

BENEFITS OF USING BIODIESEL ABOARD R/V ENDEAVOR

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OVERALL BENEFITS OF BIODIESEL ABOARD R/V ENDEAVOR

- ENVIRONMENTAL
 - LIFE CYCLE REDUCTIONS IN CARBON FOOTPRINT
 - CLEANER OPERATIONS FOR SCIENTIFIC EXPERIMENTS
- ECONOMICAL
 - SIMILAR PRICE TO PETROLEUM DIESEL
 - INCREASED LUBRICITY
 - SUPPORT FOR LOCAL BUSINESS
- EDUCATIONAL
 - DISPROVE MISCONCEPTIONS REGARDING BIODIESEL
 - INSTILL CONFIDENCE IN USING HIGHER BLENDS



ENVIRONMENTAL IMPACTS OF BIODIESEL

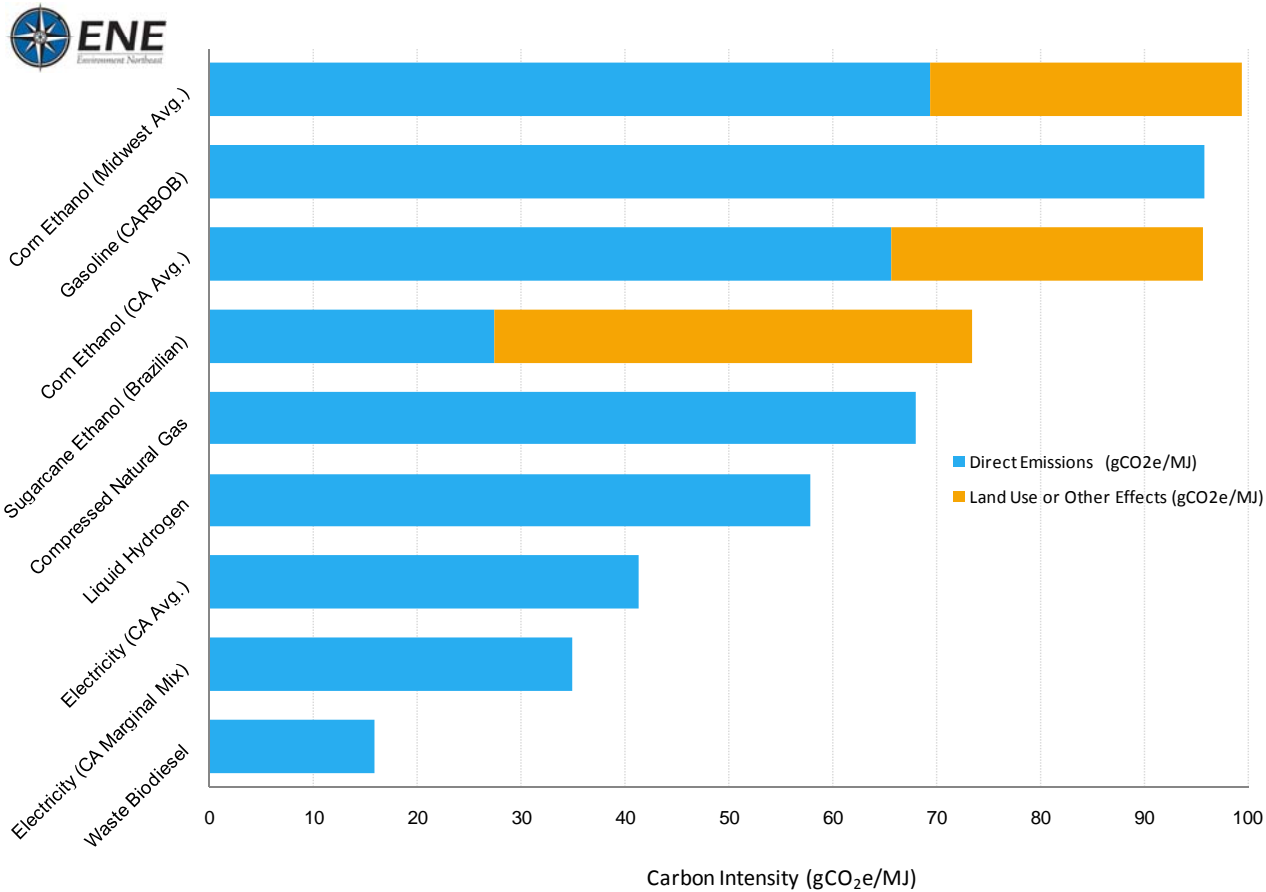
NOT ALL BIODIESEL IS THE SAME

- LOCAL, RECYCLED WASTE VEGETABLE OIL (WVO) FEEDSTOCK HAS GREATEST IMPACT
 - NO LOSS OF FOOD SUPPLY
 - MINIMAL EMISSIONS DUE TO FARMING AND TRANSPORTATION
 - MEETS ASTM SPECIFICATIONS
 - LOW GEL POINT



Relative Carbon Intensity of Fuels

(Source: Abigail Anthony, Ph.D. Environment Northeast)



USE OF BIODIESEL

- TYPICALLY BLENDED WITH PETROLEUM DIESEL
 - START WITH B-5
 - 5% BIODIESEL, 95% PETROLEUM DIESEL
 - MINIMAL EFFECT
 - WELL WITHIN ENGINE WARRANTY LIMITS
 - WORK TOWARD B-20 AND ABOVE
 - 20% BIODIESEL, 80 % PETROLEUM DIESEL
 - INCREASED LUBRICITY FOR LOW SULFUR DIESEL
 - SIGNIFICANT REDUCTION IN EMISSIONS
 - MINIMAL IMPACT ON ENGINE OPERATION



B-5 EMISSION REDUCTION

Emission Parameter	Percent Reduction	lbs of Emission reduced
Particulate Material	-3.14%	-67.07lbs
Hydrocarbon	-5.44%	-91.02lbs
Carbon Monoxide	-3.23%	-746.66lbs
Sulfur Dioxide	-5%	-147.62lbs
Carbon Dioxide	-3.92%	-161,170.1

Values calculated using National Biodiesel Board's Emissions Reduction Calculator



B-10 EMISSION REDUCTION

Emission Parameter	Percent Reduction	lbs of Emission reduced
Particulate Material	-6.18%	-132.01lbs
Hydrocarbon	-10.59%	-177.18lbs
Carbon Monoxide	-6.35%	-1,467.90lbs
Sulfur Dioxide	-10%	-88.20lbs
Carbon Dioxide	-7.85%	-322,625.19lbs

Values calculated using National Biodiesel Board's Emissions Reduction Calculator



B-20 EMISSION REDUCTION

Emission Parameter	Percent Reduction	lbs of Emission reduced
Particulate Material	-11.99%	-256.11lbs
Hydrocarbon	-20.06%	-335.62lbs
Carbon Monoxide	-12.30%	-2,843.33lbs
Sulfur Dioxide	-20%	-176.40lbs
Carbon Dioxide	-15.69%	-644,839.39lbs

Values calculated using National Biodiesel Board's Emissions Reduction Calculator



CONCERNS WITH THE USE OF BIODIESEL

- **CLEANS TANKS & FUEL LINES**
 - MAY NEED TO CHANGE FILTERS MORE FREQUENTLY AT FIRST
- **GEL POINT**
 - OCCURS AT LOW TEMPERATURES
 - VERY LOW WHEN BLENDED
- **LONGEVITY**
 - NO PROBLEMS WITH STORAGE



ECONOMIC IMPACT OF BIODIESEL

- COST IS SIMILAR TO OR LESS THAN PETROLEUM DIESEL
- SUPPORT TO LOCAL BUSINESSES
 - RESTAURANTS THAT PROVIDE WVO
 - PRODUCER WHO MAKES BIODIESEL
 - DISTRIBUTOR WHO BLENDS & DELIVERS



EDUCATIONAL ASPECTS

- BIODIESEL OFTEN CONFUSED WITH ETHANOL
 - SUSTAINABLE BIODIESEL HAS NO IMPACT ON FOOD SOURCES
 - BIODIESEL PROVIDES SIGNIFICANTLY GREATER REDUCTION IN GREENHOUSE GAS EMISSIONS
 - BIODIESEL DOES NOT AFFECT FIBERGLASS TANKS
 - BLENDS OF 5% TO 20% BIODIESEL HAVE VERY SIMILAR FUEL CHARACTERISTICS



SUMMARY

- TEAM OF URI GRADUATE SCHOOL OF OCEANOGRAPHY, NEWPORT BIODIESEL & MALLOY BIODIESEL HAS ALREADY STARTED USE OF BIODIESEL ABOARD THE ENDEAVOR
- “GREENING THE ENDEAVOR” FUND CREATED AT URI FOUNDATION TO SUPPORT FUTURE USE OF ENVIRONMENTALLY FRIENDLY ACTIONS

