

# Green Guide for Individuals and Households

## Strategy: Individuals / Households

### Use and Encourage Non-Motorized Transport (NMT)

#### Fast Facts-

- Motorized transport is expensive and inefficient over short distances and is a major contributor to carbon emissions? (Balsas, 2002).
  - NMT is the most flexible and affordable form of transportation (Woodinville, 2005).
  - NMT preserves open green spaces, wildlife habitats, and cultural resources such as historic buildings (Woodinville, 2005).
  - NMT reduces costs associated with car purchases, driving delays and parking (SACOG, 2005).
  - Creating accessible, well-connected non-motorized facilities where public activities are encouraged improves safety, neighborhood interaction, and community cohesion (SACOG, 2005).
  - NMT may attract businesses and new skills to an area, including tourism, due to improved environmental quality (Woodinville, 2005).
  - Greenways provides access to green spaces and opportunities to expand recreational opportunities for walking, jogging, biking, and skating (NYCGOVPARKS, 2008).
  - In medium-sized cities in Japan, Germany and the Netherlands, 40-60 percent of all trips are made by walking and cycling (Guitink et al. 1994).
  - Roadway intersections pose the greatest danger to cyclists (SACOG, 2005).
  - Traffic control measures should be implemented to warn both drivers and bicyclists of the oncoming intersection for safe crossing of the intersection (SACOG, 2005).
- Public schools in Marin County, CA, that participated in the Safe Routes to Schools program saw increases in walking, carpooling and biking to school of from 64% to 114%, respectively (Stanton et al. 2003)

<b>Actions for Individuals / Households:</b>
<b>Address safety issues for bicycle riders and walkers by:</b>
Wearing or requiring the wearing of helmets.
Installing or enforcing minimal safety accessories on bikes such as horns and lights.
Obeying or enforcing obedience to all road rules.
Form community groups to develop NMT routes in your area,
Walk or ride your bike to nearby places whenever possible.

#### Resources:

##### Walking to school-

Walking school bus - <http://www.walkingschoolbus.org/>

Safe Routes to Schools - <http://www.saferoutesinfo.org/>

Ohio Safe Routes to School program - <http://www.saferoutesinfo.org/>

Non-Motorized Transport- Sacramento Area Council of Governments  
<http://www.sacog.org/mtp/2035/mediacenter/> (Non-motorized Transport)

##### Greenways-

Greenways, Inc. - <http://www.greenways.com/>

Knoxville, Tennessee. <http://www.ci.knoxville.tn.us/greenways/>

Greenways Initiative, southeastern Michigan - <http://greenways.cfsem.org/>

Bicycling and Greenways, New York City - <http://www.nycgovparks.org/facilities/bikeways>

##### General information on non-motorized transport-

City of Woodinville, WA, [Non-Motorized Transit Plan -](#)

<http://www.ci.woodinville.wa.us/Live/NonMotorizedTransportation.asp> (

The World Bank - <http://www.worldbank.org/html/fpd/transport/publicat/td-ut4.htm>

Rideshare Program that Works - <http://www.worldchanging.com/archives/009168.html>

#### Bicycle safety-

National Highway Traffic Safety Administration -

<http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.810acae50c651189ca8e410dba046a0/>

How not to get hit by cars - <http://bicyclesafe.com/>

Ohio Bicycle Federation - <http://www.ohiobike.org/resources.htm>

Bike Miami Valley - <http://www.bikemiamivalley.org/safety.htm>

Cincinnati Children's Hospital - <http://www.cincinnatichildrens.org/svc/alpha/r/bike-helmet/community/ed.htm>

#### Regional planning for NMT - OKI

Tri-State Bicycle Facilities - [http://www.oki.org/transportation/bike/tristate\\_bike.html](http://www.oki.org/transportation/bike/tristate_bike.html)

Regional Pedestrian Plan - <http://www.oki.org/transportation/pedestrianplan.html>

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Balsas C.J.L. 2002. Sustainable transportation planning on college campuses. Department of Landscape Architecture and Regional Planning, University of Massachusetts, Hills North, Amherst, MA 01003, USA Elsevier Science Ltd.

Guitink, Paul, Susanne Holste, and Jerry Lebo. 1994. Non-motorized transport: confronting poverty through affordable mobility. Infrastructure Notes, April 1994. Transport No. UT-4. The World Bank, Transportation, Water and Urban Development Dept., Washington, DC, USA.  
<http://www.worldbank.org/html/fpd/transport/publicat/td-ut4.htm> (accessed November 28, 2008).

Staunton, Catherine, Deb Hubsmith and Wendi Kallins. 2003. Promoting safe walking and biking to school: the Marin County success story. American Journal of Public Health 93 (9): 1431.  
<http://www.ajph.org/cgi/reprint/93/9/1431?ikey=356f194f4c9d55a103829bd50f0fb09b84edd133> (accessed December 6, 2008).

SACOG (The Sacramento Area Council of Governments). October 14, 2005. Final Bicycle & Pedestrian Policy Committee Report on Class I Trail User Policy.  
<http://www.sacog.org/mtp/2035/mediacenter/> (accessed December 7, 2008)

Whitelegg, J. and Williams, N. 2000. Non-motorized transport and sustainable development: evidence from Calcutta. Local Environment, 13549839, Vol. 5, Issue 1.

Woodinville, City of. 2005. Non-Motorized Transport Plan. Washington  
<http://www.ci.woodinville.wa.us/Live/NonMotorizedTransportation.asp> (Non-Motorized Transit Plan) (accessed November 28, 2008)

### **Transportation (automobiles)**

#### **Fast Facts-**

- Transportation consumes 70% of the nation's oil and generates 1/3 of the nation's carbon emissions (Lovins 2005).
- In 2004, U.S. cars and light trucks emitted 314 million metric tons of carbon dioxide (DiCicco and Fung, 2006).
- The United States has 5% of the world's population and 30% of the world's automobiles, but it contributes 45% of the world's automotive CO<sub>2</sub> emissions (DiCicco and Fung, 2006).
- Total vehicle miles traveled by U.S. cars and light trucks in 2004 amounted to 2.6 trillion miles (DiCicco and Fung, 2006 automobile).
- The fuel economy of the U.S. stock averaged 19.6 mpg in 2004, implying an average fuel use rate of 51 gallons per 1,000 miles of driving (DiCicco and Fung, 2006).
- Each gallon of gasoline saved keeps 5.3 pounds of carbon from being emitted into the atmosphere (DiCicco and Fung, 2006).

- Using biodiesel blends can reduce carbon emissions from 7% to 44 % and particulate matter from 19% to 68% (Schumacher, 1995).
- Emissions of CO<sub>2</sub> for one person traveling 40 miles by car to work, round trip travel per is 0.9207 tons per month (Sustainable Travel International, 2008).
- The average 2005 passenger car cost 31 cents per miles in fuel, maintenance, and depreciation to drive (Environmental Defense Fund, 2008).

<b>Actions for Individuals / Households:</b>
Shut automobiles off when stopped to reduce idling time.
Reduce use of air conditioning and other features that increase fuel use.
Keep tires inflated to proper pressure to reduce fuel consumption.
Reduce the weight of things transported in vehicle; don't carry unnecessary items.
When replacing an automobile, replace with a hybrid, fuel-efficient, alternative fuel, or at least smaller vehicle.
Purchase E-85 fuel instead of regular gasoline and biodiesel fuel blends instead of petrodiesel.
Increase telecommuting, satellite offices and teleconferences.
Reduce number of trips; combine errands, shopping and work travel.
Encourage and use carpooling.
Drive at a consistent speed and avoid speeding to reduce fuel consumption.

#### **Resources:**

Tips for individuals to cut carbon emissions from autos-

<http://autos.canada.com/bmwtips/story.html?id=dc1ffcd2-06f4-4644-bb15-2184c6595030>

EDF (Environmental Defense Fund) <http://www.edf.org/page.cfm?tagID=1142>

Live Neutral [http://www.liveneutral.org/co2\\_reduction\\_tips](http://www.liveneutral.org/co2_reduction_tips)

Friends of the Earth [http://www.foe.co.uk/resource/press\\_releases/green\\_tips\\_to\\_reduce\\_carbo.html](http://www.foe.co.uk/resource/press_releases/green_tips_to_reduce_carbo.html)

Carbon Calculator

[http://www.sustainabletravelinternational.org/documents/op\\_carboncalcs.html](http://www.sustainabletravelinternational.org/documents/op_carboncalcs.html)

<http://www.carbonneutral.com/cncalculators/travelcalculatorshop.asp>

Cool Counties Implementation Guide-

[http://coolcities.us/resources/bestPracticeGuides/CoolCounties\\_ImplementationGuide.pdf](http://coolcities.us/resources/bestPracticeGuides/CoolCounties_ImplementationGuide.pdf)

Biodiesel emissions data-[http://web.missouri.edu/~schumacherl/Biodiesel\\_Emissions\\_Data\\_60\\_DDC.pdf](http://web.missouri.edu/~schumacherl/Biodiesel_Emissions_Data_60_DDC.pdf)

Biofuels reported to cut emissions by 94% in UK-<http://www.biofuelreview.com/content/view/992/>

Benefits of Carpooling

<http://www.erideshare.com/?gclid=CMYD2cnRs5cCFQNHfQodyQtajA>CarSharing.net-

CarShare programs-

<http://www.carsharing.net/aboutus.html>

Carpooling in Cincinnati - <http://www.erideshare.com/carpool.php?city=Cincinnati>

Rideshare – regional - <http://www.oki.org/commuter/rideshare.html>

[http://www.enquirer.com/editions/1999/07/01/loc\\_sharing\\_van\\_ride\\_now.html](http://www.enquirer.com/editions/1999/07/01/loc_sharing_van_ride_now.html)

American Planning Association (APA) Magazine –December 2008 (see “Transportation Innovations”, “Post-Carbon Cities”)

<http://www.planning.org/>

Electric vehicles- EV World- <http://www.evworld.com/>

Green Car Congress- <http://www.greencarcongress.com/about3.html>

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Environmental Defense Fund. Drive smart: Fuel savings add up. in Environmental Defense Fund [database online]. USA, 2008 [cited December 7 2008]. Available from <http://www.fightglobalwarming.com/page.cfm?tagID=268> (accessed December 7, 2008).

Lovins, Amory B. 2005. More profit with less carbon. *Scientific American* 293, (3) (09): 74-83.

DeCicco, J. and Fung, F. (2006). Global Warming on the road: The climate impact of America's automobiles. Environmental Defense, 4-43. Accessed on November 28, 2008 from [http://www.edf.org/documents/5301\\_Globalwarmingontheroad.pdf](http://www.edf.org/documents/5301_Globalwarmingontheroad.pdf).

Schumacher, L. G. (1995). Biodiesel emissions data from series 60 DDC engines. 1995 American Public Transit Association Bus Operations and Technology Conference. Reno, Nevada, May 10, 1995.

Sustainable Travel International. Leave the world a better place. in Sustainable Travel International [database online]. USA, 2008 [cited December 7 2008]. Available from [http://www.sustainabletravelinternational.org/documents/op\\_carboncalcs.html](http://www.sustainabletravelinternational.org/documents/op_carboncalcs.html) (accessed December 7, 2008).

## Mass Transit

### Fast Facts-

- Public transportation reduces pollution and helps promote cleaner air.
- Energy-related CO<sub>2</sub> emissions represent 82% of total US human-made greenhouse emissions. Public transportation produces about half as much CO<sub>2</sub> per passenger mile as private vehicles. (Public Transportation: Wherever Life Takes You, 2008).
- Transit services benefits include:
  - Reducing road congestion,
  - Preserving communities because encourages members to stay near to transit instead of moving out and away from the community,
  - Improving the environment through less vehicles on the road and because it has the possibility to run on electricity which can come from alternative fuel sources,
  - Enhancing economy by creating jobs (GoRailGo, 2008).

<b>Actions for Individuals / Households:</b>
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Use and encourage public transit. Interest must exist for the creation of these transportation methods.
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### Resources:

#### General Sites

History and future plans of Cincinnati's transportation - <http://www.cincinnati-transit.net/>

Transportation-related issues in the Tristate - <http://oki.org>

Ohio public transportation systems - [http://www.apta.com/links/state\\_local/oh.cfm](http://www.apta.com/links/state_local/oh.cfm)

APTA – Does transit work? <http://www.apta.com/research/info/online/weyrich2new.cfm>

Smart Growth / Smart Energy Toolkit (Case studies – Transit Oriented Development [TOD])  
[http://www.mass.gov/envir/smart\\_growth\\_toolkit/index.html](http://www.mass.gov/envir/smart_growth_toolkit/index.html)

Business benefits of mass transit for employees - <http://www.transitcenter.com/>.

Examples of successful public transit systems:

- King County, Washington - <http://transit.metrokc.gov/>
- Boston, Massachusetts - <http://www.mbta.com>

Cincinnati area mass transit-

- GoMetro maps, timetables and info - <http://www.go-metro.com/>
- Transit authority of northern Kentucky (TANK) maps, timetables and info <http://www.tankbus.org/>

Cincinnati Rideshare

- <http://www.erideshare.com/carpool.php?city=Cincinnati>
- <http://www.rideshareohio.com/>

**References Cited:**

GoRailGo. 2008. *Benefits of Mass Transit*. Available from <http://www.gorailgo.org> (accessed November 27, 2008).

American Public Transportation Association. 2008. *Public Transportation: Wherever Life Takes You; Facts on Public Transportation*. Available from <http://publictransportation.org/facts/#hw12>. (accessed November 27, 2008).

## **Airports and Air Travel**

### **Fast Facts**

- Travel by air emits about ten times more carbon than travel by train.  
(The Independent, 2008)
- Traveling by air produces three times the carbon emissions as travelling by bus.
- Flying to Europe business class produces 1.5 times more CO<sub>2</sub> per person than flying by coach.  
(Stockholm Environment Institute, 2008)
- Emissions of CO<sub>2</sub> on a one-way flight (for 1 passenger) from Cincinnati to the following cities are:
  - To New York (JFK) (924 Km) 136.12 Kg of CO<sub>2</sub>
  - To Chicago, IL (ORD) (824 Km) 81.44 Kg of CO<sub>2</sub>
  - To Miami, FL (MIA) (1,534 Km) 200.42 Kg of CO<sub>2</sub>
  - To Nassau, Bahamas (1,698 Km) 210.81 Kg of CO<sub>2</sub>(International Civil Aviation Organization, 2008)
- US airlines reduced 2.5 billion metric tons of CO<sub>2</sub> from 1978 to 2007; that's the equivalent of taking 18.7 million cars off the road over 29 years.  
(Environmental Leader, 2008)
- Air freight uses more fuel to transport the same amount of cargo as a ship or train.
- 200 liters (52.8 gallons) of fuel can transport a standard shipping container 3,300 miles by ship, 850 miles by train, 300 miles by truck, and only 32 miles by air freight.  
(Berkin, Samuel. 2003)

<b>Actions for Individuals / Households:</b>
Use video conferences, email and phones.
Take the train or bus.
Use the most direct route as possible.
Fly economy instead of business class.
Buy carbon offset.

## Resources:

Calculate air travel CO<sub>2</sub> emissions-

[http://www2.icao.int/public/cfmapps/carbonoffset/carbon\\_calculator.cfm](http://www2.icao.int/public/cfmapps/carbonoffset/carbon_calculator.cfm)

Green Airports- <http://www.cleanairports.com/>

Federal funding for airports- <http://clblegistar.longbeach.gov/attachments/6681610d-00d8-4c6f-804d-11072464056f.pdf>

Buy carbon offset-

[http://www.conservation.org/act/live\\_green/carboncalc/Pages/default.aspx?gclid=CN-rv3fqZcCFQsQagodf3Pqhg](http://www.conservation.org/act/live_green/carboncalc/Pages/default.aspx?gclid=CN-rv3fqZcCFQsQagodf3Pqhg)

[http://www.carbonfund.org/?gclid=CM39\\_cvhqZcCFRIRagod4SAMjA](http://www.carbonfund.org/?gclid=CM39_cvhqZcCFRIRagod4SAMjA)

Light Rail Service-

[http://www.bwairport.com/ground\\_transportation/light\\_rail/](http://www.bwairport.com/ground_transportation/light_rail/)

[http://www.msairport.com/msp/Ground\\_Transportation/Light\\_Rail.aspx](http://www.msairport.com/msp/Ground_Transportation/Light_Rail.aspx)

[http://www.lightrailnow.org/features/f\\_cin001.htm](http://www.lightrailnow.org/features/f_cin001.htm)

Bus service- <http://www.iexplore.com/airportguides/Ohio/CVG/Overview>

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Berkin, Samuel. 2003. The counterintuitive relationship between globalization and climate change. *Global Environmental Politics* 3, (3) (08): 8-13.

Carbon reduction Institute. Carbon offset calculator. in Carbon Reduction Institute Pty Ltd [database online]. Australia, 2008 [cited November 26 2008]. Available from <https://secure.noco2.com.au/> (accessed November 27, 2008).

Clean airport partnership. Solutions for airports and communities. in Clean Airport Partnership, Inc. [database online]. USA, 2008 [cited November 25 2008]. Available from <http://www.cleanairports.com/> (accessed November 27, 2008).

Environmental Leader. Airbus A380 could have jumbo-sized carbon footprint. in Environmental Leader [database online]. USA, 2008 [cited November 1 2007]. Available from <http://www.environmentalleader.com/2007/11/01/airbus-a380-could-have-jumbo-sized-carbon-footprint/> (accessed November 27, 2008).

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McLellan, Amy. 2008. Can the train take the strain? engineering solutions alone are not enough to combat climate change. *The Independent*, May 31, 2008, 2008, sec Environment.

Stockholm Environment Institute and Tufts Climate Institute. in Stockholm Environment Institute and Tufts Climate Institute [database online]. USA, 2008 [cited October 31, 2006]. Available from <http://www.tufts.edu/tie/carbonoffsets/TCI-offset-handout.htm> (accessed November 27, 2008).

Telegraph UK. Carbon trust: Virtual conferencing. in Telegraph Co, UK [database online]. 2008 [cited November, 26 2008]. Available from <http://www.telegraph.co.uk/sponsored/business/carbontrust/3397583/Carbon-Trust-Virtual-Conferencing.html> (accessed November 27, 2008).

The Independent. 2008. Ten ways to cut your carbon footprint at work. *The Independent*, August 2, 2007, 2008, sec Environment, Climate Change.

US Government Accountability Office. 2008. *Aviation and the environment: Initial voluntary airport low emissions program projects reduce emissions, and FAA plans to assess the program's overall performance as participation increases*. USA: US Government Accountability Office, GAO-09-37.

## General resources

American Public Transportation Association. 2008. *Public Transportation: Wherever Life Takes You; Facts on Public Transportation*. Available from <http://publictransportation.org/facts/#hw12>. (accessed November 27, 2008).

Cool Counties Implementation Guide-  
[http://coolcities.us/resources/bestPracticeGuides/CoolCounties\\_ImplementationGuide.pdf](http://coolcities.us/resources/bestPracticeGuides/CoolCounties_ImplementationGuide.pdf)

CRed - <http://www.cred-uk.org/SubCredHome.aspx?intCredID=3>

Ecogeek-  
[http://www.ecogeek.org/index.php?searchword=transportation&option=com\\_search&Itemid=5&x=29&y=10](http://www.ecogeek.org/index.php?searchword=transportation&option=com_search&Itemid=5&x=29&y=10) (transportation)

Energy Bulletin- <http://www.energybulletin.net/taxonomy/term/38> (transportation)

Grist Environmental News and Commentary-  
<http://www.grist.org/topic/cars>  
[http://www.grist.org/topic/Department\\_of\\_Transportation](http://www.grist.org/topic/Department_of_Transportation)  
[http://www.grist.org/topic/electric\\_vehicles](http://www.grist.org/topic/electric_vehicles)  
[http://www.grist.org/topic/gas\\_prices](http://www.grist.org/topic/gas_prices)  
<http://www.grist.org/topic/hybrids>

Inhabitat-  
<http://www.inhabitat.com/index.php?s=transportation> (transportation)

Natural Resources Canada - <http://www.nrcan-rncan.gc.ca/com/index-eng.php>

OKI (Ohio-Kentucky-Indiana Regional Council of Governments) - <http://www.oki.org/>

Smart Growth / Smart Energy Toolkit (Case studies – Transit Oriented Development [TOD])  
[http://www.mass.gov/envir/smart\\_growth\\_toolkit/index.html](http://www.mass.gov/envir/smart_growth_toolkit/index.html)

Transportation for America campaign-

<http://t4america.org/>

US EPA. Smart way transport partnership. in US EPA [database online].

<http://www.epa.gov/smartway/transport/basic-information/index.htm>

Worldchanging-[http://www.worldchanging.com/search/?blog\\_id=1&keyword=transportation&x=19&y=7](http://www.worldchanging.com/search/?blog_id=1&keyword=transportation&x=19&y=7)  
(transportation)