RUTGERS
NEW BRUNSWICK

RUTGERS UNIVERSITY

Offshore Wind Energy Symposium

01 | 12 | 23

Summary of Findings

Photo by Jess Stromberg/BOEM

TABLE OF CONTENTS

ACKNOWLEDGMENTS

The Rutgers University Offshore Wind Energy Symposium and the publication of this report are made possible with funding from the New Jersey Economic Development Authority for the University Initiatives to Advance Offshore Wind Energy program. This report was prepared with the assistance of the table leaders and scribes from the World Café session at the Rutgers University Offshore Wind Energy Symposium.

NJEDA
ECONOMIC DEVELOPMENT AUTHORITY

WIND INSTITUTE
for INNOVATION & TRAINING

Photo by Jess Stromberg/BOEM

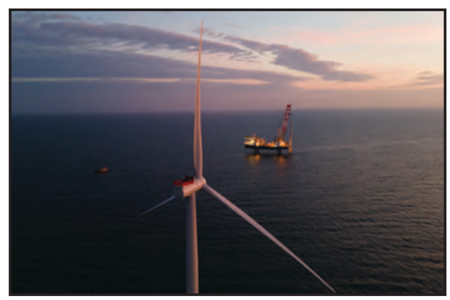
INTRODUCTION

On January 12, 2023, the first Rutgers University Offshore Wind Energy Symposium took place at the Richard Weeks Hall of Engineering on the Busch campus of Rutgers University in Piscataway, New Jersey. The Symposium was a day of collaboration among Rutgers faculty and students, industry, non-profit organizations, and government leaders. Over 140 attendees discussed challenges, identified opportunities, and built community surrounding offshore wind energy at Rutgers and throughout New Jersey.

As part of the Symposium, a World Café discussion occurred, in which the attendees were divided into 16 groups of approximately nine people. Each multidisciplinary group, led by a table leader and scribe, had 15 minutes to discuss one of four topics pertaining to offshore wind energy in New Jersey before proceeding to the next topic; therefore, all attendees were given the opportunity to provide their feedback on each topic. The four World Café discussion topics were:

- the benefits and risks of offshore wind as an energy source;
- hurdles facing offshore wind energy development and implementation;
- partnerships needed for social and economic viability of the offshore wind energy sector; and
- offshore wind energy workforce development needs.

This report synthesizes the discussions from the World Café of the Rutgers University Offshore Wind Energy Symposium. Recommendations for policy, as well as academic activities to support the future of the offshore wind energy industry in New Jersey, are provided as an outcome of these discussions.



Photos by Dennis Schroeder/NREL

BENEFITS AND RISKS OF OFFSHORE WIND AS AN ENERGY SOURCE

What are the potential benefits associated with offshore wind energy production?

The four main benefits of offshore wind energy (OSW) are: reducing carbon dioxide (CO_2) emissions to satisfy New Jersey's energy requirements, enhancing ecological conditions including ecosystem services, boosting local industry and workforce development, and generating novel scholarship and innovation.

OSW is a clear alternative to burning fossil fuels for energy, and thus will reduce CO_2 and other greenhouse gas emissions. Such reductions, especially if matched with manufacturing technology that relies less on fossil fuels or CO_2 emissions, will enable New Jersey and the US to meet their obligations to reduce the rate of global climate change. Reducing the rate of climate change then decreases the social and environmental impacts of climate change (e.g., intensifying storms, sea level rise, etc.) and the expense of mitigating these impacts. Less reliance on fossil fuels also reduces US dependence on foreign fuel sources.

OSW components introduce new 'hard' structures to coastal environments, which provide habitats to a variety of marine species. These structures can then be used to create artificial reefs offshore of New Jersey (and elsewhere) that serve as a substrate for invertebrate settlement and attract a variety of fish, several of which are of recreational importance. By creating such habitats, OSW structures provide ecosystem benefits, including enhancing recreational fishing opportunities.

The expansion of OSW in New Jersey could be a massive boon to local economies, manufacturing, and employment. Siting, installing, and maintaining OSW facilities require large-scale manufacturing facilities, reliable supply chains and a specialized workforce. Each of these is an opportunity to build local economies, especially in New Jersey's frontline communities. Synergistic relationships can form between industry and education to develop the workforce in underserved communities. OSW also requires investment in port facilities in New Jersey, which can serve as employment hubs, and such improvements may allow other industries to flourish. OSW can also improve the security and redundancy of domestic power production. Investment by the state and industry into OSW energy could elevate New Jersey to an (inter) national leader.

Many of the ecological, technological, and socioeconomic aspects of OSW energy development are understudied. Focusing on near-shore marine environments for OSW siting will bring needed research investment into these ocean ecosystems to determine how OSW facilities interact with marine life, seabirds, and migrating songbirds. These facilities, along with the funding devoted to mitigating these impacts, represent an unprecedented opportunity to study these species. OSW facilities also provide information on oceanographic processes, such as the interface between marine sediments, water movement, and wind production. Finally, investing in wind siting and operation would allow the exploration of various anthropological artifacts in the offshore environment.

What are the potential negative aspects associated with offshore wind energy production?

Participants noted various potential negative aspects of OSW, including the sustainability of resources used to build wind turbines, the effects of OSW on marine life and the environment, and a range of socioeconomic concerns, all of which highlight the many uncertainties and data gaps related to OSW.

One of the most mentioned negative aspects of OSW was the large usage of finite materials with a high carbon footprint. Tens of thousands of tons of CO2 are emitted from the manufacturing and importation of resources, such as neodymium iron chloride magnets. There is already a dwindling supply of these rare earth magnets, as well as the fiberglass composite and resin materials for the turbine blades, copper for the wiring, corrosion-resistant products for the wires and paint, and cement that is prone to cracking. Research is needed on reusing old magnets, since some of these materials cannot yet be recycled. Materials that are more abundant, recyclable, and beneficial should also be explored.

Participants were very concerned about the potential ecological effects of OSW. Many people believe that OSW causes the mass mortality and beaching of whales; thus, attendees questioned how the sound, vibrations, and structures of OSW turbines could affect marine life, especially animals that rely on echolocation for travel and communication. Some wondered how OSW might impact the cold pool and thus influence fish migration and various fishing sectors. Others raised safety concerns, such as the collision of boats, dredging equipment or divers with turbine structures or underwater cables, and the difficulty of conducting search-and-rescue operations around OSW turbines. There is also uncertainty about how the offshore placement of the turbines could impact the onshore breeze via wind extraction.

The most prevailing responses from participants about the negative consequences of OSW involved socioeconomics. Many questioned how public policy and changes in administration would affect the growth of OSW, including the granting of permits and subsidies for supply chain establishment

Photos by NREL (top) and BOEM

and workforce training, the development of manufacturing facilities, and the connection between the East and West Coasts. Public opinion is a huge concern, as OSW personnel (including Rutgers faculty) traveling to the shore have often encountered locals who are upset about the implementation of OSW in their area. Many in the public posted flyers condemning OSW and filed complaints about wind turbines being unsightly and noisy. Shore communities are especially uneasy about the uncertain impacts of OSW and the rapid transition to large-scale project development.

Economic uncertainty about the magnitude of multi-billion-dollar OSW projects was also noted as a potentially negative aspect of OSW, particularly since the real costs of manufacturing and transporting such large turbines are still unknown. Participants expressed worry that these projects would not be viable without federal subsidies, resulting in major costs being passed to consumers. Some questioned what level of maintenance would be needed to ensure the reliability of OSW structures, especially in extreme weather conditions and the salty environment of the Atlantic Ocean. Attendees noted that OSW structures could pose a national security risk because important power generation infrastructure would be located far offshore in waters that are difficult to defend. Another concern was that New Jersey lacks the education and workforce capacity required for OSW, given the need for specialized technicians, programmers, and engineers for construction and maintenance. Additional expenditures will be needed to revamp OSW education, given the shortage of literature and capable trainers/instructors.

In socioeconomic terms, OSW will disproportionately impact the fishing industry by preventing fishermen from safely dragging their nets, dredging, or navigating within a certain distance of OSW structures. These structures may act as fish-aggregation areas, thus limiting fishing opportunities outside of OSW sites. New Jersey has some of the most sustainably managed fishing industries off the US coast, and the loss of access to fishing grounds could hurt local businesses. Compensation strategies to offset these impacts have been discussed, but administrative decisions or commitments have not been made.

How do these benefits and risks compare with traditional energy technologies?

Similar to OSW, traditional energy technologies (wind, solar, fossil fuels and alternative fuels) have their own advantages and disadvantages, to which the public continues to adapt.

The main advantage of wind energy is that it is emission-less in its post-build cycle. Additionally, wind technology can generate thousands of jobs while having low operating costs and no influence on the climate. The disadvantages of wind energy include the non-recyclable disposal of wind turbines at the end of their life cycle, hazards to wildlife, harm to the fishing industry, unaesthetic and noisy design, low reliability based on wind availability, a large initial fee, and reliance on carbon-positive materials.

Regarding solar energy, it too has the advantage of being completely emission-free after being manufactured and installed. Solar energy also generates no noise, has no influence on the weather, has a low operating cost, is easy to access, and does not require a high initial outlay. In terms of drawbacks, the solar industry is dominated by China, relies on carbon-positive materials that are aesthetically unappealing, depends on sun availability and weather, and is less efficient than other technologies.

For fossil fuel energy production, one benefit is that the US is the largest producer of fossil fuels and the associated energy. Fossil fuels are easily

Photos by NREL

transported and highly reliable, and their consumption is essentially invisible to society, with medium operating costs and no noise. However, fossil fuels are made from carbon-positive materials and have a large impact on the environment due to their particulate, gas and mercury emissions, and the pollution caused by drilling and mining. Additionally, fossil fuels have large initial cash outlay requirements and ongoing expenses.

In terms of alternative fuels (e.g., nuclear and other technologies), advantages include job creation, limited greenhouse gas emission, mobility, lack of noise or climate impact, and medium operating costs. As for the disadvantages, alternative fuels require a large initial investment, have low reliability due to supply chain constraints, generate CO2 during manufacturing, and can create toxic waste.

HURDLES FACING OFFSHORE WIND ENERGY DEVELOPMENT AND IMPLEMENTATION

What are the technical hurdles?

Participants discussed various technical hurdles to OSW. One hurdle is the need for significant upgrades to the 100+ year-old grid to ensure stability, reliability and efficiency as OSW develops. At a minimum, this will include determining how to bring energy onshore, connecting offshore sources to the existing grid, and upgrading existing onshore facilities. Another obstacle is ensuring reliable power generation when the wind is not blowing, which will require the development of energy storage.

There are also numerous research hurdles to overcome. For one, since OSW largely relies on novel, untested technology, field studies are needed to assess performance metrics such as how much energy is produced, how weather changes impact the lifespan of the turbines, and how turbines of such unprecedented size will function.

Moreover, it is necessary to understand the short-, medium-, and long-term environmental conditions of New Jersey, for the sake of better predicting wind speeds, determining the physical characteristics of the ocean, and investigating the destabilization of the Gulf Stream. Research is also needed to assess the ecological/biological impacts of OSW construction and operation on marine life, continental fish and their habitats in New Jersey, as well as its broader impacts on the entire ecosystem and seasonal migration along the coastline.

Another major challenge is servicing and maintaining the turbines after they are built, as well as implementing safety measures to protect against nature, human interference, and equipment malfunction. Extending the lifespan of the turbines to be comparable to fossil fuel infrastructure is also a challenge, and there are not yet guidelines for when/how to decommission outdated turbines.

There is also a need for more researchers and technical experts to monitor, statistically analyze, and share OSW data in order to mitigate risk and uncertainty. A final technical hurdle mentioned was the need for project coordination among the many engineering, supply chain, and regulatory components involved in this work, to ensure the timely availability of plans, parts, and permits.

Photos by BOEM

What are the economic hurdles?

The integration of OSW into our energy infrastructure will also face economic hurdles, such as high capital costs and potentially high energy costs to users. It is unclear whether fossil fuels will become more expensive than renewables, and the volatility of energy costs could motivate private developers either to renegotiate power prices or to flee the marketplace. Some participants questioned why the US should have to pay to implement OSW if developing nations are not funding renewables, while others expressed concern about lost job creation to European and Asian countries that are investing in OSW. Participants also noted ecological economics as a hurdle: on one hand, fossil fuel externalities have not been considered, but on the other hand, shifting to OSW for energy generation could lead to asset stranding. Another economic hurdle is the need for increased workforce development for all aspects of OSW, which will require promoting career paths related to OSW and ensuring that they endure once construction is completed. Finally, the supply chain may be disrupted as parts are sought for OSW projects.

What are the social hurdles?

There are also social hurdles to OSW. It may not be possible to accommodate all the aesthetic, economic, and environmental interests of the diverse stakeholders among shore communities, fishermen, and the tourism industry. Homeowners may become dissatisfied with disrupted beachfront views, and the public may be more concerned with the acute impact of construction (e.g., noise) than with the chronic impact of climate change. Opposition from the fossil fuel industry may sway public opinion, and politicians may blame OSW for negative unrelated events (e.g., whale strandings) to achieve their political agendas. In the face of these false narratives, policymakers and the general public need to be educated about the actual effects of OSW on marine life.

What are other hurdles?

Participants discussed several other hurdles to OSW. One hurdle is weighing the risk-risk scenario; for example, OSW might kill or disrupt the food sources of fish or birds, but this is collateral damage to address the greater risk from climate change if emissions are not addressed (i.e., the cost of doing nothing). Another obstacle is that short-term demand may require the recommissioning of fossil fuels. Finally, there are several government policy and regulatory hurdles, such as slow permitting and policy changes, staff shortages, and administration changes.

PARTNERSHIPS NEEDED FOR SOCIAL AND ECONOMIC VIABILITY OF OFFSHORE WIND ENERGY DEVELOPMENT

What types of partnerships and agreements are needed in the next 5 to 10 years? Who needs to talk to whom in order for this to work?

Attendees strongly believed that the development of OSW will require sustained partnership among the government (policy), researchers (from K-12 up through higher education), community, and public/private sectors (corporations, industry, fishermen, workforce/unions, and interest groups). Partnerships across policy, education, community, and the public/private sectors should fill resourcing gaps in the New Jersey OSW industry and help newer markets to scale up at speed. As these partnerships become sustained, working with neighboring states will become more important, requiring New Jersey to be proactive and strategic as it becomes a leader in OSW decision-making.

Photos by Dennis Schroeder/NREL

How do we encourage investment and deployment?

Encouraging private investment and increasing the deployment of OSW is an important step to achieve New Jersey's climate and energy goals. New Jersey can advance investment and deployment by providing relevant and trustworthy information to decision-makers, investing in the community and workforce, and building enabling infrastructure, such as grid investments.

One important factor identified to encourage investment and deployment is obtaining and disseminating the data needed to support such decision-making. Decision-makers may be corporate leaders and investors deciding to invest and build, or other stakeholders such as fisheries, farmers and communities that are unsure of whether to encourage or oppose local investment and deployment. Information to support decision-making includes clearly communicated environmental and economic pros and cons, transparent accounting of federal and state funds spent on wind energy, and evidence that OSW impacts are being monitored and managed. Such information must be relevant, trustworthy and transparent, while acknowledging uncertainties. Ideas on disseminating this information to decision-makers include making non-partisan academic experts available to speak to decision-makers (formally or informally), and creating accessible online factsheets to help decision-makers assess the pros and cons of OSW development quantitatively. Some participants suggested broad marketing campaigns explaining the benefits of wind energy and how to address impacts.

In addition to information, investments in community and workforce development should increase wind energy investment and deployment. Trade school programs in OSW development could be a key means of providing a workforce and ensuring local community benefits. Finally, enabling infrastructure such as electric grid updates, ports, and roadways will be needed to promote OSW investment and deployment.

How do we encourage social buy-in?

Social buy-in is a key piece of creating a positive investment environment and improving the chances of OSW deployment in New Jersey. To this end, information about the benefits of wind energy should be emphasized, while negative media should be combatted. Such information could be integrated into K-12 and undergraduate education, so citizens are equipped to make energy choices and participate in the political process. Participants emphasized that the distribution of benefits from OSW must be just and transparent, with the most impacted stakeholders receiving the greatest benefits. Ideas included creating lower rate pricing structures for those impacted by OSW development and contracting with the fishing industry to help with monitoring and construction.

Do we need to create "standards" for offshore wind energy development and implementation?

There was general support for the idea of creating standards for the OSW industry. Thematic areas for such standards could include safety and security, environmental preservation and emissions, bird migration, electrical equipment, minimum percentage of workforce to be hired from local communities, and marine conditions. Another recommendation was to create a federal government institution to be the main governing body for OSW regulatory standards, like the Federal Electrical Governing Body (FERP).

Photos by BOEM (top) and Siemens

How do we reduce barriers to offshore wind energy job readiness and placement?

Participants discussed ways to foster OSW workforce development. One proposal was to create a clearinghouse of resources for training, certifications and jobs, as well as direct pipelines to connect students with job opportunities. Another suggestion was to reduce the time required to train/educate students – for instance, by creating programs at vocational schools rather than four-year universities. A multidisciplinary education encompassing policy, engineering, economics, communication and data analytics would help graduates understand the context of their roles in OSW industrial and natural ecosystems. Participants also proposed creating a minor in wind energy at the undergraduate and graduate levels, including internships in the wind industry. Given the variety of educational options, attendees emphasized the need for clear visualizations of career paths and options for college-bound students, vocational/technical students, career changers, and enthusiasts from related disciplines, such as maritime, construction trades and environmental policy. Mentorship programs would allow students, career changers and prospective employees to be paired with industry professionals who could teach them multiple skill sets.

How do we provide equitable access to offshore wind energy career opportunities?

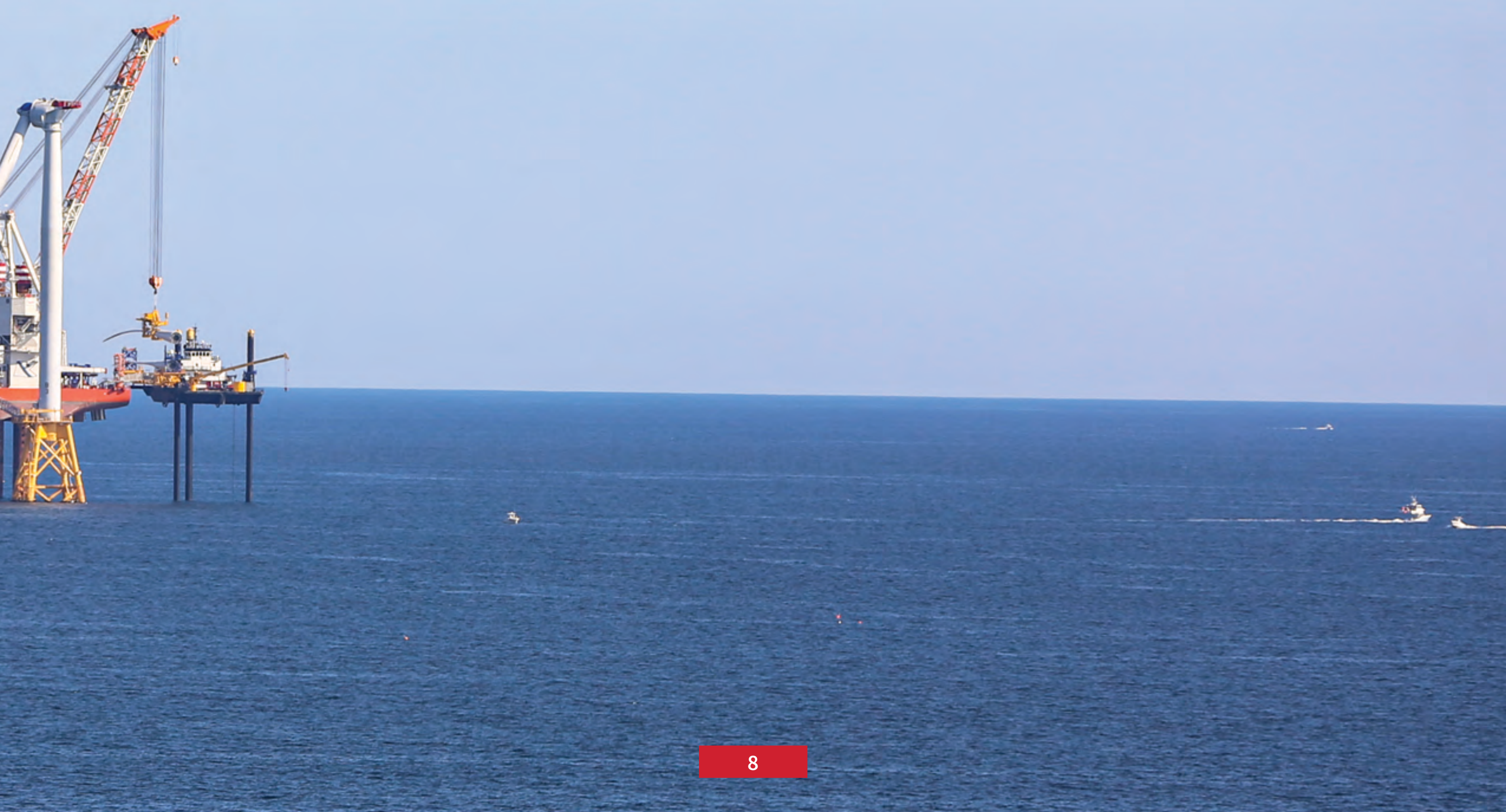
For the sake of providing fair access to a diverse population of potential employees, developers of OSW opportunities must target career resources within the context of structural and systematic inequities. This will involve expanding opportunities at vocational schools and colleges that serve underrepresented populations or are located in areas with the highest industry workforce needs (especially the locus of OSW in South Jersey and the surrounding rural areas). Participants proposed incentive programs to reduce barriers for underserved populations, including tuition reimbursement and minimum salary guidelines. Designers of OSW mentorship programs should strive to reach underrepresented populations and acknowledge systematic inequities. Due to the temporary nature of certain OSW jobs, educational program developers should prepare students for a transition to future employment in construction trades, and include cross-training opportunities to open paths into related fields, such as home energy or transportation. Participants emphasized the importance of coordinating with labor education and apprenticeship programs to ensure equitable access to opportunities.

Photo by Lissa Eng/BOEM

How do we evaluate workforce development models employed in other industries and locales?

The OSW industry would do well to draw upon the experience of other workforce development models, systems, and structures. Potential sources include:

- emerging and growing environmental fields in the US, such as hazardous waste site remediation, radon remediation, and others;
- European models of workforce development in safety, operation, and construction;
- the Jobs for America's Graduates (JAG) high school career development program;
- other countries with experience building OSW workforces and industries (e.g., Britain and China);
- PSE&G nuclear facilities that offer a pipeline from high school to the workforce;
- local workforce development systems, including coordination with employers through workforce industry advisory boards
- OSHA models for maritime safety and environmental safety;
- Wind Institute graduate fellowships focused on supporting students and their research;
- maritime schools; and
- the One Health Task Force, which recruits people of color to work with non-profits and creates action plans in schools where farming is taught to a new generation.



How should we conduct pre-college training and career readiness?

Attendees discussed the need for earlier education in matters related to OSW. For instance, public schools for students in grades K-12 should introduce career opportunities in wind energy/climate change. The New Jersey Economic Development Authority has already developed a K-12 curriculum on OSW; however, schools need to promote and employ these materials, along with educational aids like as coloring books. At the pre-college level, early career prep programs are needed for the new types of jobs that will arise from the wind industry.

What investments are needed to realize a diverse and skilled offshore wind energy workforce?

When asked about the types of investments needed to build these solutions, stakeholders shared that coordinated funding at the federal, state, and local levels would be crucial for successful OSW workforce development. They also spoke of the need to build widespread public support and excitement for OSW to maintain the necessary funding. Investments should be focused on historically marginalized communities to create good opportunities for underrepresented populations, and pre-apprenticeship programs should be designed to increase job access in lower-income communities. Participants discussed the importance of investing in younger workers in the generation that will grow up with the new industry and its technologies. In terms of education, investments must be made from the elementary level through the postsecondary level, and should encompass multiple pathways into OSW careers, such as public education, vocational/technical training, certification programs for essential skills, and pre-apprenticeship and apprenticeship programs with unions and workforce development organizations, community colleges and universities, including both traditional credit degrees and extension education. A mix of short- and long-term investments are needed to realize positive gains immediately while ensuring the long-term viability of a skilled OSW workforce in New Jersey.

Considering the myriad suggestions made regarding investments, it is clear that a diverse range of stakeholders should be included in discussions about workforce development funding, including developers and industry experts, as they have a clear understanding of the workforce needs; unions, as they have the skills and training expertise; and community members, who understand the potential impacts and opportunities that OSW can bring to their localities.

RECOMMENDATIONS FOR POLICYMAKERS

- The government should develop sustained partnerships with researchers (from K-12 up through higher education), the community, and the public/private sectors (corporations, industry, fishermen, workforce/unions, and interest groups) to help to fill resourcing gaps in the New Jersey OSW industry and help newer markets to scale up at speed.
- New Jersey should work with neighboring states, taking a proactive and strategic role as it becomes a leader in OSW decision-making. Partnership between the East and West Coasts will also help to foster OSW implementation.
- The federal, state, and local government should supply coordinated funding to ensure successful OSW workforce development.
- The government should invest in OSW-related education from the elementary level through the postsecondary level. Investments should be focused on historically marginalized and lower-income

Top photo by BOEM
Bottom photo by Stephen Boutwell/BOEM

communities to increase job access for underrepresented populations. A mix of short- and long-term investments are needed to realize positive gains immediately while ensuring the long-term viability of a skilled OSW workforce in New Jersey.
- A transparent accounting of federal and state funds spent on wind energy is needed to support decision-making on the part of stakeholders.
- Governing bodies can help to create standards for the OSW industry, with thematic areas including safety and security, environmental preservation and emissions, bird migration, electrical equipment, minimum percentage of workforce to be hired from local communities, and marine conditions.
- A federal government institution could be developed as the main governing body for OSW regulatory standards, like the Federal Electrical Governing Body (FERP).
- State and local governments should ensure that the distribution of benefits from OSW is just and transparent, with the most impacted stakeholders receiving the greatest benefits. For instance, lower rate pricing structures could be created for those impacted by OSW development.
- The government should seek to reduce policy and regulatory hurdles to OSW, such as staff shortages, administration changes, false narratives, slow permitting and policy changes. The growth of OSW will depend on the timely administration of permits and subsidies for supply chain establishment, workforce training and manufacturing facility development.
- Politicians should refrain from blaming OSW for negative unrelated events (e.g., whale strandings) to achieve their political agendas. Instead, policymakers and the general public need to be educated about the actual effects of OSW on marine life.

RECOMMENDATIONS FOR ACADEMIA

A repeated concern expressed during the Symposium was that New Jersey lacks the educational and workforce capacity required for OSW, given the need for specialized technicians, programmers and engineers for construction and maintenance. The following recommendations seek to address this concern.

- OSW education must be revamped, given the shortage of literature and capable trainers/instructors.
- OSW-related education should begin early. Public schools for students in grades K-12 should introduce career opportunities in wind energy/climate change: for instance, using the New Jersey Economic Development Authority's K-12 curriculum on OSW.
- At the pre-college level, early career prep programs are needed for the new types of jobs that will arise from the wind industry. Educators should seek to reduce the time required to train students – for example, by creating programs at vocational schools rather than four-year universities.
- A multidisciplinary education encompassing policy, engineering, economics, communication and data analytics should be developed to help graduates understand the context of their roles in OSW industrial and natural ecosystems. Universities could offer a minor in wind energy at the undergraduate and graduate levels, including internships in the wind industry.

Photo by BOEM

- Educational investments should encompass multiple pathways into OSW careers, such as public education, vocational/technical training, certification programs for essential skills, and pre-apprenticeship and apprenticeship programs with unions and workforce development organizations, community colleges, and universities, including both traditional credit degrees and extension education.
- Academic advisors should provide clear visualizations of career paths and options for college-bound students, vocational/technical students, career changers, and enthusiasts from related disciplines, such as maritime, construction trades, and environmental policy.
- A clearinghouse of resources should be created for training, certifications, and job openings, as well as direct pipelines to connect students with job opportunities.
- Mentorship programs should be developed to pair students, career changers, and prospective employees with industry professionals who could teach them multiple skill sets.
- In the development of academic programs, the OSW industry should draw upon the experience of other workforce development models, systems and structures, such as the Jobs for America's Graduates (JAG) high school career development program.
- Developers of OSW opportunities should target career resources within the context of structural and systematic inequities. This will involve expanding opportunities at vocational schools and colleges that serve underrepresented populations or are located in areas with the highest industry workforce needs. Educational institutions should coordinate with labor education and apprenticeship programs to ensure equitable access to opportunities and promote workforce development in underserved communities.

Photo by Lissa Eng/BOEM

- Incentive programs should be created to reduce barriers for under-served populations, including tuition reimbursement and minimum salary guidelines.
- Due to the temporary nature of certain OSW jobs, educational program developers should prepare students for a transition to future employment in construction trades and include cross-training opportunities to open paths into related fields, such as home energy or transportation.

RECOMMENDATIONS FOR EDUCATING THE GENERAL PUBLIC

Aside from educating the prospective OSW workforce, there is the need to educate the general public about OSW, especially in the face of false political narratives.

- Information about the benefits of wind energy should be emphasized, while negative media should be combatted. Such information should be integrated into K-12 and undergraduate education so that citizens are equipped to make energy choices and participate in the political process.
- Accessible online factsheets should be created to help decision-makers assess the pros and cons of wind development quantitatively.
- Non-partisan academic experts could make themselves available to speak to stakeholders and decision-makers.

Overall, the development of the offshore wind energy industry and ensuring maximum benefits will require sustained partnerships across policy, education, community, and the public/private sectors.

osw.rutgers.edu

The Rutgers University Offshore Wind Energy Symposium and the publication of this report are made possible with funding from the New Jersey Economic Development Authority for the University Initiatives to Advance Offshore Wind Energy program.

Photo by Lissa Eng/BOEM