



**SYSTEM FABRICATION PLAN  
DELIVERABLE D7.2.3  
ADVANCED TIDGEN<sup>®</sup> POWER SYSTEM  
DE:EE0007820**

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## Purpose

This document presents the final system design completed during Budget Period 1 (BP1) by ORPC and its partners for the Advanced TidGen® Power System Project, DE- EE0007820. The document is excerpted from the Continuation Application submitted by ORPC on April 30, 2018.

## From Section 3.2.3 of the Continuation Application: D7.2.3 System Fabrication Plan

ORPC will contract with suppliers in Budget Period 2 (BP2) to fabricate components, supply components and subassemblies, integrate and the TidGen® system. In early BP2, ORPC will bid out the supply chain activity. A marine contractor will final assemble the system and perform shakedown verification testing at an indoor facility in Maine. The same contractor will breakdown, transport, and onsite assemble the system in Eastport, Maine. The contractor will then launch and deploy the system for both Cobscook Bay and Western Passage installations. All work will be done with ORPC oversight.

Prior supply chain activity, at the component and subsystem level, will be contracted out separately by ORPC or subcontracted out by the marine contractor. Turbines, generators, and commercial-off-the-shelf (COTS) equipment will be shipped to the final assembly facility for final integration.

Figure 9 depicts the product breakdown structure (PBS). Figure 10 overviews the build of the system in relation to testing and task number, through the system verification testing to be performed in Cobscook Bay. Figure 11 continues through the Western Passage validation testing.

In Budget Period 2, tasks 9 through 15:

- The first turbine will be constructed in 2018 as part of Task 9 in parallel with further composite testing, per Task 8, for refinement of failure mechanism characterization and life estimates. ORPC has engaged several potential turbine manufacturers, to be decided on by the end of Budget Period 1. Performance testing of the first turbine will yield more accurate loading estimates for reduction of overdesign, as well as provide via inspection additional information for composite characterization. These will inform design and manufacturing process modifications, and production of the 2<sup>nd</sup> through 8<sup>th</sup> turbines will take place in 2019 by the same turbine manufacturer.
- Anchor model-scale testing will occur in early 2019, with results informing final anchor design. Deployment system testing will occur in summer of 2019; ORPC will target reuse of any purchased auxiliary equipment required for deployment and, to the extent possible, components of the test rig for later system installations.
- The Cobscook Bay system installation occurs in early 2020, as part of Task 13, with Task 12 entailing electrical system modifications of the already existing infrastructure. The entire system must be purchased and integrated for this test.

- Western Passage site will also be prepped prior to BP3 activity, including the power and data cable installation (part of Task 12). The onshore substation will be transported and installed at the WP site.
- Environmental monitoring equipment will have been purchased and developed through prior survey activity conducted throughout BP2. The equipment is external to the device and will be deployed for monitoring during the deployment subsystem testing, and later during the Cobscook Bay deployment.

In Budget Period 3, tasks 16 through 18:

- The mooring chains will be replaced, and the system reconfigured for the deeper site at Western Passage.
- Environmental monitoring equipment will be transported and redeployed for the system validation testing in Western Passage.

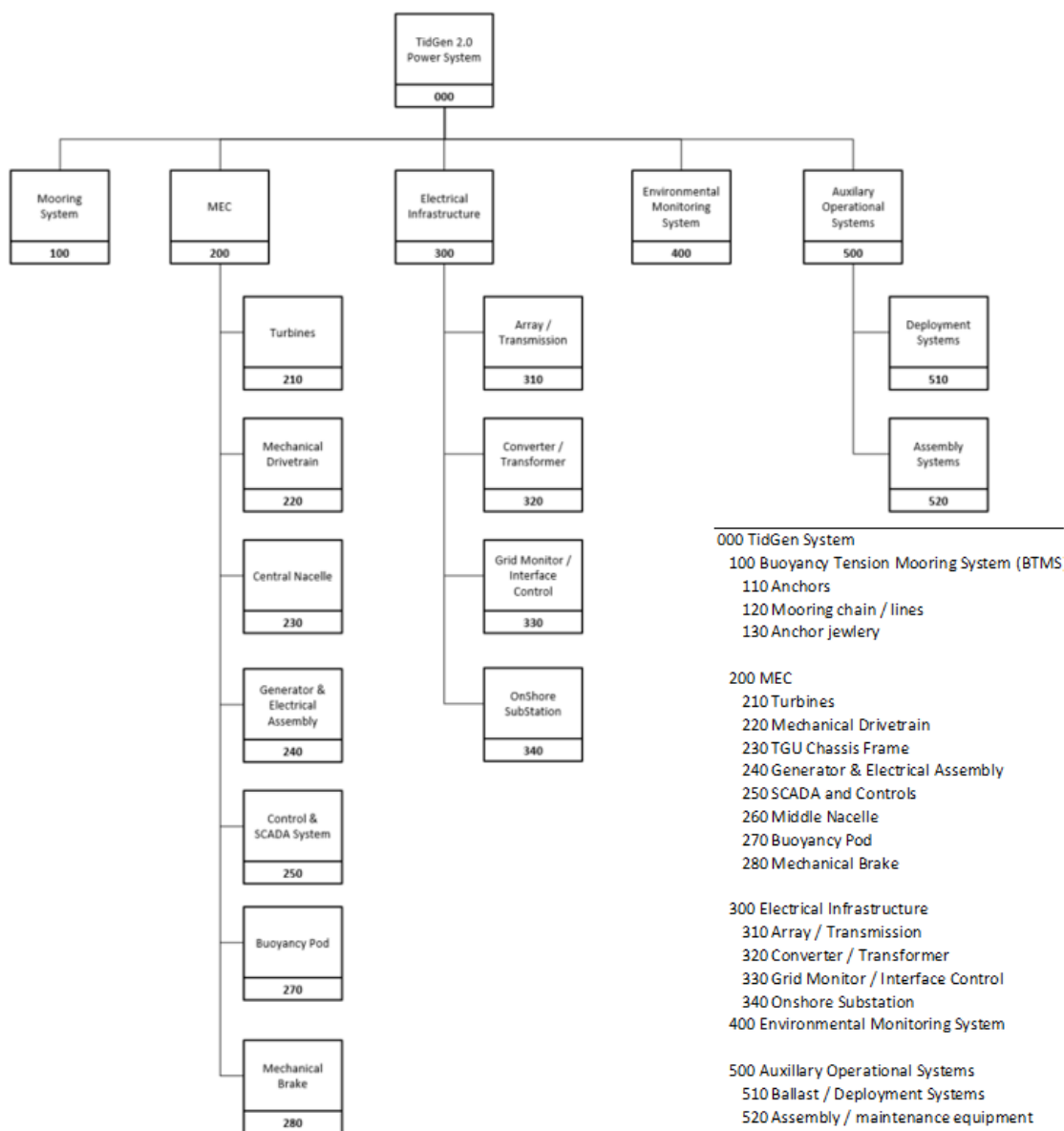
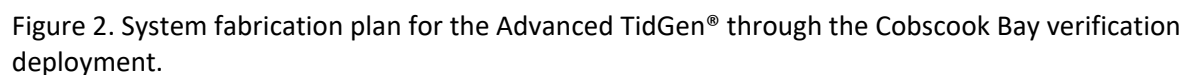


Figure 1. Advanced TidGen® Product Breakdown Structure (PBS).



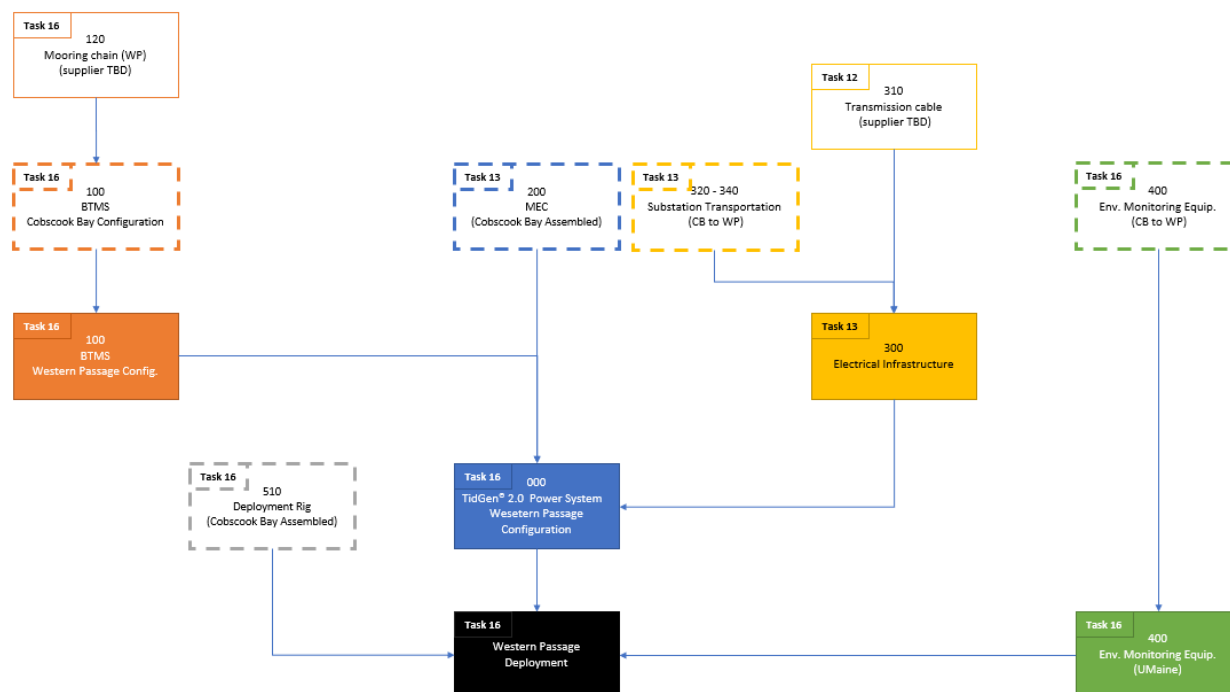


Figure 3. System fabrication plan for the Advanced TidGen® after the Cobscook Bay verification deployment through the Western Passage validation installation.