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7/30/21

Liane Randolph, Chair  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814  
Via Electronic submittal  
[Evan.Kersnar@arb.ca.gov](mailto:Evan.Kersnar@arb.ca.gov)

**RE: CARB's Commercial Harbor Craft Rule**

Dear Chair Randolph,

We urge CARB to require 100% zero-emissions deadline for all vessel segments of the Commercial Harbor Craft Rule.

Since 2009, PlanB has been leading the way in how battery technology is used on board ships to reduce emissions. We have extensive experience with installing battery powered systems in marine vessels globally.

The electrification for marine vessels has now been considered as a proven technology contributing to a decarbonized sustainable maritime sector. We are witnessing a fast-evolving climate friendly global technological shift that requires more integrated approaches entailing alternative fuels, wind and solar energy, renewable hydrogen, fuel-cell technologies, zero emission dockyards and many more to overcome the evidence based expected ecological catastrophe.

We supply batteries for various types of workboats, ranging from small harbour vessels to larger workboats of various kinds, enabling energy optimization and zero-emissions operations. Some examples of our work includes:

- The Tycho Brahe is a fully electric passenger ferry. It measures 238 meters (780 ft) and weighs 8,414 tonnes. Along with its sister ship, [the electric Aurora](#), it operates on a 4 km ferry route between Helsingborg (Sweden) and Helsingör (Denmark). The massive ships carry 7.4 million passengers and 1.9 million vehicles annually. Completed in 2017
- [Gloppefjord and Eidsfjord fully battery-operated ferries](#), which operate on the Anda-Lote route Nordfjord on the west coast of Norway, mark another milestone in the road towards zero emission in ferry operation in Norway. Total battery capacity onboard each ferry is two 520kWh PlanB batteries with Siemens as the electric integrator. Each ferry has two 500 eKW Scania DI16 90M generators for back-up and emergency operators. Among the ferries unique selling points is that they will only need to stop for nine minutes for battery charging in ports. Completed in 2018.



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- [The Elektra](#) is a 100% Electric Vessel. This double-ended ferry has paved the way for a new type of ship, the hybrid/electric ro-ro. Finnish state-owned ferry operator FinFerries is only the second operator in the world to build such a vessel but remains the first of its kind to recharge its batteries at each end directly from the domestic power grid; Norwegian Ampere was the first however it draws its power from banks of batteries at each terminal. In June 2017, the Elektra began regular operation between Nauvo and Parainen in the Turku archipelago. Designed to be a 24/7 workhorse, it travels this route every 15 minutes during peak hours and once an overovernight. She operates with a 1060kWh battery pack on a 5 minute turn time.
- [The Elfrida electric boat](#), the world's first electrically powered ship for fish farming, is in operation off the coast of Central Norway. The work boat is used to transport feed and equipment, to repair or relocate fish cages, check anchorages, and make inspections. It requires around 50 minutes for its daily trip to the fish hatchery, which lies 12km off the coast. During the normal working day of about eight hours the ship is powered by 100% battery power. System Specifications: The system is made up of 24 6.5kWh Power batteries for a total of 156kWh. Completed in 2016.

We appreciate the hard work that CARB staff have done on the proposal. However, the draft rule as written is short-sighted. The rule does not reduce greenhouse gas emissions and risks creating a stranded asset scenario for harbor craft owners who may pay to retrofit to Tier 3 and 4 engines only to be forced to make a full zero-emission transition in quickly proceeding years later.

The world is undergoing a period of significant change unlike anything in human history. All of us must work together to reduce fossil fuel emissions. **For the marine sector, a strong but achievable standard would be that all harbor craft operating in the state must be zero emission by 2035.** What we need now to drive uptake are strong market accelerating policies, including incentives and funding mechanisms.

We would be happy to discuss our technology further with you. We believe we can support a **fully zero emission solution** that can be implemented before 2035.

Sincerely,

Brent Perry  
CEO Shift Clean Energy

cc:  
CARB Board members  
Secretary Jared Blumenfeld, CalEPA