

WORKSHOP AGENDA for January 3rd

09:00 – 10:00	Arrival and Breakfast (Room 208)
10:00 – 10:45	Welcome, Introductions, and Goals of the MOCEAN Initiative (Fara) NSF Type-2 Proposal and NSF Type-1 Project (Dan)
10:45 – 11:45	Industry Panel
11:45 – 12:00	Charge to breakout groups
12:00 – 01:00	Lunch in Room 208
01:00 – 02:10	Round 1 – FOCUS AREAS – Assigned breakout spaces
02:10 – 02:25	Break
02:25 – 03:35	Round 2 – FOCUS AREAS – Assigned breakout spaces
03:35 – 03:50	Break
03:50 – 05:00	Round 3 – PROJECT GOALS – Assigned breakout spaces
05:00 – 06:30	Dinner
06:30 -	Work for Breakout Leads, Socialization for others

WORKSHOP AGENDA for January 4th

- 08:00 – 08:30 Arrival and Breakfast
- 08:30 – 08:45 Welcome (Fara)
- 08:45 – 10:00 Focus Area Breakout Reporting and Discussion (Jay)
- 10:00 – 10:30 A Just Energy Transition and Workforce Development (Greg Watson)
- 10:30 – 10:45 Break
- 10:45 – 11:30 Project Goal Breakout Reporting and Discussion (Jay)
- 11:30 – 12:00 Marketing and Engagement (Dan) – mentimeter (not about FAs or Goals)
- 12:00 – 01:00 Lunch in Room 208
- 01:00 – 02:00 What we learned from Focus Areas Discussions (Jay)
What we learned from Goals Discussion (Fara)
Next Steps, Summer Retreat, and Other Funding Opportunities (Dan)
- End of Kickoff Workshop
- 02:00 – 05:00 Open
- 05:00 – 06:30 Dinner for Anyone Interested

MOCEAN – 5 Big Ideas

- Change Change is arguably the biggest threat to marine and human ecosystems; offshore wind is a necessary response and ideal case study for optimizing opportunity in the energy transition.
- We need a 'sand box' for collaborative innovation, including policy innovation
- Generate radical /academic/public sector/private sector cooperation, like the life sciences in MA
- Adding future fisheries, aquaculture/carbon capture to the biodiversity enhancement conversation
- Conduct research at multiple scales; integrate environmental, economic and social values

Type-2 Proposal: Motivation and Elevator Pitch – Acceptability

Fixed & Floating Offshore Wind

- 10000 TWh/year Electricity Production
- 2300 GW (Capacity Factor = 0.50)
- 150000 15-MW Turbines
- ≈ 8 Trillion Development Cost

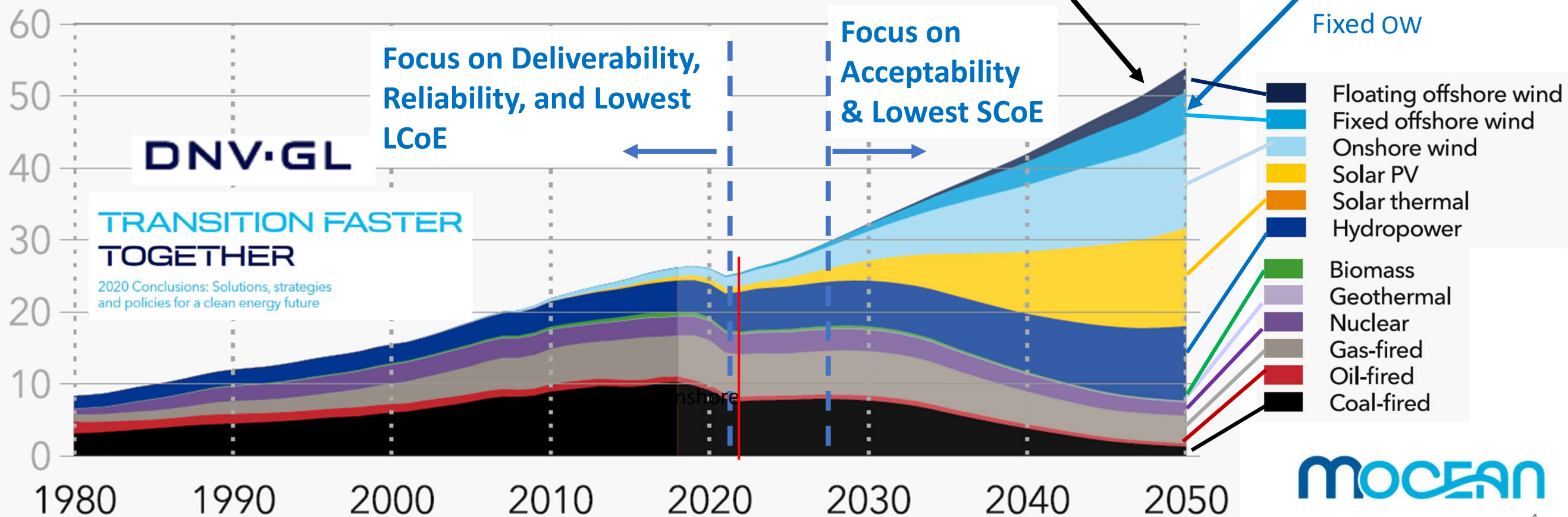
Floating OW



Fixed OW

PWh/yr

World Electricity Generation by Power Source



Type-2 Proposal: Motivation and Elevator Pitch – Acceptability

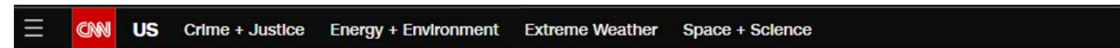


Why Greta Thunberg is protesting wind farms in Norway

By Kelsey Ahles and Rick Noack
Updated March 1, 2023 at 12:40 p.m. EST | Published March 1, 2023 at 2:51 a.m. EST



Swedish climate activist Greta Thunberg joins climate protestors as they block the entrance to Norway's Energy Ministry on Tuesday. (Olivier Morin/AFP/Getty Images)

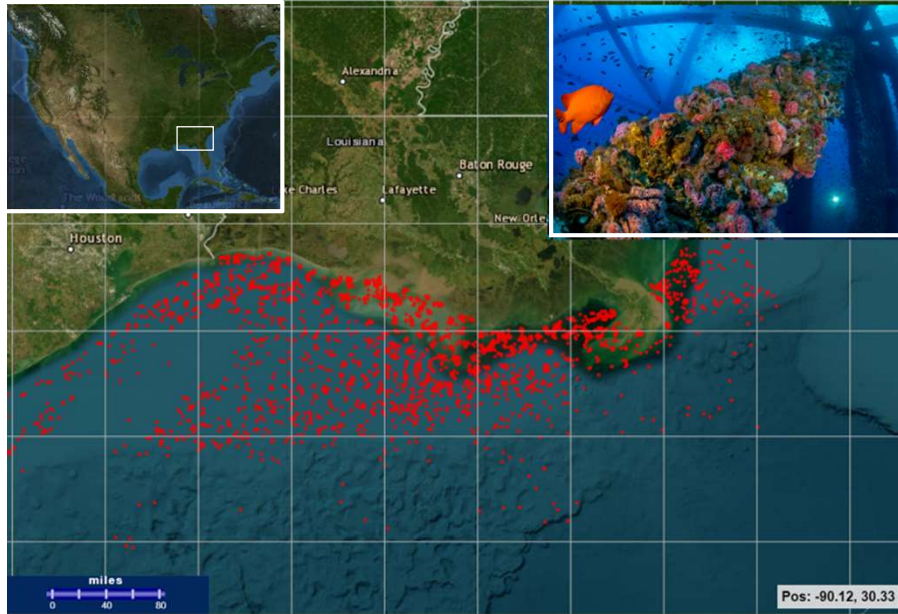


Florida ocean temps surge to 100 degrees as mass coral bleaching event is found in some reefs

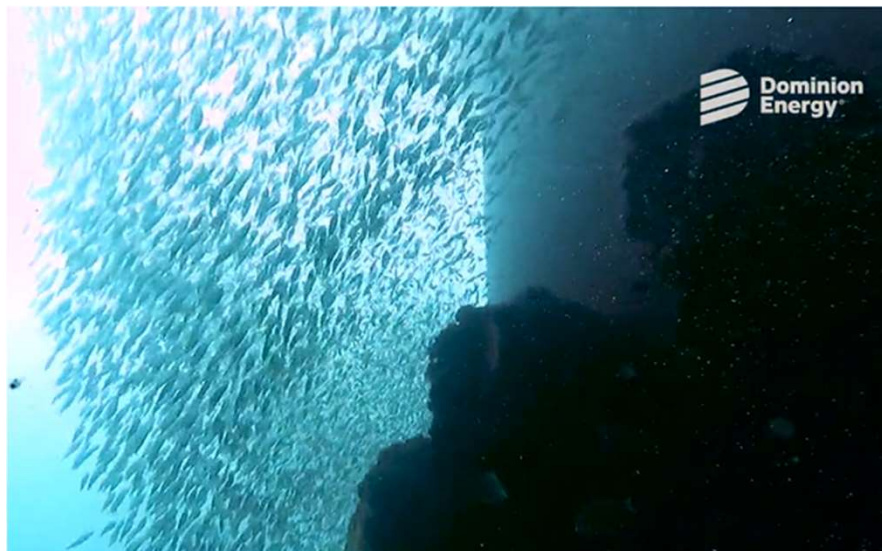


Type-2 Proposal: Motivation and Elevator Pitch – Acceptability

Unintended Artificial Reefs



Restoring and Intended Artificial Reefs



Type-2 Proposal: Motivation and Elevator Pitch – Acceptability



Turbine Reefs

Nature Based Design of Offshore Wind Infrastructure

Nature-based Design includes options that can be integrated in or added to the design of offshore wind infrastructure to create, expand, enhance, or restore habitat for native species or communities.

Enhanced Scour Protection Layers

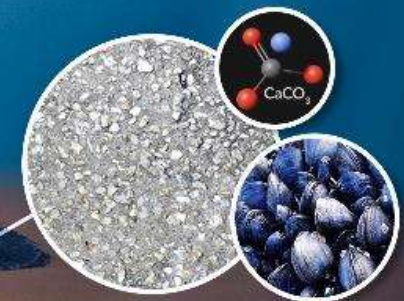
A combination of large and small structures with various sized holes and/or rocks with a range of shapes and sizes increases the surface area and habitat complexity of scour protection layers. This promotes biodiversity by providing adequate shelter for large, mobile species and suitable refuge for smaller species, juvenile life stages, and attached organisms.

Scour Protection



Mimicking Existing Complex Habitat

Habitats created by installation of offshore wind infrastructure can be optimized by mimicking naturally occurring complex habitat features.

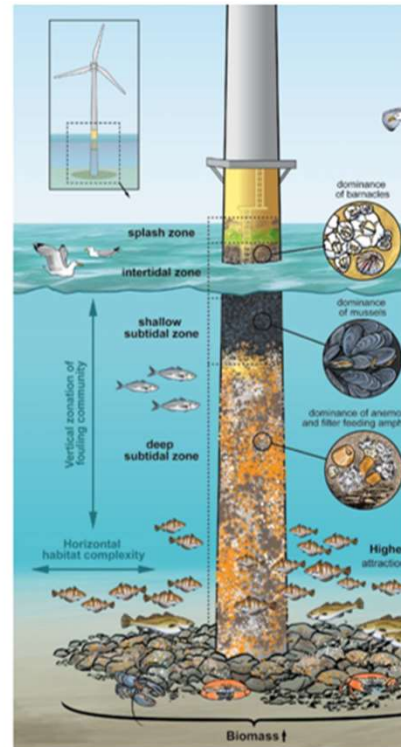


Materials Designed to Promote Growth

Calcium carbonate (CaCO_3) or natural shell can be mixed into concrete structures to provide suitable chemical composition for larval settlement of calcareous organisms such as bivalves.

Type-2 Proposal: Motivation and Elevator Pitch – Acceptability through Nature-Inclusive Design

The Netherlands now gives 50% of possible merit points on proposals from developers to impact on the ecology



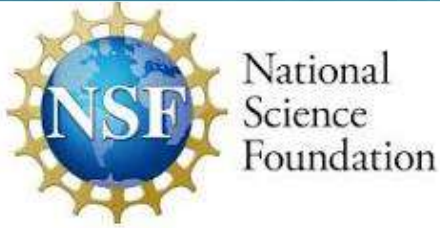
Ecowende, the joint venture (JV) of Shell and Eneco, has unveiled plans for building an offshore wind farm that will be in harmony with nature.

“positive contribution to biodiversity”“accelerate the large-scale roll-out of offshore wind”“Ecology will be leading because we know that renewable energy must become more sustainable” “ensure that the knowledge we gain from monitoring and research into the effect of the ecological measures is widely accessible” “Using innovative foundation techniques”“placing natural reef structures on the seabed to stimulate biodiversity”

IBERDROLA

- **Scour protection** solutions for subsea infrastructure and cables that promotes marine biodiversity, seaweed planting.
- Modifications to **foundation design** to include ‘space for nature’, such as seal haul-out platforms, artificial reef structures, shellfish cages.
- Blue carbon capture initiatives **promoting ecosystem growth** and healthy marine habitats alongside offshore wind.
- **Sensing and monitoring** techniques and equipment that allow tracking changes in biodiversity and environment.

Type-2 Proposal: NSF Program, Our Region and Team

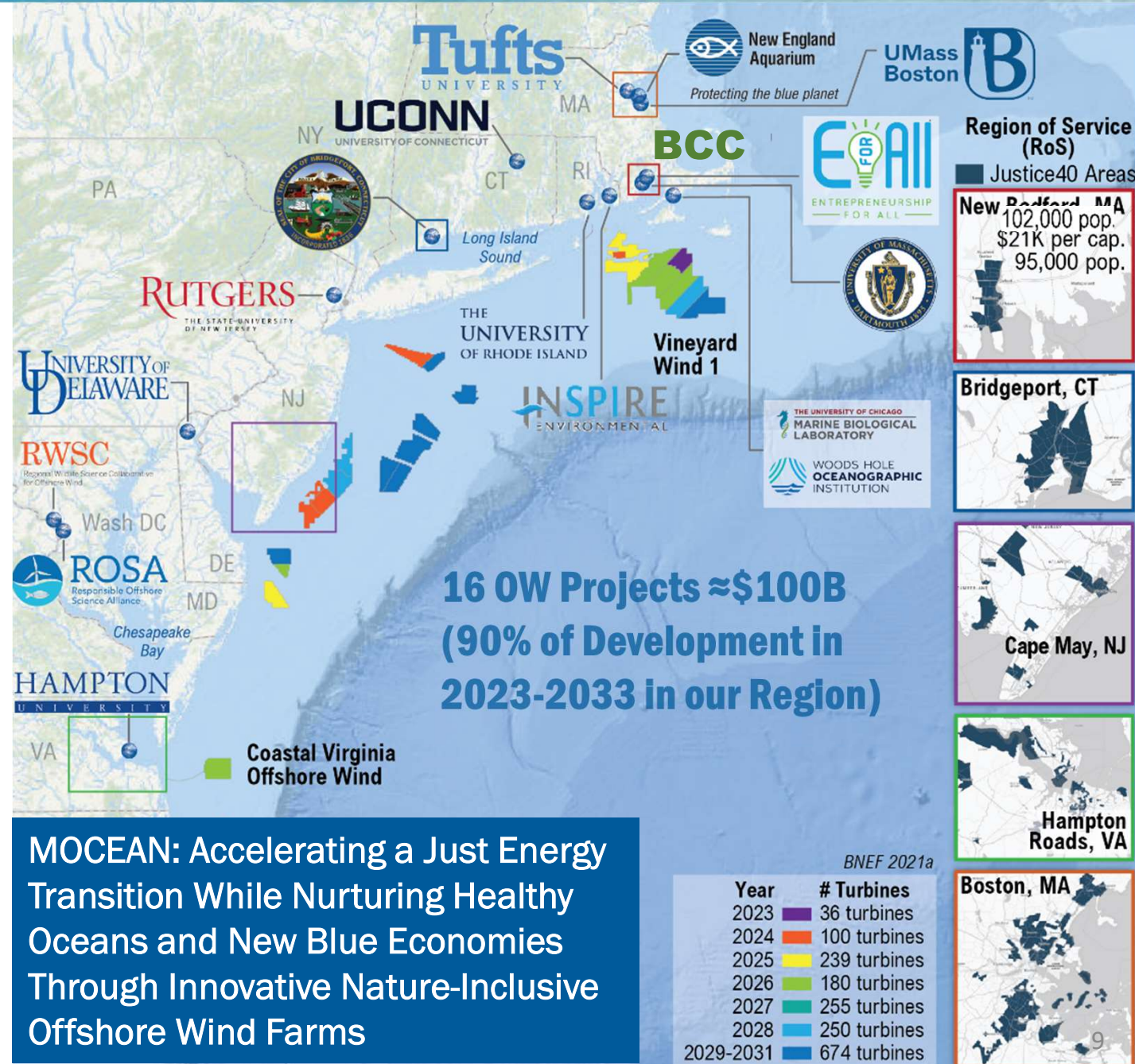


New Directorate on
Technology Innovation
Partnerships

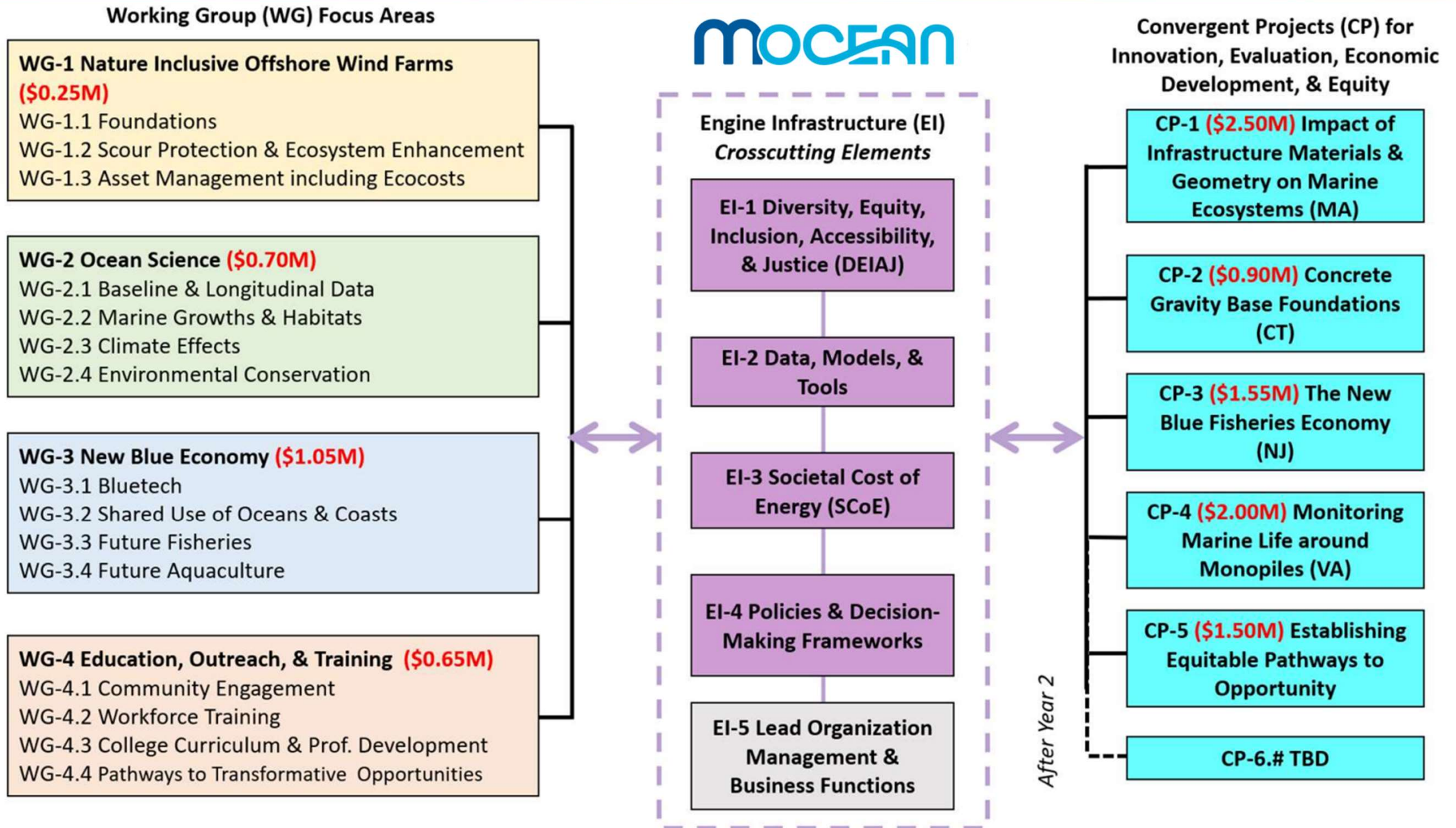
Facing global competition for talent and leadership in science, technology, engineering, and mathematics research and education, the U.S. must expand its innovation capacity by leveraging the resources, creativity, and ingenuity existing across all geographic regions of the country.

The Regional Innovation Engine program will catalyze and foster innovation ecosystems across the U.S. to:

- Advance critical technologies
- Address national and societal challenges
- Foster partnerships across industry, academia, government, nonprofits, civil society, and communities of practice
- Promote and stimulate economic growth and job creation
- Spur regional innovation and talent
- First Year of Program is 2023
 - Planning Grants (\$1M/2-years) - MOCEAN
 - Implementation Grants (\$160M/10-years)

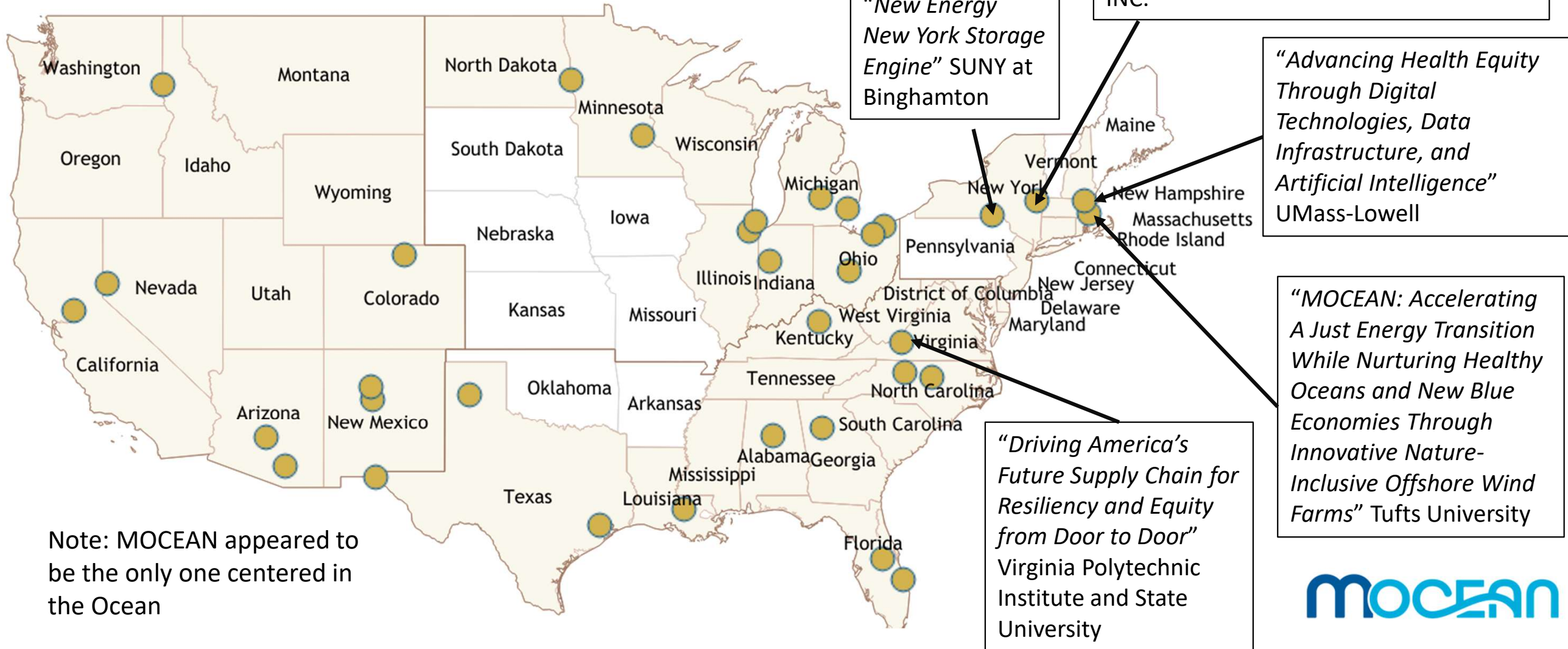


Type-2 Proposal: Working Groups, Convergent Projects, and Engine Infrastructure/Cross-Cutting Elements



Type-2 Proposal: One of 34 Semifinalist and Outcome of Virtual Site Visit

- Up to 188 submitted Type 2 (\$160M/10-yr) full proposals, of which 42 were in “Our Region” (see next slide)
- 34 semifinalists of which 5 are in our region
- ≈ 20% of U.S. population live between Virginia and Maine



Note: MOCEAN appeared to be the only one centered in the Ocean



Summary of Type-1 Proposal Key Personnel

Key Personnel (Org.)	Leading Role	Keywords for Discussion Topics and Communities to be Engaged
Dan Kuchma, (Tufts University)	FA-1 Nature-Inclusive Offshore Wind Farms	Design life of underwater infrastructure; nature-inclusive foundations; nature-inclusive scour and export cable protection; life-cycle cost of materials; corrosion and durability experts; design engineers; certification bodies; foundation fabricators; foundation installers; operators;
Colleen Hansel, (Woods Hole Oceanographic Institution, WHOI)	FA-2 Ocean Science	Impact of materials and geometry on marine life; data requirements; health and biodiversity sensing; modeling; multipurpose offshore wind farms; coupled and enhanced ecosystem services; personnel, deployable platforms, and autonomous vehicle requirements for data collection
Josh Kohut, (Rutgers University)	FA-3 Future Fisheries	New blue fisheries economy; commercial and recreational fishers; data-assimilative physical models; dynamic ecological projections at different spatial scales; AI/ML; coexistence; sustainability; fisheries organizations; state authorities; NOAA-fisheries
Bob Chen (UMass-Boston)	FA-4 Equitable Education and Training	Micro-credentials; equitable pathways to opportunities; curriculum development; hands-on educational activities for engaging students in K-12 schools; non-traditional college students; community organizations; government leaders; unions and other labor organizations; outreach
Michelle Cho & Emiley Lockhart, (New England Aquarium)	FA-5 New Blue Economy & Outreach	Ocean conservation science; blue economy and responsible ocean use outreach; aquaculture and fisheries; offshore wind developers; design of exhibits; public interaction and perspectives; public policy makers; circular economy
Mark Huang & Hailey Bathurst (SeaAhead)	FA-6 Bluetech Innov. Workforce Dev	Industry startups; economic development organizations; technology hubs; bluetech workforce needs and opportunities; entrepreneurs; venture capital; state, federal, and industry investments
Fara Courtney (Outer-Harbor Consulting)	Public Policy and Industry Partnerships	Public policy; state and federal regulation; offshore wind procurements; international policy benchmarking, offshore wind developers and supply chain; metrics for project selection; data sharing
Jay Vogt (Peoplesworth)	Professional Facilitator	Consensus building; community engagement; development of short- and long-term mission; creation of project timelines; project risk management

MOCEAN 2-Year Goals

Three Goals aimed at building the intellectual infrastructure to support an offshore wind development strategy that drives multiple values: rapid decarbonization, ocean health/biodiversity, advancing equity/opportunity in evolving coastal economies,

- Goal 1 – Policy and Regulatory Frameworks: map existing and necessary regulatory framework, policy incentives and regional impact targets to support effective commercial/public investment in nature inclusive offshore wind farms
 - *Determine what to accomplish through ecosystem enhancements and drive research/technology design/investment in that direction (e.g. biodiversity? wild harvest fisheries? Carbon capture?)*
 - *Develop the right levers: (e.g. regulatory requirements? Incentives? procurements?)*
 - *Eliminate unintended barriers to advancing these goals at the necessary scale (e.g. tension between providing additional benefits - economic, environmental - through OW development, and lowering project costs)*

MOCEAN 2-Year Goals (cont'd)

- Goal 2 – Innovation Ecosystems and Economic Development: Convene an innovation ecosystem to create new approaches for equitable economic development that supports a community of practice around offshore wind, blue tech and sustainable future fisheries.
 - *How do we systematically connect industry (offshore wind and fisheries) needs for innovation with blue-tech entrepreneurs?*
 - *Are there unmet workforce needs related to the offshore wind/ocean interface? (e.g. marine science, digitalization, maritime operations in research/data acquisition)*
 - *How do we effectively engage community organizations and industry to co-design equitable pathways to opportunity to address these needs?*
- Goal 3 – Test Bed Frameworks
 - *What do we measure to demonstrate success in positively impacting ecosystem health?*
 - *How do we vet innovative technologies to improve resource assessment/data acquisition, and streamline regulatory acceptability?*
 - *What data standards / management strategies are appropriate?*
 - *How do we implement a robust learning environment for NID in offshore wind?*

Summary of Type-1 Proposal Activities

MOCEAN Activities to be supported by the Planning Grant Award (January 2024 through December 2025)

The further development of the strategic plan and innovation community through the following activities:

1. In-Person Retreats of MOCEAN Type-2 Team & Others;
2. Culminating Symposium in Washington D.C.;
3. Organizing Sessions at Conferences and Industry Events (with Exhibition Booths where appropriate);
4. Organization of Workshops (in-person, hybrid, or fully online) on Working Group (WG) and Convergent Project (CP) topics of the larger Type-2 proposal (advance possibilities for pilot projects, Joint Industry Projects (JIPs), and obtaining commitments to CPs).
5. Outreach at Conferences, Meetings, and Events;
6. Organize field trips and meetings between for U.S. decision makers (e.g. state and federal officials, regulators, BOEM, NOAA) with those who have leading nature-inclusive design strategies;
7. White Papers, Online, and Public Presence at <https://m-ocean.org>
 - Develop papers and reports on state-of-the-art & practice
 - Create online bibliography of reports, research, & projects
 - Promote the MOCEAN Initiative at public venues
 - Online and in-person surveys to assess baseline views

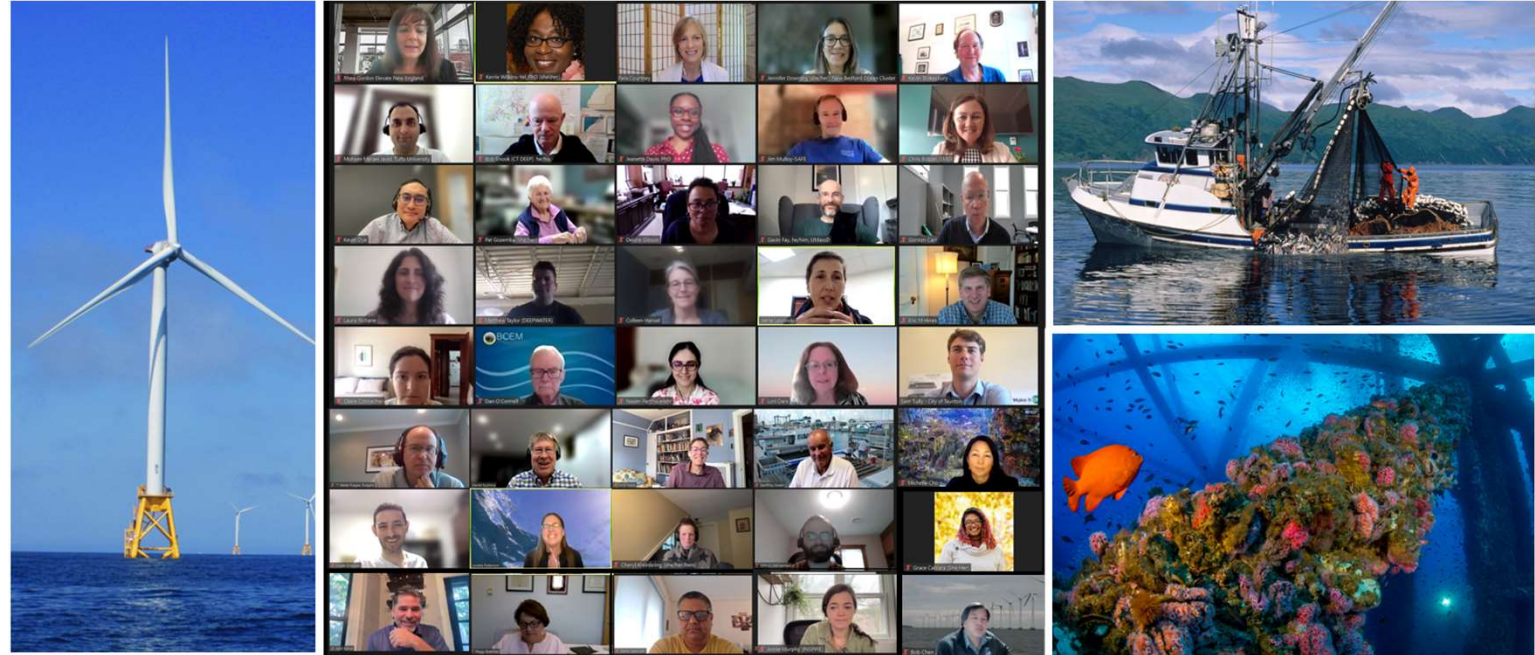
Summary of Type-1 Proposal Budget

Key Personnel (\$25%)

- Lead Focus Area Activities
- Organize Workshops and Meetings
- Engagement of Industry & Stakeholders
- Represent MOCEAN at Events
- Pursue Pilot Projects
- Reporting to NSF
- Draft White Papers

Project Administrator (\$25%)

- Contracts
- Reimbursements
- Event Planning
- Reporting to NSF
- Maintain & Grow Website
- Document Organization
- Developing Relationships
- Compile and Organize Work of Others



Convening and Travel of All Type-2 Team Partners (\$50%)

- Engagement of Industry & Stakeholders
- Represent MOCEAN at Events
- Organize Workshops and Meeting (Dual Purpose)
- Engage in Pilot Projects
- Other Suggestions???

Industry Panel

Moderator



Jay Borkand
Director Ports
and Supply
Chain



In-Person Panelist



Samuel Asci
Fisheries
Manager



Audrey Bard
Strategic
Environmental
Lead



Atma Khalsa
Director of
Environment



Jamie Lescinski
Business
Development
Director for US
Offshore Wind



Online



Anthony
Dvarskas
Regional
Environmental
Lead, Offshore

