

Recreational Boating and COP21

- Current EPA regulation of boats fall short of COP21 requirements.
- They have the effect of extending the useful (or rather, counterproductive) life of old, inefficient, polluting boats.
- The current regulations also negatively affect the sale of new, more COP21 compliant boats.
- Cars and trucks get 10x better fuel mileage than recreational boats, new or used.
- This problem is inescapable, as boats will be the very last vehicles to be electric, due to the prohibitive weight and cost of the required battery capacity at 5-10x the requirements for cars.

Effect of current regulation on **NEW** boat sales:

1. EPA's current standards encourage fuel-inefficiency.

The Premier 310 Dodici below is fully compliant with current EPA grams/kwh regulations and is in one of the fastest growing new boat market segments. It can go 57 mph using **72.3 gallons per hour**, and **the best it can do at any cruising speed is 1.6 mpg.**



http://www.boattest.com/review/premier/3516_310-dodici

As shown above, while marine engines have been getting more efficient, they are being used less efficiently in new boats. Boat buyers are far more interested in performance than in fuel economy, and the EPA's current g/kwh efficiency standard enables this (COP21 dysfunctional) behavior.

2. Used Boat Sales Currently Dwarf New Boat Sales.

Today, more than 9 out of 10 boat buyers buy used boats. In sterndrive boats, still the most popular family boat type, 9.5 out of 10 buy used boats. In 2015, only 12,000 new boats of this type were sold into a US registered base of 1.6 million. 150,000 of these boats were sold new in 1989, tapering down to 70,000 in 2007, just before the great recession and the 2010 imposition of catalytic converters.

Why used sterndrive boats dominate sales:

1. New outboard boats, like the one shown above, are more competitive on a performance/cost basis. This is partly because they do not carry the approximately \$2500 additional cost of **emission control technology** required in new sterndrive boats, and partly due to the improved technology in outboard motors and the related innovations in outboard boats.

2. EPA regulations require new sterndrive and inboard boats sold in 2010 and later years to have **catalytic converters** and closed fuel systems. These systems must be maintained for the life of the boat, an additional cost to the already high maintenance costs of a typical boat.

2009 and earlier boats may have their engines rebuilt or replaced **forever** (either with old carbureted engines or with new high-performance engines) without ever requiring the costs associated with catalyst and closed fuel systems.

3. There has been no meaningful innovation in new sterndrive boats to justify their higher cost.

Just how bad is it? And how bad is it going to get? Here is the latest industry news:

The Age of Vessels is Increasing.

“ . . . Peter Houseworth, director of client services at Info-Link, says this aging inventory goes back to boats built in the 1960s and 1970s; those boats were built in such a way that

they could effectively be used “forever” if maintained properly.

“They don’t expire, given that you can repower them.”

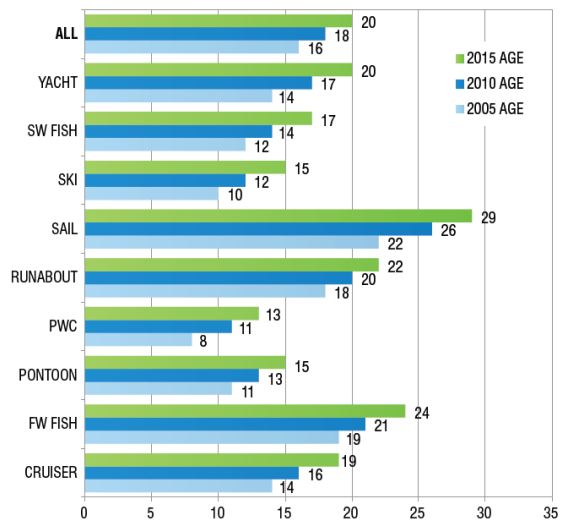
In current years, the boating industry is adding roughly 235,000 units to a fleet of 11 million. “. . . so we’re adding about 2 percent to the fleet every year. Basically, the size of the fleet is flat to declining slightly, but it’s hard to influence if you’re only adding 2 percent every year,”

From Boating Industry’s Market Data Book 2016

www.BoatingIndustry.com.

AVERAGE AGE OF VESSEL AT TIME OF PURCHASE

All boat types saw an increase in the average age of inventory



Source: Info-Link Technologies; 786-888-8238; peterh@info-link.com

Since this sea of used vessels can be legally repowered forever with inefficient systems, how can their effect on the environment ever be controlled?

In Addition to Emissions, Boats Have Propeller-Related Environmental Issues:

1. Human Health and Safety. Open propeller drives on boats are about the only device in common use that maims or kills people around it. If a situation like this were found in a factory, OSHA would not allow it and would require immediate remediation to mitigate the hazard.

2. Protection of Marine Life. Injuries to marine mammals, sea turtles, fish, coral, sea grass, and other marine life also commonly result from open propeller drives.

3. Pollution of navigable water. Propeller drives are known for disturbing the bottom, which releases pollutants into the water and destroys habitat for marine life.

Regulations Required to Meet COP21

There is technology available that addresses all of the issues raised above in one package. Its acceptance requires EPA regulation of boat carbon emissions similarly to the Agency's regulation of automotive carbon emissions with the current Corporate Average Fuel Economy (CAFE) standards for automobiles.

Prospective New Boat Regulation:

For new boats the EPA could establish a series of classes of boats, based on size and function, and establish a mpg requirement for each class.

Prospective Used Boat Regulation:

Even a phased-in CAFE for new boats will make new boats even less competitive in terms of performance/cost, which will again have the effect of driving down new boat sales and extending the life of pre-2010 boats. The only way to prevent this dilemma is to **impose additional regulations on the sea of used boats.**

Such regulations are inescapable if there is to ever be a meaningful reduction in total boat emissions in the US.

Used-boat regulations suggested by market and COP21 realities:

1. Require that all gas marine replacement motors be **fuel-injected**, which would eventually eliminate the use of carburetors in boats. The vast majority of gas boat motors now in use are carbureted. Their elimination is justified by the potential reductions in CO₂, CO, HC, and NO_x emissions, as well as the prevention of explosions and fires due to gasoline leaks from the carburetor into the bilge.
2. Provide a "Cash-for-Clunkers"-like payment, a tax credit or other incentive to encourage the **replacement of existing carbureted motors** rather than rebuilding them, which would accelerate the conversion to fuel-injected motors.
3. Provide a similar incentive for installing a **more efficient boat propulsion system**, which eliminates the exposed propeller and mitigates the "Propeller-related Environmental Issues" detailed above. Such a system would include/require an electronically controlled, fuel injected engine, such as are universally used/required in new automobile motors and in new outboard boat motors. It would also include a more efficient means of converting the motor's shaft power into thrust force for propelling the boat. Such systems would be tested/certified by the EPA to qualify for such tax credits.

Conclusion:

These regulations will be necessary under COP21 for the reduction of boat carbon emissions in any event, and they will also be an opportunity to eliminate propeller injuries to people, wildlife, and water quality.