



2151 N. Northlake Way, Suite 101, Seattle, WA 98103

November 14, 2022

California Air Resources Board
1001 I Street
Sacramento, CA 95814
helpline@arb.ca.gov

To whom it may concern,

Given recent advances in small maritime electric motors, we recommend that the Air Resources Board allocate funds to incentivize the adoption of these clean alternatives, in lieu of the polluting internal combustion outboard engines commonly used today in recreational boating applications.

Gas outboards are a shocking, long-overlooked source of pollution:

- Because catalytic converters do not work in gas outboards, switching to an electric outboard achieves ~125x the reduction in carcinogenic, non-CO2 emissions as switching a modern gas car to electric (detailed analysis here: [A Thousands Cars off the Road](#)).
- Per a [2010 EPA study](#), 25% of fine particulate emissions (PM2.5) are caused by two-stroke engines, the largest of which are used in recreational vehicles, including marine outboard motors.
- Two-stroke outboards exhaust 25-30% of their fuel unburnt into the body of water in which they are used.
- US recreational boats generate the same amount of CO2 emissions as all recreational buses (~7 million metric tons annually).¹

For the first time, commercially-available electric outboard motors exist that do not compromise on performance or total cost of ownership. For example, the Marin Rowing Association in Marin County has replaced a 25HP gas outboard with a clean 50HP equivalent Pure Outboard electric motor system. They intend to replace the remaining 7 motors in their fleet, becoming the first 100% electric rowing program in the world.

The marine electric propulsion industry is roughly where the electric vehicle industry was in 2010. As with most nascent electric vehicle categories, electric outboards and boats are more expensive to manufacture and purchase for consumers than existing gas boats/outboard engines.

We encourage the Air Resources Board to create zero-emission outboard motor or vessel incentives, by funding an appropriate program such as the LCFS, Carl Moyer, or Volkswagen Environmental Mitigation Trust.

¹ US Department of Energy: Transportation Energy Data Book: Edition 38



2151 N. Northlake Way, Suite 101, Seattle, WA 98103

A program modeled after the Clean Vehicle Rebate Project for electric outboard motors or electric boats would be particularly effective.

Please do not hesitate to reach out with any questions.

Warm regards,

Alexander Oki
Director of Finance & Business Development
Pure Watercraft, Inc.
info@purewatercraft.com