

# What you can do to help reduce global warming and pollution

by

Class #269

Of

The Academy for Lifelong Learning

Located at

Cape Code Community College

Published by ALL

November 2006

---

# What you can do to help reduce global warming and pollution

A collection of suggestions for conservation, recycling, substitution, and activism prepared by class #269 of the Academy for Lifelong Learning at Cape Cod Community College, Fall Semester 2006.

Copyright 2006  
Academy for Lifelong Learning of Cape Cod, Inc.  
2240 Iyanough Road  
West Barnstable, MA 02668-1599  
(508) 362-2131 x4400

Printed in the United States of America at the  
Cape Cod Community College  
Copy Center

November 2006

---

## **Acknowledgements**

This collection of hints and strategies was assembled through the efforts of the volunteer Editorial Committee of the **Global Ecosystem Threats – Climate Change and Pollution** class, who gave unsparingly of the time to bring it to fruition

**Liz Desaulniers**  
**Lanie Flaherty**  
**Sheila Place**  
**Mert Ingham**

## **Table of Contents**

Page 1 – Introduction

Page 3 – Conservation tips in the home

Page 7 – Conservation tips in the garden

Page 10 – Conservation tips on the road

Page 12 – Conservation tips in shopping

Page 14 – Substitution strategies

Page 16 - Activism

## Introduction

This booklet is the result of a project undertaken by class 269 in the Academy for Lifelong Learning at Cape Cod Community College. The class, **Global Ecosystem Threats – Climate Change and Pollution**, frequently returned to the question, "What can we as individuals do to decrease or delay the effects of global warming and pollution?" Answers to the question quite logically fell into the categories of conservation, substitution, alternative energy sources, recycling, sequestration of carbon, transportation alternatives, and generally promoting wider awareness of the threats that global warming and pollution represents was here on this fragile sandbar called Cape Cod.

At this writing, the dynamics and mechanisms of global warming are generally well understood and the serious threats revealed by numerical / conceptual models are widely accepted in the international scientific community. There are very few skeptics among scientists working in the field of study, but there are many doubters in the general public, industries, and political figures who fear the economic and political effects of any efforts to slow or decrease the rapid slide into a dramatically altered world.

Here on Cape Cod, as with most other coastal communities in the eastern United States and bordering the Gulf of Mexico, the major threat posed by unconstrained global warming is sea level rise. Frequently predicted 20-foot rise in sea level would flood approximately one quarter of the present landmass of Cape Cod, cut it into three or more separate islands, devastate all the seashore property below the 20 foot elevation contour, and displace thousands of people. Clearly, we on the Cape have a great deal to lose if and when that sea level rise becomes reality.

With regard to pollution on Cape Cod, the main threatened environments have been identified: the air, which in summer months often has the worst pollution in Massachusetts, coastal estuarine and pond waters, which are already under attack from fecal coliform bacteria, phosphorus, and nitrogen compounds from septic systems and run-off, and our drinking water supply located in the sole-source aquifer underlying the Cape.

Here again, the mechanisms and pathways of pollution are well understood. What seems to be lacking is a public understanding of the problems and willingness to help reduce the threats to our Cape

ecosystem, which, by the way, includes everyone of us living or visiting here.

Merton Ingham, Ph.D.  
Retired NOAA oceanographer

## **In the Home**

Everything we consume and all energy sources we use have a cost in carbon used and carbon dioxide released into the atmosphere. For example, one kilowatt hour of electricity used (about 3 - 4 hours of television) causes the release of 1.6 pounds of carbon dioxide into the air. A small household can easily use 1,000 kWh of electricity per month, thus releasing 1,600 pounds of carbon dioxide in the process.

### **Tips**

Convert incandescent light bulbs to compact fluorescents (CFL), which use 60-70% less electricity. Each CFL can save \$25-\$50 over its lifetime. If you tried them a few years ago and found them too expensive and harsh, try again. They are now reasonably priced, and the light given off is virtually indistinguishable from incandescent bulbs. (Make sure they're Energy Star rated.)

When you leave the room, turn off the lights and other appliances not in use.

Don't leave computers, TVs, and video games in the "sleep" or standby mode. By some estimates, these appliances use 40% of their full power rating in that mode.

When you purchase new appliances, look for the Energy Star rating. Such rated appliances are significantly more efficient and use much less electricity.

Turning off a second, unused refrigerator can save \$15 a month and reduce greenhouse gases from fossil fuel consumption.

Turn your hot water heater down to 120°. It's safer and saves energy and carbon dioxide emissions.

High definition TVs use six times as much energy as a regular TV.

Set your home heating thermostat as low as comfortable (68° suggested) during the day and turn it down to a lower temperature (60° suggested) at night upon retiring.

Have an energy audit done of your home to determine if it is as weather-tight as possible. Local utility companies will generally provide audits free of charge, but there may be a waiting period, so schedule early.

If you heat with oil, consider biodiesel, which is now available on Cape Cod. "Self Reliance" (508-457-7679) has information on where to obtain this type of fuel. Biodiesel use helps reduce dependence on foreign oil and is a partly renewable resource.

Put outside lights on a timer or photocell switch and use only as much lighting as you need for safety. Extensive use of holiday outdoor lighting displays is an expensive gift to the power company, and dumps a lot of carbon dioxide into the air.

Wash clothes in cold water whenever feasible. Many detergents are effective in cold water as in warm.

Use non-chlorine bleach in washing clothes. Chlorine which enters your septic system and the aquifer can form chloroform, an unhealthy substance if it finds its way into the drinking water.

If you are buying a new washing machine, consider a front-loading model. They use much less water than top-loading models.

Participate fully in your town's solid waste recycling program which removes paper, cardboard, three kinds of plastics, metal, and glass from the waste stream destined for the trash burning facility in Rochester, Massachusetts.

Dispose of unused or expired medicines by putting them in the trash to be incinerated. Don't flush them down the toilet, where they eventually will enter the groundwater.

Check your attic insulation and add more if feasible. A great deal of heat is lost through ceilings into a cold attic if un-insulated or poorly insulated.

During good weather in summer and fall months, line-dry washing wherever feasible, to save electricity and/or gas.

Check the windows in your home to make sure they are snug and

efficient. Replace any single pane windows with modern double or triple pane units. They will pay for themselves in savings and energy costs in a few years.

Be alert for toilets with leaky flapper valves – a common cause of wasted water. Find a "handyman" to help you repair leaky valves – plumbers charge more than \$90/hour.

## **In the Garden**

Your yard and garden provide many opportunities to help reduce the effects of pollution and global warming, while at the same time just following good gardening practices and being eco-friendly.

### **Tips**

Use organic, slow-release fertilizers as much as possible. Many synthetic fertilizers use petroleum products as stock chemicals and consume more as an energy source in their production. Also, synthetic fertilizers tend to be instantly soluble, increasing unwanted run-off and water pollution affects.

Maintain a compost pile if possible. Any plant materials, including vegetable scraps, can be added to the pile, mixed with a little soil, and used for a season to produce a valuable end product, "black gold," which can be used as a soil additive / fertilizer. Most gardening books will give you instructions for building and maintaining a compost pile, as will the Barnstable County agricultural extension service.

Water your garden in the morning during summer months to avoid evaporative losses. Also, water the roots, not the foliage, as much as possible to further conserve water. This latter strategy also helps reduce the incidence of fungal disease on many plants.

Use pesticides very sparingly, and use those which have a short active potency on the plants or in the soil. Some purport to be harmless after seven days. These steps will reduce the likelihood of the active chemical showing up in the ground water or in ponds.

Collect and use seaweed as a weed-blocking, water conserving mulch / fertilizer. It does not have to be pre-washed in fresh water before putting it around established plants and shrubs. It also does not introduce weed seed, unlike some commercial mulches and manures.

Collect and use seashells as a substitute for commercial ground limestone to "sweeten" garden soil. It helps to mash the shells on a hard surface by placing a board over them and stomping on it. Seashells are chemically the same as limestone, calcium magnesium carbonate, but their release rate into the soil is a little slower.

Level all garden beds if possible, to avoid wasting water in run-off. Terracing

sloping areas, or installing raised, enclosed beds is an effective, low-cost strategy for leveling.

Maximize woody shrubs and trees and minimize lawn grass. Trees and shrubs utilize carbon dioxide in photosynthesis and sequester carbon for years, decades, and for a century with some species. Lawns only sequester the carbon compounds they produce for a few weeks at the most. Also lawns require more frequent fertilization, weed killers, and mowing with either a gasoline powered or electric powered mower, none of which are environmentally friendly.

When raking leaves and other plant materials in your yard, if you have too much for your compost pile, don't burn the surplus. Instead, take any excess to your town transfer station to include in the municipal composting operation. Most towns do not require that you have a "dump sticker" to take part in the composting program.

Grow your own vegetables and fruit if you have suitable sunny space for such a garden. Yields of lettuce, peas, beans, onions, cucumbers, strawberries, and carrots are generally good on the Cape.

## **On the Road**

Nationwide, automobiles and trucks are responsible for about 32% of the country's carbon dioxide emissions and for most of the nitrogen oxide and ozone pollutants released into the atmosphere. Locally, on Cape Cod, I suspect that the percentage is much higher. Life activities on the Cape are largely dependent on the use of automobiles and trucks, due to the lack of any extensive, efficient mass transit system.

### **Tips**

Maintain your automobiles carefully. Keeping the engine tuned can improve fuel efficiency by 15%. Keep tires properly inflated and wheels aligned; this can save another 6% on fuel.

Accelerate and decelerate slowly and gradually. Observe the speed limits. You'll save 15% of your fuel consumption by driving at 55 mph rather than 65 mph.

For long trips off-Cape utilize other forms of transportation whenever possible. An automobile releases 400 pounds of carbon dioxide in 200 miles of travel. A diesel train releases 100 pounds per person in 200 miles, as does a jet airliner. A bus loaded with passengers would release even less per person.

Combine trips to stores with other errands. Offer your neighbor a ride. Avoid rush hours for more efficient driving. A weekly 10-mile multi stop round-trip saves 730 pounds of carbon dioxide over four 6-mile round trips.

If you are in the market for a new car, look for the smallest vehicle consistent with your needs and for one with the highest miles-per-gallon rating. You can reduce carbon dioxide emissions by 3,000 pounds per year by selecting a car that gets just 3 miles per gallon more than your old one.

In summer months, if you have an air conditioned vehicle, use the air conditioner instead of driving with windows open. Driving with the windows open increases the aerodynamic drag of your vehicle significantly and burns more fuel than driving with windows closed and the AC on.

Do not discharge any automotive fluids (oil, brake fluid, battery acid, anti-freeze) onto the ground. Any toxic fluids of this sort poured onto the ground will eventually find their way into the drinking water aquifer.

## While Shopping

There are many opportunities to conserve on greenhouse gases and reduce pollution in shopping, especially in the grocery store or supermarket.

### Tips

Carry canvas or mesh shopping bags to the grocery store with you to conserve plastic or paper bags supplied by the store.

The manufacture of paper and plastic bags consumes natural resources and fossil fuel. Of the two choices, plastic bags are a slightly better choice, as measured by their carbon footprint, but **only** if you can be certain they are recycled. Ask your local store manager where the bags are recycled, but keep in mind that re-usable bags are always a better choice.

Whenever possible, buy locally produced or short-haul products and produce. They have a much smaller carbon dioxide emissions history than products from out of state or out of the country. Also, produce grown in the U.S. often carries a smaller or negligent amount of pesticides, especially DDT, than that imported from foreign countries.

To reduce phosphate pollution of groundwater and ponds, purchase phosphorus-free detergents. They now are widely available and are no more costly than detergents which use phosphates.

Whenever possible, select paper products that show on their labels that they contain a percentage of “recycled paper.”

Choose products with a minimum of packaging, to save cost and reduce the amount of plastic and cardboard wasted.

When available, select “organic” produce and meats, to reduce your intake of pesticides and hormones. Note that the “organic” label on vegetable produce does not protect you from contamination from E-coli and other soil or water-borne bacteria. All produce should be thoroughly washed and / or peeled if eaten uncooked.

Consider less meat in your diet. On average, a person on a 2,200 calorie diet requires 6-8 ounces of meat, poultry, or fish per day. The environmental costs of beef, pork, and poultry production are high in terms of water use, energy consumption, and pollution.



## **Substitution Strategies**

The most well known substitution strategies today deal with alternative means of producing electricity, alternative modes of transportation, and alternative fuels.

### **Tips**

Consider using photo-voltaic panels to provide part of your household electricity. Residents on Cape report that placing solar panels on the south side of their roofs has resulted in cutting their electricity bills in half. They expect that the panels will “pay for themselves” in about 3-7 years.

Encourage your town to install wind turbines on town-owned land to reduce municipal power consumption and costs. Ask questions of your town government if they don't seem to be acting to utilize wind power, and be persistent about it. Keep asking questions until you get a reasonable, thoughtful answer. Send letters and keep copies for your future reference, instead of making phone calls. It is too easy for town officials to give you the "runaround" on the phone.

As an individual on Cape Cod, you don't have much opportunity to use alternative fuels for your automobile, unless you drive a diesel-powered vehicle. If you have a diesel engine, you can use bio-diesel as an alternative fuel. For gasoline engines, a mixture of ethanol (up to 10%) and gasoline is showing up at most filling stations, and it can be safely used in most modern automobile engines, but not in some marine engines.

Substitution of mass transit for automobile travel is barely an option for travel on-Cape. Regularly-scheduled bus service exists along the Route 28 corridor from Falmouth to Hyannis to Orleans, and also from Hyannis to Barnstable Village. Service was established on a trial basis this summer from Orleans to Provincetown, but its continuation is not certain. For off-Cape travel, there is frequent, regularly scheduled bus service from Hyannis to Boston and Logan Airport and from Hyannis to Providence, which are economical, eco-friendly alternatives.

Consider installing solar heating panels on your home to supplement your domestic hot water system. Heating water for home use represents about 20% of the energy used in the average household.

## **Ideas for Activism**

The time is right for stimulating recognition of global warming and pollution problems. Most people have heard or read about the former, and have lived with the latter for years. It is a time when your questions and suggestions made to local and state governments will receive reasonable consideration.

### **Tips**

Write to local and state officials regarding your plans for utilizing wind turbines or photo-voltaic panels to reduce the consumption and cost of commercially supplied power.

Ask churches and organizations to consider scheduling a showing of *An Inconvenient Truth*, on global warming, for their group members. Copies of this film are available on DVD at most of the Cape's libraries.

Write letters regarding global warming, conservation, pollution, or transportation to the editor of the Cape Cod Times. They have a 200-word limit, so you have to make letter short.

Write letters to state representatives and senators from our region about your concern regarding global warming, alternative energy, environmental quality, and relevant state programs.

Attend public meetings held by town or state government agencies dealing with or impacting on environmental quality. Once there speak up and be counted when you have the opportunity.

Suggest to your local grocery store or supermarket that they make available a clearly marked receptacle for once-used plastic bags, and seek assurance the bags collected thus will actually be recycled.

Talk to neighbors about their optimal use of synthetic fertilizer and chemicals on their lawns. Point out that run off and leaching into the ground water eventually may ruin a pond or contaminate our drinking water.

The Academy for Lifelong Learning of Cape Cod, Inc. is an organization of senior men and women, 50 years of age or older, that offers to members the opportunity to pursue intellectual interests, as well as to expand social relationships. The Academy is affiliated with Cape Cod Community College and is located on the college's West Barnstable campus.

Throughout its history (1987 – 2006) ALL has maintained a close relationship with the College. In addition ALL's affiliation with The Elderhostel Institute Network has contributed to the definition and realization of its mission. ALL has continued to prosper and grow into a significant asset for the citizens of Cape Cod.