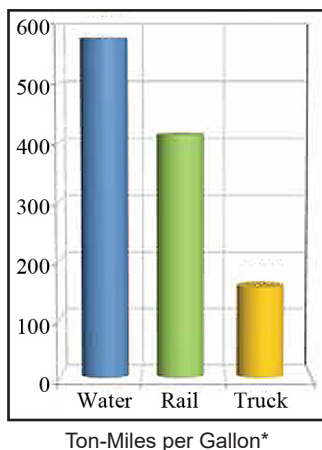
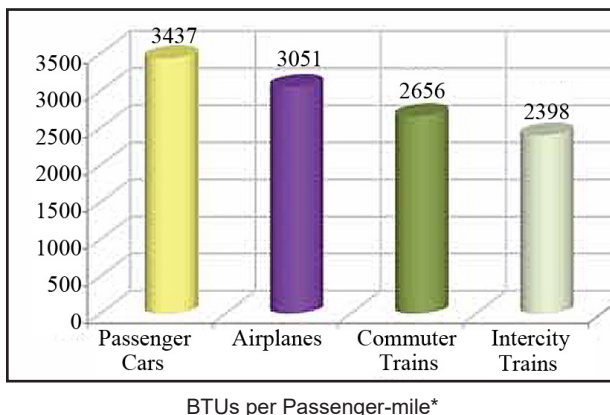


## Rail Transport Is More Efficient

Whether carrying passengers or freight, transportation via rail is inherently more efficient than rubber tires on a road. It takes half the amount of energy to move the same weight by railroad than by truck or car (Lumb, 2008). However, the data for carbon emissions per



passenger on buses are lower because buses carry more total passengers. Bus service is more extensive and convenient than rail in the U.S. Ironically, the U.S. has the largest rail network in the world, while passenger rail services in the U.S. are minimal due to lack of federal government support. Most of the rails are owned by freight companies, and, despite regulations to give passenger trains priority, Amtrak trains still have to yield to freight trains, causing serious delays.



The National Association of Railroad Passengers (*Modern Passenger Trains*) and the Federal Railroad Administration (*National Rail Plan*) have both published plans for revitalization of the U.S. rail system.

\*Both bar-graphs are adapted from the National Rail Plan.

## Public Transportation Requires Public Financing

To gain the increased transportation efficiency of public transportation, public financing of infrastructure development is essential. Some of the stimulus money was used for high speed rail development offers one example. Investing in infrastructure, especially rail, has several advantages. It provides transportation that uses less land and produces less air pollution and carbon emissions, and it creates jobs that cannot be outsourced.

### What Can Friends Do?

- Travel less and more efficiently.
- Apply a voluntary carbon tax for all travel.
- Lobby for increased funding for public transportation, elimination of fossil fuel subsidies, etc.
- Support Amtrak and public transit funding.

### For Further Information

Carbon Savings Calculator <[publictransportation.org/tools/carbonsavings/Pages/default.aspx](http://publictransportation.org/tools/carbonsavings/Pages/default.aspx)>.

Cox, Louis. *Traveling Gently on the Earth*. QEW pamphlet. <<http://www.quakerearthcare.org/pamphlet/traveling-gently-upon-earth>>

European Commission, Joint Research Center. *Trends in Global Co2 Emissions 2012 Report* <[ec.europa.eu/CO2REPORT2012.pdf](http://ec.europa.eu/CO2REPORT2012.pdf)>.

Federal Railroad Administration, 2010. *National Rail Plan*. U.S. Department of Transportation. <[ushsr.com/images/National\\_Rail\\_Plan\\_September\\_2010\\_1\\_.pdf](http://ushsr.com/images/National_Rail_Plan_September_2010_1_.pdf)>.

Lumb, Judy, 2008. Riding the Rails to an Energy-Efficient Transportation Future. *Quaker Eco-Bulletin* 8 (1) <[judylumb.com/QEB/qeb-8-1-RR-web.pdf](http://judylumb.com/QEB/qeb-8-1-RR-web.pdf)>.

National Association of Railroad Passengers, 2007. *Modern Passenger Trains (revised)* <[narprail.org/cms/images/uploads/plan.pdf](http://narprail.org/cms/images/uploads/plan.pdf)>.

Progress Report, 2013. *What Gasoline Really Costs Us*. <[progress.org/tpr/what-gasoline-really-costs-us/](http://progress.org/tpr/what-gasoline-really-costs-us/)>.

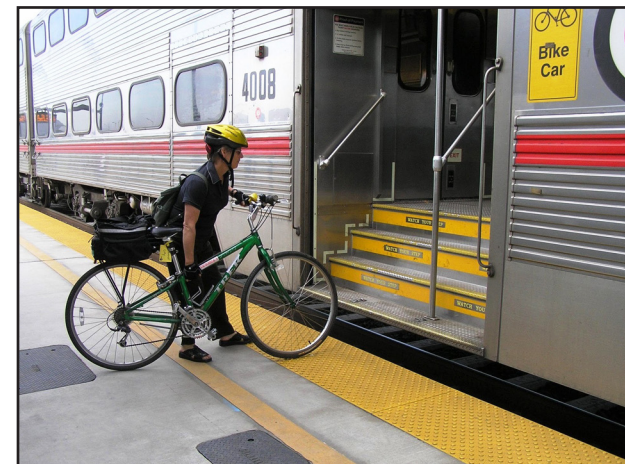
World Carfree Network <[worldcarfree.net](http://worldcarfree.net)>.

## Quaker Earthcare Witness

*Seeking emerging insights into right relationship with Earth and unity with nature.*

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## Energy Efficient Travel Options



### Friends Are Concerned

Along with other peoples and nations, Friends are very concerned about climate change. The urgency of needed action is expressed in the 2013 Fifth Assessment by the Intergovernmental Panel on Climate Change:

*“Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.”*

It is especially urgent that we reduce our carbon emissions because the United States emits one-sixth of the total global carbon emissions, six times the global *per capita* average and 100 times that of most African countries. Since 28 percent of our energy consumption is for transportation, how we travel is one way we can reduce our carbon emissions.

Limit your travel emissions:

- travel less
- walk or bike
- use public transportation
- travel more efficiently.



## Traveling Less

- Bundle business and family visits.
- Take advantage of the web and teleconferencing for more of your meetings. Beyond limiting your own carbon footprint, you enable people unwilling to travel long distances to participate more fully in the organization.
- Use web video-conferencing options to keep up with family and friends. Nothing replaces home visits, but it helps tremendously to see as well as hear your loved ones.
- And, when you are planning your next holiday, explore recreation close to home.

## Traveling More Efficiently

Choose your mode of travel for energy efficiency:

- Walking
- Biking
- Local Public Transportation
- Intercity Bus
- Intercity Train
- Carpooling
- High-mileage/Hybrid/Electric Automobile
- Flying

The following table compares the carbon emissions of different modes of travel.

| Mode of Travel   | ton CO <sub>2</sub> <sup>a</sup> |
|--|----------------------------------|
| SUV (average 15 mpg)                                     | 0.754                            |
| Average Car (average 27 mpg)                             | 0.668                            |
| Airplane   | 0.465                            |
| Small Car (average 37 mpg)                               | 0.283                            |
| Hybrid Vehicles (average 39 mpg) <sup>b</sup>            | 0.265                            |
| Electric Vehicles (electricity mostly coal) <sup>c</sup> | 0.260                            |
| Train  | 0.216                            |
| Electric Vehicles (cleanest electricity) <sup>c</sup>    | 0.140                            |
| Bus  | 0.120                            |

<sup>a</sup>The data are per passenger per 1,000 miles. mpg=miles per gallon. For cars, the U.S. average number of occupants is 1.2 persons. **Source** (except for electric and hybrid cars) <carbonify.com/carbon-calculator.htm>

<sup>b</sup>afdc.energy.gov/vehicles/electric\_emissions.php

<sup>c</sup>ucsusa.org/assets/documents/clean\_vehicles/electric-car-global-warming-emissions-report.pdf

| Mode of Travel       | Percent Passenger-Miles |                 |                    |
|----------------------|-------------------------|-----------------|--------------------|
|                      | US <sup>a</sup>         | EU <sup>b</sup> | Japan <sup>c</sup> |
| Cars, Pick-ups, SUVs | 79.7                    | 75.2            | 57.9               |
| Air                  | 12.6                    | 9.0             | 5.7                |
| Intercity Bus        | 6.4                     | 8.0             | 6.6                |
| Transit              | 1.2                     | 1.4             |                    |
| Intercity Rail       | 0.1                     | 6.4             | 29.8               |
| <b>Total</b>         | <b>100.0</b>            | <b>100.0</b>    | <b>100.0</b>       |

<sup>a</sup>Source: U.S. Dept. Transportation <rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national\_transportation\_statistics/index.html> (Data from 2011)

<sup>b</sup>The information on EU is from 2011 <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdtr210&plugin=1>

<sup>c</sup>The information on Japan is from 2010. All rail data is listed under "Intercity Rail." **Source:** <http://ec.europa.eu/energy/publications/doc/2013\_pocketbook.pdf>. (websites accessed 31 December 2013)

## Reduce Automobile Miles

The U.S. has a love affair with the private automobile. In a study of 17 developed countries (Greendex by the National Geographic Society), the U.S. was lowest in percentage of citizens using public transportation. Only five percent indicated they use public transportation daily. The next two lowest nations, Canada and Australia, had twice as high a percentage of citizens using public transportation, and Russia's percentage was ten times higher; over half their citizens use public transportation daily. That is the situation in developed countries.

The transportation situation in most developing countries is like that of Belize where very few people own private vehicles. Gas prices are over six U.S. dollars per gallon in 2014. Most people never learn to drive. Driving is not taught in schools because it is not an essential life skill; it is a specialty training like plumbing. Entrepreneurs provide bus service when and where people need to go. Belize is still fifty percent rural, but taxi service is available even in rural areas.

There is much opportunity for those of us in the U.S. to reduce carbon emissions from our travel.

## Full Cost Accounting

Because the price of gasoline has been kept artificially low, consumers do not realize its full cost. The federal government gives tax breaks and other subsidies to oil companies to encourage exploration and to keep gas prices low. Subsidies take several forms: depletion allowances, production credits, enhanced oil recovery credits, foreign tax credits, foreign income deferrals, immediate expensing of exploration costs, and accelerated depreciation allowances—all amounting to \$9 to 18 billion per year. If the federal government were to stop these subsidies, the additional revenue could be diverted to public transportation or other social needs.

Indirect subsidies include maintenance of roads and bridges, protection for oil company operations by police and fire departments, as well as the U.S. Department of Defense. There are additional health and environmental consequences of air pollution. If all these costs were built into the price we pay at the pump, gasoline would cost from five to fifteen dollars per gallon. Indeed, in most other countries gasoline does cost five dollars per gallon or more, so drivers generally travel more efficiently elsewhere.

## Voluntary Carbon Tax

What are Friends to do? Many opportunities exist to tax ourselves for the carbon emissions that result from our travels. We can drive cars less; we can choose more efficient modes when we do travel; and we can adopt a voluntary carbon tax. Sustainable Travel <sustainabletravel.org> recommends US\$11 per ton of CO<sub>2</sub>. Here are some options to contribute your voluntary carbon tax to Quaker programs:

- Quaker Earthcare Witness mini-grants
- Pacific Yearly Meeting mini-grants – Does your Yearly Meeting have such a program?
- Monthly Meeting mini-grants – Strawberry Creek Monthly Meeting has a “dime a gallon fund.”
- Friends General Conference has a “green meetinghouse fund.”