

GREEN CORNER December 2007

Henry P. MacLean

For most folks, taking on a problem as overwhelming as climate change can seem daunting at best, and downright depressing and useless at worst. What we know from our faith based tradition and from our recent Nobel Laureates is that the Earth requires our collective stewardship and **action** in response to the climate crisis at hand.

A three-step process is suggested.

1. Audit, benchmark where you are; 2. Conserve and reduce; 3. Invest in renewable energy systems and the new infrastructure required for carbon-free sources of energy.

The first step is determining one's contribution to the primary concern (too much Carbon in the atmosphere) and determining what your current Carbon Footprint is. Many groups, including the Empowerment Institute, have made this process fairly painless in their Low Carbon Diet Handbook, see <http://www.empowermentinstitute.net/lcd/index.html>.

(**Step 1.**) Determine your footprint. The average household in America is directly responsible for approximately 54,000 lbs of Carbon Dioxide, or about 27 tons a year. (see http://www.empowermentinstitute.net/lcd/lcd_files/LCDcalcNet.html)

(**Step 2.**) Reduce carbon output by 10 % to start, or 5000 lbs in a focused auditing process that folks can take on with neighbors and friends, tracking many of the actions we have been recommending in this Green Corner. Working with Mass Climate Action Network (MCAN) a Milton team of households has joined households from 35 other Cities and Towns in Mass on the LCD program, which provides a clear format for itemizing and measuring carbon savings. (see: <http://www.massclimateaction.org/>)

(**Step 3.**) Look to transfer some of your Fossil Fuel use to solar, geothermal, wind, biomass, hybrid and other renewable technologies and are now growing and being sought after by homeowners and communities. Hooking these systems up to our houses literally reverses the carbon footprint while paying for the systems in energy savings. Contact MTC (<http://www.mtpc.org/>) and NESEA (<http://www.nesea.org/>) for locating clean energy options for buildings, and <http://www.hybridcars.com/> and <http://www.fueleconomy.gov/feg/current.shtml> for cars.

Another useful part of step 3 is helping to create the new renewable infrastructure we will need in New England. Renewable Energy Credits or Certificates (REC's), also known as Green tags, are the property rights to the environmental benefits from generating electricity from renewable energy sources. These certificates can be sold and traded and the owner of the REC can legally claim to have purchased renewable energy that can be deducted from his or her Carbon Footprint. Also see Terra pass to see how your travel miles can be balanced. (<http://www.terrapass.com/>)

The New England Wind Fund, a program of the Mass Energy Consumer Alliance, is partnering with Sustainable Milton (<http://www.sustainablemilton.org/>) to develop the *Milton Solar Challenge*, a program to engage 150 families to contribute \$5 a month, or \$60 a year to the Wind Fund (for REC's), which with MTC support will pay for a 2kW PV solar array for a Milton municipal building or school in return. (see <http://www.newenglandwind.org/wind/challenge.milton.php>)

Together, as a church community, we have a special opportunity to work on these challenges alongside others including our Town Selectmen who recently appointed a committee to benchmark energy usage and Alternative Energy options in Milton, in response to the rising costs of energy for the Town, an ***action*** that will respond to the climate crisis as well.

Green Corner, October 2007

by Henry P. MacLean

Over the last several issues of this Environmental Green Corner, we have outlined a variety of steps and actions that the individual can take in response to the growing concerns of Climate Change that we humans are widely believed to be contributing to.

From Wikipedia we learn that ...” the term "climate change" often refers to changes in modern climate which according to the IPCC are 90-95% likely to have been in part caused by human action. Consequently the term *anthropogenic climate change* is frequently adopted; this phenomenon is also referred to in the mainstream media as global warming.”

Here are the basic tenants of their latest findings from this group, set in motion by the United Nations.

- * *Warming of the climate system is unequivocal*
- * *Most of the observed increase in averaged temperatures is very likely (confidence level >90%) due to the observed increase in (human) greenhouse gas concentrations.*
- * *Hotter temperatures and rises in sea level "would continue for centuries" even if greenhouse gas levels are stabilized...*
- * *The probability that this is caused by natural climatic processes alone is less than 5%.*
- * *Global atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values over the past 650,000 years*

We are entering a time where many believe that in addition to our individual actions, Community Action is called for, which will inevitably involve steps, actions from Community Leaders and Organizations. The question will ultimately arise: ***How do we as a Church Community in the Town of Milton and in the larger Commonwealth, effect and address the overarching concerns of Climate Change.***

Many might argue that the concerns for the wellbeing of our children, as they grow into their adult lives should alone prompt a serious and in depth discussion / debate on the issues at hand. Given the magnitude of change being outlined, if in fact there is good reason to question the findings of the IPCC stated above (by hundreds of scientists from around the world who have come to these conclusions), an open discussion with the goal of establishing our community response as a Church on Climate Change would certainly be a worthy challenge.

So as we continue to discuss and learn about green strategies and tools for our individual and households, how can our Community respond to the long-term challenge of integrating what many would define as responsible stewardship, green strategies and tools to the ongoing Church investments, including our buildings and grounds. Aligning

Green Corner, October 2007

our faith and good works with our intention, is a tradition we have inherited as a Church Community and will most certainly want to pass on to our heirs.

Green Corner, September 2007

by Henry P. MacLean

There is a new environmental movement afoot that works with the age-old notion of dieting. According to Wikipedia, a diet is.... *the sum of food consumed by a person or other organism*. As we are learning, our dietary habits associated with the energy we use for all of the things we consume can be traced back to the burning of fossil fuels and the unfortunate byproducts of global warming and climate change. Just consider that currently, for every calorie of food an average American consumes, 10 calories of fossil fuels are required to bring it to the table. (see Richard Manning, <http://www.harpers.org/archive/2004/02/0079915>)

So as much as it pays to be fit physically in our bodies, folks are starting to see the value of maintaining our overall energy fitness by making behavioral changes that shave off pounds of the carbon or CO-2 that we are all producing. As calculated by the US Department of Energy, an average American produces about 20 tons or 40,000 lbs of carbon dioxide a year, about 40% of that from operating our homes and transporting ourselves around, with another 60% from the emissions caused by the products we consume. (see: <http://www.time.com/time/health/article/0,8599,1552237,00.html>)

While we can help lobby for new regulations that work towards properly taxing carbon in the commercial sector, we can each have immediate and direct impact on how we maintain, operate and improve our carbon footprints at home. David Gershon and the Empowerment Institute with their new Book entitled Low Carbon Diet, have produced a helpful starting point for homeowners to quantify this data and their progress in reducing their carbon footprint. The program works to start cutting the average household footprint by 5,000 lbs or roughly 10% a year, working towards the longer term goals of reducing greenhouse gases by 75% to 85% by 2050, targets many see as achievable and critical to reverse the climate crisis now underway. (see: <http://www.cleanwateraction.org/ma/principles.html>)

The Mass Climate Action Network (<http://www.massclimateaction.net/>) composed of approx 40 Towns and Cities statewide and growing, has recently adopted the LCD (Low Carbon Diet) program and is setting up a Pilot Program for up to 8 households working as a group over a 3-4 month period. A group of Milton households, working together as a part of the Energy Task Force of Sustainable Milton (now becoming a member of MCAN (see: <http://www.sustainablemilton.org/index.html>) begins with the program this fall, and will be sharing their results with the rest of the Milton community and MCAN this winter.

Green Corner, Summer 2007

by Henry P. MacLean

There is a growing wave of concern and subsequent action to address the climate crisis worldwide. Reports on mainstream TV are now standard broadcasts, such as CNN's *Planet in Peril*, where Anderson Cooper can now be found reporting from melting fiords in Greenland. Rupert Murdoch, the media mogul and owner of Fox News has pledged to make his news Corp carbon neutral. This summer Live Earth, the largest simultaneously run World Music Concert will take place over 24 hours on 7 continents on 7-7-07, bringing attention to the Climate Crisis with over 100 bands and featured speakers. See: <http://liveearth.msn.com/>.

In addition to our discussion in the last newsletter about auditing the energy use of our own homes which consume roughly 55% of the energy used in buildings in this State, the other 45% of energy powering building in Massachusetts is in building types such as offices, schools, hospitals, churches, and stores. The EUR's (energy utilizations rates) of these buildings are understandably higher, for all the equipment and additional volume of spaces that need conditioning and associated electrical use as a result of the activities taking place within their walls.

While Milton is fundamentally a Residential Town, we also have a good mix of Institutional and Commercial buildings. *Sustainable Milton*, established in the fall of 2006 (see: <http://www.sustainablemilton.org/index.html>) has convened a committee that will start looking this summer at how Milton performs as a community with our energy usage. We will be working with the Utilities, Town Management, and various programs such as the Community Energy Challenge developed by the EPA, Mass Energy Consumer Alliance (<http://www.epa.gov/region1/eco/energy/energy-challenge.html>), Mass Climate Action Network, (<http://www.massclimateaction.org/>) and ICLIE, Local Governments for Sustainability (<http://www.iclei.org/>) that Milton will be joining this summer as well.

As a first step, an Energy Audit for the Town is being explored. How this is approached and to what level this it is implemented will be researched by the committee, using tools that will be further identified and shared with Milton residents. Issues of standards, targets and other case studies will be looked at. Ultimately, any building Owner, including the Town of Milton (which pays for all of the Energy for municipal and school buildings) can only gain from the knowledge of how their buildings are performing. We have arrived at Peak Oil (see:<http://www.lifeaftertheoilcrash.net/>) and a new and widespread acceptance for our responsibility to confront climate change and global warming.

One of the issues we have in an Historic town like Milton, is that the existing stock of buildings is pretty much here to stay and that converting directly over to the highest level of efficiency, or Net Zero Energy homes is not a realistic option. However, as we have been discussing in this newsletter, there are a number of methodologies for insulating, conserving, and upgrading energy systems within this existing stock of buildings that can routinely save as much as 50% of the loads with least cost first strategies that both reduce energy costs and CO2 in the atmosphere.

As a homeowner or business owner, once you have determined your energy EUR, and your related Carbon footprint (how many tons of carbon your household or business is responsible for annually, see: <http://www.lexgwac.org/Calculator2.html>), one way you can choose to offset that footprint is by purchasing what are referred to as RECs, Renewable Energy Certificates, which cost so many dollars per ton. RECs are available through funds investing in alternative energy, planting trees, or otherwise sequestering carbon. The New England Wind Fund is one such program that has a number of special contributions to renewable energy here in New England.

(see:<http://www.newenglandwind.org/wind/lexington.php>)

One incentive being promoted by the Mass Energy Consumer Alliance is rewarding communities who have more than 150 households contribute to the New England Wind Fund with a new 2 KW Photovoltaic System for a municipal building in that community. With 300 households either contributing \$100 each to the fund (equal to a 1 ton of carbon offset annually), or becoming members for \$60 a year, the new system will be increased to a 4 KW system.

The *Sustainable Milton* Energy Committee will also be looking at working with the Milton Schools and a few 9th or 10th grade classes (as is being done in Lexington, MA) to help a set up a home audit program that can teach kids how much energy they use, and how to share this info with their families to slow the energy meters down at home.

The cheapest and greenest watt or BTU is the BTU saved. This is the first step in teaching responsible stewardship. Once we are lean and efficient in our current energy usage, then we can bring in the higher technologies like Photovoltaic and Geothermal technologies to help us get off of carbon altogether. If we reverse that order, we risk teaching yet more extravagance and potential wasteful behavior with our energy resources.

Here is another good checklist for the summer, ten things to do to Green your home.

<http://realestate.msn.com/Improve/Article.aspx?cp-documentid=440485>

And finally, when you are ready to consider adding solar systems, here is an article to addressing one of the of the biggest questions folks have with solar, the financial payback on these systems.

http://realestate.msn.com/Improve/Article_mw.aspx?cp-documentid=3609262>1=9223

Green Corner, May 2007

by Henry P. MacLean

As we mentioned in last month's newsletter, while we measure our car's energy use in *Miles per Gallon*, we measure our building's Energy Performance by *BTUs per Square Foot*. This combines all the energy use into how many BTU's (British Thermal Units) they consume per square foot of the conditioned space, per year. This is called the Energy Utilization Rate (or Index), EUR (or EUI) and is helpful in getting a sense of how efficient a building is and could be.

The following is a quick and easy way to determine your home's energy use, and carbon footprint. It is something that you might want to share with your kids who can probably help work out some of the multiplication and division faster, and in the process see how much their energy use and possible conservation can save on the monthly bills.

1. Step One.

Determine the square footage of all of the conditioned spaces in your home, spaces that you keep warm in the winter and cool in the summer.

2. Step Two

Locate your Utility Bills and convert them to BTU's using the following chart. You can also determine the carbon footprint of your home this way as well. This chart below also shows you how many BTU's you get to use for every pound of carbon you produce.

Electricity	2216 BTUs/ lb of CO₂	1 KWH =	3,413 BTU's	(1.54 lbs of CO ₂)
Heating Oil	6290 BTUs/ lb of CO₂	1 gallon =	139,000 BTU's	(22.1 lbs of CO ₂)
Propane	7165 BTUs/ lb of CO₂	1 gallon =	91,000 BTU's	(12.7 lbs of CO ₂)
Natural Gas	8403 BTUs/ lb of CO₂	1 therm =	100,000 BTU's	(11.9 lbs of CO ₂)
Gasoline	5610 BTUs/ lb of CO₂	1 gallon =	124,000 BTU's	(22.1 lbs of CO ₂)
Diesel Fuel	7202 BTUs/ lb of CO₂	1 gallon =	139,000 BTU's	(19.3 lbs of CO ₂)
Wood	Reabsorbed/Renewable?? Wood pellets	1 full Cord =	22,000,000 BTU's 4' x 4' x 8'	Carbon Neutral if from Sust. Man. Forests &/or replacing conven. fuels.

With the new awareness and news of global warming and climate change hitting us from all angles, people are waking up to the unfortunate reality that we in the United States, 4.5% of the world's population contribute to over 30% of the world's greenhouse gas emissions, each of us producing over twice the amount as an average European each day, over 50,000 lbs of CO₂ a year.)

3. Step Three

Add up your total use of BTU 's per year and divide that figure by the square feet of your home. This will be your rough EUR, or Energy Utilization Rate.

According to experts, a good house today in Massachusetts that meets the new Energy Code gets about 54,500 BTUs per sf per year. An Energy Star Home, that meets a 15% reduction in energy use, uses about 46,000 BTUs per sf per year. A Net Zero Energy home (the target for Green Buildings of the future) are buildings that produces as much energy as they consume. On an annual basis using wind, geothermal and other renewable and ultimately Carbon Neutral energy sources, the EUR of these buildings will get closer to 20,000 BTU's per sf per year.

Green Corner, May 2007

by Henry P. MacLean

By applying some or all of the strategies listed in the Energy Diet last month (and more to come in this column with additional resources), you can start to watch those monthly bills drop along with your EUR.

Here's a belated prayer for Earth-Day, this past April 22, and a meditation we can extend from our homes everyday, as we think about and respond to our impacts on the Earth.

We join with the Earth and each other.

*To bring new life to the land.
To restore the waters
To refresh the air*

We join with the Earth and each other.

*To renew the forests
To care for the plants
To protect the creatures*

We join with the Earth and each other.

*To celebrate the seas
To rejoice in the sunlight
To sing the song of the stars*

We join with the Earth and each other.

*To recreate the human community
To promote justice and peace
To remember our children*

We join with the Earth and each other.

*We join together as many and diverse expressions
Of one loving mystery*

*For the healing of the earth
and the renewal of all life.*

UN Environmental Sabbath Program

Green Corner, April 2007

by Henry P. MacLean

Our Energy Diet

We are all starting to take notice of how we can save on our own monthly energy bills, and thereby also help reduce our individual carbon footprints to slow climate change. Here are some simple steps to that end, referred to in some circles as an energy diet.

- Don't leave the car idling.
- Do not exceed 50-60 mph on highway; drive cars that get better mileage.
- Use compact fluorescent light bulbs instead of incandescent lights.
- Lower household thermostat; each degree saves approx 4% of the load.
- Minimize using electrical kitchen appliances such as can-openers.
- Shut off lights and computers, when you are not in the room or using them.
- Recycle paper, plastic, and glass. Call retailers to cancel unwanted print catalogs.
- Unplug appliances when not in use as they consume energy when in standby mode. Use a surge protector for 1 switch to many of these 'phantom' loads.
- Use motion sensors for inside and outside household lights.
- Set computer display to hibernate when inactive for ten minutes.
- Run dishwasher & washer-dryer only with full loads.
- When getting dishes ready for dishwasher, rinse in cold (not hot) water.
- Limit time in shower to two minutes; don't leave water running.
- When washing white clothes use the warm/cold cycle instead of warm/warm.

While we measure our car's energy use in *Miles per Gallon*, our buildings are measured in their Energy Performance by *BTUs per Square Foot*, or how many BTU's (British Thermal Units, they consume per square foot of their conditioned space. Transportation accounts for approx. 30% of all Greenhouse Gas emissions annually, and buildings are responsible for almost half (48%).

Sustainable Milton was founded last fall and includes members from the First Congregational. The committee is working together to find ways to address the critical issues of climate change and sustainability here in Milton, and is part of a larger regional group called Sustainable South Shore, <http://www.sustainabless.org/>. For additional local showings of *the Inconvenient Truth* contact the website, <http://www.sustainablemilton.org/index.html>.

For the last several month's, Al Gore has continued his Campaign for Climate Change by talking his appeal to Congress to take legislative action, with over 500,000 signatures. View his Presentation to Congress, on March 21, 2007 at:

http://blog.algore.com/2007/03/als_testimony_before_the_house.html

More Resources

* Tips on Energy Saving

<http://www1.eere.energy.gov/consumer/tips/>

* Energy Audits

<http://hes.lbl.gov/>

<http://www.eere.energy.gov/buildings/info/homes/energyaudithome.html>

* Conservation Services Group (CSG) is helping Utilities and energy customers find set up ways to make their homes more efficient, comfortable and safe, as well as qualify for MTC grants for Solar and other new technologies. see: http://www.csgrp.com/dashboard_residential.html

Green Corner, March 2007

Henry P. MacLean

Based on the great turnout at the Showing of “ An Inconvenient Truth”, at Huntington Hall on February 8th, the Newsletter is offering some space for the ongoing dialog regarding how we can all start taking small steps, positive action towards reducing our impact on Climate change and the Planet in general.

NESEA Conference, Seaport World Trade Center, March 13-15

We are fortunate here in Massachusetts to be home to so many individuals and organizations that have been focusing on the means and methods of making our homes and workplaces more sustainable. NESEA (the Northeast Sustainable Energy Association) founded over 30 years ago and based in Greenfield MA, is the region’s leading organization of professionals working in sustainable energy. Through education and events, NESEA has brought thousands of such individuals and businesses together to support each other and share their ideas and information with the larger regional community.

The Annual NESEA Conference called **Building Energy** will take place in Boston this Coming March 13-15 at the Seaport World Trade Center. (See <http://buildingenergy.nesea.org/>). The Trade Show will feature over 150 exhibitors displaying the products and services that support the practice of Sustainability. In depth sessions and workshops are open to the public as well.

Environmentalist Bill McKibbin, one of the Speakers at the conference will be joining others in a free Public Forum at the NESEA conference on March 13, on **Wind Power in the Wild**, a discussion on how to achieve ecological and energy security in the Northeast, moderated by NECN’s Jim Braude. See: <http://buildingenergy.nesea.org/FREEPublicForum.php>

Step it Up 2007

McKibbin is also spearheading a National campaign called Step It Up 2007, an effort to organize a nationwide day of hundreds and hundreds of rallies on April 14. In his words, “we need rallies outside churches, along the tide lines in our coastal cities, in cornfields and forests and on statehouse steps.”

“Every group will be saying the same thing: Step it up, Congress! Enact immediate cuts in carbon emissions, and pledge an 80% reduction by 2050. No half measures, no easy compromises-the time has come to take the real actions that can stabilize our climate. Every group will be saying the same thing: Step it up, Congress! Enact immediate cuts in carbon emissions, and pledge an 80% reduction by 2050. No half measures, no easy compromises-the time has come to take the real actions that can stabilize our climate.”