



Norman Gleadow built his own solar array.

# The CO<sub>2</sub> Challenge:

## How We Reduced Our Carbon Footprint by Two Thirds

### TIME FOR A CHANGE

Arguments continue about how our society can reduce its greenhouse gas emissions - perhaps without changing anything. After seeing the many obfuscations of government that delay action, we decided in early 2017 it was time to change our habits and lifestyle in such a way as to reduce our personal contributions of CO<sub>2</sub> to the atmosphere. We would do the best we could and that would be good enough.

Reducing our CO<sub>2</sub> meant addressing three basic components of our life: how we move around, how we heat, and what we eat. It doesn't mean that we were going to live off the grid in a small house in the wooded grasslands of the Prairies using a horse and buggy—though I am certainly tempted to do so (at least from May to October). But it did mean that there would have to be changes. As it turned out, those changes were not painful.

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Norman Gleadow and his wife Julie are both retired teachers. Norman writes from Roberts Creek, BC.



The Gleadows move differently now. From left: Julie with their Nissan Leaf electric car, taking the train.

### MOVING AROUND

For some trips, we have started to take the train. We're retired - we have the time! Like most people we had a car; in fact we had a car and an old truck. We drove the car about 15,000 km per year, and the truck about 1,500 km. We replaced these with a Nissan LEAF. From the BC Government we received \$5,000 as their electric vehicle incentive, and \$6,000 from the Scrap-it program for the old truck. This reduced the cost of the LEAF by \$11,000. We also traded in our car.

We chose to lease the LEAF for three years as the technology is rapidly changing, and in three years time battery capacities may be different. The result of the switch is a reduction of 3,400 kg CO<sub>2</sub> per year. The other bonus is that the LEAF has cost us \$6.00 to operate in the past year and a half. That was for windshield washing liquid.

The cost of electricity to power it for 15,000 km was \$315; however with free power from public plug-ins and using our solar panels (yes, we installed 2.7 KW of solar panels) the cost to us has been zero dollars.



By mooring our boat in Nanaimo rather than in our home port of Gibsons, we have avoided the diesel guzzling trip across Georgia Strait to get to our favourite cruising grounds in the Gulf islands. That saves 500 Kg of CO<sub>2</sub> per year.

### HEATING

In January 2017 we phoned Fortis and told them to shut off our gas. We had heated our home using a gas fireplace, a small and very efficient wood stove and electric baseboards. We replaced the gas and electric baseboards with a high efficiency mini-split heat pump. This change reduced our CO<sub>2</sub> production by 1,400 kg/year. From what we can tell from our BC Hydro smart meter, our electrical consumption has decreased by replacing base board heating with a heat pump. This also made us eligible for a \$800 government incentive.

Fortunately, 90% of the electrical energy produced in B.C. is from hydroelectric power. The other 10% is from CO<sub>2</sub> producing sources. We have offset that 10% by installing 2.7 KW of solar panels. Those panels produced 2.2 million watts of electricity in the past year. That was enough to offset the CO<sub>2</sub> produced by BHydro, and to power our car for the year. We still use the wood stove, but we assuage our guilt by planting 3 trees each year on our property. They will sequester at least some of the CO<sub>2</sub> emitted.





Vegan and vegetarian options have reduced carbon emissions, calories, blood pressure, and the food bill.

### HOW WE EAT

Changing how we eat was the greatest challenge for us. The regular North American diet, with a moderate consumption of meat and dairy products, produces 2,500 kg CO<sub>2</sub> per person. In our quest to reduce our carbon footprint we became vegetarian/vegan. It meant no meat or fish, no butter or cheese, and limited amounts of refined vegetable oils, eggs, and milk.

We now eat masses of vegetables, fruit, nuts and seeds, grains and so on. Besides reducing our carbon footprint by 1,000 kg each (US Department of Agriculture figures), we have

lost weight, reduced our blood pressure, and the change has reduced our food bill, too. We also feel better knowing that we are acting ethically, healthily and in an environmentally friendly way by not eating animals or animal products.

### SUMMARY

The table below outlines the major changes we have made. They have resulted in a yearly reduction in our household CO<sub>2</sub> from about 11,000 kg to 3,600 kg.

Yes, there are financial costs associated with this, but it has not affected our lifestyle. Here are the calculations:

	2016/17	NOW
<b>Transportation</b>	Internal Combustion Engine car used 1,500L gasoline. = 1,500L x 2.3 Kg CO <sub>2</sub> /L = 3,400 Kg CO <sub>2</sub>	Electric car (LEAF) = 0 Kg CO <sub>2</sub> per year
<b>Fireplace</b>	Gas Fireplace used 25 gJoules/yr x 56Kg CO <sub>2</sub> /gJ = 1,400 Kg CO <sub>2</sub> per year	Removed fireplace = 0 Kg CO <sub>2</sub> per year
<b>Recreation</b>	Diesel powered boat makes 3 return trips to Gulf Islands from Gibsons per year uses 200L diesel fuel = 200L x 2.7 Kg CO <sub>2</sub> /L = 540 Kg CO <sub>2</sub> per year	Moored boat near Gulf Islands. BC Ferry figures show that our 3 return trips = 2 passengers x 6 trips x 0.051 L diesel/pass per Km x 52 Km = 32 Kg CO <sub>2</sub> per year
	Boating in the Gulf Islands = 650 Kg CO <sub>2</sub> per year	Same usage = 650 Kg CO <sub>2</sub> per year
<b>Electricity</b>	16,000 KWHr BC Hydro electricity per year = .011 Kg CO <sub>2</sub> /KwHr x 16,000KwHr = 176 Kg CO <sub>2</sub> per year	Solar array offsets 2,700 KwHr per year = reduction of 30Kg CO <sub>2</sub> per year
<b>Diet</b>	Regular North American Diet = 2,500 Kg CO <sub>2</sub> per person x 2 people = 5,000 Kg CO <sub>2</sub>	Vegan/vegetarian diet = 1,500Kg CO <sub>2</sub> per person x 2 people = 3,000 Kg CO <sub>2</sub>
	<b>TOTAL = 11,166 KG CO<sub>2</sub> PER YEAR</b>	<b>TOTAL = 3,652 KG CO<sub>2</sub> PER YEAR</b>