CESMII Roadmap Projects Request for Proposals (RFP4) November 2022

- This is the Fourth Request for Proposals for CESMII, soliciting project proposals that cover industry demonstrations of Smart Manufacturing technologies in a supply chain.
- Approximately $1M in federal funding is allocated for this RFP, with a cost share match of $1M (total $2.0M)
- RFP proposal submission, selection and project launch dates are shown below:

Request for Proposals Issue Date	Nov 3, 2022
Informational Webinars	Nov 14, 2022
Proposal Submission deadline	Jan 22, 2023
Anticipated Project Selection Date	Feb 2023
Anticipated Project Start Date	Apr-May, 2023
Period of performance (max)	9-12 Months
Federal funding allocated	$1M
Cost-share allocated	$1M
Total funding allocated	$2.0M
Anticipated # of projects	4-6**
Federal funding per project	$50-500K**

[Total for RFP, not per project; ** depending on focus area]*

- Dates and funding amounts are subject to change – please refer to https://www.cesmii.org/resources-rfp4/ for updates.
- Full proposals need to be submitted directly by the proposed project lead organization to CESMII by email to roadmapprojects.info@cesmii.org .
- The RFP, templates and other related information are at https://www.cesmii.org/resources-rfp4/
- Questions regarding this opportunity can be submitted at roadmapprojects.info@cesmii.org. An attempt will be made to answer all questions. Questions and answers will be posted publicly on the RFP website https://www.cesmii.org/resources-rfp4/
- Informational webinars for this RFP will be held during the dates indicated above. Additional

information will be posted on the CESMII website: https://www.cesmii.org/resources-rfp4/

- **Do not include any proprietary information in the proposals.**

This document outlines the process that CESMII will use to solicit, review, and award projects for this RFP. CESMII reserves the right to adjust emphasis on the areas of interest, selection of proposals and negotiation of statement of work for selected projects based on the ongoing update to the institute roadmap.

Revisions

- Applicants are encouraged to refer to **https://www.cesmii.org/resources-rfp4/** for updates.

Mod. No.	Date	Description of Modification
1	8/12/2022	Draft
2	8/22/2022	Update to focus only on industry demonstration projects
3	9/12/2022	Update to include extended impact projects as part of focus area (total $1M federal for RFP), simplify document, per discussion with DOE
4	12/8/2022	Revise proposals submission deadline
5	01/12/2023	Revise proposals submission deadline

Contents

1 CESMII OVERVIEW

The Clean Energy Smart Manufacturing Innovation Institute ("Institute" or "CESMII") is one of 17 Manufacturing USA Innovation Institutes designed to revitalize American manufacturing and support domestic manufacturing competitiveness.

The Clean Energy Smart Manufacturing Innovation Institute (CESMII) was awarded to the University of California at Los Angeles (UCLA) under the U.S. Department of Energy (DOE) Cooperative Agreement DE-EE0007613. CESMII is a national network that brings together over $140 million in public-private investment and more than 150 partners from leading manufacturers and universities across the US. The Institute will accelerate Smart Manufacturing (SM) adoption through the integration of advanced sensors, control, platforms and modeling to radically improve productivity, precision, performance and energy productivity.

The overall objectives of the Institute are to:

1. Lead a national effort to develop, research, test, and widely validate SM technologies and practices in a continuously evolving manner,
2. Develop a roadmap for SM technologies, practices, services, and training and update the roadmap periodically as needed,
3. Support SM Research & Development, to provide capabilities for and collaboration in open, pre-competitive work among multiple parties,
4. Establish a technical education and workforce development program that leverages regional networks,
5. Stimulate growth of a SM domestic supply chain,
6. Demonstrate participation of underrepresented groups in CESMII, and
7. Be financially self-sustaining after the five-year period of federal funding.

The above objectives and goals are driven by the overall performance metrics for CESMII, which are:

1. Energy Productivity: Energy productivity gains in U.S. manufacturing will be doubled in 10 years,
2. Energy Efficiency: 15% improvement in energy efficiency in first-of-a-kind industrial testbeds will be achieved within 5 years,
3. Industry Deployment Costs: Cost of deploying SM technologies including hardware and software in existing manufacturing processes will be reduced 50% relative to state-of-the- art in 5 years,
4. Adoption Costs: Installed and operating cost for adoption of SM technologies including hardware and software will be recovered through energy savings and productivity improvements in 10 years,
5. Workforce: SM workforce capacity in U.S. will be increased two-fold by 2020 and five- fold by 2030,
6. Supply Chain: SM supply chain will increase value and participation 40% by 2030.

CESMII and its members have worked together to develop a Roadmap to identify themes and topics that are of specific importance in the development of SM solutions necessary to achieve CESMII's goals. The roadmap was updated in December 2020 to reflect CESMII's strategy for the 2020-2022 timeframe. Information on the roadmap is available here CESMII-Roadmap - CESMII – The Smart Manufacturing Institute

2 ABOUT THIS RFP

The lifecycle of manufactured goods includes four key phases – design, production, use/service and recycling. Reducing the carbon footprint for manufactured goods therefore must consider each of these phases. CESMII believes that smart manufacturing technologies have a tremendous unrealized potential of making a huge impact on the carbon footprint of manufactured goods through improvement in energy productivity, operating efficiency, quality and waste reduction.

SM solutions are composed of building block technologies such as sensing, control, analytics and predictive modeling – all integrated in an Operational Technology/Information Technology (OT/IT) environment where they can interoperate, and exchange information in a seamless manner. CESMII's intent is to develop, demonstrate and proliferate these integrated SM solutions for all sizes of manufacturers, across as many industry verticals as possible. To successfully do so requires both technology as well as talent.

From a technology standpoint, there are three key requirements to build sustainable SM solutions – 1) SM building blocks that provide functionality, 2) structured information models that enable SM components to interoperate, and 3) a low-cost scalable platform to integrate solution components, and a marketplace from where components of the SM solution can be acquired and integrated. From a workforce development and training standpoint, there are four additional key requirements for building sustainable solutions – i) content development for education & training, ii) hardware and software tools for training, iii) a collaborative network of educators and trainers, and iv) a knowledge portal that serves as a repository of knowledge and expertise necessary to build and sustain SM solutions.

Based on priorities aligned with the Institute Roadmap, CESMII has issued three RFPs since its inception, supporting over 50 projects with a total investment of nearly $30M (including federal funding and cost share). Information on these projects may be found at https://www.cesmii.org/2022-cesmii-funded-projects-overview/

This RFP represents the fourth group of Request for Proposals for the institute. CESMII intends to take a wholistic look across technology and workforce development requirements and target specific areas that were not fully addressed in earlier RFPs. These focus areas continue to be aligned with the recently updated institute roadmap available here CESMII-Roadmap - CESMII – The Smart Manufacturing Institute

Approximately $2.0M ($1M Federal and $1M cost share) will be made available for this RFP. Details are provided in the subsequent sections.

3 FOCUS AREAS OF INTEREST

CESMII is inviting proposals on projects that will demonstrate the application of integrated SM technologies to improve energy productivity and operational efficiencies in exemplar, end-to-end manufacturing supply chains that include several contributing SMMs. The supply chains may cover energy intensive industries and/or industry verticals with a broad reach across the US.

We are specifically inviting proposals that will either fall under a), b) or both a) and b):

a) ***Extended Impact Projects***: Showcase energy productivity and/or operational efficiencies in exemplar industry use cases from energy intensive industries (such as steel, cement, food, chemicals) including the manufacturing supply chains, that could employ, augment, or extend existing SM building block technologies (sensing, control, analytics and predictive modeling) and educational content created from past CESMII projects. The results from these projects could help CESMII in developing new CESMII SM Technologies and workforce development content.

b) ***Industry Demonstration Projects***: Showcase energy productivity and/or operational efficiencies in exemplar industry use cases from energy intensive industries and/or manufacturing supply chains with Small and Medium manufacturers, that could employ and/or contribute to existing CESMII SM technologies (SM Innovation Platform (SMIP), SM Profiles, and the SM Marketplace). Commercially available hardware or software may be used in conjunction with the CESMII SM technologies.

A few guidelines are provided below:

i. Projects must establish a baseline before implementation and demonstrate the impact after implementation of the SM solution on energy efficiency, productivity, waste reduction, quality improvement etc. for the manufacturer during the course of the project.

ii. Projects must support the development of a CESMII SM Playbook for manufacturers. The playbook is intended to turn project outcomes into broadly-applicable guidelines for small and mid-sized manufacturers (SMMs) in identifying opportunities to leverage SM technology towards achieving higher levels of productivity and capacity, implementing those solutions, and training their workforce to leverage the solutions in their manufacturing jobs. Additional information on the aligning project outcomes with the SM Playbook is provided here https://www.cesmii.org/resources-rfp4/

iii. Project teams led by an industry participant that can showcase the demonstration are highly recommended.

iv. Proposals should clearly demonstrate the commitment and resources needed to execute the project on schedule.

v. Teams representing recently completed projects are highly encouraged to submit proposals for section a) (Extended Impact Projects) to further demonstrate impact at an industry site, or for scale up.

Project emphasis	Industry Demonstration Projects
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vi. For additional RFP4 background information including evaluation criteria and selection process please refer to the RFP4 Appendix. (https://www.cesmii.org/resources-rfp4/)