

+Wind

COVERING THE U.S. OFFSHORE WIND MARKET

WorkBoat + Wind is a quarterly digital publication dedicated to the growing U.S. offshore wind market, produced by the only publication that covers the entire U.S. workboat market.

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COVER PHOTO: Port of Virginia



A Spark of Innovation

The Inflation Reduction Act is designed to steer the U.S. toward an offshore wind energy revolution, aiming to generate 30 gigawatts of clean energy by 2030. To reach this ambitious goal, substantial investments across maritime, ports, energy transmission, and manufacturing sectors are essential.

Our coverage reveals the critical role of public-private partnerships and streamlined permitting processes in making this vision a reality, creating thousands of jobs in the process. Currently, the U.S. offshore wind capacity is limited, but with upcoming projects and regulatory changes, it could produce 40 gigawatts of offshore wind energy by 2040, revolutionizing the energy landscape.

Transportation challenges and adherence to the Jones Act are explored as crucial aspects. Investments like Crowley's service operations vessels (SOV) illustrate the synergy between the Inflation Reduction Act and the Jones Act, supporting the growth of wind energy and the maritime industry.

In parallel, we delve into the construction of the first U.S. mini-crew transfer vessel (CTV). Designed by Chartwell Marine and under construction by Edison Chouest Offshore, this vessel aims to revolutionize offshore wind crew transfers, emphasizing efficiency and safety. Its service, starting by summer 2024, will be instrumental in supporting offshore wind farms, marking a significant step forward.

Ken Hocke, Senior Editor | khocke@divcom.com

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SHOW

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Wind News Bitts



Equinor photo

ECO hosts keel laying ceremony for first U.S. hybrid service operation vessel

A keel laying ceremony was held for the country's first plug-in hybrid service operation vessel (SOV) at Edison Chouest Offshore's (ECO) LaShip Shipyard in Houma, La. The ceremony marks the beginning of the construction process for the vessel, which is set to play a crucial role in the operations and maintenance of two offshore wind farms off the coast of Long Island, N.Y. leaders from Edison Chouest Offshore, and hundreds of shipyard workers involved with the build.

[CLICK HERE TO VIEW](#)

BOEM outlines three Mid-Atlantic wind energy areas

The Bureau of Ocean Energy Management has designated three new offshore wind energy areas off Delaware, Maryland, and Virginia, covering 557 square miles and potentially supporting 4 to 8 gigawatts of peak energy output; the areas are situated off Ocean City, Md., Delaware Bay, and the mouth of the Chesapeake Bay in Virginia, and an environmental assessment will precede leasing to wind power developers, following the agency's selection from an initial proposal that included 3.9 million acres.

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First monopile foundation completed for New York offshore wind project

New York's South Fork Wind achieved a pivotal milestone with the installation of its first monopile foundation, setting it on course to add the U.S.-made offshore substation later this summer. It remains on track to be the nation's inaugural utility-scale offshore wind farm in federal waters, aiming to deliver 9,000 megawatts of offshore wind energy by 2035. This achievement comes shortly after the completion of Vineyard Wind 1, marking significant progress in the burgeoning U.S. offshore wind sector.

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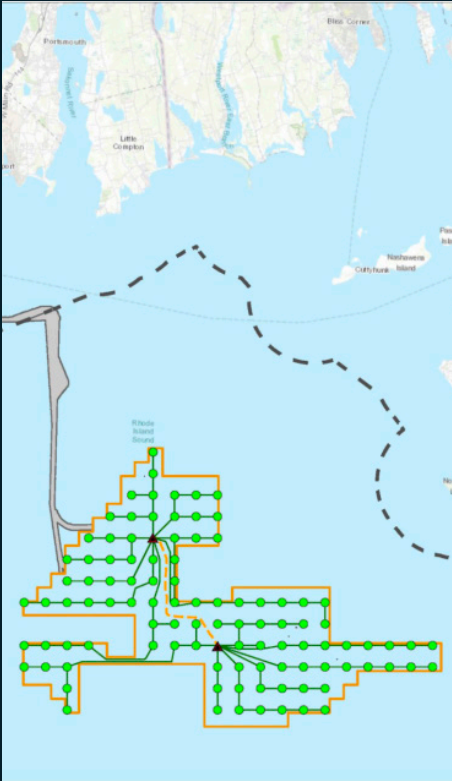
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Ørsted and Eversource plan to build Revolution Wind, a 704-megawatt offshore wind project south of Rhode Island. BOEM graphic.

U.S. **approves** Revolution Wind project off Rhode Island

By Kirk Moore, *Contributing Editor*

The Department of Interior has given its final approval for Revolution Wind, a 704-megawatt offshore wind project situated 15 miles off the coast of Rhode Island. This project, a joint effort by Ørsted and Eversource, marks the fourth offshore wind venture to receive the green light from the Biden administration, which aims to review a total of 16 project plans by 2025. Revolution Wind underwent thorough evaluation, particularly regarding its potential environmental and economic impacts. The project's approval comes with measures to mitigate these impacts, including funds to compensate fisheries affected by the project, vessel speed restrictions, and protections for marine species. This development is a significant step forward for the U.S. offshore wind industry, aligning with the administration's goals of domestic energy production, climate change mitigation, and fostering economic growth within coastal communities.

However, the offshore wind industry has faced challenges, as highlighted by Rhode Island Energy's decision not to enter a power purchase agreement for the second-phase Revolution Wind 2 project due to projected high costs. This decision underscores the impact of factors like increased interest rates, capital expenses, and supply chain uncertainties on project viability. Nevertheless, Revolution Wind is set to provide clean energy to Rhode Island and Connecticut, powering approximately 250,000 homes and supporting various aspects of the offshore wind industry, including manufacturing and installation, offshore wind advocates said of the Biden administration decision.

Biden **Hails** Offshore Wind Progress at Philly Shipyard

By WorBoat Staff

President Biden marked a pivotal moment in the green energy transition during a steel-cutting ceremony at Philly Shipyard Inc., where construction began on the groundbreaking U.S.-flag subsea rock-installation vessel (SRI). This event coincided with the Bureau of Ocean Energy Management's revelation of its intent to offer the inaugural Gulf of Mexico offshore wind leases in August.

The spotlight shone on the vessel named Acadia, measuring 461'x112', destined to become the first U.S.-built SRI tailored for offshore wind projects, with accommodations for 45 crew members. Valued at \$246 million, the Acadia project represents Great Lakes Dredge & Dock Corp.'s (GLDD) inaugural foray into the offshore wind sector. The vessel, fully compliant with the Jones Act, will play a pivotal role in fortifying offshore wind infrastructure by providing rock protection around turbine towers, cable routes, and other offshore structures. It heralds



President Joe Biden spoke at the Philly Shipyard, July 20 during a steel-cutting ceremony for the subsea rock installation vessel Acadia. Business Network for Offshore Wind photo.

a new era in the U.S. offshore wind market, with its remarkable capacity, precise placement technology, and advanced battery and alternative fuel systems.

Biden's presence in Philadelphia underscored his administration's commitment to offshore wind power, spurring investments in manufacturing, shipbuilding, and ports, and job growth across multiple states. Additionally, the President announced the sale of Gulf of Mexico lease areas with the potential to support up to 3.7 gigawatts of capacity. It is remarkable progress achieved by Gulf Coast companies that have secured 23% of U.S. offshore wind market contracts, infusing around \$1 billion into the region's shipyards and offshore equipment fabricators.

Hornbeck Offshore to Convert OSV for U.S. Offshore Wind

By WorBoat Staff

Hornbeck Offshore Services Inc. has contracted Eastern Shipbuilding Group Inc. to convert a recently acquired 280' offshore supply vessel (OSV) into a service operation vessel (SOV) for the U.S. offshore wind and petro-energy flotel markets. The vessel, originally built in 2014 by Eastern Shipbuilding in Panama City, Florida, will undergo conversion at the company's 300-acre Allanton, Florida, shipyard.

This U.S.-flagged SOV will support construction and O&M activities, with delivery expected in spring 2025. Designed in collaboration with Vard, the original vessel designer, it meets the specific requirements of the U.S. offshore wind market. The SOV can accommodate over 90 individuals for offshore wind service, featuring stepless walk-to-work transfer capabilities in sea states of up to 2.5 meters. It will include an Uptime International 30-meter motion-compensated offshore gangway, a 10-ton, 3D-compensated crane, a



Hornbeck will convert one of its 280-foot OSVs to a service operation vessel (SOV) to service the U.S. offshore wind market. Hornbeck Offshore rendering

helideck, enclosed warehouse, and stepless boat landing. The SOV will also feature a 1,500 kW-hour battery hybrid power system to reduce emissions during offshore operations and harbor transit. Its accommodations will meet ABS Comfort Class habitability standards, providing various amenities typical of a newbuild SOV.

Todd Hornbeck, president and CEO of Hornbeck Offshore Services, sees this as an opportunity to expand their expertise and benefit both the offshore wind community and petroleum clients. Joey D'Isernia, CEO of Eastern Shipbuilding Group, emphasizes the transformational role of this project in serving the emerging U.S. offshore wind market.



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Hornbeck will convert one of its 280-foot OSVs to a service operation vessel (SOV) to service the U.S. offshore wind market. Hornbeck Offshore rendering.

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Great Lakes signs first **offshore wind** rock supply subcontract

By WorBoat Staff

Great Lakes Dredge & Dock Corp. has entered into a historic subcontract agreement with Carver Sand & Gravel LLC, situated in Schoharie, N.Y., marking a pioneering move in procuring rock for a U.S. offshore wind farm. Under this contract, Houston's Great Lakes Dredge will utilize New York-sourced rock to bolster scour protection for the Equinor and BP-owned Empire Wind I and Empire Wind II wind farms. The process involves local quarrying of rock, its transportation to the Hudson River quayside, and loading onto Great Lakes Dredge's rock installation vessel, the Acadia, scheduled to commence installations in 2025.

This collaboration between Great Lakes and Carver is poised to establish the inaugural U.S. rock supply chain tailored for offshore wind ventures. The comprehensive infrastructure covers rock production at the quarry, stockpiling, transportation to the quayside, port facilities, and loading onto the installation vessel. Eleni Beyko, Great Lakes' senior vice president of U.S. Offshore Wind, emphasized the significance of this milestone in promoting local content, job creation, and economic growth in New York. The partnership signifies a significant leap forward in fortifying the United States offshore wind energy sector, marked by a focus on safety and quality while driving local community development.

Great Lakes Dredge & Dock



"This is a significant milestone for Great Lakes, our clients, Equinor, and bp, as well as Carver"

— Eleni Beyko, Great Lakes' senior vice president, U.S. offshore wind.

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The Gulf of Mexico discussion at the US Offshore Wind conference in Boston in July included Stacey VanBelleghem of Latham & Watkins, Christopher Fordham of McDermott, Walt Musial of NREL, Alicia Calero of Avangrid, and Jim Kendall of the BOEM Gulf of Mexico regional office.

In turbulent seas, industry experts take stock at US Offshore Wind 2023

By Robin G. Coles, *Correspondent*

Beating into headwinds but sailing on with support from U.S. federal and state policymakers, the offshore wind industry presented a snapshot of its current state at the US Offshore Wind 2023 conference held in July in Boston.

As the conference opened, wind advocates sounded upbeat tones. Jim Kendall, the director of the Bureau of Ocean Energy Management's (BOEM) Gulf of Mexico regional office, said he wanted people to note how Shell was supporting the conference, which he said sends a huge message about energy industry support for wind.

According to Alicia Calero, regulatory compliance program manager, Avangrid Renewables, there are a lot of similarities between oil and gas, and offshore wind. The wind industry is building on things that worked and didn't work – especially with the safety practices available for offshore wind.

Workforce development and building the U.S. supply chain are among top concerns for the industry. After the conference's opening day sessions about finding people who have experience working offshore, Kendall said, "we already have people working offshore."

Similarly, the Gulf of Mexico industrial base is already supplying wind industry needs. Keppel AmFELS, Brownsville, Texas is building the first Jones Act compliant turbine installation vessel, the 472' Charybdis, for Dominion Energy's Coastal Virginia Offshore Wind project. Early on, Gulf Island Fabrication, Houma, La., built the jacket foundations for the five-turbine Block Island Wind Farm project installed in 2016.



'The best way to move forward is to continue with collaboration and outreach at the local level. Specifically, to make sure that those living along the coastline understand what the facts are and how to move forward'

— Eric Milito, President, National Ocean Industries Association.



Two test turbines located more than 25 miles off the coast of Virginia Beach for Dominion Energy's Coastal Virginia Offshore Wind (CVOW) farm. WorkBoat Staff photo.

within communities affected by offshore wind energy development, reaching out to colleges, technical schools to teach the trades, and working with labor unions to bring in younger members. In Massachusetts, energy planners plan to release their 2030 workforce needs assessment soon. They estimate that they will need 35,000 to 40,000 more people to work in clean energy. Other states up and down the East Coast have similar ambitious goals. There are a lot of U.S. offshore workers. However, they prefer to work out of Louisiana or Texas. The oil and gas market has 50,000 employees looking for new work. Of note, 21% of global wind energy workforce are women, 8% of whom hold senior management roles.

Five key areas were discussed at the two-day conference:

Workforce

Offshore wind workforce assessments have found that the industry needs to

employ an average of 15,000 to 18,000 full-time workers every year between 2024 and 2030. To meet U.S. goals, states need a well-coordinated regional workforce development strategy. This includes creating job opportunities

Collaboration

Christopher Fordham, a senior manager with McDermott International Inc., said his group is taking all the knowledge they've learned and continuing to learn and applying that to the U.S. Northeast. It is a continuous learning curve, and

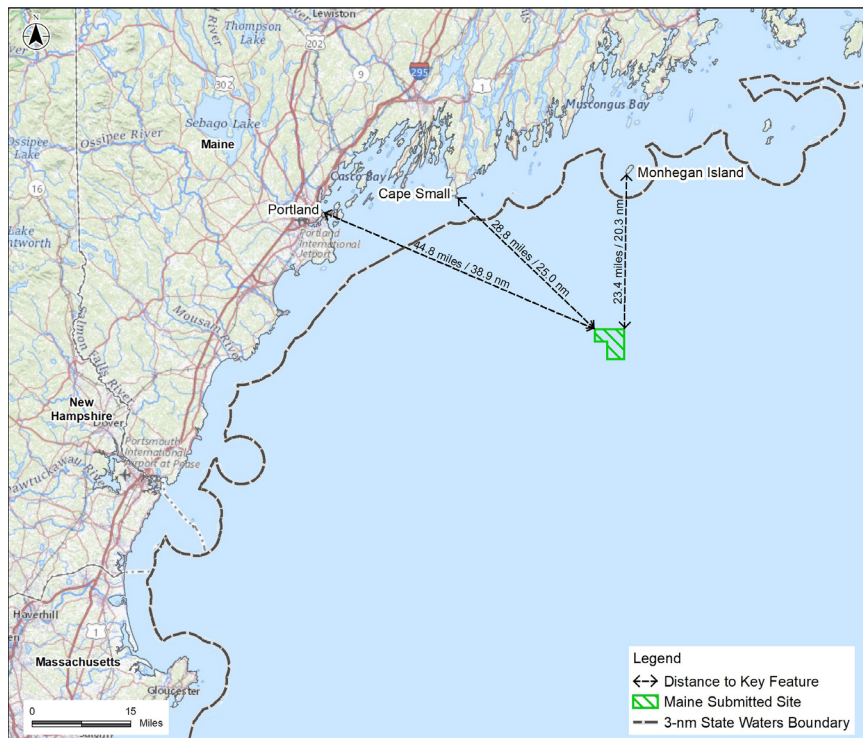
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The Governor's Energy Office has formally applied to the Bureau of Ocean Energy Management (BOEM) for the lease of a compact 15.2-square-mile area in the Gulf of Maine, marking a significant milestone in establishing the nation's inaugural floating offshore wind research site within federal waters. [maine.gov](https://www.maine.gov) image.

no longer a single mindset of “we’re working on it,” he said. Massachusetts focuses on industry partners. These include stakeholders to reduce risk, increase market confidence, and advance economic and workforce opportunities. Collaboration also includes supporting fishermen, jobs associated with the public, supply chain components, and each other. For example, Fordham said,

- one state should manufacture turbine blades, not every state.
- Buy-in is necessary for the long-term.
- Not all stakeholders have the capacity to be engaged and everyone involved needs to be transparent with others.

Stephanie Watson, floating offshore wind program manager, State of Maine Governor's Energy Office, said they hope to use the University of Maine's research array to explore intersections of floating offshore wind with other ocean users. Plus, the Maine Offshore Wind Consortium will collaborate closely with other states and regional and national science and research partners. According to Eric Milito, president, National Ocean Industries Association,

the best way to move forward is to continue with collaboration and outreach at the local level. Specifically, to make sure that those living along the coastline understand what the facts are and how to move forward. There must also be collaboration between Democrats, Republicans, states, and local municipalities, he said. On the federal level BOEM is supporting the development of the Gulf of Maine Floating Offshore Research Array. If approved, the state of Maine would lease a 15.2-square-mile site in the Gulf of Maine for the nation's first floating offshore wind research site in federal waters.

Supply Chain

Building a domestic supply chain will be critical for the sustainable growth of the offshore wind industry. Among the challenges to this are a shortage of vendors focused on safety, a lack of knowledgeable local suppliers, and ongoing cost overruns. In the U.S., however, there is widespread uncertainty about the level of investment necessary to build critical resources. Suppliers and businesses don't understand the length of time or

amount of money these wind projects will need. Plus, there are significant gaps in manufacturing, ports, vessels, work, and workforce needed to meet targets. Patrick Henry, senior director of the sustainable business group at DAI, said a lot of operators coming into the offshore wind space traditionally work in other industries. Globally, they're very good at supplier development programs.

Permitting

Michael Brown, country manager U.S., Ocean Winds, said developers are struggling with permits at both the state and federal level. “We need to see the state's composition,” said Brown. “Or we need to see the federal government and interagency issues that we're all suffering at, so that we can get our elements for our projects.”

Pricing

Equinor Wind US President Molly Morris said to look at pricing as the perfect storm of what's happening right now. She feels lucky to have contracts that are negotiable with the industry, and knows they have a place where they can sell their energy. However, the downside is a locked project price that is no longer viable. These price challenges are due to high inflation, supply chain challenges, and squeezing manufacturers to make factory buildings bigger, to name a few. Plus, she said, developers are bidding on technology that doesn't exist yet. The competition to increase megawatts is hurting the numbers. Decreasing the number of megawatts may help with pricing and get more signed contracts.

As the conference concluded, speakers offered several “to-dos” to the offshore wind sector: accelerate growth and move to the next step, move from fossil fuels to electrification, find a way to cope with all the problems, and provide a scalable renewable energy solution. To accomplish this, they agreed, there needs to be collaboration and support.

As a group, the speakers were optimistic about the prospect of offshore wind, but conceded that the nascent sector faces a number of unanticipated challenges. but getting there has proven to be more challenging than originally thought.

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Crowley's Role in Powering the Offshore Wind Revolution

By WorkBoat Staff

The recently enacted Inflation Reduction Act has initiated the development of offshore wind farms in the United States, ushering in the potential for affordable and eco-friendly electricity generation. However, achieving the ambitious goal of producing 30 gigawatts of electricity from offshore wind by 2030 will require substantial investments in various sectors such as the domestic maritime industry, port terminals, energy transmission, and manufacturing. It is worth noting that the United States has been relatively slow to tap into offshore wind energy compared to other nations. For instance, Denmark boasts 55 times more offshore wind capacity than the United States.

One distinct advantage of offshore wind power, as opposed to land-based wind farms commonly found in the Great Plains, is the consistent and stronger wind patterns experienced at sea. To bolster the offshore wind industry's growth, the current administration is taking significant steps. These include opening up new coastal areas for development, streamlining permitting procedures, and outlining a comprehensive roadmap for building the necessary supply chain. The Inflation Reduction Act, with its substantial financial backing, is poised to give a massive boost to the clean energy sector. According to the U.S. National Renewable Energy Laboratory, achieving the 30-gigawatt target by 2030 could potentially create as many as 55,000 jobs in manufacturing and the supply chain.

Bob Karl, senior vice president and general manager of Crowley Wind



“Having operational partners across the industry will help drive costs out of the projects while allowing us to solve problems faster and better serve our customers.”

— Bob Karl, Senior vice president and general manager of Crowley Wind Services

Stats in focus

30 gigawatts
of offshore wind turbines would power...

11 million homes
with cheap, renewable energy

But to make it happen by 2030 the U.S. would need...

More than **2,100** wind turbines



Up to **6**
installation
vessels

Up to **6**
heavy lift
vessels

4 to 8 U.S.-flagged
feeder barges

34 new turbine
factories

8 ports equipped to
assemble turbines
on the East Coast

2 specialized ports to
assemble floating turbines
on the West Coast



Source: U.S. National Renewable Energy Laboratory

Karl stresses the importance of operational partnerships across the industry in driving down project costs, enhancing problem-solving capabilities, and ultimately delivering superior service to customers. Collaboration is particularly crucial in making offshore wind projects economically viable, given the challenges posed by high inflation, rising interest rates, soaring steel costs, and a tight labor market. The Department of Energy anticipates that improved supply chains and the deployment of larger turbines will significantly reduce the cost of wind energy.

For instance, floating wind turbines planned for the West Coast, necessitated by deeper waters, were projected to generate power at \$207 per megawatt-hour if constructed in 2021. By 2035, the Department of Energy estimates that offshore floating wind turbines will produce a megawatt-hour of energy for just \$64. This substantial cost reduction promises cleaner and more affordable energy for American consumers and businesses, underlining the critical role of offshore wind in the nation's sustainable energy future.

The offshore wind revolution in the United States holds immense promise for clean and affordable energy production. The Inflation Reduction Act, combined with strategic government initiatives and private sector investments, is propelling the nation towards achieving ambitious renewable energy targets. Crowley, with its focus on collaboration and innovation, is at the forefront of this transformation, contributing to the growth of the American maritime industry and the development of a sustainable energy future for the nation. As offshore wind capacity continues to expand, the United States moves closer to a greener, more resilient energy landscape that benefits both the environment and the economy.

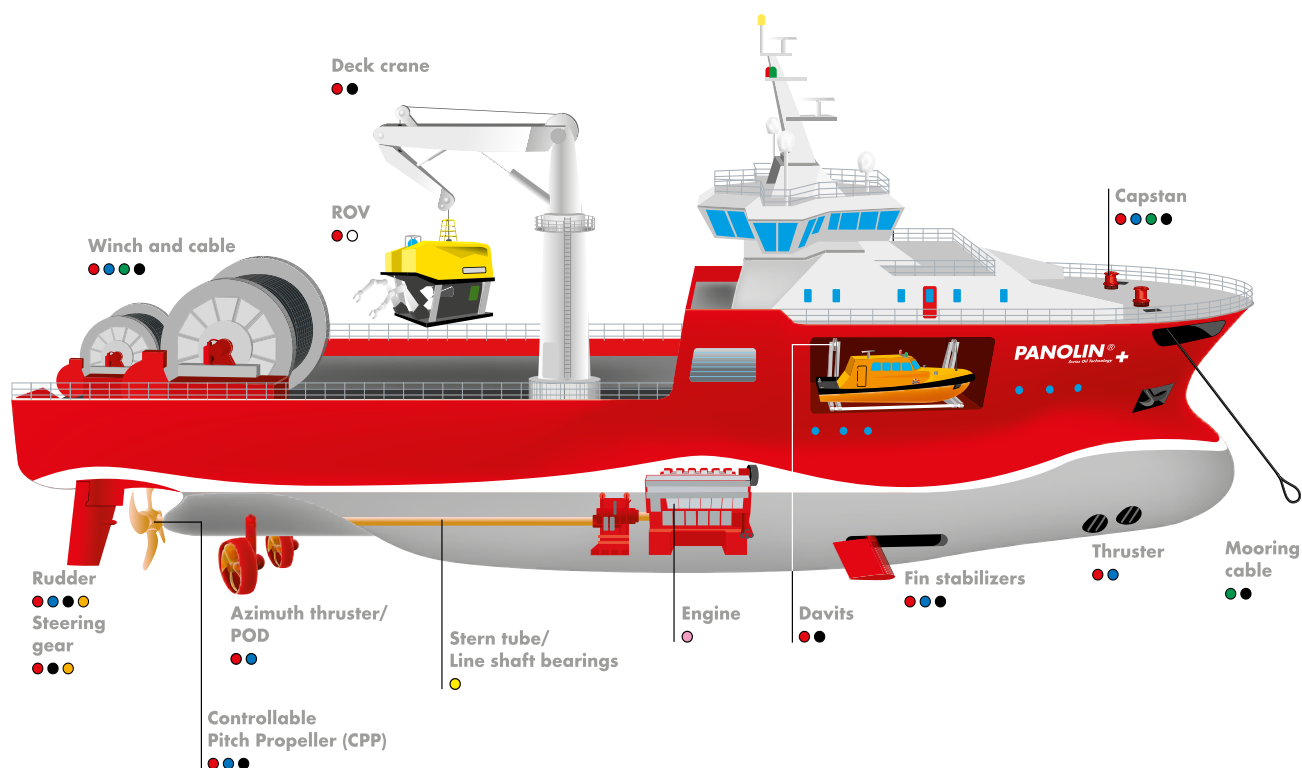
Services, emphasizes the importance of public and private partnerships in propelling the offshore wind industry forward. Cooperation among industry stakeholders and states is vital to unlock the full potential of offshore wind energy in the United States. Karl underscores the need to consider each state's specific interests, highlighting the successful collaboration between Crowley and the Commonwealth of Massachusetts. However, it is equally essential for local initiatives to align with federal efforts, including seabed leases necessary for the construction of new wind farms.

Presently, the United States has only two operational wind farms in its waters, with a combined peak output of 42 megawatts, representing a mere 0.14% of the 2030 target. Nevertheless, the outlook is promising, as two commercial-scale projects are set to go online in the next year, adding an additional 932 megawatts of wind energy capacity. Furthermore, 18 more projects are in the permitting phase, suggesting the potential for the United States to produce 40 gigawatts of offshore wind energy by 2040, sufficient to power around 11 million homes.

One of the primary challenges in reaching this ambitious target is the transportation of equipment and infrastructure to offshore sites. Deploying massive wind structures, some towering twice as high as the Statue of Liberty, necessitates a specialized fleet of vessels. The Jones Act, legislation dating back to 1920 supporting the domestic maritime industry, plays a pivotal role in this regard. It mandates that much of the fleet required for offshore wind projects be built in the United States and crewed by American mariners. Consequently, domestic shipyards are experiencing a resurgence in orders for large barges and service operations vessels (SOVs) dedicated to supporting offshore wind farms.

Crowley's investment in constructing service operations vessels, such as the one being built for Siemens Gamesa, exemplifies the opportunities arising from the combination of the Inflation Reduction Act and the Jones Act. This convergence benefits both the advancement of wind energy and the American maritime industry, creating a mutually beneficial scenario.

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The 39' CTV will simultaneously accompany the launch of ECO Edison, the first ever U.S.-built service operation vessel (SOV) announced in April 2023. Chartwell Marine rendering.

Construction for the **first mini-CTV** commences at Louisiana shipyard

By WorkBoat Staff

Edison Chouest Offshore (ECO), headquartered in Cut Off, Louisiana, has initiated construction of the first mini-crew transfer vessel (CTV) for the U.S. offshore wind industry. This groundbreaking vessel is being designed by Chartwell Marine, a UK-based naval architecture and marine engineering firm that specializes in next-generation vessel design. The mini-CTV is expected to be fully operational by the summer of 2024.

This vessel is set to play a crucial role in supporting the offshore wind endeavors of Ørsted and their U.S.-based joint venture partner, Eversource Energy. It will work in conjunction with ECO Edison, the first U.S.-built service operation vessel (SOV), marking significant progress in the U.S. offshore wind sector.

The mini-CTV, often referred to as a “daughter craft,” will be responsible for efficiently transporting crews across the Revolution Wind, South Fork Wind, and Sunrise Wind offshore wind farms. These projects are currently under development as part of the joint venture’s portfolio.

Andy Page, the managing director of Chartwell, emphasized the importance of the mini-CTV in the offshore wind industry. He described it as the vital link that connects SOVs and wind turbines. Ensuring that engineers can quickly and safely transition from larger vessels to turbines is of paramount importance, and the mini-CTV has been meticulously designed to meet this need.

Page noted that the mini-CTV is not a one-size-fits-all solution. Wind turbines



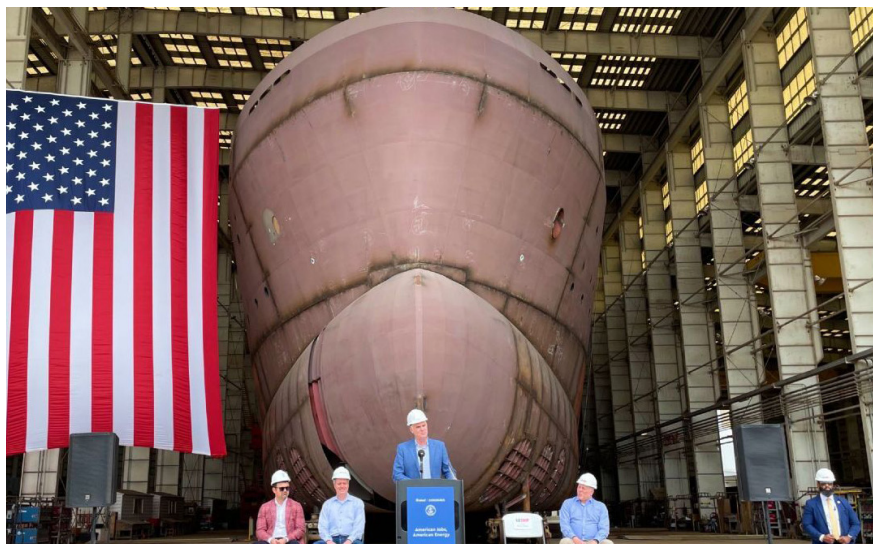
‘This vessel is the small but essential chain connecting SOVs and turbines together’

— Andy Page, Chartwell’s Managing Director

come in various configurations, each with its own unique crew transfer requirements. To address these distinct needs, Chartwell collaborated closely with Ørsted to customize the vessel's design to align with the specific demands of the joint venture's portfolio of projects.

Construction of the mini-CTV commenced in July at one of Edison Chouest's shipyards in Louisiana. The project is expected to involve approximately 15 workers and will draw components from U.S. suppliers located in five different states. Edison Chouest will oversee the entire construction and operational pipeline, benefiting from incentives provided by the Inflation Reduction Act.

Michael Braid, ECO's vice president of renewables, emphasized the importance of finding the right partner for the launch of ECO Edison. He praised Chartwell for crafting the vessel, highlighting the need to



In April, Edison Chouest Offshore (ECO) commemorated the halfway point in constructing the inaugural US-flagged service operation vessel ECO Edison (SOV) for the domestic offshore wind sector at its Houma shipyard. Edison Chouest Offshore photo.

maintain the efficiency of transfers and ensure a high level of technical availability as the fleet expands and becomes operational across numerous offshore wind projects. Diversifying the range of vessels used is seen as a critical strategy to achieve these objectives.

Chartwell's design aligns with the growing demand in the U.S. offshore wind market for low-emission, cost-effective support vessels. The vessel's catamaran design offers an optimized hull form, ensuring efficient fuel use, stability, and maneuverability, even in challenging sea conditions.



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One notable aspect of the mini-CTV is its primary propulsion system, which marks a significant departure from conventional vessel designs. The vessel is set to incorporate a Volvo Penta IPS (for integrated propulsion system), designed to enhance power and performance while providing enhanced onboard comfort for operators. The innovate IPS features forward-facing, twin counter-rotating propellers, complemented by an individually steerable unit positioned beneath the vessel's hull. With this state-of-the-art system, the mini-CTV is expected to achieve a cruising speed of 20 knots.

Designed to accommodate a crew of up to 12 individuals, the mini-CTV aims to serve as a convenient deployment solution for ECO Edison during prolonged offshore missions. Its primary purpose is to facilitate efficient access for essential personnel to wind turbines, vessels, and other critical infrastructure essential for the success of offshore wind projects.

Throughout the design phase, Chartwell worked closely with Ørsted to ensure that the vessel met the specific requirements of the wind turbines slated for installation at various U.S. East Coast project sites. A key aspect of this collaboration was the integration of Ørsted's "Get Up Safe" system. This motion-compensated hoist solution is designed to enable technicians to safely transition between small moving vessels and offshore wind turbines, effectively eliminating the need for ladders and enhancing safety.

Mike Ausere, vice president of business development at Eversource Energy, acknowledged the potential of offshore wind energy to create employment opportunities within America's future-focused industries. However, he raised important questions about the long-term benefits for workers and communities, particularly in relation to the establishment of a domestic supply chain.

It's worth noting that the new mini-CTV is poised to obtain certification from the U.S. Coast Guard under Subchapter L. While this certification implies adherence to safety and operational standards, it also underscores the need for stringent oversight and regulation in an industry that is witnessing unconventional developments.

This vessel marks a significant milestone in the U.S. offshore wind industry's growth and development. As it continues to expand and meet the demands for clean and renewable energy, the successful construction and operation of the mini-CTV represent a significant step forward in the nation's journey toward harnessing the potential of offshore wind resources. The collaboration between Edison Chouest Offshore, Chartwell Marine, Ørsted, and Eversource Energy underscores the industry's commitment to innovation and sustainability.



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Managing Risk in the Development of Commercial-Scale **Offshore Floating Wind** Concepts



The world's largest floating wind turbine, an 8.4 MW ABS-classed offshore unit, is soon to be deployed off the coast of Viana do Castelo, Portugal. It's part of a groundbreaking 25 MW floating wind farm, featuring three SEMI Submersible Type units designed by Principle Power, housing MHI Vestas turbines – marking continental Europe's debut in large-scale floating wind power. Principle Power photo

By Lars Samuelsson, Manager, Global Offshore Renewables, ABS

Offshore floating wind is expected to play a key role in the global energy transition by expanding the reach of renewable generating capacity to waters that are too deep for fixed-bottom wind projects.

In recent years, the industry has seen the development of several innovative floating concepts that target the lower levelized cost of energy (LCOE) and improve manufacturing economies of scale. However, progress on commercial-scale floating projects has been much slower than expected. Many 2030 generating capacity targets that were established over the past five-10 years are now being revised down with lessons learned from challenges with supply chain and scaling from pilot projects.

Given the long duration from concept design to final installation, along with the complexities associated with manufacturing, installation, regulatory approval, etc., engaging with an independent third party that can perform comprehensive design reviews and certification-related services can be highly beneficial.

The American Bureau of Shipping (ABS) has extensive experience helping OEM technology providers identify risks with the development of floating wind technologies. One example of this can be seen with the WindFloat concept from Principle Power.



ABS initially engaged with WindFloat on the U.S. West Coast, offering Classification and Certified Verification Agent (CVA) services. Despite the project's early cancellation, valuable insights were transferred to the successful 2019 installation of the WindFloat Atlantic project. Principle Power photo

From Concept to Reality

ABS involvement with WindFloat started in 2008. We provided preliminary planning and advice (PPA) and workshops in the early stages of the project to identify risks that come with development and instill confidence in the design with the developer.

We also provided certification services in the design, fabrication, and installation phases of the project. The prototype, WindFloat 1, was installed in 2011 offshore of Portugal and operated until 2016.

ABS' next involvement with WindFloat was for a project on the U.S. West Coast where we provided Classification and Certified Verification Agent (CVA) services. Although the project was canceled in the relatively early stages, the experiences and lessons learned were carried over to the WindFloat Atlantic project that was successfully installed in 2019.

The WindFloat Atlantic project consists of three 8.4 MW semi-submersible floating units (column stabilized units) installed offshore of Portugal. The units were built in Portugal and Spain under supervision of ABS surveyors.

A design review of the project was carried out by ABS in Houston, along with the project management from our Western Hemisphere team. The three floating turbines were assembled at the Port of Ferrol in Spain prior to being towed to the installation site where, when completed, they became the largest wind turbines to be installed on a floating platform. The installation was completed in June 2020.

ABS also played an integral role in the Kincardine Offshore Windfarm south-east of Aberdeen, Scotland.

The developments started with a 2 MW turbine, which is the original WindFloat 1 installed offshore Portugal in 2011. After its service, it was decommissioned and relocated to the new site in Scotland, where ABS provided refurbishment and relocation certification.

Kincardine was the largest offshore wind farm in the world when it was installed and remains the largest grid-connected floating offshore wind project. It features five WindFloat units that house 9.5 MW turbines. ABS classed the unit's verifying compliance with the ABS Guide for Building and Classing Floating

Offshore Wind Turbine Installations. We also performed the statutory reviews on behalf of the Marshall Islands Flag to meet the requirements with the local authorities.

The Importance of Early Engagement

In a highly competitive business environment where several different floating wind technologies and projects are vying for a limited amount of capital, companies that support a risk-identification process and develop early on their own mitigation plan is beneficial. Engaging earlier with floating-wind-experienced companies, with capabilities like ABS, will support their technology development on the path to success.

Through services like Preliminary Planning and Advice (PPA), workshops/HAZOP's, Approval in Principle (AIP), and New Technology Qualification (NTQ), technology providers can identify and mitigate issues and risks that could potentially lead to cost overruns or delays during design, manufacturing, installation, commissioning, etc. These services also serve to streamline the project certification process, which is important to establishing credibility and instilling confidence in the project among developers, finance/insurance institutions, local authorities, and other key project stakeholders.



Lars Samuelsson
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