New Jersey Offshore Wind Solicitation 2

August 31, 2021

New Jersey Board of Public Utilities

Presented by

Jim Ferris

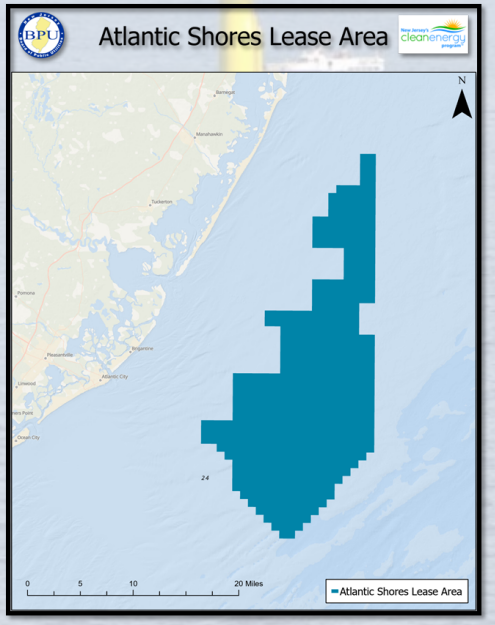
Clean Energy Division

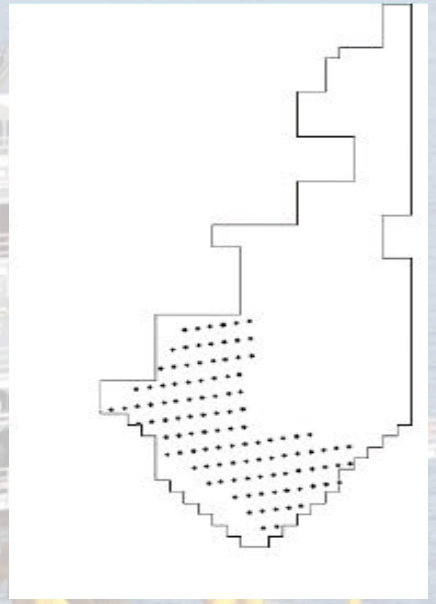
Offshore Wind Solicitation 2 Timeline

- July 2020: Draft Solicitation Guidance Document Released for Public Comment
- August 2020: Public Meeting on Guidance Document
- September 2020: Final Guidance Document Released; Application Window Opens
- December 2020: Application Window Closes; Applications Received
- December 2020 - June 2021: Application Evaluation
- June 30, 2021: Awards

Offshore Wind Solicitation 2 Awards

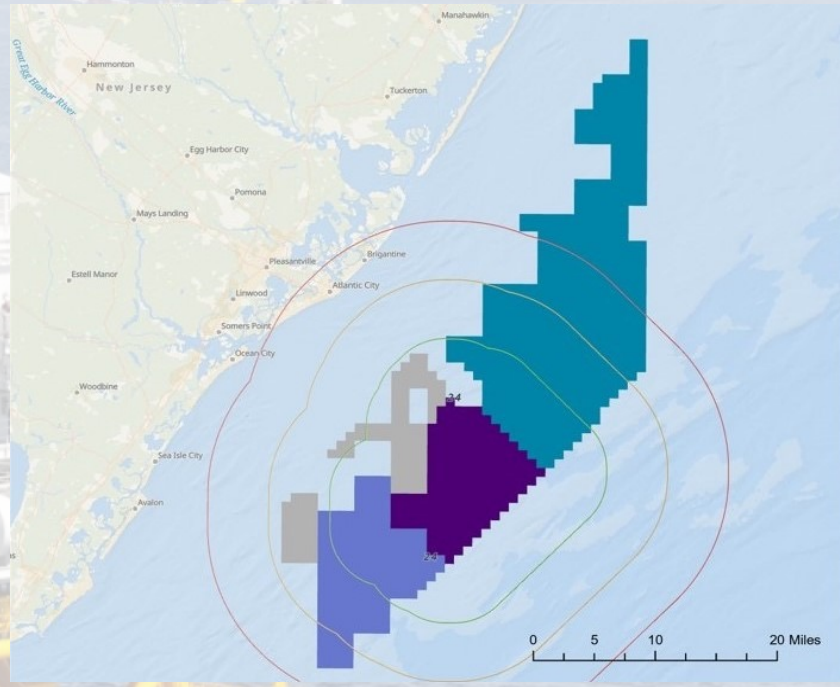
- EDF/Shell's Atlantic Shores Offshore Wind: Awarded 1,510 MW





Offshore Wind Solicitation 2 Awards

- Ørsted's Ocean Wind Project: Awarded 1,148 MW



Offshore Wind Solicitation 2 Combined Benefits

Clean Energy

- Over 11,000,000 MWh per year expected to be produced
- Over 1.1 million homes powered
- Over 5 million tons of avoided GHG emissions annually

Offshore Wind Solicitation 2
Combined Benefits

Environmental

- Environmental and Fisheries Protection Plans updated to ensure natural resources, including fin fish and shellfish, sea turtles, marine mammals, avian species, bats and benthic populations are protected from pre-construction through decommissioning and that any impacts are being actively monitored and mitigated as required by law.
- Developers to work with Board Staff and the NJDEP to identify and implement best practices for the avoidance, minimization and mitigation of adverse impacts on wildlife including but not limited to marine mammals, sea turtles, and avian and bat species, throughout the life of the projects.
- Over $26 million for research initiatives and regional monitoring of wildlife and fisheries

Offshore Wind Solicitation 2
Combined Benefits

Economic

- $3.6 billion injected into the New Jersey economy
- 6,800 full or part-time jobs
- Use of New Jersey Ports for monopile manufacturing, marshalling and nacelle assembly
    - Establishes New Jersey as supply chain hub for east coast

Offshore Wind Solicitation Schedule

Solicitation	Capacity Target	Capacity Awarded	Issue Date	Submittal Date	Award Date	Estimated COD
1	1,100	1,100	Q3 2018	Q4 2018	Q2 2019	2024-25
2	1,200	2,658	Q3 2020	Q4 2020	Q2 2021	2027-29
3	1,200		Q3 2022	Q4 2022	Q2 2023	2030
4	1,200		Q2 2024	Q3 2024	Q1 2025	2031
5	1,342		Q2 2026	Q3 2026	Q1 2027	2033
Total	7,500					

Schedule and capacity targets to be evaluated prior to each planned solicitation

Questions

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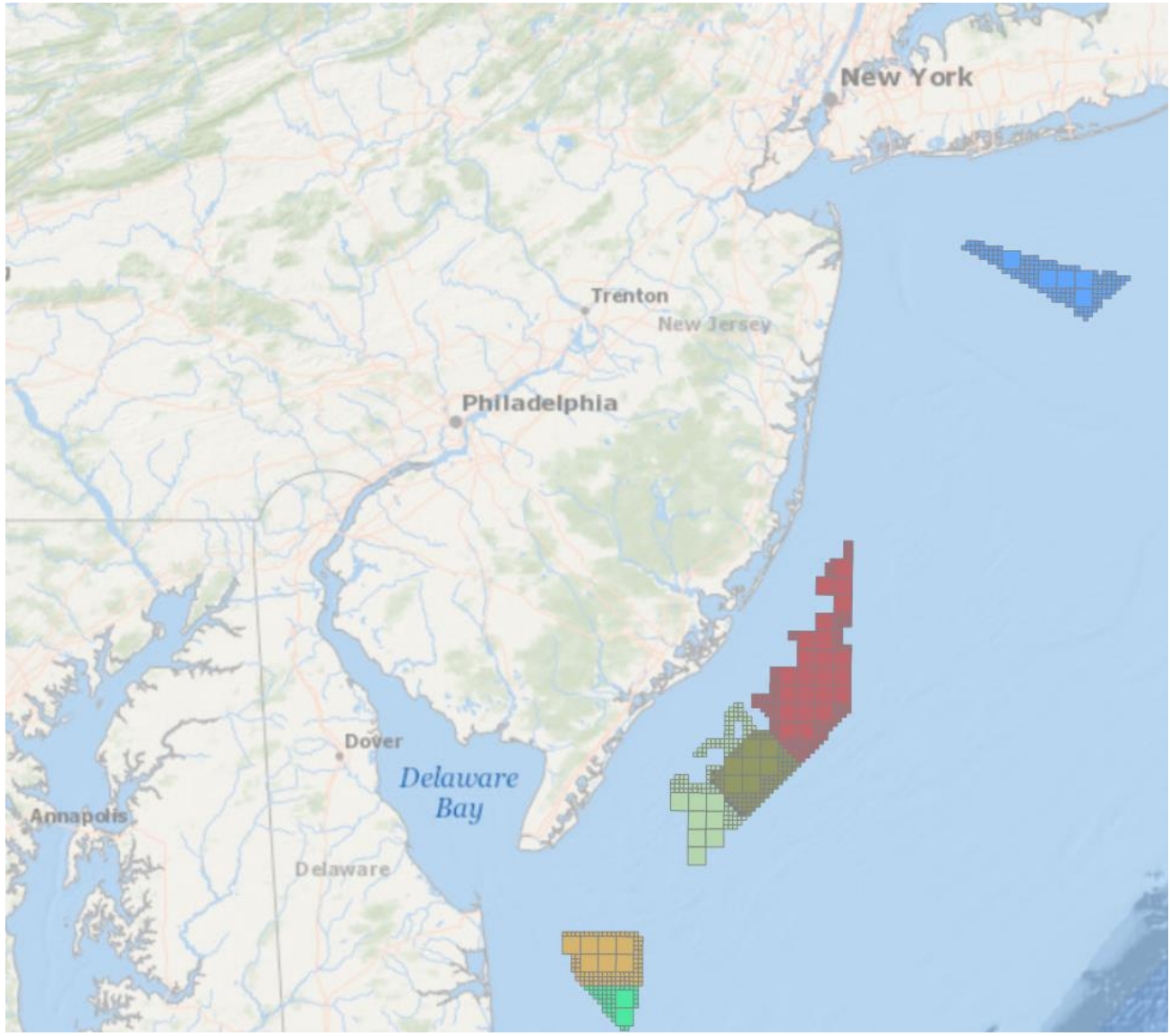
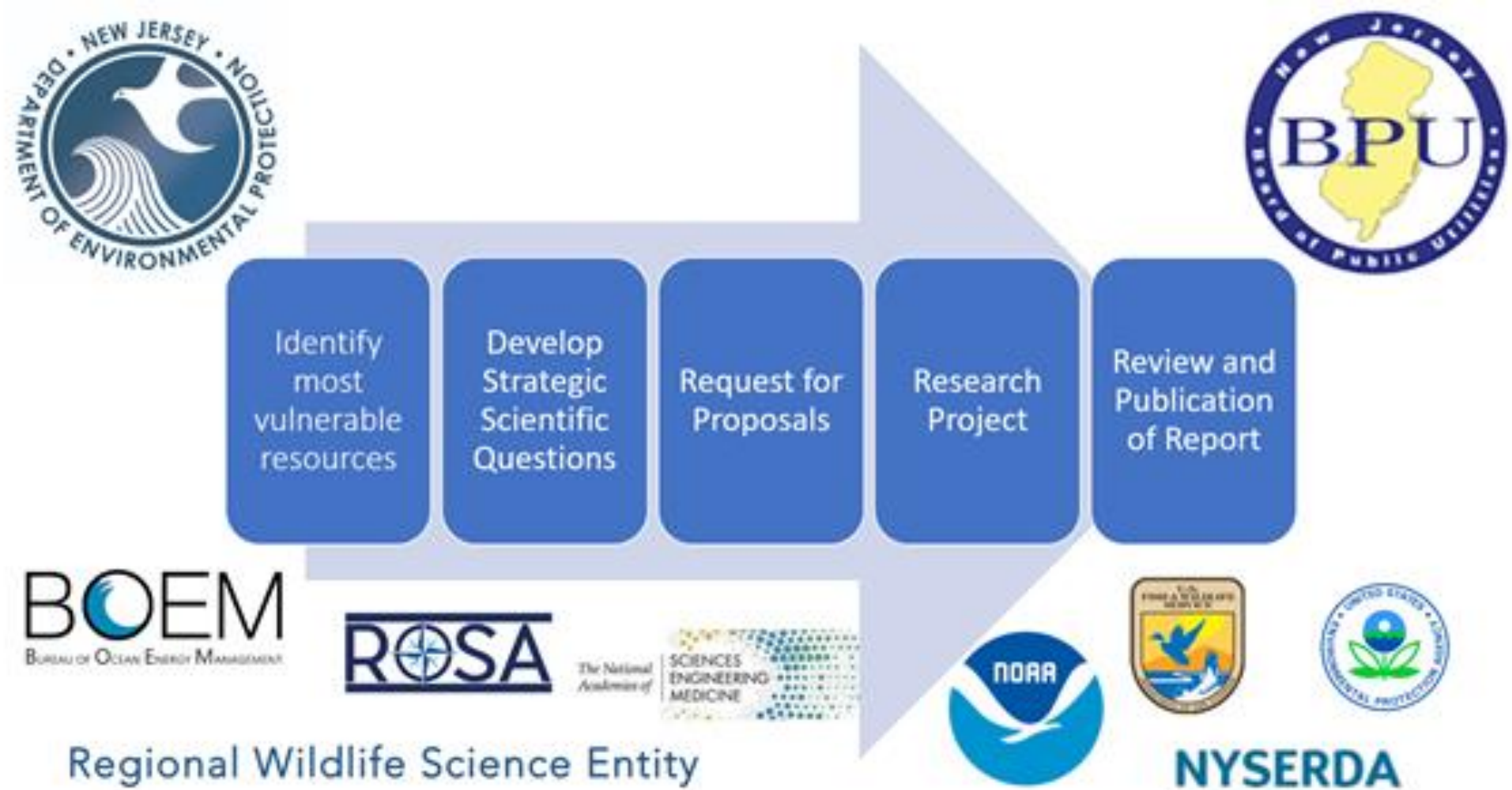
New Jersey's Offshore Wind Research & Monitoring Initiative

August 31, 2021 ERWG meeting

Offshore Wind Research & Monitoring Initiative (RMI)

- Initial Funding
- Partners
- Vision & Goal

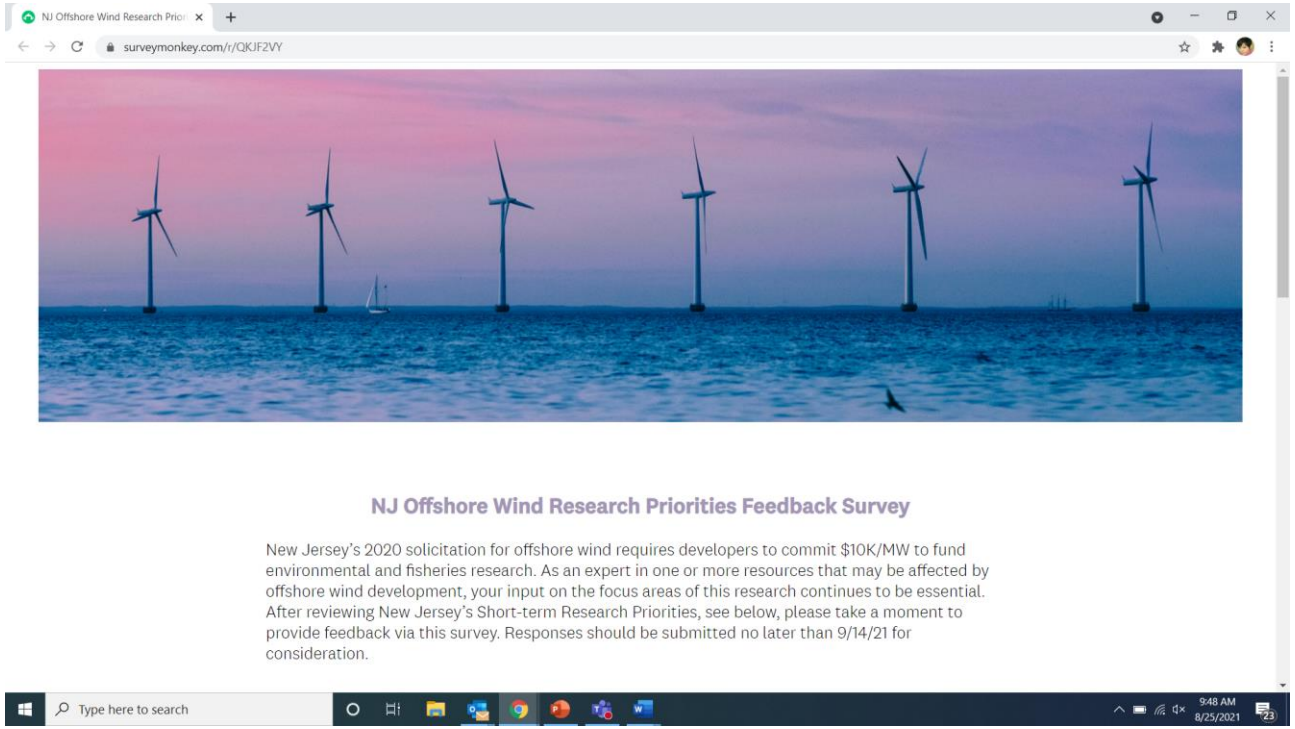



Identify most vulnerable resources
Develop Strategic Scientific Questions
Request for Proposals
Research Project
Review and Publication of Report
BOEM
Bureau of Ocean Energy Management
ROSA
The National Academies of SCIENCES ENGINEERING MEDICINE
NOAA
NYSERDA
Regional Wildlife Science Entity

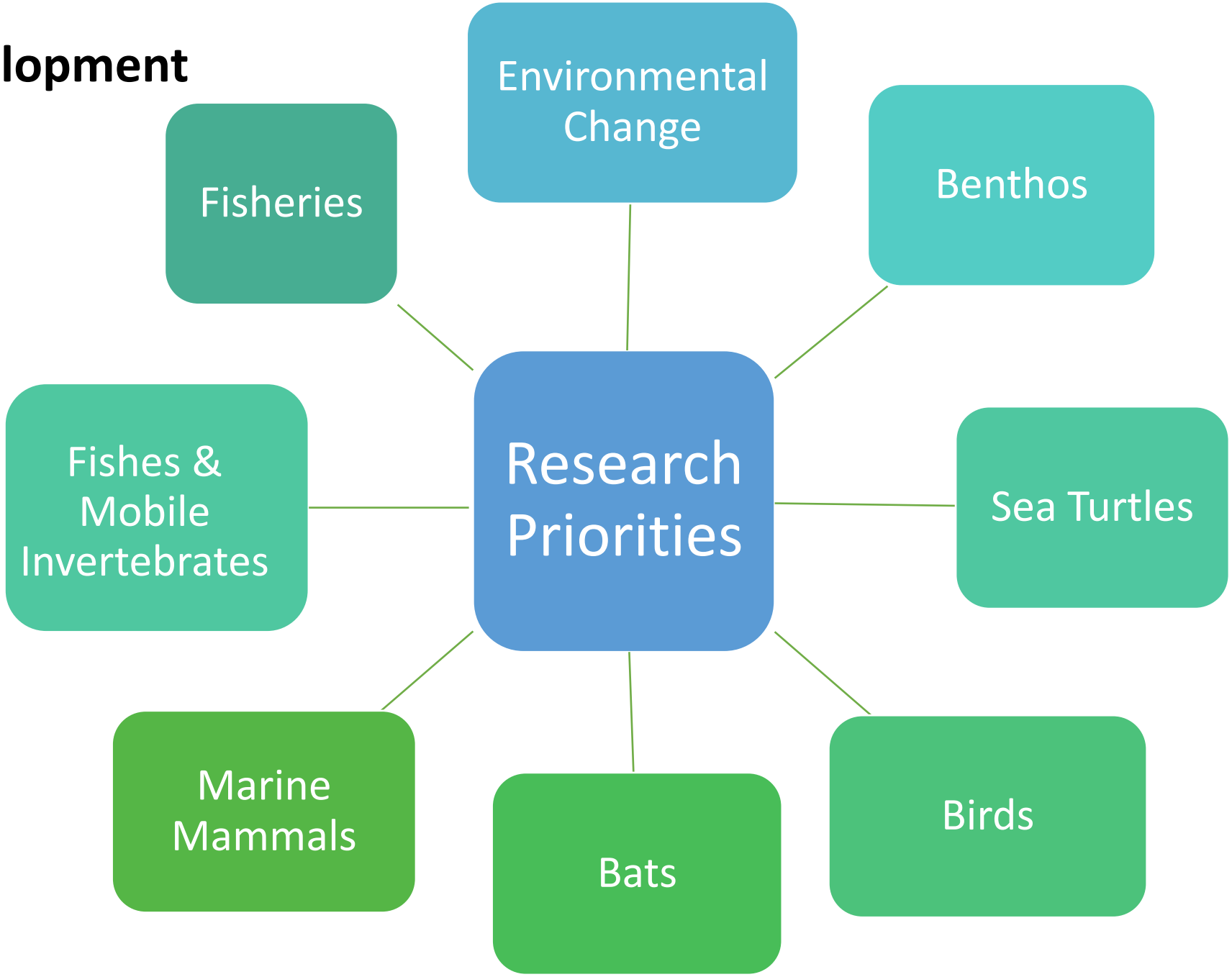
ERWG Involvement

RMI Priorities

- Guided discussion
- Written comments: https://www.surveymonkey.com/r/QKJF2VY
- Feedback will be reviewed & considered
- Updates to be provided at future meetings



Priority Development



Environmental Change

Physical, Chemical, & Geologic Properties

- Seafloor
- Light conditions
- Ocean stratification
- Ocean acidification

Potential Methods

- Extend data collection
  - Existing gliders
  - Integrate sensors on existing tagging studies
  - Expand regional PAM buoy network
- Include sensors on turbine structures

Benthos

Valuable bottom habitats

- Sand Ridges
- Surfclam Beds
- SAV in estuaries

Organisms

- Summer flounder
- Skate
- Dogfish
- Horseshoe crab
- Sturgeon

Potential Methods

- Habitat surveys (finer spatial scale)
- Spatial overlap analysis
  - OSW areas
  - Long-term monitoring stations (reference sites)
- Examine accessibility for surveys that best target benthic populations

Sea Turtles

Collate existing data to characterize movement, distribution, & habitat use patterns

Species

- Atlantic Loggerhead
- Kemp's Ridley
- Leatherback
- Green

Potential Methods

- Tagging on rehabilitated/released sea turtles
- Beach surveys for potential nesting

Birds & Bats

Estimate population-level distribution information & extent of migration & activity offshore

Bat Species

- Hoary
- Silver-haired
- Eastern red bats

Bird Species

- Red Knot
- Piping Plover
- Roseate and Common Tern
- Pelegic birds

Methods

- Wildlife tracking studies (telemetry/nanotags, etc.)
- Expansion of the Motus network
- Acoustics surveys (bats)

- Expand GPS & satellite tag technology
- Characterize migratory movements
- Flight altitudes

Photo courtesy of Farrar Straus Giroux

Marine Mammals

Evaluate habitat use, distribution, & abundance by season

Species

- North Atlantic Right Whale
- Overwintering harbor seals

Concerns

- Relative threat of mortality/injury from vessel strikes
  - increased vessel interactions (due to creation of traffic corridors)

Methods

- Support expanding PAM efforts
- Identify environmental variables driving population-level patterns

Fishes & Mobile Invertebrates

Examine effects on the distribution/connectivity of mobile species & communities

Species

- Horseshoe crabs
- Species with obligate migration paths
- Larvae & juveniles (fishes/crustaceans)

Methods

- Acoustic tags
- Examine trawl survey data for relevant areas

Fisheries

Capture both biological, regulatory, and socioeconomic impacts

Sectors

- NJDEP trawl survey
- Commercial Fisheries
  - Dredge
  - Purse-seine
  - Trawl
- Recreational Fisheries changes
  - Fish communities
  - Access

Methods

- Compare biases/limitations
- Calibrate new time series

Discussion Guidelines

- Clarifying questions by category
- “One bite at the apple”
  Time permitting – cycle back
- Written comments through the survey

Short-term Highest Priority Research & Monitoring Needs*†		
Environmental Change	**1**	Examine impacts of OSW energy development on seafloor, light conditions, and ocean stratification (i.e., how could potential changes in circulation patterns due to OSW development affect geological and physical oceanographic properties, such as the mid-Atlantic Cold Pool?)
Benthos	**2**	Identify & evaluate valuable bottom habitats (e.g., sand ridges, surfclam beds, SAV in estuaries - use survey work in lease areas to identify habitat types) and organisms (summer flounder, skate, dogfish, horseshoe crab, sturgeon); model potential changes to these habitats and organisms
Birds	**3**	Develop baseline estimates of population-level distribution information (with focus on Red Knot, Piping Plover, and Roseate Tern) by expanding GPS, Motus, and satellite tag technology to characterize migratory movements – particularly flight altitudes – throughout the NY bight
Bats	**4**	Update known population data at the proposed development sites (i.e., how many bats will potentially be interacting within the known lease areas)
	5	Use best available technologies (e.g., nanotags and Motus network) to determine the extent of bat migration/activity offshore in the NY Bight (especially for Hoary, Silver-haired, and Eastern red bats)
Fishes & Mobile Invertebrates	**6**	Examine effects of OSW on the distribution/connectivity of mobile species and communities (e.g., acoustic tags for horshoe crabs or species with obligate migration paths)
	7	Examine the distribution and use of habitat by larvae and juveniles (fishes/crustaceans) in the New York Bight (e.g., nursery function and spawning grounds)
Sea Turtles	**8**	Collate existing data for sea turtle movement, distributions, and habitat use patterns; conduct beach surveys where possible (i.e., how do these animals use the space?)
	9	Conduct tagging on rehabilitated/released sea turtles
Marine Mammals	**10**	Estimate habitat use, distribution, and abundance by season (e.g., overwintering harbor seals) for the right whale, other whales and dolphins through supporting PAM efforts in the NY Bight; identify environmental variables driving these patterns
	11	Evaluate relative threat of mortality/injury to for the right whale, other whales and dolphins from vessel strikes (including increased vessel interactions due to creation of traffic corridors) associated with OSW and non-OSW activities
Fisheries	**12**	Adapt DEP trawl survey design to allow for comparison of biases/limitations in and outside of OSW development areas and calibrate new time series
	13	Identify and implement methods to determine how dredge, purse-seine, and trawl fisheries will be affected by construction/during operation; model increased vessel interactions due to creation of traffic corridors
	14	Develop and implement methods to assess impact of OSW on recreational fisheries (e.g., changes in fish communities within WEAs)

New Jersey Offshore Wind Research & Monitoring Initiative

Presentation to the Environmental Resources Working Group 8/31/21

Narrative to Accompany Slides Presented

Slide 10

New Jersey's Research & Monitoring Initiative (RMI) is a project that we at the Department of Environmental Protection (DEP) are collectively working on in collaboration with our partners at the Board of Public Utilities.

Earlier this month, the Intergovernmental Panel on Climate Change (IPCC) released its Sixth Assessment Report, and the science has never been more clear that climate change is real and it is happening now. The report is the strongest call to action from this impressive collection of scientific experts to date. It lends even greater urgency to the need to enact sustainable solutions like Offshore Wind (OSW), that reduce our greenhouse gas emissions.

Slide 11

As we move towards a clean energy economy, however, we must do so in step with our mandate to protect and responsibly manage New Jersey's coastal & marine resources, which we hold in the public trust.

Our mandate at DEP requires that we understand the resources: as they exist, as they are changing with the climate, as well as how they might change in response to the installation and operation of OSW. That is what our Research and Monitoring Initiative is intended to do.

Initial funding for this Initiative is provided by developers through NJ's Second OSW Solicitation in the amount of $10,000/MW. The Initiative is intended to be a rigorous scientific approach addressing the need for research and monitoring of marine and coastal resources during OSW development, construction, operation and decommissioning as recommended in the NJ OSW Strategic Plan.

We will do this with key principles in mind including: maintaining transparency, balance, furthering scientific understanding, using credible and rigorous science, and by being adaptive.

We recognize that there are multiple partners undertaking similar efforts across the Atlantic Coast; so while we are committed to ensuring that New Jersey's highest research priorities are met, we are also interested in cooperating with regional partners and experts, such that we are contributing to a broader regional research effort.

We are thankful for the ability to coordinate with many of the members of this working group regularly and are glad to present our progress and our process in developing the Priorities document we circulated last week.

Slide 12 - The RMI process

Based on current understanding of resources of concern, data gaps, and information needs, and informed by both current literature and references pulled together both internally and by analogous groups in the mid-Atlantic, we identified a list of research and monitoring priorities for New Jersey. We expect our understanding to evolve with the continued expansion of and coordination with regional efforts by the groups listed here.

This list contains broad categories and includes everything from assessing environmental changes to potential impacts on New Jersey's fishing industry.

Using these priorities, we will develop strategic scientific questions and where appropriate, create a competitive opportunity to answer them. Some projects are intended to move ahead starting in 2022. Other projects may become part of a long-term research and monitoring plan that will be developed subsequently. And in keeping with our principle about maintaining transparency, the Monitoring Reports will be made publicly available.

Slide 13 - ERWG's role

We will present each of the categories for our priorities and some specific examples to illustrate the types of information we may seek; afterward, our team will be happy to answer any clarifying questions so that you are best prepared to offer us thoughtful feedback on the priorities in writing via a survey link that we will send out after today's meeting.

We will keep the survey open for ERWG comments until **Sept 17th**. After that, we will maintain a web presence to continue to accept comments from the broader science community, other state agencies, and the public.

All feedback will be reviewed and considered; we are grateful for your time and consideration in providing it. It is through collaboration that this effort will succeed.

Slide 14 - Research Priorities Development

This is NOT a weighted visual or indicative of the level of priority, funding, or effort each of these research areas will receive. With our resources being limited, we cannot fund all potential projects to answer questions about impacts of OSW development on our natural resources. We need to create a list of high-priority research and monitoring questions, and understand what work is being done by other state, regional, and federal agencies and institutions, to make informed decisions about what work will need to begin here in New Jersey, as early as Spring 2022.

To create our priorities list, we used the framework from the New York State Energy Research & Development Authority (NYSERDA) Environmental Technical Workgroup's OSW Cumulative Impacts Workshop. The workshop was comprised of 466 attendees from 21 states and 20 countries, with a combined 1200+ years of cumulative experience in offshore wind and wildlife including a wide range of stakeholders from the OSW industry, government agencies, non-profit organizations, and academic institutions. The goal was to assess what is currently known about the potential cumulative impacts of

OSW development on wildlife populations and ecosystems, and to identify a list of studies that could be implemented in the next five years.

We chose to align with NYSERDA's approach and make use of the tremendous amount of work and expertise that went into the reports resulting from the workshop. Like NYSERDA, we chose to use taxa-based categories for our research priorities versus impact-based categories, as most potential impacts affect multiple taxa groups and monitoring methods tend to be similar within them. Additionally, many subject-matter experts' research is focused within a given taxa group.

Beginning with the information contained in these NYSERDA's workgroup reports, we then conducted our own internal literature & resources review, which is ongoing, to see areas that have additional existing information in the peer-reviewed literature and various program reports, what related research projects are currently ongoing, and where some of the remaining data gaps lie – with a focus on New Jersey-specific issues. For example, we may be interested in how different blade configurations might affect collision risk for birds, but this question is currently being answered by other entities, and those results will be applicable across the Mid-Atlantic Bight.

We have also fostered collaborations to coordinate monitoring efforts across the region and gauge the relevance of our priorities within the broader Atlantic Coast context. We are working with small, interstate groups (for example, groups focusing on ocean sensor coordination and Passive Acoustic Monitoring (PAM) networks). Additionally, we are interacting regularly with organizations such as the Responsible Offshore Science Alliance (ROSA) and the Regional Wildlife Science Entity (RWSE), as well as colleagues at federal agencies, to ensure the work we pursue is not duplicative and can be analyzed within a broader spatial framework. Our goal is to create a streamlined set of priorities within each of these areas that reflects New Jersey-specific research and monitoring needs, and supports regional efforts, where possible.

Given the timelines that the Bureau of Ocean Energy Management has given us for construction in the waters off our coast, we are looking to work both quickly - with a sense of urgency given the potential for OSW to offset our carbon emissions dramatically, but also carefully - meeting our call to steward the environment with a well-vetted and robust collection of data that will allow regulators to avoid, minimize, and mitigate potential negative impacts as we move forward in our green energy economy.

Slide 15 - Environmental Change

To examine any potential impacts of OSW energy development, we must first understand the existing environment. We will be looking to evaluate potential impacts to the seafloor, light conditions, and ocean stratification (i.e., how could potential changes in circulation patterns due to OSW development affect geological and physical oceanographic properties, such as the mid-Atlantic Cold Pool?)

We also recognize that a key component of accurately answering these questions will be teasing out the effects of climate change from the effects of OSW development. Doing so is no simple feat. A comprehensive approach geological, physical, and chemical data collection is needed.

The potential methods for this work include expanding existing data collection that is going on in our area, such as eco-glider deployments, integrating oceanographic sensors with existing tagging programs,

and potentially adding sensors to the turbines themselves to gain more insight into the changes that are happening in our oceans.

Slide 16 - Benthos

We are interested in the effects of OSW development on the seafloor itself, but also the organisms and communities that rely on it . The existing habitat mapping that is being conducted by developers (as required by BOEM) is at a coarse spatial scale. We seek to identify & evaluate valuable bottom habitats (e.g., sand ridges, surfclam beds, SAV in estuaries) at a finer spatial scale to be able to answer questions pertinent to important NJ species and habitats. We plan to use survey work to identify habitat types and the organisms that are obligate users of those habitat types. Looking ahead, we would like to be able to model the potential changes to those habitats and species resulting from OSW development.

Slide 17 - Sea Turtles

The first priority for sea turtles will be to collate existing data for sea turtle movement, distributions, and habitat use patterns. We would additionally like to conduct beach surveys where possible, to investigate the potential nesting sites in Cape May county, for example. The overarching question we look to answer is how do these animals use the space? An important note as we examine historical and current data about habitat and distributions is, again, the impact of climate change on these species. It is no longer a question of whether species with distributions to the south of New Jersey will be thermally forced north, but when.

We must maintain a forward-looking temporal perspective when assessing all of these areas of research, but for sea turtle distribution especially.

Slide 18 - Birds & Bats

We combined our research priorities slide for birds and bats in the interest of time; we would like to allow ample time for clarifying questions. The reason for combining these two taxa groups is their alignment in both the essential research questions, as well as the potential methods to be used. The first order assessment for these groups will be to update known population data at the proposed development sites (i.e., how many organisms will potentially be interacting within the known lease areas).

We will use the best available technologies (e.g., nanotags and Motus network) to determine the extent of migration/activity offshore in the NY Bight. Particular attention will be given to Hoary, Silver-haired, and Eastern Red bats, as well as Red Knot, Piping Plover, and Roseate Tern, as these are species of particular concern in our area.

The plan is to develop baseline estimates of population-level distribution information by expanding GPS and satellite tag technology to characterize migratory movements – particularly flight altitudes - throughout the NY bight.

Slide 19 - Marine Mammals

Similar to sea turtles, birds, and bats, our first goal for marine mammals will be to estimate habitat use, distribution, and abundance by season (e.g., overwintering harbor seals)

Our initial efforts will be to support Passive Acoustic Monitoring efforts which are already underway in New Jersey and throughout the NY Bight. Subsequently, we want to identify environmental variables that are actually driving these patterns – a really important piece of separating the impacts of climate change from those of OSW development.

For marine mammals, an additional area to evaluate will be the relative threat of injury and mortality from vessel strikes. The creation of traffic corridors has the potential to increase vessel interactions

Slide 20 - Fishes & Mobile Invertebrates

We want to emphasize our distinction between assessing impacts to fish & invertebrate species and impacts to the commercial and recreational fisheries that operate off the NJ coast.

For the biological impact, we will seek to examine the distribution and connectivity of mobile species and communities. Potential methods for collecting these data include acoustic tags for species like horseshoe crabs and organisms with obligate migration paths within the wind energy areas, or near proposed cable routes.

As with the other taxa-based groups, our goal for fish and invertebrates will be to estimate habitat use, distribution, and abundance by season, so that we can then asses any significant impacts, positive or negative, that OSW development may have.

We understand that modelling efforts are underway at the federal level to help answer these more predictive questions, and will coordinate to collect data that will calibrate those distribution models

Slide 21 - Fisheries

We hope to adapt the NJDEP trawl survey design to allow for comparison of biases/limitations in and outside of OSW development areas. This exercise will essentially be a calibration of a new time series (one that begins along with construction).

We will also work to identify, develop, and implement methods to assess and mitigate impacts to dredge, purse-seine, and trawl fisheries during construction and operation.

Along with the regulatory and socio-economic impacts, we will seek to model increased vessel interactions due to creation of traffic corridors (particularly between commercial and recreational fishing sectors, along with other maritime traffic)

Slide 22 - Discussion Guidelines

This portion of our presentation is intended to provide the opportunity to ask clarifying questions.

Our goal is to ensure that the materials we have shared are understood so that you may offer thoughtful written comments via the survey we will send after this meeting.

The survey will remain open until Sept 17th.

Our time for questions is somewhat short, so we will spend just a few minutes on each topic, and we will request that you ask your question succinctly.