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CG-BSX-23 Policy Letter 22-02

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COMDT (CG-BSX-23)

To: Distribution

Subj: Safe Loading, Safe Powering and Flotation Compliance Guidance for Electrically  
Powered Recreational Vessels

Ref: (a) Title 46 U.S. Code Chapter 43  
(b) Title 33 Code of Federal Regulations Subchapter S

1. Purpose and Application. This policy establishes regulatory compliance guidance for recreational vessels less than 20 feet in length that use batteries to power their primary propulsion. This document provides consistent guidance for the design, inspection, and/or testing of recreational vessels using batteries to power their primary propulsion.
2. Directives Affected. None.
3. Action. USCG Headquarters Units and Offices, Districts and Sector Commanders and recreational boat manufacturers may use this policy letter to ensure compliance with U.S. statutory and regulatory requirements.
4. Background.
  - a. The USCG has statutory authority under reference (a), Section 4302(a) to prescribe regulations establishing minimum safety standards for recreational vessels and associated equipment.
  - b. Regulations found in reference (b) address display of capacity information, safe loading, safe powering, and outboard motor and related equipment test weights for flotation and safe loading requirements.
  - c. Advances in battery technology have enabled new possibilities in boat power and propulsion systems. Currently, internal combustion engines using lead-acid or absorbent glass mat (AGM) batteries comprise the vast majority of recreational vessel propulsion installations. However, recent advancements in the development of lithium-ion (Li-ion) battery technology have made all-electric systems possible on some recreational vessels. Li-ion batteries are becoming more cost-effective and deliver one of the highest energy densities of any currently available battery technology, making these batteries and electric motors a viable alternative to internal combustion engines and traditional lead acid and AGM batteries for powering recreational vessels.
  - d. Current regulations for safe loading, safe powering and flotation in reference (b) were promulgated with the expectation that internal combustion engines for propulsion would

be used and did not anticipate the use of batteries and electric motors for these functions. As a result, further clarification is needed to determine capacities required by reference (b) when internal combustion engines are replaced with electric motors and large Li-ion battery installations.

5. Discussion. This policy letter is applicable to recreational vessels using battery-supplied electricity as the source of power for their primary propulsion. The regulatory and technical basis for this guidance is found in the equivalency provisions of Section 4305 of reference (a) as well as in the individual subparts of Part 183 of reference (b). The guidance in paragraph 6 applies to the determination of capacity, flotation and powering of recreational vessels, but it does not address electrical issues inherent with their use.
6. Safe Loading, Safe Powering and Flotation Compliance. The following guidance may be used as an acceptable method for complying with the applicable referenced regulation.
  - a. 33 CFR 183 Subpart B – Display of Capacity Information
    - i. Electrically powered recreational vessels that meet the maximum horsepower (HP) display requirement found in 33 CFR Part 183.23HP may be determined as Propeller Shaft HP using SAE-J228 *Marine Propulsion Engine and Systems – Power Measurement*, or ISO – 8665 *Small Craft – Marine Propulsion Reciprocating Internal Combustion Engines – Power Measurements and Declarations*.
    - ii. Adding the statement “For Electric Propulsion” to the marking required by 33 CFR 183.25(b)(1) and (2) is an acceptable method of compliance with 33 CFR Part 183.23’s marking requirements.
    - iii. The capacity plate should display the actual maximum weight of the electric outboard motor used.
  - b. 33 CFR 183 Subpart C – Safe Loading
    - i. To comply with 33 CFR Part 183.35, the weight of all supplied or intended batteries and Battery Management System(s) (BMS), if they are separate from the outboard motor, should be included in boat weight.
    - ii. To comply with 33 CFR Part 183.33, boat weight and machinery weight should be used as written with the weight of batteries and BMS being included in the machinery weight.
  - c. 33 CFR 183 Subpart D – Safe Powering
    - i. Manufacturers shall compute the maximum horsepower capacity as specified in 183.53(a) or conduct the performance tests found in 33 CFR Part 183.53(b).
    - ii. The maximum horsepower marked on the boat may not exceed the lesser result of the two methods.
  - d. 33 CFR 183 Subpart E – Flotation and Safe Loading Requirements – Outboard Motor and Related Equipment Test Weights

- i. The manufacturer should use the actual weights of the installed electric outboard motor and components as opposed to engine family weights found in Table 183.75 in order to determine the proper test weight.
7. Additional Considerations. This policy addresses manufacturer compliance with regulations set forth in reference (b), written in 1977, when electrical propulsion was not considered viable in mass production recreational vessel construction. Over the past decade, electric propulsion has rapidly evolved, and the current federal regulations do not address all considerations that should be addressed during the design and manufacturing of electrically powered recreational vessels. Manufacturers should refer to applicable voluntary consensus standards like ABYC E-13 to ensure relevant, current safety practices are in place during the design and manufacture of recreational vessels with electric propulsion systems.
8. Disclaimer. The guidance in this policy letter is not a substitute for applicable legal requirements and is not a rule. It is not intended to impose legally binding requirements on any party. This guidance represents the USCG's current rationale on this topic and may assist industry, mariners, the public, and the Coast Guard, as well as other Federal and state regulators, in applying statutory and regulatory requirements. An alternative approach for complying with these requirements is acceptable, if that approach satisfies the requirements of the applicable statutes and regulations.
9. Changes. This policy will be revised as necessary. It will be available with any changes on the CG-BSX-23 website at <https://safeafloat.com/policies-letters/>. Questions concerning compliance with recreational boat manufacturing requirements should be directed to Commandant (CG-BSX-23), Recreational Boat Product Assurance Branch, Office of Auxiliary & Boating Safety at [rbscompliance@uscg.mil](mailto:rbscompliance@uscg.mil).

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