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**Preliminary Assessment of the Economic Benefits of Offshore
Wind Related to Seaport Investments and Workforce Development
Needs**

Additional submitted attachment is included below.



The California central coast has been Bardex's home for 60 years. We offer decades of offshore experience, including mooring systems, to support a broad range of floating offshore wind development activities. We delivered our first shiplift in 1967.

We believe in supporting the local workforce in the areas where our equipment is installed and depended upon for mission-critical use. We establish partnerships to support users locally with maintenance and spare parts. We will provide training opportunities on our systems to the port(s) and local tradesmen and women during the installation and commissioning of each system.

We whole-heartedly agree that offshore wind should be developed in a manner that protects coastal and marine ecosystems.

Our chain based shiplift equipment is inherently smaller than that of wire rope equipment, and fewer lift stations are required when using a chain solution. What does this mean for the ecosystem? Choosing chain allows for fewer piles leading to less air pollution from diesel driven heavy pile driving equipment and a reduction in noise pollution to marine animals from that same pile driving process.

We can deliver a better NET Zero footprint for the port(s) through the reduction of heavy equipment diesel emissions with our rail system and equipment able to run on renewable, clean power.

Additionally, chain shiplifts are the only shiplift solution to provide an environmentally safe lifting mechanism for service operation vessels (SOVs); wire rope equipment requires protection from internal corrosion - a) petroleum grease is introduced into the coastal and marine ecosystem b) biodegradable grease is used [a technically inferior choice – how can biodegradable grease protect this mission-critical equipment if it has degraded into the marine environment?] or c) the risky choice to use no grease at all – allowing internal corrosion to take place at an increased pace and going against certifying authorities', such as Lloyd's Register, rules.

We often think of the ocean's strength in terms of waves and currents, but there is power in its salt content, too – an inherent ability to whittle down the threads of wire rope in just a few years. What happens when a rope snaps? The immediate repercussions involve at best minor damage, but far too often catastrophic damage to the mission critical vessel/hoist system occurs and injuries to those near the incident happen. Thinking longer term, the fleet is now down an SOV that will need to be repaired (if it can be salvaged at all), the wire rope hoists and platform will need to be repaired or altogether replaced (halting work months to years until it is fully operational), there will be delays to the maintenance of other SOVs leading to delays in the maintenance and repair of wind turbines, and potentially local fishing vessels will face even more competition to receive maintenance as offshore wind vessels now need to find an alternative hoist somewhere along the coast (likely one which normally services the fishing fleet). State-of-the-Art SOVs, and more importantly the humans behind them, working to advance progress toward California's renewable and climate goals deserve the environmentally friendly, safe Bardex chain shiplift system. After all, we've never dropped a single ship in the 56 years we've been delivering shiplifts.

The shiplift system can be scaled to accommodate the assembly and load out of large FOSW platforms, like semis, TLPs, etc, as well as for marshaling and operating as a drydock closer to the wind farm, all integrated into the port without losing valuable laydown area, supporting industrialization and operational efficiencies. Being able to directly lower the floater for wet tow and **retrieve** floaters back to



dry land for major O&M and/or extending the life of the FOSW platforms is a capability unique to Bardex systems. There is ***no other solution out there*** that can do this. The ability to retrieve floaters addresses a major concern of local residents with regards to what evidence of offshore floating wind will be left behind at the end of the projects' lifecycle. Choosing a Bardex system opens up an unparalleled opportunity to choose to do better for the marine ecosystem than what was realized with the abandonment of old oil wells.

How often does an infrastructure choice offer long-term environmental ***and*** economic benefits? The same technology that offers a solution to avoiding an offshore wind equipment graveyard offers an improvement of ROI through reduced DEVEX, CAPEX, OPEX, and life extension. Traditionally floating semi hulls never see the light of day once they are in operation. We provide a life cycle solution where the hull could be repurposed and/or repaired to extend the life of the asset, improving the CO₂ footprint for the floater over the life of the floater in operation. The amount of CO₂ produced (through project execution and supply chain) to build the asset up to installation and light off and O&M, takes X amount of CO₂. If the life of the floater is 30 years for example, when is the rate of return based on reduced CO₂ emission savings for the wind power? If the ROI is less than 30 years → Great, it was worth it! If more than that, then why build it? Part of this calculation is the additional credit received from de-commissioning and recycling the floater after its useful life. Are smart decisions being made to maximize how much can be repurposed?

Bardex systems provide an integrated extension to the existing quayside and adds an additional assembly area to quayside. It is also able to directly lower the floater for wet tow, instead of a semi-submersible barge for foundation load out only after assembly and tug boats to support the barge during this time. The semi-submersible barge is subject to many variables, like wave height and quayside mooring (a safety issue), consumes valuable quayside real-estate, as well as requiring ballasting operations to support load-out, offshore tugs are also used for stability during the operation (costing time and money). Viewing the semi-submersible barge holistically, it inherently needs many operational touch points to be managed safely. Bardex systems are a simpler, safer, and more controlled solution.

If the ship channel is not wide enough for a semi-submersible to support loadout, the Bardex system could be built into the existing quayside, providing dual use to support final assembly, without loss of usable laydown area and also supporting load-out of the FOSW platforms, ready for wet tow from the quayside. This increases the number of assembly load-out ports/locations in a port that could now be looked at for volume of assembly and load-out needed for industrialization → maximizing port infrastructure ROI.

Bardex rail system configuration on land can be utilized as a process line for assembly, reducing the operational costs and expense of buying/renting/maintaining other equipment like SPMTs and crawler cranes for critical heavy structural movement. Our rail systems also allow heavy load transfers to take place lower to the ground, leading to safer port operations for personnel. The rail system provides an agnostic system that can be utilized by all technologies for assembly movement, reducing heavy lift equipment on site. Different heavy equipment needs by clients becomes an operational contractual issue if you have the crane as a shared resource on site. Alternatively, each client having their own crane(s) results in valuable real-estate not being utilized to its optimal potential, increasing costs. Cranes – due to demand and availability – will be a bottle neck in the future, as we know different clients with different build strategies may need a different size and or dedicated cranes for their projects.



Investing in a technology/developer agnostic system now will accommodate current technology developments and support newer technologies as they are developed through 2045 and beyond.

The Bardex Corporation team appreciates the opportunity for comment on the Workshop on Assembly Bill 525: Preliminary Assessment of the Economic Benefits of Offshore Wind Related to Seaport Investments and Workforce Development Needs and Standards.

Sincerely,

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