Tourism Operators RESPONDING TO CLIMATE CHANGE







Reducing Outboard Emissions

"Since we switched to low emission four-stroke outboards, we have reduced our fuel and oil use by 30 per cent."

> Jan and Peter Claxton, Ocean Rafting



Australian Government

Great Barrier Reef Marine Park Authority

Reducing Outboard Emissions

Why should I care about using a low emission, well maintained outboard engine?

The amount of fuel an outboard motor uses is directly related to the type of engine and how well maintained it is. A low emission, well maintained engine will not only save your business money on fuel, but will also greatly reduce your emissions.

Some food for thought...

Traditional old technology carburetted two-stroke engines used in marine outboards are high polluters relative to their size and usage. For example, an old six horsepower two-stroke has about the same emissions per hour as a 150 horsepower low-emission outboard.

The benefits of low-emission outboard engines

A low emission outboard engine will outperform a conventional two-stroke motor, burn up 30 to 50 per cent less fuel, yet produce only 10 per cent of the emissions.

Whilst low emission outboard engines are more expensive than the older technology two-stroke engines, they last much longer and are more reliable, saving you money in the end.

The benefits of well maintained outboard engines

If you can't replace your outboard motors at the moment, you can still reduce your fuel consumption and level of pollution.

A clean and well maintained engine will use less fuel than a poorly maintained engine.

How do I reduce my outboard engine emissions?

Step 1. Look for the 'stars' at your outboard supplier

To help boat owners choose outboard engines based on comparable emissions, the Outboard Engine Distributors Association (OEDA) has an emissions rating system known as the Voluntary Emissions Labelling Scheme (VELS).



The VELS uses star ratings for new outboard engines, similar to energy and water effi ency ratings for household appliances. It is based on international emission regulations and supported by the major outboard manufacturers: Honda, Mercury, Suzuki, Tohatsu, Yamaha and BRP (makers of Evinrude and Johnson).

The OEDA Australia star rating system classifies engines with zero to four stars as follows:

OEDA Australia Star Rating	Star Rating Description	OEDA Emissions Limit (g/kW/h)
OEDA More entresion	High emission: A handful of older design two-stroke engines	> 250
OEDA *	Low emission: Most traditional two-stroke engines	68.4 - 250
OEDA **	Very low emission: Most two-stroke direct injection and four- stroke engines	30 - 64.8
OEDA ****	Ultra low emission: Some two-stroke direct injection and four-	F 20
	Super ultra low emission: For future technologies	< 5

All outboard manufacturers in Australia have three star motors available. Four star outboards are not currently available, but are the standard that outboard manufacturers are aiming for in the future.

Step 2. Match engine horsepower to vessel size

When purchasing a marine engine or other motorised equipment, it is important to properly match engine horsepower to the size of your vessel, taking into account payload and required service speed. Choosing the right engine can reduce your fuel consumption, lower your emissions, and improve reliability through fewer breakdowns.

Step 3. Don't forget your prop!

Make sure the pitch of your propeller is correct to increase fuel efficiency and overall performance and remember to keep the propeller in good condition.

Step 4. Follow maintenance and operation tips

Minimising the emissions produced by your marine engine does not stop at purchasing the right equipment.

Once the engine is installed, use these tips to optimise engine performance and reduce environmental impacts:

- Ensure your outboard motor is kept in good condition and serviced according to the manufacturer's recommendations.
- Drive your boat conservatively. Abrupt starts, excessive speed and extended use of full throttle reduce fuel efficiency and increase emissions.
- Reduce weight. Extra cargo in your boat reduces fuel efficiency.
- Eliminate unnecessary engine idling.
- Trim engines to sea conditions and the load on the vessel.





Reducing Outboard Emissions

Where can I find out more?

- Comparative Assessment of the Environmental Performance of Small Engines - Marine Outboards and Personal Watercraft www.environment.gov. au/atmosphere/ airquality/publications/marine-outboard-engine. html
- Voluntary Emissions Labelling Scheme (VELS) www.oeda.com.au
- Climate change information and resources for tourism operators
 www.gbrmpa.gov.au/onboard/home/high_ standards/climate_change_action
- Great Barrier Reef Outlook Report 2009 www.gbrmpa.gov.au/corp_site/about_us/great_ barrier_reef_outlook_report

What will my customers think?

People are more aware of climate change than ever.

By using a low emission outboard and talking to your customers about your choice, you can demonstrate your commitment to looking after the Great Barrier Reef, the very thing they are here to enjoy.

Checklist

- Buy a three star outboard engine.
- Match your engine horsepower to the size, carrying capacity and regular operating speed of your vessel.
- Fit your engine with an appropriately sized and pitched propeller.
- Check your propeller weekly for damage and have it repaired as required.
- Service your engines as recommended by the manufacturer.
- Drive your boat conservatively and avoid unnecessary idling.
- Trim your engine to the sea conditions and payload onboard.
- Reduce the payload of your vessel by carrying only the necessities.



Ocean Rafting has been operating daily tours in the Marine Park since 1997. In the Whitsundays, the business now operates three semi rigid inflatable boats (RIB) driven by twin four-stroke V6 225hp engines. One larger RIB powered by twin V8 350hp engines is run out of Cape Tribulation under the name Ocean Safari.

Jan and Peter Claxton purchased *Ocean Rafting* in 2001, and after replacing all the vessels' twostroke engines with four-strokes, the company has gone from strength to strength.

"The four-strokes are more reliable, have less environmental impacts, and reduce fuel and oil use by 30 per cent," says owner Jan Claxton. "Visitors have commented that the exhaust does not smell nearly as much and they are much quieter, so they are much better from a passenger comfort point of view."

The Ocean Rafting RIBs have engines with much more power then is actually required to run their 25 passenger vessels. The Claxton's have found that running these engines at about two-thirds their capacity means they are never running under strain and therefore burn less fuel. To assist in achieving the best performance from its engines, Ocean Rafting also ensures they choose their propeller's size and pitch to match the engine and vessel and that the propellers are well maintained to give optimum performance. Another important factor is ensuring skippers pay constant attention to the trim of the engine to achieve the best performance while underway. Getting both of these correct can have a direct impact not only on the ride and performance but on the end-of-month fuel bill.

Peter Claxton believes "if you maintain the engines according to a strict schedule and get the boat's skipper to participate in the engine breakin, on-going maintenance and tuning of the vessel's engines, then you have the key to keeping the engines running at their prime. Skippers are the ones operating the boats and are in the best postion to identify when the engines may need an extra service".

Even though the manufacturer recommends an oil service every 100 hours, Peter does it every 50 hours to keep the engines running at optimum performance. The oil is recycled at the marina. At 500 hours, the engines get a major service, replacing the recommended parts whether they are needed or not. At 1000 hours, the engines get a major overhaul, and at 2000 hours the engines are sold and replaced with a brand new ones. "By maintaining the engines to a top standard and replacing them every 2000 hours, we have increased the reliability of the boats through fewer breakdowns. This has made the business more profitable," Peter says.

Further information about *Ocean Rafting* can be found at www.oceanrafting.com.au/index. html or by emailing Jan and Peter Claxton at oceanrafting@airlie.net.au



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