



EMERGING TECHNOLOGY CHALLENGE FOR MAINE'S FOREST RESOURCES

Issue Date: December 14, 2018

Due Date: January 25, 2019

Challenge: Deploy a forest industry technology in Maine, preferably co-located at an existing industrial facility, where forest biomass is used in the production of a value-added product for sale into a well-defined, promising market. The Challenge goal is further diversification of Maine's forest industry.

Maine Technology Institute:

The Maine Technology Institute (MTI) is an industry-led, publicly funded, nonprofit corporation with the core mission to diversify and grow Maine's economy by encouraging, promoting, stimulating, and supporting innovation and its transformation into new products, services and companies, leading to the creation and retention of quality jobs in Maine. MTI works across seven technology sectors, recognizing that the greatest innovations occur at the intersection of multiple sectors. As a key "innovator of innovation" and as part of MTI's most recent strategic plan, MTI regularly supports unique initiatives and invest in projects that are in addition to its core program offerings. MTI is issuing this Emerging Technology Challenge for Maine's Forest Resources in recognition of this unique moment in the Maine's forest products industry.

Emerging Technology Challenge Purpose and Goals:

The Maine Technology Institute is identifying promising technologies that could be deployed within Maine's forest industry. MTI supports Maine's robust forest industry, including efforts to diversify it. MTI recognizes the growth of industrial biotechnology around the globe and wants to ensure that Maine is part of this growth. Also, this innovation challenge is serving as a pilot project to inform innovation challenges in other sectors in the future. Even though this challenge is restricted to emerging technologies for Maine's forest resources, the lessons learned from this process will be used in other industries and to the benefit of Maine's overall economic development.

The purpose of this Emerging Technology Challenge is to encourage, through MTI cost-sharing, the field of promising technologies that can succeed in Maine. Success means bringing to the market value-added products, creation of high-paying jobs, and synergies with Maine's existing forest industry.

Over the past several years, Maine's forest industry stakeholders have collaborated to chart a course for the future of the industry. The industry remains strong and robust, contributing an estimated \$8.5 billion annually to the state's economy, with the potential to grow to \$12

billion by 2025.¹ It is poised to embrace new opportunities, and there have been recent success stories. In the past few years, approximately \$1.02 billion has been invested in Maine's forest industry, including pulp and paper equipment, wood processing equipment, energy production, and new facility construction.

Eligibility: Enterprises who submitted information to MTI's Request for Information in July 2018 are eligible for this challenge. MTI may issue subsequent challenges in 2019 and beyond, which will be open to those who did not respond to the July 2018 RFI. Enterprises that did not submit a response to the Request for Information may still seek funding from MTI through MTI's normal funding channel and process. Visit mainetechnology.org for more information.

Please note that although Biobased Maine is managing this challenge on behalf of MTI, membership to Biobased Maine does not provide any advantage in this Challenge nor will Biobased Maine Board of Directors, staff or membership select Challenge funding recipients. Biobased Maine is not available to assist its members in applying to this challenge or assist in any other way for the duration of this challenge. All contractors and reviewers associated with this challenge comply with MTI's conflict of interest and confidentiality policies.

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Investment Award: MTI will award up to \$1.5 million in grants, for one or more projects. Like all MTI's investments, this award requires a 1:1 match. See [MTI matching policy details](#).

Timeframe and Review Process: MTI will announce challenge award recipients within 6-8 weeks of application deadline. Submissions will be reviewed based on the criteria listed in this Challenge document, and the pool will be narrowed to a group of 6-10 enterprises to go through a deeper due diligence process, enlisting appropriate technical and techno-economic analysis. MTI may reach out for additional information from these finalists. From this narrowed list, the MTI Board of Directors will make final funding decisions based on the established criteria.

Biobased Maine and MTI will make every effort to connect all applicants to Maine-based resources for companies considering relocation to Maine or interested in connecting with Maine's R&D and forestry-related resources.

Proposal Submission Requirements:

Submissions are due by Friday January 25, 2019 and should be submitted to info@biobasedmaine.org. Questions about this Emerging Technology Challenge should be directed in writing to Biobased Maine. Proposals should be submitted as a PDF document not exceeding 20 pages and should include the elements listed below. Submissions lacking some of the elements listed below may be disqualified from this Challenge. Please note that under MTI's Confidentiality Agreement, all materials submitted as part of this Challenge will be kept confidential by Biobased Maine, MTI, and the contractors hired to evaluate the technologies. Biobased Maine, MTI, and its contractors will not enter into additional Non-

¹ formaine.org

Disclosure Agreements with technology companies submitting materials for this Challenge. MTI reserves the right to request additional information as part of the evaluation process.

Information submitted in response to the July 2018 RFI will become part of your proposal submission. There is no need to re-submit this information, unless it needs to be revised/updated. Please send the following additional items by the due date:

- Succinct description of the proposed project and how it meets the challenge stated above and the proposal scoring criteria described below.
- Project budget including how MTI funds will be deployed and a list of other sources of funding and financing for the project (match). Please be very specific about how these funds, if awarded to you, will be used, including goals that can be achieved.
- Complete business plan, including cost model, off-take agreements (if applicable), and other elements responsive to this Challenge. Business plans should include a market assessment sufficient to assess commercial viability of technology deployment and ROI
- Feedstock requirements (be as specific as possible in terms of species, size, moisture content, bark content, etc.)
- Complete description of technology and technical approach as well as stage of development - please provide a list of key process elements, key equipment and process chemicals, estimated scale, CAPEX and OPEX, references to literature, patents and assumptions
- Project duration and timeline, including key milestones up to and including technology/facility commissioning.

Criteria for Scoring Proposals:

MTI will base its award decisions on the following criteria, with weight given in descending order:

1. **Strong Business Case.** Responders' business plans must show how the technology is innovative and responsive to market/customer needs in a way that other technologies are not, identify the market for products manufactured, summarize market analyses that have been performed to date, and describe a timeline for technology deployment by Q1 2021. The business plan must also provide sufficient documentation that the company has freedom to practice, and has the necessary intellectual property to ensure project success. For commercial-scale technology deployments, business plans must specify off-takers for the products manufactured and the product quantities for each off-taker.
2. **Feedstock Fit with Maine.** Information submitted in your application should help us understand the assumptions used in your economic model, particularly with respect to Maine feedstock cost, Maine feedstock type, and subsidies needed that industries in Maine are eligible for. For the purposes of this challenge "biomass" refers to all grades of lignocellulosic biomass, which may include whole tree, dimension lumber, pulp wood, chips, sawmill residuals, low-grade biomass, etc. If your technology does not currently use wood as a feedstock, you are unlikely to be selected for investment under this Challenge. Please identify existing relationships you may have with Maine feedstock providers, or plans to engage such providers.

Use of residuals – from both manufacturing and harvesting – will be prioritized under the evaluation criteria for this Challenge.

3. **Technical and Technoeconomic Merit.** Responders' technical plan and economic models must show evidence that the technology works and, if not already commercialized, include a scale-up plan that could lead to successful technology demonstration or profitable commercialization.
4. **Economic Benefits to Maine.** Proposals should estimate job creation potential from technology deployment in Maine – for pilot/demonstration scale projects, this estimate will be for when/if the technology reaches commercial scale. For commercial-scale technology deployments, projects that include the creation of a minimum of 10 new FTE direct jobs will be scored higher. These jobs are direct jobs required to operate the facility, and do not include biomass harvesting-related jobs or indirect jobs. Economic value to the supply chain in Maine will also be considered as part of the evaluation of economic benefit.
5. **Geographic Fit.** Responders are not required to have a Maine presence at the time of application but will need to be registered to do business in Maine and be able to meet MTI's Maine-based requirement at the time of contract execution. Projects to be located outside the state of Maine do not qualify for investment. Projects to be located within economically distressed areas of Maine will be prioritized including the following counties in Maine²: Aroostook, Androscoggin, Penobscot, Washington, Oxford, Franklin, Somerset, Piscataquis, and Waldo counties.

² The list of economically distressed counties in Maine are based on federal economic distress criteria per U.S. EDA economic distress criteria 13 C.F.R § 301.3.

Attachment 1: State of Maine Economic Development, Business Relocation, Forest Industry and Bioeconomy Resources

Maine Department of Economic & Community Development

(maine.gov/decd/)

Maine Technology Institute (mainetechnology.org) – investments (grants, loans, equity) in seven technology sectors including advanced technology in forestry and agriculture, biotechnology, environmental technology

Forest Opportunity Roadmap/Maine (formaine.org) – Maine forest economy coalition providing information about the forestry sector including the Maine wood supply, landowners

Maine & Co. (maineco.org)- business re-location and siting in Maine

Finance Authority of Maine (famemaine.com)- loans, loan guarantees, New Market Tax Credits

Maine Forest Products Council (maineforest.org)- trade association promoting Maine’s forest products industry

Biobased Maine (biobasedmaine.org)- trade association promoting Maine’s biobased economy

Professional Logging Contractors of Maine (maineloggers.com)

CEI Capital Management (ceicapitalmgmt.com)

Maine Venture Fund (maineventurefund.com)- equity investment

Maine International Trade Center (mitc.com)- Technical assistance with international trade, Invest in Maine foreign direct investment program

Keeping Maine’s Forests (keepingmainesforests.org)

At the University of Maine:

- **Forest Bioproducts Research Institute** (forestbioproducts.umaine.edu)
- **Advanced Structures & Composites Institute** (composites.umaine.edu)
- **Process Development Center and 1 TPD Nanocellulose Pilot Plant** (umaine.edu/pdc/)