

## Supply Chain, Workforce, Ports and Marine Transportation Working Group

### Workforce

#### Draft Initial Recommendations for Discussion – January 2022

##### *DRAFT Vision Statement for OSW Workforce:*

Maine people have a strong work ethic and an innovative spirit; qualities that will make our state a global leader in the Offshore Wind Industry. Developing the state's OSW workforce will foster economic opportunities for Maine people and advance the goals of Maine's Ten-Year Economic Development Strategy, Climate Action Plan, and the Strengthening Maine's Clean Energy Economy report. The recommendations in this roadmap will further inclusivity and opportunity, offer new career paths, and ensure high-quality, family-supporting jobs. With critical investments, Maine will develop and attract the talent needed to cement Maine's global leadership role in the OSW industry.

#### ***Recommendation 1: Strengthen OSW Career Exploration Opportunities for K-12 and CTE Students***

Action 1: Implement opportunities for K-12 career exploration (curricula and awareness) relating to the offshore wind industry; and Science, Technology, Engineering, and Math (STEM)

- Design professional development experiences for K-12/CTE educators to understand and teach OSW and related STEM content already existing in Maine's learning standards. Identify key education partners.
  - Create networks of educators (K-postsecondary) to support robust pathways into OSW careers.
- Develop and implement OSW career exploration opportunities that are available to students in formal and informal learning environments to ensure equitable access to STEM learning related to OSW. Career exploration should emphasize career mobility including career pathways and wages.
  - Engage education partners, communities, employers, organized labor, and industry partners.
  - Look to existing programs and best practices.
- Develop community programs for youth to picture themselves in a clean energy career with Artificial Intelligence (AI) and data science at the core of such a program. Such programs lead to opportunities to incorporate OSW-specific projects, especially in the USM robotic and Oceans Wide Training program.

Action 2: Position Maine's 27 Career and Technical Education (CTE) Centers to generate a talent pipeline by offering OSW career exploration, OSW-related course work and work-based learning opportunities.

- Recognize the importance of the CTE programs in preparing Maine's OSW workforce and:

- Promote the value of CTEs to schools, students, and parents by highlighting career pathways, outcomes, and anticipated wages.
- Strengthen and expand partnerships between post-secondary, industry, organized labor and CTEs.
- Remove policy and regulatory barriers to CTE participation.
- Formalize a pathway for CTE students to transition into Pre-Apprenticeship and Registered Apprenticeship programs.

Example: The Massachusetts Clean Energy Center’s Vocational Internship Program (VIP) enhances the talent pipeline for Massachusetts clean energy companies and places skilled labor from vocational high schools in paid clean energy internships during the academic year.<sup>27</sup>

**Action 3:** Expand OSW internship, work-based learning, and Pre-Apprenticeship offerings to all secondary students, charting a pathway to Registered Apprenticeship<sup>28</sup> programs in the trades

Maine Example: The University of Maine Composite center has successfully engaged high school interns in their wind energy-related research & development efforts. As other internship, Pre-Apprenticeship, and Registered Apprenticeship opportunities increase, ensure OSW employers and organized labor are included.

Other State Example: New Mexico collaborative with Los Alamos National Laboratory – [A new partnership](#) between the Laboratory, high schools in the region, and the NM Building and Construction Trades Council (NMBCTC) is creating a talent pipeline to fill in-demand positions at the Laboratory and in the wider community. The program prepares high school students for craft trades using a nationally-recognized Multi Core Craft Curriculum (MC3) developed by North America’s Building Trades Unions (NABTU).<sup>29</sup>

**Action 4:** Engage and support tribal educators and leaders.

### *Rationale*

Maine’s 10-year Economic Development Strategy (EDS) and the Governor’s Economic Recovery Committee prioritizes career exploration as a key workforce development initiative. The Maine Jobs and Recovery Plan includes a \$25 million investment in career exploration across the K-12 system. Developing Maine’s talent with early exposure to Offshore Wind career opportunities

<sup>27</sup> <https://www.masscec.com/students>

<sup>28</sup> A “registered apprenticeship” (RA) is administered by the Employment and Training Administration’s Office of Apprenticeship (OA) within the U.S. Department of Labor (DOL), in conjunction with State Apprenticeship Agencies (SAAs). RAs are nationally-recognized, occupational training programs delivered by sponsors—employers, employer associations, and labor management organizations. Employers cover the costs of training, wages paid to apprentices, costs of managing the program, and costs associated with time spent by senior employees to mentor and train apprentices.

<sup>29</sup> New Program Offers High-schoolers Path to Trade Apprenticeships, DOE, <https://www.energy.gov/articles/new-program-offers-high-schoolers-path-trade-apprenticeships>

will build a strong pipeline of dynamic workers who have a range of interests, skills, and experiences.

## ***Recommendation #2: Increase OSW Opportunities in Maine's Postsecondary Education Institutions***

**Action 1:** Create Maine's Offshore Wind Foundation, modeled after the [UMaine Pulp & Paper Foundation](#), to support the creation of educational programs and experiential learning opportunities and provide direct scholarship support to students. Specifically:

- Partner with Maine's higher education institutions to establish specific offshore wind tracks or certificate programs for undergraduate and graduate-level students in engineering, marine sciences, law, and other industry-related disciplines.
- Encourage experiential learning and offshore experiences.
- Develop an international cooperative education/internship program to provide work experience at European and other global job sites.
- Partner with the community college system to prepare and offer GWO certification, or similarly established industry certifications.
- Provide scholarships to address equity concerns.
- Evaluate Vineyard Wind workforce investment program, including the offering of "Offshore Wind 101" in community colleges across the state.

**Action 2:** Support University-based R&D that can benefit the industry in Maine and outside of Maine. UMaine's Advanced Structures and Composites Center is positioned as the national leader in floating offshore wind research and development. The center has already spun off several successful private companies, including Aqua Ventus. Fostering innovation activity can also help attract top talent and capital to Maine.

**Action 3:** Support and leverage Maine Maritime Academy's and Northern Maine Community College's Offshore training programs at their Offshore Training Center at Bucksport. This training center will be an important in-state provider of the necessary certifications and credentials for the maritime workers needed for the construction and operations and maintenance phases of offshore wind development.

**Action 4:** Coordinate with Maine Quality Centers and other workforce training organizations, to increase training opportunities for the following high-demand occupations: Welding, CNC Machining (programs & operators), Quality Control Inspection, Electricians<sup>30</sup>, Iron Workers, Concrete Laborers, Operating Engineers. Recognize and adapt to the quickly changing landscape of OSW workforce needs.

**Action 5:** Declare the University of Maine a Center of National Excellence for Floating OSW. The University is already a national leader in floating OSW research and development, and a formal

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<sup>30</sup> BW Research, Maine Offshore Wind Workforce Gaps Analysis, November 2021

announcement will draw prospective talent and funding, further solidifying the University's leadership in the sector.

Action 6: Attract and retain out-of-state students, educators, and researchers to Maine's higher education institutions. Promote Maine as "Education Land". Continuing to promote Maine as a Center of National Excellence for Floating OSW will draw potential talent, employers, and researchers. Once this "cluster" is fully formed, specialized talent will want to stay in Maine to be surrounded by other top talent, employers, and researchers.

### *Rationale*

Maine's postsecondary institutions present an opportunity for Maine to further its leadership role in floating offshore wind. Supporting the activities of these institutions can help attract and retain highly-educated and specialized talent in a sector that is poised to see substantial growth in the coming decades. As noted below, each college and university can play a unique role in developing Maine's floating OSW cluster.

- There are ten wind-specific training programs in seven different institutions in Maine. Three community colleges host wind-specific programs, along with three public universities. The other programs are not necessarily specific to OSW but the training is transferable:
  - Four programs are geared towards electrical engineering and electrical technician roles
  - Three (all through Sky Climber Renewables) offer trainings for Wind Service Technician apprenticeships
  - Two are geared towards structural or materials engineering and,
  - One program will allow graduates to work in professional or support service roles related to OSW.<sup>31</sup>
- Northern Maine Community College's Wind Power Technology program offers broad fundamental training in the electrical, electronic, and mechanical aspects of the wind power industry, with a focus on wind turbine maintenance and electrical power production. The National Electrical Code and theory are taught throughout the program.
- The University of Maine is establishing itself as one of the leading national and international sources of offshore wind engineers and professionals. Additionally, UMS and Maine's other higher education institutions are successfully training students in adjacent occupations—mechanical engineering, marine sciences, for example, which can further Maine's OSW industry.
- Maine Maritime Academy (MMA) has already served as a key player in offshore wind development. When the University of Maine deployed the nation's first grid-connected offshore floating wind turbine prototype off the coast of Castine, MMA helped test and conduct analyses on the designs.

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<sup>31</sup> Ibid BW Research 2021

Cutting-edge technologies, including data science and artificial intelligence, as well as autonomous aerial and undersea drones, will play an increasingly important role in OSW. Maine can leverage several of its private four-year and graduate-level institutions such as the Roux Institute, University of Maine, and undergraduate institutions offering degrees in these fields, to develop specializations in these fields. The Roux Institute has several master's programs in data analytics, applied machine intelligence, and other data science-oriented programs, while Bowdoin College can support the talent pipeline with computer science undergraduates. Diversifying Maine's OSW expertise into these technologies also presents substantial opportunities for exporting goods and services for future OSW locations around the world.

### ***Recommendation #3: Enhance & Expand OSW Training & Registered Apprenticeship Opportunities***

Action 1: Develop and promote training and Registered Apprenticeship (RA) opportunities:

- Prompt industry to create and expand Registered Apprenticeship opportunities and develop mutually beneficial partnerships that grow Maine's talent pool.
- Strengthen ties between work-based learning and classroom experience by supporting and providing technical assistance for high-quality Registered Apprenticeship programming.
- Engage Maine Quality Centers and other training organizations for efficient, relevant, and cost accessible training, engage with stakeholders to promote RA opportunities, particularly to underrepresented populations and non-traditional postsecondary students.

Action 2: Attract new workers into the developing OSW industry cluster without exacerbating existing workforce shortages in other industries. Leverage unemployed residents and dislocated workers from adjacent and declining industries. Tap existing ocean users interested in expanding or adapting their skill sets and Gulf of Maine knowledge to offshore wind.

- Consider initiatives that provide Maine's fishermen with supplementary income opportunities and remove barriers. Offer free training for relevant certifications or eliminate unnecessarily onerous vessel requirements.

Action 3: Advocate for a clear certification standard for offshore wind workforce, specifically the Global Wind Organization (GWO) certification.

Action 4: Ensure social infrastructure is in place for Maine people to engage in the workforce. Supporting entry and success into OSW-relevant occupations is essential in guaranteeing that Mainers of all backgrounds can benefit from the economic activity.

- Bolster supports and awareness of programs that increase access to transportation, housing, childcare, and other basic needs to ensure Mainers can participate in the OSW economy.

Example: [The Building Pathways](#) program in Massachusetts provides a gateway for low-income area residents, particularly in underserved communities, to access family-sustaining careers in the construction industry through apprenticeship preparedness training and advocacy.

### *Rationale*

The EDS states that Maine needs to add 75K new workers to our workforce over the next 10 years. Part of that strategy includes welcoming disengaged adults, people with disabilities, new Mainers, and “at risk” young adults. Re-engaging disengaged workers will require significantly increased investment and a higher risk tolerance, as well as additional support coupled with earn-to-learn frameworks. Previous OSW projects have shown that, due to supply chain dynamics and costs, the manufacturing of hulls and construction of turbines are activities most likely to be done in Maine. This presents a substantial opportunity for the state’s workforce, particularly among occupations that require some training but less than a four year degree. Registered apprenticeships provide great entrance ramps into these types of careers by allowing participants to earn money while they learn and prepare for a career.

### ***Recommendation #4: Encourage High-Quality Jobs***

Action 1: When developing Offshore Wind projects and relevant policies, ensure opportunities for high-quality, family-supporting jobs that offer upward mobility.

Action 2: Ensure safety and health protections—many OSW construction and operations and maintenance jobs will take place miles out at sea and in inclement weather. Given the considerable risk that workers will face in such an environment, proper training and certification, safety protocols, and risk mitigation strategies will be essential to ensuring OSW workers can safely complete their jobs.

Action 3: Build opportunities for Maine companies in data science, artificial intelligence, and robotics –especially in the forestry and aquaculture industries – to expand their expertise into OSW. Jobs that require the development and deployment of cutting-edge technology often offer strong wage and career progression opportunities. These high-education, high-wage jobs also tend to have greater multiplier effects on the local economy.

Action 4: Support Maine’s engineering and professional services clusters/hubs of excellence related to OSW. Maine not only has a relatively high concentration of these workers, but these jobs tend to offer family-supporting wages and career progression opportunities.

### ***Recommendation #5: Promote Equity in Workforce Development***

Action 1: Address equity and barriers to participation in OSW jobs, Registered Apprenticeships, and other training opportunities to ensure Maine can attract and develop high-skilled workers, protect public health and safety, and support an expanding clean energy economy.

- Document the current diversity of the clean energy sector workforce, and opportunities

to increase access to these jobs for underserved communities.

- Create targeted, earn-to-learn programs that provide work experience and classroom learning to prepare individuals for apprenticeship entry examinations and other certifications and licenses.
  - These training opportunities should provide resources to increase recruitment of women, people of color, vulnerable Mainers and other underrepresented groups. Opportunities should be promoted and accessible to Mainers from across the state.
- Explore barriers to entry into clean energy careers related to credentialing pathways—including license and work experience reciprocity for new and returning Mainers and requirements for individuals entering the clean energy workforce.
- Support training programs to decrease barriers to entry through the provision of wrap-around services, financial incentives for learners to decrease identified barriers and other opportunities.
- Expedite systems to recognize foreign-trained professional credentials and connect immigrants, refugees, and asylum-seekers to OSW training and job opportunities.
- Advance policy and investments that support immigrant workers with English as a Second Language and associated job training, and other supports for new Mainers.

Action 2: Support the [New Mainers Resource Center](#) (NMRC) in offering OSW training opportunities. The NMRC is a Portland Adult Education program serving immigrants, refugees, and employers in the Greater Portland area that provides skilled professionals programs, employment and case management, intensive classes focused on job readiness skills, networking opportunities, workshops and other services designed to help New Mainers of all professions overcome barriers to entering the workforce.

Other State Example (New York): [Nontraditional Employment for Women \(NEW\)](#) prepares, trains, and places women in careers in the skilled construction, utility, and maintenance trades, helping women achieve economic independence and a secure future for themselves and their families. At the same time, NEW provides a pipeline of qualified workers to the industries that build, move, power, green, and maintain New York.

### *Rationale*

A recent report by the Maine Center for Economic Policy shows that systemic racism prevents many Mainers of color from reaching their full potential through barriers to hiring, lower wages, lack of protection from the law, and being made to feel unwelcome in the workplace.

For example, in Maine, a woman who is a representative of the racial, Indigenous, or tribal population with a college degree earns only slightly more than a white man with a high school diploma. While three-quarters of white Mainers own their own home, the same is true for fewer than one in four Black Mainers. Mainers who are representatives of the racial, Indigenous, or tribal populations typically experience unemployment and poverty at twice the

rate of white Mainers.<sup>32</sup>

## ***Recommendation #6: Coordinate & Collaborate Regionally to Attract Skilled Workers***

### **Action 1:** Attract skilled workers to Maine:

- Expand the Opportunity Maine Tax Credit: This program reimburses student loan payments for college graduates who live and work in Maine through the form of an income tax credit. Eligibility requirements include living, working, and paying taxes in Maine and having an accredited associate, bachelors, or graduate degree, with additional benefits for STEAM degrees.

### **Action 2:** Develop regional workforce strategies:

- Consider the convening of a regional OSW workforce development task force.
- Draw upon a skilled regional workforce and talent pool in partnership with organized labor due to the establishment and implementation of PLAs
- Explore the establishment of a joint Maine Building Trades Training Facility to attract and retain in-state and regional worker talent.

### ***Rationale***

Building on Maine’s existing strengths in the floating OSW industry can help the state solidify its status as a hub for floating OSW activities. The development of an industry “cluster” or a “hub of excellence” within Maine can generate far-reaching positive feedback effects. This type of convergence of research, postsecondary institutions, skilled workforce and businesses have positive feedback effects as workers and employers alike are drawn to them because of greater access to the other. Alongside promoting self-perpetuating growth, industry clusters can help drive innovation as workers are able to cross-pollinate skills and ideas that can revolutionize an industry.<sup>33</sup>

Regional strategies can help facilitate cooperation and coordination. Collaboration between states can allow each state to capitalize on its strengths while leveraging the strengths of its neighbors, increasing project efficiency, and decreasing costs.

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<sup>32</sup> Myall, James. Data on racial inequality shows need for solutions to advance racial justice. (June 2019). Maine Center for Economic Policy. Retrieved June 15, 2020 from: <https://www.mecep.org/wp-content/uploads/2019/06/MECEP-racial-inequality-fact-sheet-FINAL.pdf>

<sup>33</sup> Maine’s Economic Development Strategy, DECD, 2019