



# ENVIRONMENTAL ANALYSIS

## Carbon Footprint of RV Vacations Compared to Fly/Drive/Hotel Vacations

PREPARED BY: **PKF Consulting**  
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# **ENVIRONMENTAL ANALYSIS**

**ESTIMATED CARBON FOOTPRINT OF  
RECREATION VEHICLE VACATIONS COMPARED TO  
FLY / DRIVE / HOTEL VACATIONS**

**PREPARED FOR:  
RECREATION VEHICLE  
INDUSTRY ASSOCIATION  
RESTON, VIRGINIA**

**PREPARED BY:  
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## **ENVIRONMENTAL ANALYSIS: CARBON FOOTPRINT COMPARISON**

### **OBJECTIVE AND METHODOLOGY**

Recreation Vehicle Industry Association requested that PKF conduct an environmental analysis for summer 2008 comparing the estimated carbon footprint (CO<sub>2</sub> emissions in tons) of RV vacations against airline/rental car/motels or hotels vacations. We utilized secondary research produced by Conservation International to assess the relative environmental “friendliness” of the RV vacations versus this other vacation type.

Using a carbon calculator methodology devised by Conservation International, we estimated the CO<sub>2</sub> emissions (in tons) of the selected vacation types. A higher level of CO<sub>2</sub> emissions indicates a more adverse environmental impact. Of note is that the CO<sub>2</sub> emissions presented for the non-RV vacations include an allocation for the lodging component.

Below is a summary of the key assumptions used in calculating the CO<sub>2</sub> emissions identified in the tables that follow:

- Fuel Economy
  - o Personal Vehicle: 30.3 MPG
  - o Rental Car: 23.4 MPG
  - o SUV: 22.1 MPG
  - o Type C Motorhome: 10 MPG
  - o Type A Motorhome (diesel): 12.5 MPG
- Road Miles to Air Miles Conversion Rate
  - o 1.18 Road Miles = 1.00 Airline Miles
- Impact of Folding Camping Trailer and Lightweight Travel Trailer
  - o 1 Additional Gallon of Fuel per 100 Miles Traveled per 1,000 Pounds
    - . Folding Camping Trailer = 2,000 Pounds
    - . Lightweight Travel Trailer = 4,000 Pounds
- CO<sub>2</sub> Emissions
  - o .0089 Tons per Gallon of Fuel
  - o .00041 Tons per Airline Passenger Mile
  - o .0136 per Person per Hotel Night

The mileage traveled during each vacation, or in and around the destination city (rental car), was divided by miles per gallon (MPG) estimated for the various vehicle types. RV MPG estimates were based on industry averages for each type of RV derived through information gathered from RV manufacturers. In the case of rental cars, the average fuel mileage of models commonly rented was calculated. MPG estimates were derived from the fuel mileage ratings prepared by the U.S. Environmental Protection Agency (EPA). The EPA ratings model presents city and highway MPG estimates for nearly all vehicle makes and models. We have assumed all RVs and rental cars will be model year 2008.

## **ENVIRONMENTAL ANALYSIS: CARBON FOOTPRINT COMPARISON**

As an example, the analysis on the following page illustrates a detailed breakdown of the carbon calculations for the 10-day Minneapolis to Branson vacations.

### **EXAMPLE – 10-Day Minneapolis to Branson Vacations**

#### Car/Folding Camping Trailer

Gallons of Gas Required (Base) = 73.9

Gallons of Gas Required (Additional) = 16.5

Total Gallons of Gas Required (Base + Additional) = 90.4

90.4 Gallons of Gas x .0089 Tons per Gallon of Fuel = **0.80 Tons CO<sub>2</sub>**

#### SUV/Travel Trailer

Gallons of Gas Required (Base) = 118.8

Gallons of Gas Required (Additional) = 22.6

Total Gallons of Gas Required (Base + Additional) = 141.5

141.5 Gallons of Gas x .0089 Tons per Gallon of Fuel = **1.26 Tons CO<sub>2</sub>**

Type C Motorhome Total Gallons of Gas Required = 189.4

189.4 Gallons of Gas x .0089 Tons per Gallon of Fuel = **1.69 Tons CO<sub>2</sub>**

#### Type A Motorhome (diesel)

Total Gallons of Diesel Fuel Required = 151.5

151.5 Gallons of Diesel Fuel x .0089 Tons per Gallon of Fuel = **1.35 Tons CO<sub>2</sub>**

#### Airline/Rental Car/Motels or Hotels

Airline Miles = 1,180

1,180 Airline Miles x .00041 Tons per Airline Passenger Mile x 4 persons = **1.93 Tons CO<sub>2</sub>**

Total Gallons of Fuel Required = 21.4

21.4 Gallons of Fuel x .0089 Tons per Gallon of Fuel = **0.19 Tons CO<sub>2</sub>** Total

Number of Hotel Nights = 9 Hotel Nights x .0136 Tons per Person per Hotel

Night x 4 persons =  
**0.49 Tons CO<sub>2</sub>**

1.93 Tons + 0.19 Tons + 0.49 tons = **2.61 Tons CO<sub>2</sub>**

## **ENVIRONMENTAL ANALYSIS: CARBON FOOTPRINT COMPARISON**

### **RESULTS**

Summaries of the carbon footprint of the various vacations are presented in the following tables.

<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: Branson, MO</b>			
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Chicago to Branson</b>	<b>Minneapolis to Branson</b>	<b>Minneapolis to Branson</b>
<b>RV Vacations</b>			
Car/Folding Camping Trailer	0.62	0.80	0.86
SUV/Travel Trailer	0.98	1.26	1.34
Type C Motorhome	1.29	1.69	1.86
Type A Motorhome (diesel)	1.04	1.35	1.49
<b>Non-RV Vacation</b>			
Airline/Rental Car/Motels or Hotels	1.99	2.61	2.91
Duration of Vacation	7 days	10 days	14 days

<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: Dennis Port, MA</b>			
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Washington, DC to Dennis Port</b>	<b>Washington, DC to Dennis Port</b>	<b>Columbus to Dennis Port</b>
<b>RV Vacations</b>			
Car/Folding Camping Trailer	0.60	0.65	1.00
SUV/Travel Trailer	0.95	1.01	1.55
Type C Motorhome	1.25	1.39	2.11
Type A Motorhome (diesel)	1.00	1.11	1.69
<b>Non-RV Vacation</b>			
Airline/Rental Car/Motels or Hotels	1.93	2.15	3.30
Duration of Vacation	7 days	10 days	14 days

<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: Grand Canyon, AZ</b>			
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Salt Lake City to Grand Canyon</b>	<b>Denver to Grand Canyon</b>	<b>Dallas to Grand Canyon</b>
<b>RV Vacations</b>			
Car/Folding Camping Trailer	0.45	0.91	1.84
SUV/Travel Trailer	0.70	1.43	2.91
Type C Motorhome	0.97	1.88	3.71
Type A Motorhome (diesel)	0.78	1.51	2.97
<b>Non-RV Vacation</b>			
Airline/Rental Car/Motels or Hotels	1.49	2.92	5.79
Duration of Vacation	7 days	10 days	14 days

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<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: Lancaster, PA</b>	
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Pittsburgh to Lancaster</b>
<b>RV Vacations</b>	
Car/Folding Camping Trailer	0.27
SUV/Travel Trailer	0.42
Type C Motorhome	0.56
Type A Motorhome (diesel)	0.44
<b>Non-RV Vacation</b>	
Airline/Rental Car/Motels or Hotels	0.82
Duration of Vacation	3 days

<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: Napa, CA</b>			
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Portland to Napa</b>	<b>Phoenix to Napa</b>	<b>Denver to Napa</b>
<b>RV Vacations</b>			
Car/Folding Camping Trailer	0.68	0.93	1.39
SUV/Travel Trailer	1.07	1.46	2.18
Type C Motorhome	1.40	1.92	2.85
Type A Motorhome (diesel)	1.12	1.53	2.28
<b>Non-RV Vacation</b>			
Airline/Rental Car/Motels or Hotels	2.15	2.98	4.44
Duration of Vacation	7 days	10 days	14 days

<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: New Orleans, LA</b>		
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Nashville to New Orleans</b>	<b>Charlotte to New Orleans</b>
<b>RV Vacations</b>		
Car/Folding Camping Trailer	0.61	0.83
SUV/Travel Trailer	0.96	1.29
Type C Motorhome	1.27	1.73
Type A Motorhome (diesel)	1.01	1.38
<b>Non-RV Vacation</b>		
Airline/Rental Car/Motels or Hotels	1.95	2.68
Duration of Vacation	7 days	10 days

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<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: Orlando, FL</b>			
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Atlanta to Orlando</b>	<b>Richmond to Orlando</b>	<b>Cincinnati to Orlando</b>
<b>RV Vacations</b>			
Car/Folding Camping Trailer	0.53	0.88	1.21
SUV/Travel Trailer	0.82	1.38	1.90
Type C Motorhome	1.11	1.82	2.53
Type A Motorhome (diesel)	0.89	1.46	2.02
<b>Non-RV Vacation</b>			
Airline/Rental Car/Motels or Hotels	1.71	2.83	3.94
Duration of Vacation	7 days	10 days	14 days

<b>CO<sub>2</sub> Emissions (in Tons) of Vacations by Type: Traverse City, MI</b>	
<b>Vacation Type/Transport Mode/Accommodation</b>	<b>Detroit to Traverse City</b>
<b>RV Vacations</b>	
Car/Folding Camping Trailer	0.30
SUV/Travel Trailer	0.47
Type C Motorhome	0.62
Type A Motorhome (diesel)	0.49
<b>Non-RV Vacation</b>	
Airline/Rental Car/Motels or Hotels	0.92
Duration of Vacation	3 days

**CONCLUSION**

As the data from the previous tables indicate, across the board, RV vacations have a lower CO<sub>2</sub> emissions level than the airline/rental car/motels or hotels vacations. Essentially, using the carbon calculator developed by Conservation International, RV vacations have a less adverse environmental impact than the typical airline/rental car/motels or hotels vacation.