1. Introduction

Wind turbine, growing in size and deployments requiring further out to sea, pose new challenges for offshore wind logistics. Clarendon Hill Consulting conducted a study of the U.S. East Coast port and harbor infrastructure which would accommodate the larger and more servicing installation vessels mandated by these new requirements. In order to meet the target of 54 GW from offshore wind in the United States by 2030 a series of installation ports will be required.

2. Study Objectives

- Investigate U.S. East coast ports with respect to their ability to function as a staging port for offshore wind jack-up vessel.

3. Specifications of Jack-up vessels

- Jack-up vessels are able to lift themselves above water level by lowering down a number of legs into the seabed to provide good stability.
- These legs also allow them independent from towing vessels (this function differentiates them from jack-up barges).
- The operability of a jack-up vessel depends on water depth at site and their crane capabilities.

4. Development of Port Screening Criteria

- First tier criteria: detail navigational access criteria derived from the vessel’s length, breadth, draft and air draft.

5. Case Study: North-East Coast Ports

- New Haven, CT have excellent or very good berth capabilities. However they only meet the criteria for a second tier due to their vertical clearance of less than 80 m.

6. Ports Screened in this Study

- Purely recreational ports with no industrial area were excluded from the search.

7. Results: Percentage of Suitable Jack-up vessels for North-East Coast Ports

- The figure lists the percentage of currently available and planned jack-up vessels that could be staged at ports.

8. Current infrastructure updates

- Current infrastructure upgrades are underway at several ports. These include channel dredging to accommodate the up to 15 m (50') deep new Panamax vessels at the Port of New York and New Jersey (PANYNJ). PANYNJ also plans to elevate the Bayonne bridge from currently 46 m (151') to 65 m (215'). A finding of no significance impact and bridge permit were issued in May 2013.

9. Conclusions

- A vessel-specific research on port infrastructure is crucial for the offshore wind industry to find the best and most efficient solutions for staging, deploying and operating offshore wind farms.
- Currently underway infrastructure upgrades will also benefit the offshore wind industry. However, in order to have meaningful implications, those projects would need to look closer at implications of offshore wind jack-up vessel developments. Even with an elevated Bayonne bridge, the Port of New York and New Jersey would only be accessible for less than 50 % of the jack-up vessels.
- A more comprehensive infrastructure planning approach is needed bringing together planning for waterways and the port and hinterland infrastructure. More detailed infrastructure studies will be needed for offshore wind projects at the Mid Atlantic, Gulf of Maine, Great Lakes and the West coast.

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