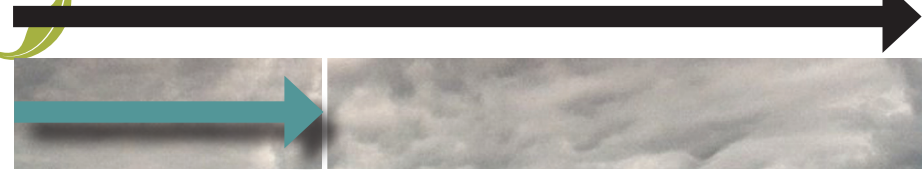


The U.S. emits the equivalent of **5.75 gigatonnes** of CO₂ annually.



Our transportation contributes **1.90 gigatonnes** of that.

WHAT WE CAN DO ABOUT TRANSPORTATION

TEN YEARS AGO, many people thought the transportation fuel of the future would be hydrogen. Then came the hopes of biofuels. Today, both dreams have gone, fallen to the reality of their full life-cycle energy equations and unsustainable sources.

There will still be a role for hydrogen, and for biofuel where it can be harvested sustainably from sewage, algae, seaweed and prairie grass. The emerging winner, however, is electricity. The electric vehicle, far from being dead, is being reborn as both pure electric (EV) by Tesla, G-Wiz, and Modec and as a Plug-in Hybrid Electric Vehicle (PHEV).

Our exploration of post-carbon travel should start with our legs, however. Our ancestors walked all around the planet, so let us reclaim the right to walk in safety and beauty on our Earth. Let us redesign our communities and suburbs with winding lanes that lead to woodlands and village stores. If 5 percent of our post-carbon trips are by foot, that's a 5 percent reduction in our need for liquid fuel.

Next comes the bicycle. In Copenhagen, Denmark, 33 percent of commuters bike to work. In Davis, California, where they have been building bike routes since the 1960s, 17 percent of commuters do the same. In Paris, the government has placed 20,000 Vélib' ("vélo liberté," or "bicycle freedom") bikes on the city's streets for anyone to use for a small charge. If your muscles ache, a quick electric conversion will make your bike fly up the hills. In snow-clad winters, cyclists ride with studded tires. If 10 percent of our trips are by bike, that's a cumulative 15 percent reduction.

Then there's transit. Boulder, Colorado, has redesigned its service to make the buses smaller and more frequent—increasing ridership five-fold. Hasselt, Belgium, has made its buses free, paid for by city taxes—increasing ridership

10-fold. In transit-friendly cities, buses have GPS and electronic timetables, so you know exactly when they'll come. We need to make a huge public investment in transit, bus rapid transit (like light rail transit, but on regular roads) and luxury commuter coaches with laptop plug-ins and frappuccinos. If 20 percent of our trips are thus, that's a cumulative 35 percent reduction, but since hybrid buses still need liquid fuel, we'll call it 30 percent.

Add teleworking and teleconferencing for 5 percent, trains and high speed trains for 5 percent, and ridesharing for 5 percent, and we've reduced our liquid fuel need by 45 percent. Now turn to cars. Since 80 percent of the car trips we take are within battery range of an EV or PHEV, this can further reduce our need for liquid fuel. If we use modern lightweight materials, trimming a vehicle's weight by as much as 80 percent, it falls to around 5 percent, which could be covered by biofuels from wastes or algae.

To reduce the need for long-distance trucking, we must rebuild our local economies to meet most of our needs, and use hydrogen-enhanced hybrid biofueled trucks for what's left. For ocean shipping, the answer may be wind-powered SkySails and hydrogen harvested on mid-ocean platforms from the sun, wind and waves. For flying, maybe slow biofueled helium dirigibles, but otherwise, no easy answers.

A hundred years ago, most people were either walking, or riding a horse. The carbon age has provided us with a stepping stone between the past and the future. It is time to step off it, and into the future.

—Guy Dauncey

 www.YesMagazine.org/coolcars
for links and other resources



IAN PAGE-ECHOLS, V8MEDIA.COM

The Secret Lives of Plug-ins

Passionate and eclectic alliances are fueling hybrid passion, and, well ... it's electric

Sherry Boschert

Marc Geller of San Francisco has driven gasoline-free in electric cars for six years and more than 65,000 miles. A sales rep for a solar installer, he often travels hundreds of miles in a day without using a drop of oil.

Felix Kramer of Redwood City, California drives a Toyota Prius he had converted to a plug-in hybrid—one that, unlike standard hybrids, plugs into a regular 110-volt wall socket for recharging overnight. Kramer typically gets more than 100 miles per gallon in daily driving.

Both men say that driving on electricity has not inconvenienced them. It's been easier, in fact, because they seldom or never have to stop at a gas station.

The hard part was getting the cars. Geller and thousands of other drivers were clamoring to buy the more than 5,000 leased electric cars, trucks

and SUVs that California clean-air regulators forced automakers to produce between 1996 and 2003. As told in the 2006 documentary *Who Killed the Electric Car?*, once the state's Zero Emission Vehicle Regulation in 2003 no longer mandated electric cars, the car companies reclaimed the leased cars and crushed them for scrap. Geller co-founded the non-profit Plug In America (www.PlugInAmerica.org) and helped lead a grass-roots protest movement that saved more than 1,000 of the vehicles, one of which he drives today.

Kramer wanted a car that used electricity but that didn't need to stop every 120-250 miles to recharge, as electric cars do. Plug-in hybrids go 10-60 miles on electricity but also have a gasoline tank and engine, so that they operate like conventional hybrids for very long distance driving. Kramer founded the non-profit California Cars Initiative (www.CalCars.org), which tapped into a

Of the original 1,115 EV1's produced in 1997, only 40 or so still exist. These were disabled by GM and given to universities and museums with stipulations they not be driven as electric vehicles.

wildfire of demand for plug-in hybrids.

Why are they so driven to plug in their cars? And why the surge of activity around plug-in vehicles in the past year?

People concerned about climate change like the idea of moving away from gasoline-powered cars and trucks, which produce 33 percent of U.S. greenhouse gas emissions. Groups like the Rainforest Action Network and Global Exchange have formed an unusual alliance with conservative organizations that see liberation from foreign oil as a necessary step in improving national security. Former CIA Director and defense hawk James Woolsey (whose own home is partly solar-powered) calls the campaign for plug-in cars an alliance of hawks, tree huggers, do-gooders, religious evangelicals, and farmers (whose biofuels could be the backup fuel to electricity in plug-in hybrids).

Many environmentalists had to overcome an initial fear that driving on electricity would be dirtier than driving on gasoline, since 52 percent of U.S. electricity comes from coal, a notorious polluter. That fear turned out to be unfounded. Dozens of studies have shown that all-electric vehicles are >>>