



Developing Sustainable Alternatives to Fossil Energy

MicroFueler™ Environmental Impact

Ethanol is a practical and economical way to dramatically reduce carbon emissions:

For the average American household, transportation-related petroleum consumption is responsible for far more carbon dioxide and particulate emissions than all other household energy uses combined. Producing and using ethanol fuel to displace gasoline can reduce your total household carbon emissions by over 50% and save you money. In contrast, switching to solar or wind-generated electricity or buying an electric/hybrid vehicle might reduce your household carbon emissions, but these options come with an additional cost.

Ethanol is a carbon-neutral fuel:

Burning a gallon of gasoline adds almost twenty pounds of carbon dioxide into the atmosphere. In contrast, using one gallon of ethanol releases almost zero net carbon dioxide. This is because plants absorb carbon dioxide as they grow and store it as sugar. When we transform that sugar into ethanol and burn it in our vehicles, we release the same amount of carbon dioxide that was absorbed by the plant as it grew.

Ethanol production is cleaner than gasoline production:

Extracting, refining, and transporting gasoline is a dirty business. Producing one gallon of gasoline releases five to ten pounds (or more) of CO₂ in addition to the twenty pounds released by burning it. Using 5 kwh of electricity to produce 1.5 gallons of ethanol (equivalent to 1 gallon gasoline, worst case) generally releases fewer than eight pounds of CO₂, and using renewable electricity can further reduce ethanol-related carbon emissions.

	Miles Per Gallon	CO2 Per Gallon	Cost Per Gallon	CO2/mile	\$/mile
Gasoline	20	25 lbs (low est.)	\$2.50	1.25 lbs	\$0.13
Ethanol	15	8 lbs (high est.)	\$1.00	0.53 lbs	\$0.07

Ethanol is biodegradable:

Ethanol spilled on the ground biodegrades rapidly and does not cause groundwater contamination.

Ethanol can be used in existing vehicles:

Ethanol fuel can be used today in almost any existing gasoline-powered vehicle, although simple and inexpensive modifications may be necessary in some cases. Converting a vehicle to use hydrogen or even natural gas is much more difficult and quite expensive, as is upgrading existing vehicles to have “electric / hybrid” capabilities.

New vehicles are not necessarily “green”:

Epiphergy believes that using ethanol fuel in an existing vehicle is cleaner, greener, and more cost-effective than other alternatives. Producing a new vehicle consumes energy and raw materials which emits carbon and other greenhouse gasses. Continuing to use an existing vehicle generates no additional production-related emissions.

Building new hybrid/electric and “plug-in” type vehicles that rely on large batteries and that make extensive use of plastic parts leads to increased production costs, increased manufacturing emissions, and expensive “recycling” processes at the vehicle’s end-of-life. Further, electric vehicle battery systems are known to have short lifetimes.

The Chevy Volt is projected to cost \$40,000 and it will use 1 kwh of electricity to travel 4-5 miles. If producing 1 kwh of electricity releases 1.8 pounds of carbon dioxide, then 4 mpkwh = 0.45 lbs/mile, and 5 mpkwh = 0.36 lbs/mile. This is about the same as the carbon emissions of an existing vehicle that gets 15 mpg on ethanol fuel.

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