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## **Gulf Louisiana Offshore Wind (GLOW) Propeller Tech Hubs Case for Designation**

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### **GLOW Propeller Overview**

**Project Team.** The Southern Louisiana offshore wind and renewable energy cluster is represented by the GLOW Propeller consortium, whose members represent the core industry, agency, research, teaching, and training partners to support national energy transition goals through the transformation of a historically underserved region into an epicenter of competitive energy transition talent and technology development.

LEAD	
National Center for Advanced Manufacturing (NCAM)	
INSTITUTIONS OF HIGHER EDUCATION	GOVERNMENT
Louisiana State University (LSU) University of New Orleans (UNO) & UNO Research & Technology Foundation Tulane University (Tulane) Xavier University of Louisiana (Xavier) Southern University (Southern)	Louisiana Dept. of Economic Development (LED) Louisiana Dept. of Natural Resources (LDNR) City of New Orleans Port Fourchon
WORKFORCE TRAINING	INDUSTRY
Nunez Community College Delgado Community College	Gulf Wind Technologies RWE Sev1Tech
ECONOMIC DEVELOPMENT	APPLIED RESEARCH
Greater New Orleans, Inc.	The Water Institute of the Gulf

**Location Matters.** Decades of energy leadership, unparalleled manufacturing and logistics infrastructure, generational knowledge in energy production industries, and global calls for energy transition make Southern Louisiana singularly poised for the creation of an offshore wind and renewable energy Tech Hub that is globally competitive within a decade. With imminent inaugural leases for offshore wind energy production in both state and federal waters and unprecedented alignment of stakeholder interests, Louisiana is ground zero for zero emissions technology, and the nation’s next energy demonstration lab. GLOW Propeller aligns the necessary stakeholders to advance offshore wind, drive economic investment,

transform workforce and assets, assure environmental justice outcomes, and secure our state and national energy future.

### **GLOW Propeller Tech Hub Region: Southeast Louisiana**

GLOW Propeller will operate primarily across the Baton Rouge and New Orleans MSAs, home to nearly 50% of the state's population. The area is ideal for Hub potential and global competitiveness within a decade: the region supports some of the country's largest legacy energy infrastructure, one of the world's largest port systems, thousands of miles of pipeline and energy networks, and access to essential waters for offshore wind development. Notably, many companies worldwide have located their largest global facilities and most critical infrastructure within this region, but with little investment in innovation. Generations of Louisianans have fueled the energy sector, but many—particularly the state's Black, Indigenous, and Underrepresented communities—experience disproportionate negative impacts of those sectors while being excluded from the economic benefits of the energy economy. Louisiana finds itself with people, pipelines, and plants but little prosperity. Through the EDA Designation, GLOW Propeller has the opportunity to fundamentally transform SE Louisiana's small, rural, and vulnerable coastal communities, including southern parts of Lafourche and Jefferson Parishes. As an NSF EPSCoR state, Louisiana is also positioned to secure research funding to complement the Tech Hub's mission, including potentially a Regional Innovation Engine award.

### **Core Technology Focus: Offshore Wind and Renewable Energy**

GLOW Propeller's core technology focus is at the intersection of four Key Technology Focus Areas (KTFAs): (1) Advanced energy and industrial efficiency technologies; (2) Advanced materials science; (3) Robotics, automation, and advanced manufacturing; and (4) Artificial Intelligence, machine learning, autonomy, and related activities. These KTFAs are cross-functional, and the intersection of any of them with critical energy and wind infrastructure is an opportunity for program and talent development, as well as the attraction of companies and capital. GLOW Propeller will also hire a dedicated Regional Innovation Officer (RIO) to coordinate efforts; solidify regional and national partnerships for a comprehensive regional technology strategy; unify regional needs; align existing assets, resources, and capabilities; and support broad workforce development in KTFAs-relevant areas.

### **The Louisiana Advantage: Existing Assets, Resources, and Capabilities**

**1. Local workforce with readily translatable skills.** Generations of Louisianans have supported offshore oil and gas exploration and development and Louisiana shipyards supply the majority of the nation's maritime industry. The transition to cleaner energy presents an opportunity to pivot this workforce into a leading driver of the offshore wind energy industry. Traditional energy and fossil fuel skills such as welding, electric, nondestructive testing (NDT), and coatings will be valuable competitive advantages for offshore wind.<sup>1</sup> The region is committed to the continued development of a diverse, local, and quality workforce to serve the emerging offshore wind and renewable energy industry in Louisiana. For example, Nunez Community College has developed an offshore wind training curriculum for workforce upskilling and reskilling. In 2022, UNO launched its Wind Energy Hub which provides an offshore wind certification, innovation programming, scholarships, startup incubation and support services, and seed technology commercialization grants. Tulane's Center for Energy Law is creating a Master of Jurisprudence in offshore wind law and governance, and their Energy Institute has expertise in offshore wind modeling, forecasting, and analysis. In 2023, LSU produced the

nation's first engineering graduates in Carbon Capture, Usage, and Sequestration (CCUS), developing new curricula for evolving industry needs.

**2. Existing ports, shipyards, fabrication facilities, and maritime and energy infrastructure.** Louisiana has one of the largest port networks in the Western Hemisphere, with 32 total, including five deep-draft ports along the Mississippi River.<sup>ii</sup> These major ports, their connections to rail lines, adjacent acreage, and ability to accommodate large engineered components are ideal to support the manufacturing and transport needed to deploy and integrate offshore wind components. Port Fourchon, which services more than 90% of the nation's offshore production, has authorization to begin dredging to add 200 acres of property and more than two miles of waterfront for prospective offshore wind operations.

**3. Shipbuilding and vessel operations.** Louisiana is home to leading shipbuilders, particularly for Gulf and offshore operations. The state's expertise has already played an important role in the domestic offshore wind industry, as Louisiana workers helped build the Block Island Wind Farm.<sup>iii</sup> Critically, a major and underappreciated limiting factor to domestic offshore wind deployment is the availability of Jones Act-compliant (i.e., American made, owned, and operated) vessels. Louisiana companies solved this issue in other production areas and lead national development of new service vessels, including those specifically for wind service.

**4. Component manufacturing, supply chain, and support services.** Louisiana is home to multiple companies engaged in the technology, design, and manufacture of wind turbine and other offshore energy components, including Gulf Island Fabrication and LM Wind Power. The state's strong offshore supply chain and accessibility to intermodal transport routes position manufacturers to provide components like nacelles, jackets, towers, and blades to wind projects in Louisiana and across the U.S.

**5. Hydrogen, electrification, and decarbonizing the industrial corridor.** Louisiana's industrial sector (i.e., oil and gas, chemical, and petrochemical) accounts for approximately two-thirds of statewide GHG emissions, and the state is 4<sup>th</sup> nationally in CO<sub>2</sub> emissions per capita. Decarbonizing these industries will require offshore wind and new approaches to electrification and fuel switching, such as powering electrolyzers to create zero-carbon hydrogen for industrial use. The Governor's 2022 Louisiana Climate Action Plan set an offshore wind power generation goal of 5 GW by 2035, demonstrating clear State support.<sup>iv</sup>

**6. Capital investment and market opportunity.** Offshore wind is receiving unprecedented state and federal support. LDNR is undergoing a rulemaking process regarding leasing state offshore areas for wind projects and is currently negotiating operating agreements in with multiple offshore wind developers. In August of 2023, BOEM will hold its first Gulf of Mexico offshore wind lease sale which includes a lease area south of Louisiana. Congress expanded federal incentives for domestic offshore wind and associated supply chain development through the Inflation Reduction Act of 2022 (IRA), which also provides \$100 million for offshore wind electricity transmission planning, modeling, and analysis.

## Key Designation Factors

**1. Technology-based potential of the region for global competitiveness.** Louisiana's offshore oil and gas supply chain provides unmatched potential to catapult the region to global competitiveness for offshore wind and renewable energy within the decade (See Existing Assets, Resources, and Capabilities 1-4). The first-tier sites for offshore wind—high wind speeds and shallow waters on the U.S. East Coast and elsewhere globally—are currently

undergoing commercial development. As first-tier sites are developed, an offshore wind energy demonstration environment is critical to developing second-tier offshore wind sites.

The unique challenges of the Gulf of Mexico (lower wind speeds, softer soils, and major storm events) present a significant opportunity for Louisiana to export knowledge and technology developed through the GLOW Propeller consortium to coastal waters around the world with similar environmental conditions. Being a first-mover in deploying a demonstration project in the Gulf will strengthen Louisiana and the U.S. global position.

Louisiana is increasingly competitive in its federal funding efforts, particularly around energy transition. In 2023, the LSU-led Engine for Louisiana Innovation and Transition of Energy (ELITE) was named 1 of 16 finalists for a National Science Foundation Regional Innovation Engine; ELITE includes many GLOW Propeller partners. Additionally, the State of Louisiana is the lead applicant for HALO (Hydrogen across Arkansas, Louisiana, and Oklahoma) a U.S. DOE Hydrogen Hub finalist. LSU and UNO are partners on a NASA Digital Twin manufacturing project, and LSU recently secured funding for a Phase 1 U.S. Department of Energy Direct Air Capture Hub. Finally, GNO, Inc. was the lead applicant in one of the nation's Build Back Better awards with \$50M H2TheFuture award. GLOW member Louisiana Economic Development manages Louisiana's State Small Business Credit Initiative (SSBCI) program for prospective energy entrepreneurs. For all of these efforts, there remains considerable opportunity for improved orchestration, and that is the role of GLOW Propeller.

**2. Role of the private sector.** GLOW Propeller builds on South Louisiana's private sector prowess in the offshore energy and renewable energy industries: Gulf Coast contractors capture 26% of the offshore wind supply chain<sup>v</sup>, and South Louisiana companies played a significant role in building the nation's first offshore wind farm at Block Island (supplying the steel, foundations, and service vessels).<sup>vi</sup> In March 2023, Gulf Wind Technology announced plans to establish a research, training, and technology demonstration program, supported by a \$10 million investment from Shell and a package of incentives from the state including a performance-based Economic Development Award for site infrastructure improvements.

**3. Regional coordination & partnerships.** GLOW Propeller aims to add capacity and provide cross-institutional leadership through the RIO, who will be an individual with relationships with university, private sector, and workforce partners. The GLOW Propeller project team has successfully coordinated in various ways in the past:

- In 2020, GNO, Inc. created the GNO Wind Alliance to coordinate efforts among over 200 private and public sector offshore wind deployment stakeholders, which led to successes like H2TheFuture. All GLOW Propeller team members are part of the GNO Wind Alliance.
- LSU, UNO, and LED partnered to build NCAM, the GLOW Propeller consortium lead. NCAM manages NASA advanced manufacturing assets, used by NASA and its contractors at Michoud Assembly Facility in New Orleans East in support of the Artemis mission.
- GNO, Inc. has partnered with RWE Renewables to enhance Louisiana's offshore wind supply chain, including workshops and company interfaces for upskilling and reskilling.
- UNO is a regional leader in offshore wind with expertise and assets related to offshore structures, shipping, business administration, and the Gulf environment. The LA Wind Energy Hub supports industry partnerships and workforce transition programs.
- The City of New Orleans, Dillard University, UNO, and Xavier jointly submitted a Department of Energy Wind Energy Technology Office grant application to conduct a three-year

longitudinal, mixed methods research project on the economic and social impacts of offshore wind on coastal communities.

**4. Equity & diversity.** GLOW Propeller consortium members share a firm commitment to equity and diversity and addressing issues that achieve Justice40 objectives. As a long-standing energy producing state, Louisiana ecosystems and coastal communities have borne disproportionate impacts of energy production. Prioritizing engagement with HBCUs, minority-serving institutions, and state and local entities is a key part of the State’s Climate Action Plan,<sup>vii</sup> with a commitment to equity. Both H2TheFuture and NSF Engine initiatives are intentional with this commitment, allocating award funds to bolster HBCU R&D and testing strengths. A key objective of GLOW Propeller’s strategy will be to mirror this approach to directly support entrepreneurial activity within underserved communities.

**5. Composition and capacity of the regional workforce.** Historically, the oil and gas industry has had a strong presence in Louisiana, employing a major segment of the state’s workforce. The state’s workforce remains deeply ingrained in the industry—12.6% of Louisiana’s total employment was related to the oil and gas industry in 2019.<sup>viii</sup> However, the industry’s employment share has significantly declined since the 1980s—a trend which is anticipated to continue as global demand for cleaner energy sources increases. Therefore, Louisiana possesses a world-class energy workforce that specializes in offshore energy and is well-positioned to apply readily transferrable skills to offshore wind and renewable energy generation, with an estimated 80% of job-related skills in oil and gas translating directly to offshore wind and renewable energy.<sup>ix</sup> See Existing Assets, Resources, and Capabilities 1.

**6. Innovative “lab to market” approaches.** GLOW Propeller will operate comprehensive open-access research, test, innovation, and validation services to accelerate the deployment of new and innovative offshore renewable energy technology, starting with offshore wind. With highly experienced teams of technical researchers, test engineers, and technology specialists, the consortium is equipped to deliver industry-leading services to drive down the cost of offshore renewable energy. The cornerstones of the GLOW Propeller are (1) an “in-water” test center comprising multiple offshore wind turbines and (2) an onshore test center comprising wind tunnel and other equipment to test and validate prototype technologies, materials, and components. Together, these GLOW Propeller test centers enable a novel world-class demonstration facility to de-risk essential technologies and approaches that will open Louisiana and other coastal waters around the world to offshore wind development. The test centers model LSU’s Petroleum Engineering Research & Technology Transfer (PERTT) lab and the UK’s Offshore Renewable Energy Catapult—two world-class research, testing, teaching, and innovation facilities providing.

**7. Impact on economic and national security of the entire United States.** The national offshore wind energy target of 30 GW by 2030 recognizes the benefits of establishing a domestic supply chain, including providing existing suppliers with the ability to produce thousands of components while creating tens of thousands of U.S. jobs.<sup>x</sup> According to the National Renewable Energy Laboratory, “...achieving these benefits will require a significant ramp-up in domestic manufacturing, ports, vessels, and workforce, all of which are currently too limited to support the needed levels of commercial-scale offshore wind energy deployment.” See also Existing Assets, Resources, and Capabilities 5.

## Addendum – Louisiana Offshore Wind Map and the GLOW Propeller Region



### Citations

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