projects with an expected project duration of 18-24 months, although longer project periods will be considered if they can be sufficiently justified. There are no minimum or maximum budget requirements, but budget requests should match the scope of the proposed project and have a clear justification based on the impact of the proposed work. Generally, we anticipate appropriate projects will have total project budgets under \$500,000. BioMADE reserves the right to make one, multiple, or no awards as a result of this solicitation. White papers must meet the minimum requirements of this call to be considered eligible for full proposal consideration. 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 1:1 with in-kind/cash from awarded teams. Cost sharing includes cash and third-party in-kind such as equipment, facilities, and manpower. State and Local funds, as well as private industry funding, can be used as cost-share; however, Federal funds may not. The 1:1 match can be divided between partnering entities at their discretion. Detailed descriptions of allowable cost-share can be found in US Government documents DoDGARs 32.23 and 34.13. More detailed cost-share guidelines are attached as Appendix B.

3. Guidelines for successful proposals

- a. **Priority Funding Areas:** BioMADE has been tasked with creating a holistic education and workforce development program that will advance the current and future bioindustrial manufacturing workforce. While bioindustrial manufacturing shares some traits with other industry sectors, the products, processes and business drivers are often unique. Developing educational materials and programs that are specifically tailored to bioindustrial manufacturing will be a core focus of BioMADE EWD projects. This work will be continually aligned to emerging industry needs by sustained engagement with the BioMADE membership and annual updating of the EWD Roadmap. In this project call, BioMADE has identified three key areas of priority:
1. **Building awareness:** Raising awareness of the potential of bioindustrial manufacturing as a significant component of the developing bioeconomy is important to meet growing workforce needs. BioMADE is positioned as the leader in promoting and supporting this work across the nation and seeks to fund projects that will generate increased awareness of bioindustrial manufacturing with key stakeholders. Targets include traditional (e.g. community college and university students) and non-traditional (e.g. veterans, manufacturing workforces that require re-training, etc.) audiences.
 2. **Training the pre-employment workforce:** While there are several examples of successful pre-employment training programs across biotechnology broadly, gaps exist between the current pre-employment education programs and the needs of the bioindustrial manufacturing industry. BioMADE seeks proposals for innovative education and workforce development programs that focus on closing the skills and competencies gaps identified by our industrial members. Of particular interest are proposals that focus on training opportunities that integrate learning across multiple disciplines, including but not limited to: engineering, biology, chemistry, materials science, computer science, data analytics and economics. Projects in this area should offer direct value to BioMADE members and should not be focused on manufacturing of biopharmaceuticals. Partnerships that allow for training on industrial scale equipment are highly encouraged. Projects may focus their impact on a regionally specific industry need or be national in scope, but the audience and alignment to BioMADE's membership should be clear.
 3. **Advancing the current workforce:** With the rapid pace of technological development within bioindustrial manufacturing, opportunities to modernize the current workforce are as imperative as cultivating the next generation. To this end, BioMADE requests proposals that provide innovative approaches for training the current workforce to develop skills related to cutting edge technologies. Projects in this priority area should focus on the acquisition of specific new skills or competencies, not general preparedness. This could include (i) training in an emerging industry-relevant technology for the existing bioindustrial workforce or (ii) training in core bioindustrial skills and competencies for non-bioindustrial workforces (e.g. companies not currently integrating bio-based processes that could benefit from incorporating them).
- b. **What constitutes Bioindustrial Manufacturing?** Bioindustrial manufacturing is the use of whole cells or biomolecular catalysts for the at-scale production of a commodity. Production environments typically consist of facilities with large-scale fermentation systems, down-stream processing/purification capabilities, and product formulation facilities. Excluded from BioMADE's

mission is the manufacturing of medicines or therapeutic bioproducts. Educational materials that are developed to address the unique aspects of bioindustrial manufacturing compared to other manufacturing sectors are strongly encouraged.

- c. **Cross-institute collaboration.** BioMADE is one of 16 [Manufacturing USA Institutes](#) that span across several manufacturing sectors. Proposals that address intersectional EWD needs between BioMADE and another Manufacturing USA Institute should be highlighted in the white paper. 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.
- d. **Team composition.** BioMADE is an industry-focused institute. Proposal teams are strongly encouraged to include at least one industry organization. BioMADE is focused on training the domestic workforce, so international partnering is not encouraged unless there is a compelling justification. Any team seeking to spend funds outside the US is required to discuss the plan and justification with a BioMADE Program Manager (PM) **prior to** submitting a full proposal, as foreign participation requires DoD approval. 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.
- e. **BioMADE membership.** BioMADE membership is required for all participating organizations (i.e. lead and sub-awardees) prior to receive funding, but only for the lead organization at the time of proposal submission. If an organization is solely providing supplies or services at catalogue price, then they are considered suppliers/service providers to the project and not partner organizations. Such organizations are not required to be BioMADE members and will not receive member benefits.
- f. **Safety, Security, Sustainability, and Social Responsibility (4S).** It is within BioMADE's mission to advance the bioindustrial manufacturing community in a way that is cognizant of the broader society. Successful proposals must address how the project will integrate 4S components, how progress in these components will be measured and communicated, and what the anticipated outcome/impact will be. For more information on the types of activities that address BioMADE's 4S mission, see the 4S mission statement on the BioMADE website.

4. Proposal submission process and timeline

This will be a two-step solicitation. All proposals require submission of a maximum three-page, single-spaced white paper prior to submission of a full proposal. White papers will be reviewed by internal BioMADE staff to determine their ability to address the requirements of the Open RFP instructions. Suitable projects will be invited for full proposal submission. Invitation for full proposal submission does not constitute an assurance of funding.

Timeline. Key dates for proposal submission and decisions for this Open RFP are as follows.

- **April 22, 2021:** BioMADE Open RFP is released with member newsletter
- **April 30, 2021:** BioMADE launch event will coincide with an optional proposer's day to discuss program requirements and answer questions about the proposal submission process.
- **May 28, 2021:** White papers are due by 11:59 pm EST.
- BioMADE anticipates providing invitations to submit a Full Proposal to selected teams *within a month* of the White Paper deadline. Furthermore, teams should plan to submit Full Proposals within a month of notice of selection.

Submission of materials. White papers and full proposals should be submitted electronically by emailing to proposals@biomade.org with the email subject line "**BioMADE 2021 EWD Open RFP - [lead organization name]**". Proposal documents should be submitted as word documents, PDF documents, and/or excel files (budgets must be recorded using the budget template in Appendix B). Late submissions will not be considered. Prime recipients are generally expected to collect details on the budget and cost-share for all sub-awardees. In the event that details of budget or cost share cannot be shared within a team due to confidentiality requirements, prime recipients should report sum totals from each sub-awardee and sub-awardee institutions can submit detailed budgets and cost-share plans to proposals@biomade.org as attachments with an email subject line "**Sub-award details 2021 EWD Open-RFP [lead organization name] - [sub-awardee name]**".

5. Proposal requirements and format

Formatting requirements. Both white papers and full proposals should be submitted electronically as a .pdf or .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. White papers should be a maximum of 4 pages in length, not including the coversheet, cost-share plan, or Gantt Chart. A White Paper Template file is included with the RFP packet, and detailed instructions on filling out the template are found in Appendix A of this RFP. Full proposals should be a maximum of 12 pages in length. Using less than these maximum page limits is encouraged when possible.

Filename convention for submitting white papers or full proposals: [PI's last name]_[Organization Name]_[EWDwhitePaper or EWDfullProposal]_[yyyymmdd]. If more than one white paper is submitted by the same author in a fiscal year, use [PI's last name]_[Organization Name]_[EWDpreProposal or EWDfullProposal]_[keywords]_[yyyymmdd], where the keywords are 1-3 words that adequately identifies the proposed work effort.

Content requirements for White Papers. White papers need to briefly summarize the following information that justify the appropriateness to this project call. A Microsoft Word template is included with the RFP materials and should be used to draft the white paper.

1. Cover Page (not included in page count)
2. Work statement (0.5 page)
3. Justification/impact statement (0.5 page)
4. Role of team members in overall project (0.5 page)
5. Summary of approach organized by Project Tasks (2 pages)
6. Plan for cost share (not included in page count)
7. Gantt chart with major milestones and objectives (not included in page count)

Content requirements for Full Proposals. Full proposals should answer the following questions in 12 pages or less: *What will you do? Why is this important? How will you do it? How long will it take? What are the long-term benefits of this project? How much will it cost? Who will do the work?* **A full proposal template will be provided to teams invited for full proposal submission.** This template should be used to provide the information described below.

- 1. Background and relevance (1-2 pages).** Describe the key education or workforce development problem you are addressing and how it is aligned to the BioMADE EWD mission.
- 2. Proposed innovation (up to 1 page).** Summarize the key innovation that will be developed and tested in this project. Describe the impact this innovation will have on the bioindustrial manufacturing ecosystem.
- 3. Educational Approach and Justification (3-6 pages).** The major objective of the project proposal is to provide a clear description of the educational materials or programs developed under this award and anticipated outcomes. This discussion should provide insight into the pedagogical foundation/justification for pursuing this project. The proposal should specify metrics by which the new program will be evaluated and assessed.
- 4. Project Schedule and Milestones (1-2 pages).** Summarize the anticipated schedule of events and milestones for the project as a Gantt Chart. Whenever possible, include quantitative metrics for successful completion of the project as well as interim milestones. The total timelines represented by the milestones should generally not exceed two years.

5. Products and deliverables (up to 1 page). Describe the reports, software, courses, programs, and other products that are expected to result from the project. Describe how these products will benefit the broader BioMADE community, for example through member-restricted access, data-sharing, etc. Details concerning IP-generated on BioMADE projects are described in the Additional Information section below.

6. Implementation Plan and Sustainability Strategy (1 page). Proposals should include an implementation plan that demonstrates how the products of the EWD project will be delivered to students or educators. Proposals should describe the sustainability of educational materials to have an impact after the initial funding period.

7. Safe, Secure, Sustainable, and Socially Responsible (4S) integration (up to 1 page). Please outline how funded or cost-shared effort on this project will advance (4S) mission of BioMADE to engender a robust culture of responsible and safe conduct for the bioindustrial manufacturing ecosystem. Goals articulated in this section should be connected to the project schedule and milestones and to the budget/budget justification.

8. Key personnel (1 page per person, not included in total page count). Identify the key personnel to include the Principal Investigator and key personnel within the partnering organizations who will be involved.

9. Facilities and Infrastructure (not included in total page count). Provide a description of the facilities and infrastructure, including critical equipment, that will be leveraged to complete the proposed work.

10. Budget and Budget Justification (not included in total page count). Provide a detailed budget of the cost associated with the initiative. Cost description MUST contain a detailed plan for providing cost-share at a 1:1 match of BioMADE funds. The total budget requested in the Full Proposal can decrease from that estimated in the white paper, but cannot increase more than 10%.

11. Foreign Participation Plan. Teams planning on incorporating foreign organizations as team members should contact BioMADE for pre-approval. Details on what extra information will need to be included in the full proposal will be provided at that point.

12. Quad Chart. The slide should contain information on the Team, Innovation, Target audience, and Implementation plan. A template that should be used to create the Quad Chart will be provided with the invitation to submit a full proposal.

6. Proposal evaluation criteria

White Papers. White papers (pre-proposals) will be evaluated on suitability to the guidelines, eligibility requirements, and BioMADE mission. Proposals that are deemed competitive for funding will be invited to submit a full proposal. Prior to full proposal submission, a BioMADE PM will schedule a meeting with the proposers and other key personnel to discuss the white paper. Invitation to submit a full proposal is dependent on the debrief with the program manager. An invitation to submit a full proposal does not guarantee funding.

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. The BioMADE PM will use proposal ranking to guide funding of projects, but PMs have the flexibility to recommend projects based on innovation area to maintain a suitable balance of projects in each of the BioMADE priority areas.

The following scoring criteria will be used to evaluate full proposals. Relative weights of scoring sections are noted in the table below. A White Paper evaluation table is not given, but will similarly emphasize innovation, educational impact, and feasibility.

Section (weight)	Scoring Criteria
Background and Relevance (5)	<ul style="list-style-type: none"> ● Proposal addresses an important problem in bioindustrial manufacturing education or workforce development
Innovation (10)	<ul style="list-style-type: none"> ● Proposed solution is innovative, disruptive ● Solution will broadly impact the bioindustrial manufacturing ecosystem
Educational Approach and Justification (15)	<ul style="list-style-type: none"> ● Educational approach is pedagogically sound and likely to yield desired outcomes ● Educational approach incorporates the appropriate tools and technologies
Project Schedule and Milestones (10)	<ul style="list-style-type: none"> ● Technical approach is appropriately scoped to the available time and funds, with intermediate milestones that will advance the project forward ● Milestones are quantifiable such that progress on project can be objectively measured
Products and deliverables (10)	<ul style="list-style-type: none"> ● Clear articulation of what the final outcomes will be upon successful completion of the project
Implementation Plan and Sustainability Strategy (15)	<ul style="list-style-type: none"> ● Feasibility of implementation plan ● Reach of educational and workforce development materials ● Duration of impact
Personnel, Facilities, and Infrastructure (5)	<ul style="list-style-type: none"> ● Suitability of personnel expertise and physical infrastructure available to accomplish educational goals
Budget and Cost-share (5)	<ul style="list-style-type: none"> ● Cost and cost realism ● Value and quality of cost-share

7. Additional Information and Contact

IP policy

The BioMADE IP policy describes how background IP related to a funded project and new IP generated on an institute project will be handled. Details on BioMADE's IP policy are found in our Membership Agreement documents, which are available upon request.

Contact: Address all questions concerning this Open RFP to the BioMADE team via an email with the subject line "EWD RFP Question" sent to hello@biomade.org. White paper and full proposal submissions should be sent to proposals@biomade.org.

Appendix A: White Paper Detailed Instructions

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A Microsoft Word form (“WhitePaperTemplate.docx”) has been provided on our webpage and should be used as a template for White Paper submissions. Please use the clickable forms ‘text entry boxes’ when possible. The form is not ‘locked’, so it is possible to tailor the Technical Description (number of Tasks, Objectives, etc.) to the specific project. Instructions on how to add additional Tasks are given in the form.

Cover Sheet

Project Information:

Project Title:	Introduction BioIndustrial Manufacturing to a broader diversity of college-age students		
Keywords (3):	Community College, Social Media, Student Engagement		
BioMADE Funding Priority Area: (check all that apply)	<input checked="" type="checkbox"/> <i>Awareness Building</i>	<input type="checkbox"/> <i>Pre-employment Training</i>	<input type="checkbox"/> <i>Advancing the current workforce</i>
Date of submission:	18-May-2021		

Primary Submitter Information:

Project Lead:	Benjamin Franklin		
Lead Organization:	Company Name, INC		
Organization address:	1500 Gortner Ave, Saint Paul, MN, 55108		
Phone Number:	[number at which PI can be reached]	Email Address:	BFranklin@company.com
Lead organization BioMADE membership level:	Industry - Gold		

Partner Organization Information: (use as many lines as necessary)

Partner Organization 1:	Adams University	Membership Level*:	Academic - Governing
Partner Organization 2:	CCC Solutions, LLC.	Membership Level*:	Industry - Start-up
Partner Organization 3:	Click or tap here to enter text.	Membership Level*:	Choose an item.
Partner Organization 4:	Click or tap here to enter text.	Membership Level*:	Choose an item.
Partner Organization 5:	Click or tap here to enter text.	Membership Level*:	Choose an item.

*if TBD, select anticipated membership level at start of project.

Budget and Duration Estimates:

Total Project Cost:	\$ Sum two cells below	Start Date:	15-Sep-2021
Requested BioMADE funds:	\$ Total requested from BioMADE	Duration (months):	18 months
Contributed Cost-share:	\$ Should meet or exceed above cell		

Work statement: *[0.5 page max]*

Use this space to enter a clear and concise summary of the work to be done. Your summary should include the scale of production, the location of the physical infrastructure that will be used, and the measurements/metrics that will be used to evaluate success of the project.

Justification/impact statement: *[0.5 page max]*

This section should briefly describe the problem that exists, the limitations of status-quo technologies to solve the problem, and the impact that success of the project will have on both the commercialization of a specific manufacturing process and on the bioindustrial manufacturing community as a whole. This section should clearly articulate who will benefit from success of the project, particularly when the data or processes generated will be of wide applicability to the community.

Role of team members in overall project: *[0.5 page max]*

List the key personnel, their job title, organizational affiliation, and roles and responsibilities on the project. At least one individual from each collaborating organization should be listed.

Benjamin Franklin (Sr. Process Engineer, Company Name). Dr. Franklin will be the overall project lead and Task 2 lead. He will be responsible for submitting quarterly reports to BioMADE, organizing weekly meetings for technical leads, setting near-term and long-term project goals, and communicating results. Dr. Franklin will also be responsible for integrating results and work products from sub-awardee institutions to reach the final milestone of a complete system demonstration.

Abigail Adams (Professor, Adams University). Dr. Adams will be responsible for leading Techno-economic analyses efforts Task 1. She will also lead database creation efforts as part of Objective 2.4, including designing database structure and ensuring FAIR data standard compliance. She will be responsible for setting near-term and long-term goals and preparing written communications related to virtual tools and infrastructure developed on this project.

Fredrick Douglas (CTO, CCC Solutions, Inc). Dr. Douglas will lead activities at CCC Solutions related to Task 3 (Objectives 3.1 and 3.2). He will be in charge for developing counter-current chromatography system suitable for pilot-scale purification of target oligosaccharides. Major responsibilities include leading the work on the manufacturing floor, leading the pilot-scale demonstrations, and organizing/communicating results to the project lead during weekly meetings.

Summary of technical approach organized by Project Tasks: *[2 pages max]*

The Task tables should be tailored to fit the number of Tasks (broad category) and Objectives (specific goals under each Task). An example Task summary is given below.

Task 1: Develop a continuous purification of glucosinolates	Complete: Mar-2022
TEAs suggest that for bio-industrial manufacturing of glucosinolates by yeast fermentation to be commercially viable requires a method for continuous production/purification at industrial scales. This task will establish such a system by connecting continuous flow counter current chromatography to a 5000L scale fermentation. After first establishing protocols for multi-day continuous fermentation/purification processes, we will integrate downstream solvent evaporation and recovery to increase production efficiency.	
Objective #1.1: <i>Develop continuous counter-current chromatography methods suitable for glucosinolates</i>	Complete: Sep-2021
Objective #1.2: <i>Demonstrate recycling stream for solvents used in counter-current chromatography</i>	Complete: Mar-2022

Plan for cost share (not included in total page count)

Achieving a 1:1 cost-share for each project is required. While detailed budgets and cost-share documents are not needed at the White Paper stage, we ask that each team provide a high-level plan on how the cost-share obligation will be met. The plan should include a description of the anticipated source of cost-share (e.g. Federal funds cannot be used for cost-share, but state-funds or company funds can), and the mechanism by which it will be realized (e.g. in-kind labor on the project, purchase of supplies and materials, etc.)

Gantt chart with major milestones and objectives (not included in total page count):

An editable Microsoft Word table is included for teams to produce a high-level Gantt chart to summarize the work schedule on the project. Short descriptions should be given to each Task, Objective, and Milestone in the left column of the chart. Boxes in the right can be clicked to fill them in. Milestone rows should only have a single box at right filled in, corresponding to the quarter in which that milestone is scheduled to be reached. Task and Objective rows can have multiple boxes at right filled in, corresponding to the quarters in which activity towards those Tasks/Objectives will take place. The Gantt Chart in the White Paper Template contains an example that can be used for reference and deleted prior to submission. Rows can be added or deleted as needed. To maintain formatting, copy-paste a template row into a newly added row.

Note on maximum page/section lengths: We list maximum section lengths in the White Paper Template, but we anticipate that sufficiently detailed responses in each field are possible well-within this maximum length. Proposals should be clear and concise, and proposers should not feel like they need to provide extra information to use all of the allowed space.

Appendix B: 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. This document covers two types of cost share: cost share required by Institute membership tier obligations and cost share required by project awards. Cost share is required for all Institute-funded projects. Cost sharing or matching on project awards is defined as that portion of project or program costs not borne by the Federal Government.

BioMADE provides this guidance, which has been modeled after guidance provided by the MII NextFlex, to assist its members in understanding how cost share works, including the various government regulations and defining terms. BioMADE, its members, and sub-recipients are subject to the federal regulations governing federally funded programs, noted in the following paragraphs.

The rules governing cost share for BioMADE are set forth and defined in 2 Code of Federal Regulations (CFR) part 200, “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards,” as modified and supplemented by the Department of Defense’s (DoD) implementation found at 2 CFR part 1104, “Implementation of Governmentwide Guidance For Grants and Cooperative Agreements” (85 FR 51158, 10/19/2020). Provisions of Chapter I, Subchapter C of Title 32, C.F.R., “DoD Grant and Agreement Regulations,” other than parts 32 and 33, continue to be in effect and are incorporated herein by reference, with applicability as stated in those provisions. 2 CFR 200 describes the cost principles for determining allowability of costs applicable to Members and BioMADE project awards that is determined by the type of entity. **Members and project awardees are at all times solely responsible for ensuring that their Cost Share complies with [2 CFR 200](#).** BioMADE is the recipient of government grant funds pursuant to its Cooperative Agreement with the Department of Defense. Project awardees receiving grant funds from BioMADE are sub-recipients under the Cooperative Agreement.

DoD Grant and Agreement regulations, as applicable, based on the type of organization providing the cost share, are as follows:

Regulation	Applicability
DoDGARs 32.23*	Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations
DoDGARs 34.13*	Administrative Requirements for Grants and Agreements with For-Profit Organizations

*See Exhibit I below

Types of Cost Share

For cost share to be considered allowable, it must meet the following criteria from DoDGARs, Section 32.23(a):

- Are incurred or contributed during the sub-recipient's Institute-funded project period of performance, or the BioMADE Cooperative Agreement period of performance, as appropriate.
- Are verifiable from the sub-recipient's records.
- Are not included as contributions for any other federally-assisted project or program.
- Are necessary and reasonable for proper and efficient accomplishment of an Institute-funded project or BioMADE program objectives.
- Are allowable under the sub-recipient's applicable cost principles.
- Are not paid by the Federal Government under another award, except where authorized by Federal statute to be used for cost sharing or matching.
- Are provided for in the sub-recipient's approved budget for Institute-funded projects.
- Are contributed through BioMADE membership participation efforts that are documented and have benefit to the BioMADE community.
- Conform to other provisions of DoDGARs, as applicable.

Cash and Cash Equivalent Cost Share

Any contribution of funds, or of 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 in some cases the purchase of new equipment. 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. Cost share can also be contributed through BioMADE membership participation efforts that are documented and have benefit to the BioMADE community (*e.g.*, labor and travel costs in support of participation in BioMADE Technical Committee or Governing Council meetings).

In-Kind Cost Share

In-kind cost share may include labor, travel, materials, equipment or property and other elements of cost, as further defined in the table below. 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.

Types of In-Kind Cost Share

<p>Labor</p>	<p>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.</p>
<p>Travel</p>	<p>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.</p>
<p>Materials</p>	<p>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.</p>
<p>Equipment</p>	<p>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.</p>
<p>Indirect Costs</p>	<p>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.</p>

Cost Share Reporting and Documentation

Cost share reporting will be included on each quarterly sub-recipient invoice. 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.

Cash and Cash Equivalent Cost Share

Documentation will include evidence of all cash received from any contributor. This evidence may be in the form of a letter and a bank account statement displaying an electronic funds transfer from a cash contributor to the institute's bank account.

In-Kind Cost Share

In-kind contributions must be evidenced by written documentation that is signed by the contributor that describes the contribution, its value, and when and for what purpose it was donated. The sub-recipient must provide an acknowledgement of the contribution. The sub-recipient must have documented evidence of the in-kind contribution from the contributor that contains:

- The value of each in-kind contribution established in accordance with the applicable cost principles
- The valuation and allocation methods used by the sub-recipient for purposes allocating in-kind contributions
- A list of the type of in-kind contribution

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 II 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. Sub-recipient 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 sub-recipient. 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 II 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.

Achievement of Cost Share Goals

Cost Share Ratio

A specific cost share ratio is established during sub-award negotiations and is included in the sub-award. 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.

Cost Share Percentage

The cost share percentage to be contributed by the sub-recipient is calculated by dividing the cost share dollars by the total agreement ceiling (i.e., Institute-funded project funds + cost share or federal funds + non-federal funds). Significant deviations from the cost share ratio must be approved by the BioMADE Executive Director. Both the cost share ratio and specific cost share dollar amount are detailed in the subaward.

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 de-obligating Government funds, the cost share dollar amount must be adjusted by sub-award modification to ensure the original cost share ratio is maintained.

Cost Share FAQs

Membership Cost Share

Q: Can any cost share incurred be counted toward membership dues and obligations?

A: No, cost share contributions do not count toward BioMADE membership dues. Membership contribution requirements may be met by payment of cash membership dues and in-kind donations. Membership Cost Share is non-project-related and contributed through various means, including but not limited to (i.) dedicating documented time/effort to BioMADE-sanctioned activities that advance the institute's mission, (ii.) provision of equipment or other physical infrastructure to BioMADE, and (iii.) provision of software or other virtual infrastructure to BioMADE.

Q: How and when should I report member cost share?

Reporting must be completed quarterly, on standard reporting templates to be provided by BioMADE.

Project Cost Share

Q: What can count as cost share?

A: Any work on an Institute-funded project that is not reimbursed by the Federal Government can be counted as cost share, provided it meets the requirements noted in this guidance document. Also, participation in a BioMADE event (e.g., quarterly meetings, program review, Governing Council meetings, Technical Council meetings, etc.) can be counted as cost share, provided those costs have not already been reimbursed by the Federal Government. Other cost share brought to BioMADE to further its mission and for the benefit of its members will be reviewed and evaluated on a case-by-case basis to determine value and allowability.

Q: Can I contribute cost share before a project begins?

A: No, cost share must run concurrent to the project period of performance denoted in a member's BioMADE sub-award, or the BioMADE program when appropriate.

Q: How and when should I report project cost share?

A: Reporting should be completed quarterly and should accompany invoices for payment under a member's sub-award. Additionally, members may be required to submit a [Standard Form 425](#) (Financial Status Report) on a quarterly basis.

Q: If I have not incurred any cost share do I still need to file a report?

A: Yes, quarterly reports should be submitted, even if no cost share was incurred or contributed.

Q: Is supporting documentation required when filing a project cost share form?

A: Yes, supporting documentation is required with submission of quarterly project cost share reports. Additionally, the member reporting the cost share must keep all documents for audit purposes.

Q: How is a project cost share tracked at BioMADE?

A: All cost share is recorded and tracked by BioMADE specific to each BioMADE contributing member. Quarterly invoices will be reconciled with the quarterly Standard Form 425.

Q: How does a sub-recipient track project cost share for their subawardees?

A: Each sub-recipient is responsible for tracking Institute-funded project cost share for their 2nd tier subawardees (sub-sub recipients). All 2nd tier sub-awardee cost share must be included in the first tier sub-recipient's quarterly cost share reporting.

EXHIBIT I

Applicable DoDGARs Cost Share Guidelines

The following guidelines from the Department of Defense Grant and Agreement Regulations (DoDGARs) are provided for your convenience.

Part 32.23 - Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations

For the most up to date version of this guidance, please visit this [link](#).

§ 32.23 Cost sharing or matching

1. All contributions, including cash and third party in-kind, shall be accepted as part of the recipient's cost sharing or matching when such contributions meet all of the following criteria:
 - a. Are verifiable from the recipient's records.
 - b. Are not included as contributions for any other federally-assisted project or program.
 - c. Are necessary and reasonable for proper and efficient accomplishment of project or program objectives.
 - d. Are allowable under the applicable cost principles.
 - e. Are not paid by the Federal Government under another award, except where authorized by Federal statute to be used for cost sharing or matching.
 - f. Are provided for in the approved budget when required by the DoD Component.
 - g. Conform to other provisions of this part, as applicable.
2. Unrecovered indirect costs (see definition in §32.2) may be included as part of cost sharing or matching.
3. Values for recipient contributions of services and property shall be established in accordance with the applicable cost principles. If a DoD Component authorizes recipients to donate buildings or land for construction/facilities acquisition projects or long-term use, the value of the donated property for cost sharing or matching shall be the lesser of:
 - a. The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or
 - b. The current fair market value. However, when there is sufficient justification the DoD Component may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The DoD Component may accept the use of any reasonable basis for determining the fair market value of the property.
4. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services shall be consistent with those paid for similar work in the recipient's organization. In those instances in which the required skills are not found in the recipient organization, rates shall be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.
5. When an employer other than the recipient furnishes the services of an employee, these services shall be valued at the employee's regular rate of pay (plus an amount of fringe benefits that are reasonable, allowable, and allocable, but exclusive of overhead costs), provided these services are in the same skill for which the employee is normally paid.
6. Donated supplies may include such items as office supplies, laboratory supplies or workshop and classroom supplies. Value assessed to donated supplies included in the cost sharing or matching share shall be reasonable and shall not exceed the fair market value of the property at the time of the donation.

7. The method used for determining cost sharing or matching for donated equipment, buildings and land for which title passes to the recipient may differ according to the purpose of the award, if the purpose of the award is to:
 - a. Assist the recipient in the acquisition of equipment, buildings or land, the total value of the donated property may be claimed as cost sharing or matching; or
 - b. 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 DoD Component has approved the charges.
8. The value of donated property shall be determined in accordance with the usual accounting policies of the recipient, with the following qualifications.
 - a. The value of donated land and buildings shall not exceed its fair market value at the time of donation to the recipient as established by an independent appraiser (e.g., certified real property appraiser or General Services Administration representative) and certified by a responsible official of the recipient.
 - b. 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.
 - c. The value of donated space shall not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately-owned building in the same locality.
 - d. The value of loaned equipment shall not exceed its fair rental value.
9. The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties:
 - a. Volunteer services shall be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.
 - b. The basis for determining the valuation for personal service and property shall be documented.

Part 34.13 - Administrative Requirements for Grants and Agreements with For-Profit Organizations

For the most up to date version of this guidance please visit this [link](#).

§ 34.13 Cost sharing or matching

1. Acceptable contributions. All contributions, including cash contributions and third party in-kind contributions, shall be accepted as part of the recipient's cost sharing or matching when such contributions meet all of the following criteria:
 - a. They are verifiable from the recipient's records.
 - b. They are not included as contributions for any other federally-assisted project or program.
 - c. They are necessary and reasonable for proper and efficient accomplishment of project or program objectives.
 - d. They are allowable under §34.17.
 - e. They are not paid by the Federal Government under another award, except:
 - i. Costs that are authorized by Federal statute to be used for cost sharing or matching; or
 - ii. Independent research and development (IR&D) costs. In accordance with the for-profit cost principle in 48 CFR 31.205-18(e), use of IR&D as cost sharing is permitted, whether or not the Government decides at a later date to reimburse any of the IR&D as allowable indirect costs. In such cases, the IR&D must meet all of the criteria in paragraphs (a) (1) through (4) and (a) (6) through (8) of this section.
 - f. They are provided for in the approved budget, when approval of the budget is required by the DoD Component.

- g. If they are real property or equipment, whether purchased with recipient's funds or donated by third parties, they must have the grants officer's prior approval if the contributions' value is to exceed depreciation or use charges during the project period (paragraphs (b)(1) and (b)(4)(ii) of this section discuss the limited circumstances under which a grants officer may approve higher values).
 - h. If a DoD Component requires approval of a recipient's budget (see paragraph (a)(6) of this section), the grants officer's approval of the budget satisfies this prior approval requirement, for real property or equipment items listed in the budget.
 - i. They conform to other provisions of this part, as applicable.
2. Valuing and documenting contributions:
- a. Valuing recipient's property or services of recipient's employees. Values shall be established in accordance with the applicable cost principles in §34.17, which means that amounts chargeable to the project are determined on the basis of costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as cost sharing or matching, that full value shall be the lesser of the following:
 - i. The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or
 - ii. The current fair market value. However, when there is sufficient justification, the grants officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The grants officer may accept the use of any reasonable basis for determining the fair market value of the property.
 - b. Valuing services of others' employees. When an employer other than the recipient furnishes the services of an employee, those services shall be valued at the employee's regular rate of pay plus an amount of fringe benefits and overhead (at an overhead rate appropriate for the location where the services are performed) provided these services are in the same skill for which the employee is normally paid.
 - c. Valuing volunteer services. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services shall be consistent with those paid for similar work in the recipient's organization. In those instances in which the required skills are not found in the recipient organization, rates shall be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.
 - d. Valuing property donated by third parties.
 - i. Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the cost sharing or matching share shall be reasonable and shall not exceed the fair market value of the property at the time of the donation.
 - ii. Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets
 - iii. may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the grants officer has approved the charges.
 - iv. When use charges are applied, values shall be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:

1. The value of donated space shall not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately- owned building in the same locality.
 2. The value of loaned equipment shall not exceed its fair rental value.
- e. Documentation. The following requirements pertain to the recipient's supporting records for in- kind contributions from third parties:
- i. Volunteer services shall be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.
 - ii. The basis for determining the valuation for personal services and property shall be documented.

EXHIBIT II

Standard Reporting Form SF-425 [link](#)