To prepare for the next round of NSF EPSCoR RII Track-1 funding, Maine EPSCoR is executing a formal proposal development process.

For Phase 1, researchers from Maine are invited to submit a concept paper that describes a current research problem/need for the state that might be applicable for the next Maine NSF EPSCoR RII Track-1 project.

The Track-1 grant is required to address a comprehensive, integrated, transdisciplinary, statewide focus that creates a substantial academic research infrastructure and includes strong intellectual engagement of diverse participants from institutions of higher education across the submitting EPSCoR jurisdiction, as well as productive partnerships between the jurisdiction's academic institutions and organizations in its governmental, nonprofit, and commercial or industrial sectors.

INSTRUCTIONS:
Please fill in the template below, using standard NSF font size requirements and margins. The allowable maximum is three pages. If you require additional space, you may delete unused lines in the Senior Personnel section, blank lines, or instructions in the document.

Sections:
1) Indicate the general focus area of the research that you are proposing.
2) Indicate the contact person for this concept.
3) Indicate potential key personnel who could be part of the effort to address this research concept. (only include individuals who have granted permission to be listed)
4) Intellectual Merit – provide a brief description in each of the sections, relating to the research focus that you have identified as a current problem/need in Maine.
5) Broader Impacts – provide a brief description in each of the sections describing the likely impacts and outcomes that can be achieved.

Due by:	January 7, 2022
Submit to:	shane.moeykens@maine.edu (as pdf or Word doc)

By submitting this concept paper, you are giving Maine EPSCoR permission to post this document on a public website to encourage statewide discussions and collaborative engagements prior to the next phase of the RII Track-1 project development process.

For more information see: https://umaine.edu/epscor/track-1-rii-development-process/
https://www.nsf.gov/pubs/2021/nsf21586/nsf21586.htm

1) **Proposed Research Focus:**		**The United Nations Sustainable Development Goals – A Catalyst for Maine's Blue Economy Innovation and Investment**			
2) **Primary Contact Person:**					
Name:	**Institution:**	**Title:**	**Dept.**	**E-mail:**	**Phone:**
Carrie Byron	UNE	Associate Professor	School of Marine and Environmental Programs	cbyron@une.edu	602-2287
Holly Parker	UNE	Director – UNE North & Assistant Professor	School of Marine and Environmental Programs	Hparker3@une.edu	221-4624
3) **Suggested/Potential Key Senior Personnel:**					
Name:	**Institution:**	**Title:**	**Dept.**	**E-mail:**	**Phone:**
4) **Intellectual Merit:**					

A. *Need*: *a brief statement of the research problem/need to be addressed, and why it is urgent for Maine to address this problem/need now (how it is currently limiting the state's capacity/research competitiveness).*
Maine's Blue Economy and its ability to innovate, as well as attract new talent and new investment, is vital to the state's economic growth, as well as the health of its coastal, ocean and freshwater environments. Maine's Blue Economy includes sectors across ocean foods, energy, transportation, tourism, and other sectors. Currently, Blue Economy innovation most frequently occurs at the individual operator/entrepreneur level, often with the support of entities like Maine Technology Institute and Maine Center for Entrepreneurs. *We propose that using the globally recognized United Nations Sustainable Development Goals (UNSDGs) framework would help accelerate and scale Blue Economy innovation as local, regional and international investors and governments are seeking to support initiatives that are demonstrably aligned with this framework*. By providing analytical support and guidance at the sector level, this project will allow Maine's Blue Economy to enhance its reputation, based in scientific, economic, and policy analysis, as an international hub for sustainable development opportunity and growth. ***This SDG-aligned strategy will attract new investment needed to increase innovation and bring projects to scale.***

B. *Research Goal & Objectives:* *describe the overall project goal to address this problem/need, and the related research objectives.*
The overarching goal is to advance Maine's Blue Economy in alignment with Maine's Economic Development Strategy. **The primary objective towards this goal is to create a pathway by which Maine Blue Economy companies can join the UN Global Compact which seeks to accelerate and scale the global collective impact of business by delivering the Sustainable Development Goals through accountable companies and ecosystems that enable change**. With more than 12,000 companies and 3,000 non-business signatories based in over 160 countries, and 69 Local Networks, the UN Global Compact is the world's largest corporate sustainability initiative. *There are currently no Maine Blue Economy companies that are part of the UNGC.* Secondary objectives and activities towards meeting this goal include:
1) To survey and analyze current and potential Blue Economy UNSDG aligned activities at the sector level, including social, environmental and economic impacts.
2) To develop and deploy sector-based programming that will support the implementation of the UNSDGs as a framework for innovation at the sector and entrepreneur levels.
3) To develop and deploy programming across the workforce development spectrum to educate and prepare a workforce to use this framework for continued innovation.
4) To advance research and innovation that better aligns Maine's Blue Economy sectors with UNSDGs and/or towards advancing any of the UNSDG-specific targets in Maine.

C. *Research Actions: describe a few specific key research actions that could be implemented to meet the*

objectives. Withhold any information deemed sensitive, given this form will be shared with the community. We recommend a structure by which research investigators can submit proposals to the EPSCoR office for their specific interests, as aligned with UNSDGs and Maine's Economic Development Strategy (or relevant equivalent). All research activities will be mapped to UNSDGs and UNSDG targets as well as serve project objectives. The specific research activities will be varied across disciplines and dependent on needs of each Blue Economy sector, as defined by that sector and/or advising parties (NGOs, GOs, academic institutions, etc). Though a few high-level activities should be articulated in the NSF proposal, most of the detailed PI-specific activities will be articulated post-award through an RFP process. An important action will be to develop a proposal RFP and review process by which PIs can request funding for their activities. The review committee will vet and rank proposals in accordance with Maine's Economic Development Strategy and goals thereby elevating the most impactful projects towards aligning Maine with the UN Global Compact.

*Priority: indicate how this research would address national priorities (*FY2022 budget request to Congress, White House 2021 R&D priorities memo*) and state priorities (*Maine Economic Development Strategy 2020-2029, 2017 Maine Innovation Economy Action Plan*)*

This work addresses and is aligned with the following UNSDGs:

FY2022 budget request to Congress
- NSF's strategic priority ("enabling big ideas") on "growing convergence research" (SDG 17)
- NSF's STEM Education and Workforce goals, for both undergraduates and graduate students (SDG 4)

White House 2021 R&D priorities memo
- Tackling climate change (page 2) (SDG 13)
- Catalyze research and innovation in critical emerging technologies (page 3) (SDG 9)
- Innovation for equity (page 4) (SDG 10)
- Economic resilience (page 4) (SDG 8)

Maine Economic Development Strategy 2020-2029
- Strategy A: Grow local talent (SDG 4 & 8); through workforce education and development
- Strategy B: Attract new talent (SDG 8 & 9); by attracting investors, entrepreneurs, and students to academic institutions
- Strategy C: Promote innovation (SDG 9); though research and communication
- Strategy D: Build connections (SDG 17); between researchers, citizens, and policy makers.

2017 Maine Innovation Economy Action Plan
- Maine's "targeted technology sectors" of "Marine Technology & Aquaculture" and "Environmental Technologies" (SDG 9 & 14)

5) Broader Impacts:

E. *In-state collaborations: describe potential for collaborations within Maine (considering diverse participants from institutions of higher education, PUIs and community colleges, as well as productive partnerships between Maine's academic institutions and governmental, non-profit, and commercial or industrial sectors).*

This project would draw on expertise from across Maine's higher education, research and government institutions. UNE North and the School of Marine and Environmental Programs (SMEP) at UNE are uniquely positioned to lead this work. "UNE North connects researchers, educators, policymakers, and industry leaders from across Maine" (https://www.une.edu/UNE-North) and SMEP offers technical expertise and a varied curriculum in marine disciplines (i.e. aquaculture, marine affairs, biology, sustainability) engaging the next generation of entrepreneurs. We suggest participation from research institutions, for example, Bigelow Laboratory for Ocean Sciences and Gulf of Maine Research Institute, which, alongside universities such as University of New England and University of Maine, can provide key research support for new Blue Economy initiatives aligned under the UNSDGs. The participation of the State, ideally represented by the Office of Innovation and the Future, is vital as this is a project designed to support the State's Economic Development Strategy as well as the Maine Won't Wait Climate Action Plan. In addition, identifying the policy implications of scaling Blue Economy innovation will be key to the project's success. Finally, participation of education institutions from secondary to post- secondary/professional training, is vital to preparing a workforce ready to

continue along a path of innovation aligned with UNSDGs. Programs like Maine Center for Entrepreneurs, for example, would be vital in teaching skills needed for the individual innovator to help move an idea from concept to launch; the addition of the international UNSDG framework would help such programming provide an avenue for start-ups to scale up.

F. *Regional/national collaborations: describe potential for collaborations among regional and national EPSCoR jurisdiction-based organizations, and/or partnerships with nationally recognized centers of R&D activity, such as federal and industrial R&D laboratories, NSF-sponsored research centers, and academic institutions with nationally recognized research capabilities.*

This work will need to be done in communication and coordination with State of Maine. Specifically, the Office of Innovation and the Future is likely the most appropriate contact point to help direct and coordinate this work. In addition, the Maine Center for Entrepreneurs is dedicated to the growth of Maine's economy (https://www.mced.biz/) and serves as an advisor for promising entrepreneurs and could be invited to advise the organizational development of this proposed work. Academics and researchers across institutions in Maine could be invited to propose work as described above. The proposed work is meant to be as inclusive as possible, stimulating research, creative thought, and strategic planning for positioning Maine's Blue Economy to be able to take advantage of UN Global Compact resources.

G. *Economic development: describe potential for economic development in Maine.*

This project is designed both to accelerate and bring to scale technologies and practices designed to support the Blue Economy. In our vision, the "Blue" is the coastal, ocean and freshwater environments that require our thoughtful stewardship if they are to remain both economic resources and resources for a healthier, resilient Maine. The "Economy" is supporting thriving communities that derive their health and prosperity from the natural resources around them. The UNSDG framework is based on the foundation that we can have a true "Blue Economy" for Maine, the place and its people. It is important to note that the UNSDGs are also predicated on equity and justice. This framework has the potential to guide decision makers to consider how growing our economy can be done in a way that is just and equitable for all Mainers, including our Indigenous people and those new to our state. Maine has an opportunity to use the UNSDG framework as a tool to help place itself on the global stage as a hub for sustainable development and investment.

H. *Workforce Development: describe potential for statewide workforce development in this research area (e.g., support for faculty and student teams that include women, minorities underrepresented in STEM, and persons with disabilities that will result in a strong, quantifiable impact on the STEM workforce; may also consider support for students who are in the first generation of the family to attend college, or those from economically disadvantaged or rural populations).*

This project would be purposeful in engaging with education and training programs state-wide to bring this framework to multiple audiences – new Mainers, Indigenous communities, high school students, etc. With its focus on equity and justice, the UNSDGs and the UN Global Compact demand that aligned initiatives address those traditionally underserved or marginalized. It is also important to note that the UNSDGs, to be implemented successfully, require skills such as teamwork, communication, empathy, and other high level emotional IQ skills. By offering education and training using this framework, this project will help develop a workforce that is not only guided by concepts of sustainable development, but uniquely skilled to implement them for the benefit of Maine, its environment, communities and economy.

I. *Infrastructure: describe potential to provide infrastructure (e.g., physical and/or cyber) that grows the state's academic research and education capacity.*

This project holds the potential to build the research and education capacity of the state by providing a sector level approach to Blue Economy innovation and workforce development. While previous efforts have worked at the "Marine Economy" level or at the individual "entrepreneur/innovator" level, this initiative would allow researchers to build collaborative networks that allows scaling for larger impact. These networks will be able to share crucial data specific to each sector, while also developing a voice for collaboration across sectors. For example, the grown and harvested seaweed sectors may be able to share crucial land and ocean use data to be advocate for access key to sector growth. These sectors may then also be able to work together to build the social contracts necessary with communities and other Blue Economy sectors so that sectors no longer compete against each other, but rather thrive together.