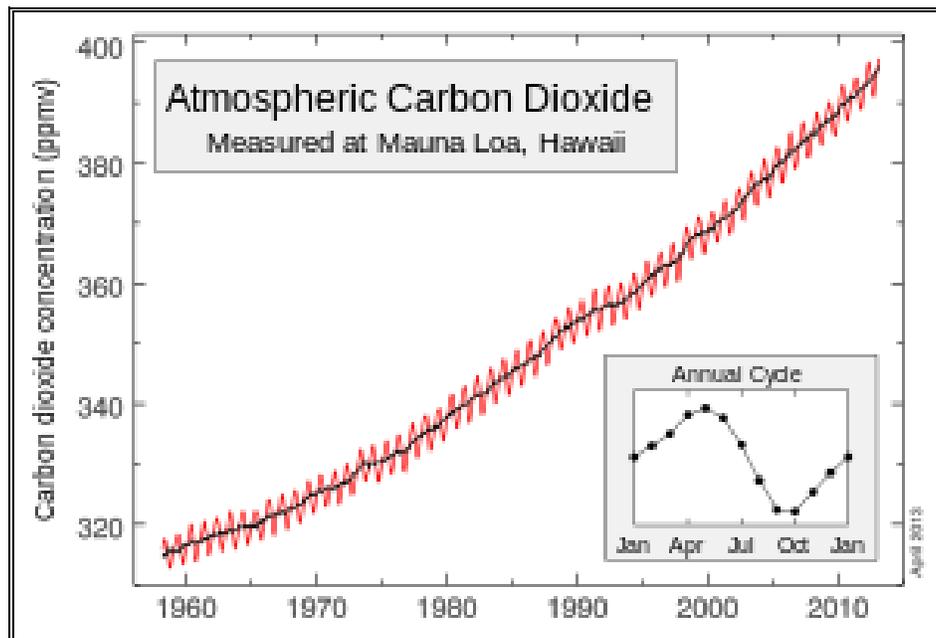


# Guidelines for Small Reflection/Action Groups And Individuals

*Excerpts from Books, Magazines, Newspaper Articles  
And Websites of Public and Private Organizations That Describe the  
Present and Future Ravages of Climate Change*

*Along with Appropriate Activities to Halt and Reverse Climate Change*



The famous Keeling Curve measures the rapid accumulation of carbon dioxide in the atmosphere. The stair-step pattern reflects the annual tilting of the Northern Hemisphere toward the Sun in summer and away from the Sun in winter. When the deciduous trees in the Northern Hemisphere (much larger than those in the Southern Hemisphere) lose their leaves, the exhalation of carbon dioxide into the atmosphere causes a sharp jump in carbon dioxide. When the same trees grow leaves anew the following spring and summer, the amount of carbon dioxide in the atmosphere comes back down. The fact that these concentrations continue to increase from one year to the next reflects the massive burning of coal, oil and natural gas and the massive amount of deforestation.

March 2014

Grassroots Coalition 21431 Marlin Circle Shade Gap PA 17255  
814-259-3680 [grassroots1@pa.net](mailto:grassroots1@pa.net)

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**Contact us at any time to explore participating in the effort  
described in these pages.**

**Grassroots Coalition 21431 Marlin Circle Shade Gap PA 17255  
814-259-3680 grassroots1@pa.net**

# Section I

## Introduction

Climate Change is an unprecedented threat to all that humanity holds dear, a threat of such magnitude that it should be the primary concern of every American. Moreover, time is of the essence. It is very possible that within a few years humanity will see ‘tipping points’ start to kick in, whereby we will be faced with the constant, never ceasing intensification of the catastrophic consequences of Climate Change and have no ability to halt and reverse the progress of those consequences.

Given the great economic and political power of the elements of humanity which are responsible for Climate Change, our only hope for survival lies in enlisting the effective participation of great numbers of Americans, initially for many as individuals, but as soon as possible in Small Groups, in contrast to their current isolation and separation. Community is necessary in order to facilitate and maximize joint efforts, mutual support and persistence.

These Guidelines are intended for 1) existing Small Groups working on Climate Change, 2) existing Small Groups not yet working on Climate Change, 3) individuals who are interested in starting up a new Small Group, and 4) individuals who wish to operate for now as individuals.

There are two parts:

- Section I provides information for understanding Climate Change and suggestions for appropriate activities for halting and reversing it.
- Section II contains information about what members of existing Small Groups, environmental organizations and companies are doing, in the hope that others will learn from their successes and their failures, their experiences and their resources.

As soon as possible we shall arrange gatherings in several regions of the country for members of all the Small Groups. But for now we shall connect participants with emails, letters and phone calls.

There is no hierarchy in this effort. Our sole aims are to facilitate the exchange of information among the participating Small Groups, organizations and companies and to provide the opportunity for them to work together.

The Grassroots Coalition has been involved in social justice activities focusing on peace, the economy and the environment since 1982, when Jonathan Schell’s *The Fate of the Earth* appeared, describing the horrors of nuclear war. In 1989, when the Cold War between the United States and the Soviet Union began to die down, we switched to economic justice, promoting democratically-run, worker-owned cooperatives, exemplified by those in Mondragon, Spain. Then in 2006, another book appeared called *The Revenge of Gaia* by James Lovelock, which described the ravages of Climate Change. We then shifted much of our effort to Climate Change.

**It is imperative for us to join with others who share our convictions and our ideals in order to gain control of federal, state and local governments. They alone have the power to radically reduce/eliminate the burning of fossil fuels and replace them with conservation and renewables. This is job #1 for us.**

## Part I Climate Change Summary

The primary source of information about Climate Change is the Intergovernmental Panel on Climate Change (IPCC), which consists of climatologists, glaciologists, meteorologists, oceanographers and specialists from dozens of other disciplines – thousands of scientists from over 120 countries. This Panel, assembled in the 1980s by the United Nations Environment Program and the World Meteorological Organization, issues a detailed report to the world every six years, the first of which appeared in 1995 and the most recent in 2013. Between these reports, scientists frequently produce studies of specific climate conditions.

The primary source of opposition to the IPCC is the major energy companies, who have billions of dollars invested in the burning of fossil fuels. According to Bill McKibben, “In case you think fossil fuel companies are less powerful now than before, think again: Exxon Mobil made more money in 2006, 2007 and 2008 than any company in the history of money. Exxon has spent the last decade underwriting an elaborate disinformation campaign to sow doubt about climate change and with reasonable success. 44 percent of Americans believe global warming comes from “long-term planetary trends” and not the pumps at the Exxon stations.”

Ninety-seven percent of the world’s climate scientists now agree that Climate Change is real, is caused by us humans and, unless we take radical steps to curtail it, will soon bring on catastrophic conditions (which are now starting for all with eyes to see), possibly entailing extreme loss of life, both human and non-human.

The loss of life that we are now facing is not unprecedented. It is generally agreed that there have been five mass extinctions of life in the past, the most severe of which was the Permian-Triassic, which occurred about 252 million years ago. Up to 96% of all marine species and 70% of terrestrial vertebrate species became extinct. The recovery of life took up to 10 million years. Humanity’s current war on life is considered to be the sixth mass extinction, the first caused by us humans. See Elizabeth Kolbert’s new (2014) book: *The Sixth Extinction*.

The principal cause of the climate changes is the burning of fossil fuels – coal, oil and natural gas. This burning began to intensify with the start of the Industrial Revolution around 1750 AD. Human activities, especially since 1750, have increased atmospheric carbon dioxide concentrations by about 40%, with more than half the increase occurring since 1970. This has indeed brought many benefits to human life, but in these latter decades we are seeing that it may bring doom to most of us.

The burning produces ‘greenhouse gases’, the chief of which is carbon dioxide. They rise up and trap in heat which would otherwise escape from the atmosphere, causing the Earth’s mean temperature to gradually increase as the years go by. Look back at the graph on the cover, the famous Keeling Curve, which has been recording the rise in carbon dioxide since 1958. The concentration of carbon dioxide in the atmosphere is now at its highest point in the last three million years, and is growing at an unprecedented rate.

If emissions of carbon dioxide stopped altogether, it would take many thousands of years for atmospheric carbon dioxide to return to ‘pre-industrial’ levels due to its very slow transfer to the deep ocean and ultimate burial in and release from ocean sediments. Surface temperatures would stay elevated for at least a thousand years, implying extremely long-term commitment to a warmer planet due to past and current emissions, and sea level would likely continue to rise for many centuries even

after temperatures stopped increasing. The current carbon dioxide-induced warming of Earth is therefore essentially irreversible on human timescales.

This increasing heat is producing ever-intensifying results: extreme hurricanes and tornadoes, rising oceans, floods, dying coral reefs, acidic oceans, drought, famine, wildfires, rivers drying up, migrations, diseases, extinction of species, melting of glaciers and ice caps. If emissions continue on their present trajectory, warming of 4.7 to 8.6° F in addition to that which has already occurred is expected by the end of the century, intensifying the conditions named above. However, the total amount of warming from a given amount of emissions depends on chains of effects (feedbacks) that can individually either amplify or diminish the initial warming.

**Bill McKibben in *Eaarth*:** “In the last four decades, the Earth has changed profoundly, in ways that have already taken us out of the sweet spot where we humans so long thrived. The world hasn’t ended, but the world as we know it has. We imagine that we still live back on the old planet, that the disturbances that we see around us are the old random and freakish kind. But they’re not. It’s a different place. A different planet. This is the start of a change far larger and more thoroughgoing than anything we can read in the records of man.”

James Hansen is considered the foremost climate scientist in the U.S. In a recent paper, he points to three groups which are on target to suffer most from Climate Change: people who are young today, future generations and nature. If a person is 70 years old and dies in 10-15 years, he/she may escape the ravages of Climate Change. But that person’s children very probably won’t and his/her grandchildren and future generations, along with nature, almost certainly won’t.

What worries James Hansen most are positive feedbacks. To date, we humans have been the cause of the intensification of the conditions mentioned above. We burn coal, oil and natural gas, producing carbon dioxide, which traps in heat and causes those conditions. But now we are seeing positive feedbacks (A produces B; B intensifies A, A then produces more B, which then produces more A and on and on), of which there are several. One is easy to see: The heat that we produce is causing the Arctic sea ice to melt, removing the shiny white mirror that reflects most of the incoming rays of the Sun back out into space. Now, in place of that white surface, we have a dull blue ocean that absorbs most of those rays, warms up and causes more melting of the ice, which produces more warming, and on and on. A similar process is at work for methane, another potent greenhouse gas, frozen in the Arctic tundra and in icy ‘clathrates’ below the sea. Those are just two of several such feedbacks. Destruction of the Amazon rainforests is a third. Rainforest vegetation would normally absorb carbon dioxide; but when that vegetation is removed, the dark surface of the Earth reflects the heat back into the atmosphere.

What scientists fear is that at a certain stage in these processes, our input will no longer be needed and the process will continue to progress of its own accord (tipping points). At which point there will be nothing that we can do. Cutting back on the production of greenhouse gases won’t have any effect. All we will be able to do will be to stand by and watch, and regret the departure of the planet that we once knew, taking us and our loved ones, along with much of non-human life, with it.

The composition of the atmosphere is changing towards conditions that have not been experienced for millions of years, so we are headed for unknown territory, and uncertainty is large. The climate system involves many competing processes that could switch the climate into a different state in a relatively short amount of time once a threshold has been exceeded.

The obvious question is: how are we humans reacting to these current conditions and the grim prospects of their worsening? Judging by what we are doing now and have been doing in the past two centuries, prospects for the future are bleak.

**Elizabeth Kolbert in *Field Notes from a Catastrophe* 2006:** “As the effects of global warming become more and more difficult to ignore, will we react by finally fashioning a global response? Or will we retreat into ever narrower and more destructive forms of self-interest? It may seem impossible to imagine that a technologically advanced society could choose, in essence, to destroy itself, but that is what we are now in the process of doing.”

**James Hansen in *Storms of My Grandchildren* 2009:** “The world is in imminent peril. We now have clear evidence of the crisis, based upon increasingly detailed information about how Earth responded to perturbing forces during its history (very sensitively, with some lag caused by the inertia of massive oceans) and by observations of changes that are beginning to occur around the globe in response to ongoing climate change. The startling conclusion is that the continued exploitation of all fossil fuels on Earth e.g. tar sands in Canada, threatens not only the survival of humanity, but also that of the other millions of species on the planet – and the timetable is shorter than we thought.”

***The Nation* 2/24/14:** “On December 3, 2013, James Hansen and seventeen co-authors released a study confirming that the United Nations-approved 3.6° F ceiling has no real basis in science, only in politics, and would itself set in motion ‘disastrous consequences’ beyond humanity’s control. Accordingly, according to the study, we should do everything we can to stay as close as possible to a ceiling of 1.8° F. Given that we’ve already warmed about 1.6° F in the past 100 years, (with another 1.6° F ‘in the pipeline’, due to the time-lag for emitted carbon dioxide to take effect), you would be correct in concluding that the time frame in which to act is vanishingly short – and that the scale of action required is vanishingly large. On our current trajectory, with global emissions still rising, we’re headed to at least 7.2° F this century. Even to have a shot at the 3.6° F goal, global emissions must peak by 2020, and then plummet to near zero by mid-century.”

Four reasons for the opposition to the conservation of energy and the use of renewables (wind, solar, hydro, geothermal) needed to halt and reverse Climate Change:

- Group I - those who reap immense profits from the burning of fossil fuels e.g. oil, coal and gas companies. They are promoting ever more such burning and doing everything possible to thwart the efforts of those who oppose that burning. For them, money is first; money is second; money is third; money is everything. The common good is a meaningless concept. Their watchword is: What’s good for me and all the other superrich now?
- Group II: those in government who are paid to oppose any governmental actions to move the country away from the burning of fossil fuels. The Koch Brothers own millions of acres of tar sand in Alberta and stand to reap billions of dollars in profits from mining and shipping oil by the Keystone Pipeline. They have paid over \$50 million to members of Congress.
- Group III - those who lead comfortable lives made possible by the burning of fossil fuels. They are unwilling to expend the time and energy needed to radically reduce the burning. They deceive themselves into believing that they care.
- Group IV: those who are misinformed by Group I’s massive propaganda effort.

And thus we come to the most important challenge of our time: How can and should we grapple with these harsh realities, these grim prospects? Where does hope lie?

It would be good if the answer were simple and easy, but it isn't. It's hard, and it's time-consuming. It starts with the realization that a strong force, in this case the four Groups above, taken together, can be overcome only by a stronger force.

Since a few of us cannot transform the entire country, we must reach out to and attract great numbers of the currently uninvolved. Which process must be effective, permanent and constantly evolving. If one of these is lacking, we shall be lost.

The primary constituent elements of our effort:

- It needs to bring participants together into Small Reflection/Action Groups, for the sake of mutual encouragement and support, with all of these Groups across the country working together. If we are all alone and isolated, the effects of our activities are radically diminished.
- It needs to enable the participants to use their economic and political power to bring the U.S. to undertake and sustain a crash program for conservation and renewables, similar in magnitude to that at the start of World War II.
- It needs to involve churches, schools, Organized Labor, community groups, businesses, service organizations, individuals etc. in activities that promote conservation and renewables.
- It needs to bring each participant to modify her/his personal lifestyle to make as great a contribution as possible to the task of countering the advance of Climate Change.

## Part II The Need for Small Groups

Rich and powerful corporations and individuals run the country. **Thomas Dye in *Who's Running America***: "They control the government, the banks, insurance companies, foundations, the prestigious law firms, the large investment houses, the media, the universities, the local and state police, the military, the NSA, CIA and FBI - virtually everything that has any effect on their profits. A few thousand individuals out of 300 million Americans decide about war and peace, wages and prices, consumption and investment, employment and production, law and justice, taxes and benefits, education and learning, health and welfare, advertising and communication, life and leisure."

Their primary goal is to maximize their wealth and power, using every means possible, stopping at nothing. Anyone or anything that gets in their way is neutralized or eliminated.

Anyone who is in doubt about their willingness and ability to cast aside anything and anyone who stands in their way, and about what is in store for American society unless effective resistance materializes, needs only to look at their record in the Third World. **Michael Parenti in *Democracy for the Few***: "Over the past five decades, democratically elected reformist governments in Guyana, the Dominican Republic, Brazil, Chile, Uruguay, Syria, Indonesia, Greece, Argentina, Bolivia, Haiti and numerous other nations were overthrown by militaries that were funded and aided by the U.S.

"In pursuit of counterrevolution and in the name of freedom, U.S. forces or U.S.-supported forces slaughtered 2,000,000 North Koreans, 3,000,000 Vietnamese, over 500,000 in aerial wars over Laos and Cambodia, over 1,500,000 in Angola, over 1,000,000 in Mozambique, over 500,000 in Afghanistan, 500,000 to 1,000,000 in Indonesia, 200,000 in East Timor, 100,000 in Nicaragua, over 100,000 in Guatemala, plus an additional 40,000 disappeared, over 700,000 in Iraq, mostly children, over 60,000 in El Salvador, 30,000 in Argentina, 35,000 in Taiwan, 20,000 in Chile, and many

thousands in Haiti, Panama, Grenada, Brazil, South Africa, Western Sahara, Zaire, Turkey and many other countries.”

Given this complete disdain for human life, it's easy to grasp their willingness to ravage the entire planet in order to increase their profits. In spite of the real prospect of the elimination of much of life on the Earth looming in this century, they rejoice, for their profits are obscenely great today, and profit today is all that matters. The only question of any consequence for them is: “What's good for me in the here and now?” The manager of the most profitable U.S. Hedge Fund makes \$2 billion dollars a year, which is \$1,000,000 an hour, while 1.1 million American children are homeless. The average income of each manager of the top 25 Hedge Funds is \$1 billion annually, which amounts to \$500,000 an hour. The six heirs of the Walmart fortune have more wealth than the bottom 47% of the population. Meanwhile, the real median income of full-time male workers is lower than it was 40 years ago and steadily moving downward.

The only hope for counteracting their activities lies in transferring economic and political power to the great majority of the population, in the form of Small Reflection/Action Groups, which foster solidarity, community, persistence and mutual support, and seek above all to create a just, caring and democratic society.

No single Small Group can gain control of the economic and political systems by itself nor will such a goal be achieved in the near future. Until the number of Small Groups is sufficiently large, therefore, each Small Group must work patiently, energetically and persistently, content with whatever success it is able to achieve, in the belief that one day it will be one of a sufficient number of such Groups to transform society.

With respect to Climate Change, the goal for the members of each Small Group at any given time is to use their control of the economic and political systems to effect enough conservation of energy and deployment of renewables to halt and reverse Climate Change. These two changes will flow from:

- A crash program by the federal government spending billions and billions of dollars to promote conservation and renewables, comparable to the U.S. crash program at the outset of World War II to place American industry on a war footing. This is so central and so essential that every Small Group should expend much time and energy to achieve it.
- Actions of similar magnitude by individuals, organizations, schools and companies.

The members of the Small Groups work to achieve their objectives by:

- Keeping abreast of current economic, environmental and political developments.
- Encouraging and assisting each other to remain true to their core ideals and beliefs.
- Using every means to press elected representatives on all three levels of government (national, state and local) to promote economic and environmental justice, in accordance with the Small Group's values and convictions. Electing new candidates who will operate in this manner.
- Publicizing the activities of elected officials and corporations, especially as they bear upon economic and environmental justice.
- Using every means to influence companies to operate in an economically and environmentally just manner, by patronizing 'good' companies - ones that operate in an economically and environmentally just manner - and boycotting 'bad' companies - ones that don't so operate.
- Starting democratically-run, worker-owned companies that operate in an economically and environmentally just manner, the best examples of which are the Mondragon Cooperatives in Spain, started in 1956 by a Catholic priest with only five workers, but whose workers now

number over 85,000, all of whom earn not the minimum wage but a living wage and all of whom have an equal say in the operations of the Cooperatives. Check out their website.

- As far as possible creating local self-reliance with respect to housing, jobs, transportation, energy, food, education, health care and other basic needs, remaining faithful to principles of economic and environmental justice.
- Constantly reaching out to as many people as possible outside of their Small Group in order to invite/encourage/assist them to form new Small Groups.
- Obtaining information from and working with national and local organizations, and focusing on conditions of their choice – conservation and renewables, the Keystone Pipeline, Transition Towns, the Oberlin Project, fracking, divestment from oil, coal and gas stocks, personal lifestyle changes, preservation of forests, wildlife and ecosystems, clean and safe water and air, and other relevant issues. The Coalition will take in information from every Small Group and from established economic, political and environmental organizations, and funnel that information to all of the participating Small Groups.
- Obtaining information from and working with national and local organizations, and focusing on issues that are not in themselves environmental but affect Climate Change, such as democracy, universal health care, the unjust distribution of wealth and income, both in the United States and in Third World countries, U.S. imperialism, the Citizens United decision, worker-owned cooperatives, campaign finance reform, taxation, the assault on Organized Labor, gerrymandering etc.
- This wide variety of focuses will not hinder the overall effectiveness of the Small Groups because the great number of members of the Small Groups will provide them with enough economic and political power to grapple effectively with all of these conditions.

In the early stages, the results of the activities of the Small Groups will in fact be minimal, but as their numbers grow, the effectiveness of their activities will grow, until they gain control of the political and economic processes, and find themselves with enough economic and political power to halt and reverse Climate Change and at the same time create a just, caring and democratic society.

Of course, the Small Groups will differ in size, experience, knowledge, resources and interests. All of which will influence their choice of activities at any given time.

***State of the World 2013:*** “Toward the end of his life, historian Lewis Mumford concluded that the only way out of this conundrum is a steady withdrawal from the megamachine of technocratic and corporate control. He did not mean community-scale isolation and autarky. But rather more equitable, decentralized and self-reliant communities that meet a significant portion of their needs for food, energy, shelter, waste cycling and economic support. He did not propose secession from the national and global community but rather withdrawal from dependence on the forces of oligarchy, technological dominance and zombie-like consumption. Half a century later, that remains the most likely strategy for building the foundations of democracies robust enough to see through the tribulations ahead.

“In other words, the alternative to a futile and probably bloody attempt to forcibly redistribute wealth is to spread the ownership of economic assets throughout society. We know that revitalization of local economies through worker-owned businesses, local investment and greater local self-reliance is smart economics, wise social policy, smart environmental management, and a solid foundation for both democracy and national reliance.

“Simultaneously, and without much public notice, there have been dramatic advances in ecological design, biomimicry, distributed renewable energy, ecological engineering, transportation infrastructure, permaculture, and natural systems agriculture. Applied systematically at community, city and regional scales, ecological design opens genuine possibilities for greater local control over energy, food, shelter, money, water, transportation and waste cycling. It is the most likely basis for revitalizing local economies powered by home-grown efficiency and locally accessible renewable energy while eliminating pollution, improving resilience and spreading wealth. Fifty years ago, Mumford’s suggestions seemed unlikely. But in the years since, local self-reliance, Transition Towns, and regional policy initiatives are leading progressive changes throughout Europe and the United States, while central governments have been rendered ineffective.

“In the long emergency ahead, the challenges to be overcome are first and foremost political, not technological or economic. They are in the domain of governance where the operative words are ‘we’ and ‘us’, not those of markets where the pronouns are ‘I’, ‘me’ and ‘mine’. At issue is whether we have the wherewithal, wisdom and foresight to preserve and improve the human enterprise in the midst of a profound human crisis. Any chance for us to come through the trials of climate destabilization in a nuclear-armed world with 10 billion people by 2100 will require that we soon reckon with the thorny issues of politics, political theory and governance with wisdom, boldness and creativity.”

### **Part III Understanding the Economy, the Government and Climate Change**

Each Group will purchase a number of the books listed here and create a small library. When the Group selects a certain topic for discussion, the books will be in the hands of Group members, who will carefully read about that topic in their books and be prepared to insert information from the books into the discussion.

Similarly, whenever a Group member notices a relevant and significant article in a website, newspaper or periodical, he/she will retain the article and be prepared to inject into the discussion information from that article.

#### **The Economic and Political Systems**

Recent books for the Group to read and discuss include:

- *Aftershock: The Next Economy and America’s Future* by Robert Reich
- *The Betrayal of the American Dream* by Donald Barlett and James Steele
- *Dollarocracy: How the Money and Media Election Complex is Destroying America* by John Nichols and Robert McChesney
- *Freeforall: America, Free Markets and the Sinking of the World Economy* by Joseph Stiglitz
- *Obama’s Economy: Recovery for the Few* by Jack Rasmus
- *The Price of Inequality: How Today’s Divided Society Endangers our Future* by Joseph Stiglitz
- *Winner-Take-All Politics: How Washington Made the Rich Richer and Turned its Back on the Middle Class* by Jacob Hacker and Paul Pierson
- *Who Stole the American Dream* by Hedrick Smith

#### **Climate Change: Nature, Causes and Effects**

Recent books for the Group to read and discuss include:

- *Consumers Guide to Effective Environmental Choices: Practical Advice from the Union of Concerned Scientists* by Michael Brower and Warren Leon
- *Dire Predictions: Understanding Global Warming, the Illustrated Guide to the Findings of the IPCC* by Michael Mann and Lee Kump
- *Eaarth: Making a Life on a Tough New Planet* by Bill McKibben
- *Earth: The Operator's Manual* by Richard Alley
- *Field Notes from a Catastrophe: Man, Nature and Climate Change* by Elizabeth Kolbert
- *The Green Family Book of Household Solutions* by Doug Donaldson
- *Green Living: The E Magazine Handbook for Living Lightly on the Earth*
- *The Rough Guide to Climate Change: The Symptoms, the Science, the Solutions* by Robert Henson
- *The Sixth Extinction* by Elizabeth Kolbert
- *State of the World: Is Sustainability Still Possible?* by The Worldwatch Institute
- *Storms of My Grandchildren: The Truth about the Coming Climate Catastrophe and Our Last Chance to Save Humanity* by James Hansen
- *A Summary of the Current Climate Change Situation* by the Grassroots Coalition (free by email)
- *Sustainable Planet: Solutions for the Twenty-first Century* by Juliet Schor and Betsy Taylor
- *World on the Edge: How to Prevent Environmental and Economic Collapse* by Lester Brown
- *You Can Prevent Global Warming* by Jeffrey Langholz and Kelly Turner
- *Common Dreams* is not a book. It's a website which every day contains many articles by progressive authors on the economy and the environment
- James Hansen also has a website, which is possibly more useful than any of the above, except his book.

In the discussions, it's imperative that the Group spends considerable time on:

- How their core values and beliefs relate to Climate Change.
- Control of the economic and political systems by rich and powerful corporations and individuals; the effects of that control on humanity and the environment; and effective means to transfer that control into the hands of others.
- The nature and causes of Climate Change and its effects, both present and future.
- How to maximize the conservation of energy.
- How to maximize the use of renewable sources of energy.
- How to stop the production of carbon dioxide and the other greenhouse gases.

## **Part IV Work toward the Realization of Basic Goals**

### **A Process to Get Additional Small Groups Started**

**Identify groups which are currently working on injustices of any kind.** Make a presentation to them and invite them to allocate a portion of their time to Climate Change, using these *Guidelines*. That these groups allocate a small portion of their efforts to Climate Change is a key element in our plan to place economic and political power in the hands of as many people as possible who will use that power to create a just, caring and democratic society. We can gather in the necessary numbers to halt and reverse Climate Change if all of the members of all operating groups will utilize a small portion of their time and energy for addressing Climate Change, while continuing to work on their own

special interests. The other key element consists in drawing in those not currently working on peace and justice issues – see below.

**Identify existing groups which are not currently working for peace and justice** e.g. churches, high school and college groups, community groups, political clubs, service groups such as the Kiwanis Club, the Elks Club, the Lions Club. Make a presentation to them about Climate Change and invite those who are interested to form Small Groups. Invite and assist those Groups to use the *Guidelines* to address Climate Change, and to obtain resources and contacts to work on any other issues of concern to them. The same rationale expressed above applies here. If any of these Groups wish to work on justice issues in addition to Climate Change, you should urge them to always use a portion of their time for Climate Change.

One of the most fruitful groups is churches. By speaking at all the Masses/Services at just one church on a weekend, one can reach thousands of people. Sign up those who are interested after the Masses/Services and invite them to return one evening to meet with you to discuss forming into a Small Group. Make it clear that Climate Change is supremely relevant to their Faith. Don't be upset if some don't agree with you. And also don't be upset if the percentage who come to the evening meeting is small.

Another fruitful group is universities. We've been providing information to Catholic Campus Ministers, and even traveling to distant cities to meet with them, asking them to help us make contact with students with minimal results so far. Another approach in a university is appropriate clubs such as the environmental club, the social justice club, the Democratic club or the political science club. A third approach is to identify sympathetic faculty who will give you all or part of a class.

**Reach out to: uninvolved people** – friends, neighbors, relatives, business associates, casual acquaintances, as well as the general public. Invite them to come together to learn about Climate Change and then to form into a Small Group, using these *Guidelines*, as described above. Use whatever forms of advertising you can.

**Reach out to as many as possible of those who express an interest in ongoing activities of your Small Group.** Invite them in a warm, friendly way to come to your next meeting. Bring flyers to your activities and meetings for just that purpose.

**Reach out to any groups that are already working on Climate Change.** Explore ways of collaborating with them.

Periodically, representatives of all the involved groups meet to discuss how they can best work together on Climate Change, as well as on other forms of injustice.

The members of all of the participating groups in the country will eventually be so numerous, as a result of 1) unifying the currently involved and 2) enlisting the uninvolved, that they will possess enough economic and political power to prevail in all the issues that concern them.

### **Radically Increase the Conservation of Energy**

If there is any hope of halting and reversing Climate Change, a major focus on conservation is absolutely necessary, most importantly a crash program by the federal government, working with state

and local governments, similar in magnitude to that in the days soon after Pearl Harbor. The job of each Group therefore is to press their elected representatives – federal, state and local - to initiate and intensify such a program. Their job is to learn what is going on, what should be going on but is not, and engage in activities that press elected representatives to:

- Provide valid information to the public.
- Mandate far better mileage for cars, trucks, airplanes, trains, ships.
- Provide funding for all-electric vehicles and for improved travel by train.
- Provide funding for mass transit.
- Provide funding to eliminate urban sprawl.
- Eliminate coal-fired power plants first, and minimize the use of oil and natural gas second.
- Enact legislation and provide far greater funding for the development of renewables.
- Enact legislation and provide far greater funding for conservation in new and existing buildings.
- Enact legislation that transforms agriculture.
- Enact a tax on carbon.

### **Transportation**

It is clear from the two examples below that government is capable of radically increasing the extent of conservation of energy in the area of transportation.

**Wikipedia 2014:** “Two examples of the ability of the federal government to influence emissions: “Cash for Clunkers – the Car Allowance Rebate System. This was a \$3 billion U.S. federal scrappage system intended to provide economic incentives to U.S. residents to purchase a new, more fuel-efficient vehicle when trading in a less fuel-efficient vehicle. The program was promoted as providing stimulus to the economy by boosting auto sales, while putting safer, cleaner and more fuel-efficient vehicles on the roadways.

“The Department of Transportation (DoT) reported that the program resulted in 690,114 dealer transactions submitted requesting a total of \$2,877 billion in rebates. The DoT also reported that the average fuel efficiency of trade-ins was 15.8 mpg compared to 24.9 mpg for the new cars purchased to replace them, translating to a 58% fuel efficiency improvement.”

**Editor’s Note.** To see what Detroit could do if it wished, consider the fact that John Conner, who assembled this document, has always driven Ford Escorts. The current one, a 1999 Ford Escort, averages 42 mpg. The only thing unusual about it is that it is a stick shift and has five forward speeds. This means that 15 years ago the Ford Motor Company was capable of manufacturing cars that got over 40 mpg.

“Corporate Average Fuel Economy (CAFÉ): Regulations in the United States, first enacted by Congress in 1975, in the wake of the Arab Oil Embargo. Intended to improve the average fuel economy of cars and light trucks, vans and SUVs sold in the United States. Historically, it is the sales-weighted mean fuel economy, expressed in miles per U.S. gallon, of a manufacturer’s fleet of current model year passenger cars and light trucks with a gross vehicle weight rating of 8,500 pounds or less, manufactured for sale in the United States. If the average fuel economy of a manufacturer’s annual fleet of vehicle production falls below the defined standard, the manufacturer must pay a penalty. In addition, a Gas Guzzler Tax is levied on individual passenger car models that get less than 22.4 miles per U.S. gallon.

“The on-road vehicle fleets in the United States and Canada have the lowest overall average fuel economy among first-world nations: 25 miles per U.S. gallon in the United States, versus 45 miles per U.S. gallon in the European Union and higher in Japan. Despite general opinion that larger and heavier vehicles are safer, the U.S. traffic fatality rate, and its trend over time, is worse than that of other first world nations. In 2002, the National Academy of Sciences reported that in the absence of CAFÉ, and with no other fuel economy regulation substituted, motor vehicle fuel consumption would have been approximately 14 percent higher than it actually was in 2002.

“Historically, there have been three distinct periods of fuel economy change:

- From 1979 to 1982 the fuel economy rose as the CAFÉ standard rose and the price of fuel increased.
- From 1984 to 1986 the fuel economy rose as the CAFÉ standard rose and the price of fuel decreased rapidly.
- From 1986 to 1988 the fuel economy rose at a significantly reduced rate and eventually leveled off as the price of fuel fell and the CAFÉ standard was relaxed before returning to 1986 levels in 1990.

“The law of supply and demand would predict that an increase in gas prices would lead in the long run to an increase in the average fuel economy of the U.S. passenger car fleet. But in the case of U.S. passenger cars, U.S. average fuel economy did not fall as economic theory would predict, suggesting that CAFÉ standards maintained the higher fuel economy of the passenger car fleet during the long period from the end of the 1979 energy crisis to the rise of gas prices in the early 2000s.”

## **Buildings**

It is clear from the information below that government can play a major role in effecting energy conservation in buildings of all kinds – residential and commercial.

*State of the World 2013*: “Focusing on the demand side of the energy equation – increasing energy efficiency – can dramatically reduce the relative percentage of emissions created by energy generation, relieve the high demand for increased energy production, and ultimately reduce carbon emissions.

“In the United States, the transportation and industrial sectors each use about one-quarter of all the energy consumed, while buildings consume nearly half in the course of heating, cooling, ventilating and lighting their spaces. Worldwide, buildings account for nearly 16 percent of all energy consumption. And with little of the building stock being built new – from 2% of U.S. commercial floor space to as much as 10% in India – most opportunities to improve efficiency over the next several decades will be in the existing building stock.

“Many countries are taking building efficiency seriously. India and China, for example, have begun paying much closer attention to natural gas and electricity consumption as these begin to play a larger role in their growing built environment. Recently launched efficiency programs, such as energy-conservation building codes and high-performance building standards, are responses to the asymmetrical growth of energy consumption and population growth. In industrial countries, such as the United States, energy consumption rises at an annual rate of 1.3 percent while population grows 0.8 percent; in India, energy consumption is exploding by 4.3 percent a year while population grows 1.3 percent.

“Efficiency is an investment opportunity as well as an environmental one. In July 2009, a study of U.S. building stock found that if off-the-shelf energy efficiency measures were put in place across the sector, total U.S. energy consumption would decline by 23 percent, yielding more than \$1.2 trillion in savings for an investment of \$520 billion. These measures included retrofitting existing buildings with more efficient lighting and updated heating and cooling equipment, as well as insulating walls and roofs, upgrading windows, and optimizing building system controls. The study concluded that installing building insulation would yield greater net savings than solar photovoltaic panels.

“The same study confirmed that energy efficiency strategies routinely yield better emission reduction results than supply-side solutions like solar or wind energy because energy efficiency strategies offer larger carbon savings at lower costs. Energy efficiency, in fact, often wins out as a high-yields financial investment strategy when compared with more traditional investments like stocks or bonds. The average financial return on investment for efficiency is about 20 percent. The energy efficiency performance contracting business has now grown to over a \$5 billion-per-year business.

“Analysts have identified a vast opportunity for the reduction of carbon emissions and economic development. There is a clear business case for renovating buildings to meet high efficiency standards, such as those set by the Energy Star Program of the EPA. An Energy Star leader building is one with an energy efficiency score calculated by EPA to be at least 75, meaning that the building is in the 75<sup>th</sup> percentile for efficient buildings. Despite the recent recession, the number of green buildings in the U.S. has grown significantly. This trend is predicted to continue and to shift even more toward retrofit and renovation projects.

“On average, a 10 percent reduction in energy use in certified buildings results in an increase of 1.1-1.2 percent in market value. The aggregate value of the U.S. commercial green real estate market is expected to grow by 18 percent annually, from \$35.6 billion in 2010 to \$81.8 billion in 2015. And with 1,022,580,000 square feet of floor space in LEED-certified buildings and another 6,996,000,000 square feet registered to become certified, sustainability investments are seen to create even larger market differentiation.

“The commercial real estate market is beginning to take notice of these evolutionary developments toward sustainable buildings. One milestone reached in 2010 was a concerted effort by the Appraisal Foundation - which is responsible for publishing standards, appraiser qualifications and guidance regarding valuation methods and techniques – to begin to account for the increased value imparted to a building by its energy efficiency and sustainability features.

“A second development is the emergence of asset rating. Many building operational rating systems are in use today, such as the EPA’s Energy Star Portfolio Manager, which is used to rate building energy efficiency in percentile terms compared with other similar buildings. These focus on ongoing energy usage with the intent of improving operations. Asset rating, however, focuses on the energy performance of a building’s component parts, enabling direct comparisons of performance among similar buildings regardless of hours of operation, tenant behavior, how well the systems are operated and maintained, and other factors that can have significant impacts on energy consumption. Asset rating of a building’s systems, such as lighting, heating and cooling and insulation, in terms of their energy efficiency, offers a new way to objectively value property.

“These developments have helped to unlock energy efficiency in commercial buildings. Building owners, in response to seeing value beyond the simple payback from spending less on energy, have started changing the way they evaluate building performance upgrades. Traditionally, owners have

performed straightforward return on investment (ROI) calculations to show how energy efficiency measures can repay an investment, and this has been the tool of choice for evaluating whether to upgrade a building's efficiency.

“ROI calculations are a key part of the evaluation process and often help set priorities for upgrades, but they do not give the whole picture. If an ROI calculation yields a payback period longer than an owner plans to hold on to the building, the incentive for the upgrade disappears. Commercial buildings typically change hands every 2-4 years, which makes the acceptable period fairly short. The owner in these cases usually chooses to implement only efficiency measures with short payback times, thus excluding many options that might yield deeper savings over the life of the building.

“Since green building has caught on, however, and tenant demand for sustainable buildings has increased, many commercial building owners have broadened their evaluation tools and are using a net present value (NPV) method that takes into account not just payback but total asset value to help them make efficiency upgrade decisions. Because NPV can be realized before and in the sale of a building, owners are now willing to make strategic efficiency upgrades whose payback times extend beyond their terms of ownership.

“A supportive policy framework has grown around the green building movement. In addition to U.S. Department of Energy investments of hundreds of millions of dollars in energy efficiency projects, Obama's Better Buildings Initiative is partnering with the public and private sectors to invest \$4 billion in energy efficiency. And many city and state governments have begun passing energy efficiency legislation.

“According to the Institute for Market Transformation, many local jurisdictions – including Austin, Washington, New York City, Portland OR, San Francisco, Seattle, and the states of Washington and California – now have disclosure policies requiring owners of commercial buildings of a certain size (usually over 5,000 square feet) to report the buildings' annual energy consumption. Thirty-two countries in Europe as well as China and Australia have also adopted disclosure policies. In New York City, commercial buildings over 10,000 square feet are required to undergo an efficiency auditing and evaluation process called retro-commissioning every 10 years to ensure that their owners learn about opportunities for efficiency improvements.

“While it is clear that great environmental benefits can result from these policy changes, the justification for most of the policy programs and legislation has been roots in promoting energy efficiency as a valid tool to drive economic growth. Obama's Better Buildings Initiative “seeks to tap into job creation potential with a suite of policies designed to encourage the pursuit of energy efficiency.” The administration claims the initiative has led to the creation of 144,000 jobs. Many local governments have also been using environmental policy as a tool for boosting economic growth, citing job creation and the value of efficiency as an innovative approach to help balance the books in a struggling economy. A good number of them have undertaken efficiency strategies to reach their climate goals as well: at least 141 U.S. cities have registered Climate Action Plans and more than 1,000 have signed on to the U.S. Conference of Mayors' Climate Protection Agreement.

“Many nations have also instituted green building codes and standards. Between Australia's Green Star Program, Canada's Green Globes, China's Three Star Program and Britain's BREEAM program, to name just a few, almost every nation has begun requiring some level of sustainable building be incorporated into their built environment in the last 10 years.

“The untapped energy savings waiting to be harvested from existing building stock are vast. And while certain barriers still block this harvest, it is clear from the private and political support for sustainable buildings that an energy-efficient future is good for everyone. While realizing economic savings and improving the world’s well-being through a sustainable built environment, the problems of excessive energy consumption and greenhouse gas emissions can be addressed. Focusing on energy efficiency and creating sustainable buildings is essential to mitigate environmental risk, create long-standing jobs, sustain local governments, and help design a future that leverages waste to prosperity.”

**Wikipedia 2/26/14:** “The term passive house refers to a rigorous, voluntary standard for energy efficiency in a building, reducing its ecological footprint. It results in ultra-low energy buildings that require little energy for space heating or cooling. The standard is not confined to residential properties. Several office buildings, schools and a supermarket have also been constructed to the standard. Passive design is not an attachment or supplement to architectural design, but a design process that is integrated with architectural design. Although it is mostly applied to new buildings, it has also been used for refurbishments.

“Estimates of the number of Passivhaus buildings around the world in late 2008 ranged from 15,000 to 20,000 structures. As of August 2010, there were approximately 25,000 such certified structures of all types in Europe, while in the United States there were only 13, with a few dozen more under construction. The vast majority of passive structures have been built in German-speaking countries and Scandinavia.

“Qualified buildings are able to dispense with conventional heating systems. While this is an underlying objective of the Passivhaus standard, some type of heating will still be required and most Passivhaus buildings do include a system to provide supplemental space heating. This is normally distributed through the low-volume heat recovery ventilation system that is required to maintain air quality, rather than a conventional high-volume forced-air heating system.

“In Passivhaus buildings, the cost savings from dispensing with the conventional heating system can be used to fund the upgrade of the building envelope and the heat recovery ventilation system. With careful design and increasing competition in the supply of the specifically designed Passivhaus building products, in Germany it is now possible to construct buildings for the same cost as those built to normal German building standards. A number of architects design buildings that use the ground under the building for massive heat storage to shift heat production from the winter to the summer. Some buildings can also shift cooling from the summer to the winter.

“Passive solar building design and energy-efficient landscaping support the Passivhaus energy conservation and can integrate them into a neighborhood and environment. The architects use passive solar building techniques; where possible, buildings are compact in shape to reduce their surface area, with principal windows oriented toward the equator, to maximize solar gain. However, the use of solar gain, especially in temperate climate regions, is secondary to minimizing the overall house energy requirements. In climates and regions needing to reduce excessive summer passive solar heat gain, whether from direct or reflected sources, trees, attached trellises with vines, vertical gardens, green roofs and other techniques are implemented.

“Passivhaus buildings employ superinsulation to significantly reduce the heat transfer through walls, roof and floor compared to conventional buildings. A disadvantage resulting from the thickness of wall insulation required is that, unless the external dimensions of the building can be enlarged to compensate, the internal floor area of the building may be less compared to traditional construction.

Windows are manufactured with exceptionally high R values. These normally combine triple-pane insulated glazing, low emissivity coatings, sealed argon or krypton gas filled with inter-pane voids and warm-edge insulating glass spacers, with air-seals and specially developed thermally-broken window frames.

“Building envelopes are required to be extremely airtight compared to conventional construction. Passivhaus is designed so that most of the air exchange with exterior is done by controlled ventilation through a heat-exchanger in order to minimize heat loss, so uncontrolled air leaks are best avoided. The Passivhaus makes extensive use of insulation which usually requires a careful management of moisture and dew points. This is achieved through air barriers, careful sealing of every construction joint in the building envelope, and sealing of all service penetrations.

“Use of passive natural ventilation is an integral component of Passivhaus design where ambient temperature is conducive – either by singular or cross ventilation, by a simple opening or enhanced by the stack effect from smaller ingress with larger egress windows and/or clerestory-operable skylight.

“Where ambient climate is not conducive, mechanical heat recovery ventilation systems, with a heat recovery rate of over 80% and high-efficiency electronically-commutated motors (ECM), are employed to maintain air quality, and to recover sufficient heat to dispense with a conventional central heating system. Since passively designed buildings are essentially air-tight, the rate of air change can be optimized and carefully controlled at about 0.4 air changes per hour.

“Some builders promote the use of earth warming tubes. These are buried in the soil to act as earth-to-air heat exchangers and pre-heat the intake air for the ventilation system. In cold weather, the warmed air also prevents ice formation in the heat recovery system’s heat exchanger.

“In addition to using passive solar gain, Passivhaus buildings make extensive use of their intrinsic heat from internal sources. – such as waste heat from lighting, white goods (major appliances) and other electrical devices, as well as body heat from the people and other animals inside the building. This is due to the fact that people, on average, emit equivalent to 100 watts each of radiated thermal energy.

“Together with the comprehensive energy conservation measures taken, this means that a conventional central heating system is not necessary. Instead, a Passivhaus sometimes has a dual-purpose 800 to 1,500 watt heating and/or cooling element integrated with the supply air duct of the ventilation system, for use during the coldest days. It is fundamental to the design that all the heat required can be transported by the normal low air volume required for ventilation. The air heating element can be heated by a small heat pump, by direct solar thermal energy, geothermal solar, or simply by a natural gas or oil burner. In some cases, a micro-heat pump is used to extract additional heat from the exhaust ventilation air, using it to heat either the incoming air or the hot water storage tank. Small wood-burning stoves can also be used to heat the water tank.

“Typically, a Passivhaus features:

- Fresh, clean air. This implies careful selection of interior finishes and furnishings, to minimize indoor air pollution from VOCs. This can be counteracted somewhat by opening a window for a very brief time, by plants and by indoor fountains.
- Because of the high resistance to heat flow, there are no ‘outside walls’ which are colder than other walls.

- Homogeneous indoor temperature. It is impossible to have single rooms at a different temperature from the rest of the house. Bedroom windows can be cracked open slightly to alleviate this.
- Slow temperature changes. With ventilation and heating systems switched off, a Passivhaus typically loses less than 1 degree F per day in the winter, stabilizing at around 59 degrees F in the central European climate.
- Quick return to normal temperature. Opening windows or doors for a short time has only a limited effect. After they are closed, the air very quickly returns to the ‘normal’ temperature.”

### **Personal Lifestyle Changes**

Information on various forms of conservation in homes, vehicles, cities and counties, agriculture etc. can be found in these books:

- *Consumers Guide to Effective Environmental Choices: Practical Advice from the Union of Concerned Scientists* by Michael Brower and Warren Leon
- *The Green Family Book of Household Solutions* by Doug Donaldson
- *Green Living: The E Magazine Handbook for Living Lightly on the Earth*
- *Sustainable Planet: Solutions for the Twenty-first Century* by Juliet Schor and Betsy Taylor
- *You Can Prevent Global Warming* by Jeffrey Langholz and Kelly Turner

And useful information can also be found in Section II below, which describes current activities by existing Small Groups and companies. Contact them for further information. In addition, also in Section II are suggestions for working with Congress.

**Bill McKibben in *Eaarth*:** “Job one is conservation. The numbers are huge. The consulting firm McKinsley estimated in 2008 that existing technologies could cut world energy demand 20 percent by 2020. To understand why, tour a typical home in your neighborhood. Maybe there’s no insulating blanket around the water heater, which is turned so high that the occupants need to cut the temperature with cold water when they turn on the shower. Videogame consoles can use as much juice as two refrigerators when they’re left on. This list goes on a long time – we’re energy wastrels. Amory Lovins recently calculated that Americans could, relatively cheaply, save half the oil and three-fourths of the electricity they use. DuPont has managed to cut energy use 6 percent a year since 2000 by focusing on efficiency. That means it’s using half of what it used to.

“Nine hundred American cities have pledged to meet the Kyoto targets, and some have succeeded. Portland, Oregon managed to cut per capita carbon emissions by more than 10 percent. City leaders looked around and figured out what made sense: cheap bus passes for city employees, 750 miles of bike paths. But it’s not all government. A local group hands out doughnuts and coffee to bicyclists one day a month as they cross the city’s bridges. Another group specializes in ‘intersection repair’ – cobblestoning intersections, painting them bright colors, building sculptures on the corner. Cars slow, foot traffic increases, neighborhoods start to cohere instead of sprawl.”

James Hansen below says that in recent years energy consumption has increased significantly in developing countries, because both the governments and the people want to see their standard of living rise and they see the burning of fossil fuels as the only way to achieve that, although they are making every effort to grow renewables; and in First World countries energy usage has leveled off, primarily because of growth in nuclear power and the outsourcing of manufacturing to Third World countries.

***The Rough Guide to the Energy Crisis* by David Buchan 2010:** “In terms of time, it’s today’s generation that will have to pay the cost of an emissions reduction that will largely benefit future generations. The four-or five-year electoral cycle in democratic countries is far too short to take this into consideration, favoring policies that will appeal to voters making decisions in the here and now.”

“There is also a geographical mismatch. Generally, the industrialized countries most responsible for the build-up of greenhouse gases are not those feeling the first effects of climate change, which have mainly been felt in poorer developing countries. Americans, for instance, might be more motivated to cut their high-level emissions if they were as generally threatened by rising sea levels as Bangladesh. Rich nations are also better able to defend themselves against extreme weather conditions that afflict them. But there are additional, specific reasons for inertia when it comes to changing energy systems.

“The longevity of energy-hungry commodities and buildings provides few opportunities for replacement with more efficient equipment or buildings. According to some averages worked out by the International Energy Agency, housing stocks last anywhere between 40 and 400 years, industrial buildings between 10 and 150 years, large hydropower plants between 60 and 120 years, coal-fired plants from 40 to 60 years, nuclear reactors over 40 years, and power grids and gas pipelines around 40 years. At the top end of the product range are aircraft, the design of which can remain unchanged for more than 50 years.

“According to the UK’s Energy Saving Trust, the average life of a refrigerator is 12.8 years, and that of a freezer between 15 and 17 years. The only electrical item we replace very often is the incandescent light bulb, and that is changing.”

“Reluctance to change personal behavior is another factor. Some energy-saving measures do not require any behavioral change. Installing a more efficient boiler or buying a hybrid car does not involve living in a colder house or travelling less. Turning the heating thermostat down in winter or the air-conditioning thermostat up in summer merely requires the minor sacrifice of adding or subtracting a layer of clothing. But any restriction on personal travel tends to be regarded as a major sacrifice. This is why people react with panic to any form of gas rationing or shortages.

“Another aspect of the mobility revolution is air travel, which budget airlines have made affordable to many people. One example of the particular store that even environmentalists set on maintaining their mobility was brought to light by a 2007 survey by the British Market Research Bureau. This surveyed neatly fifty thousand people, over two years, by asking them to fill out a questionnaire with fifteen measures of consumer behavior, such as ‘green’ product purchases and subscriptions and donations to ‘green’ groups. Those exhibiting five or more of these fifteen lifestyle traits were rated as ‘Active Environmentalists’. Over 905 of this group said they were ready to pay more for environmentally friendly products, said they were worried about traffic pollution and said people had a duty to recycle. Yet the majority of these Active Environmentalists, who were rated as well-educated, affluent and middle class, and were aged 35 and over, were found to be more likely to fly 3-5 times a year. This is more than the average UK citizen.

“In households, total energy use is on the rise – it rose by fourteen percent between 1990 and 2004. This is because the population is growing and more of us now live in smaller household units. But the new growth factor is the plethora of appliances that now litter our houses.

“It is not so much that individual appliances are so wasteful. Indeed all of the traditional household appliances use energy more efficiently than they used to: the only exceptions being televisions, as

today's large screens use more power. The big five appliances that most people have – fridges, freezers, TVs, washing machines and dishwashers - still account for about half the energy consumption of all household appliances. But this ratio has been declining as smaller gadgets proliferate and push up overall electricity use.

“Growing global ownership of consumer electronics is, in principle, a good thing if it improves people’s welfare and quality of life around the world. Many traditional electronic items are now cheaper to buy and cheaper to run. New refrigerators use much less power than the old models. But new scales are being found for traditional items. The liquid crystal display (LCD) TV screens may use less electricity than the cathode ray tube monitors they are replacing, but they don’t if they are twice the size. Of course, large-screen TVs are not used just for TV broadcasts, but to display video games and DVDs. So it is not surprising that TV sales around the world are actually growing faster than the number of households gaining access to electricity.

“Around one billion people now use a computer. Faster access to the Internet through broadband is high on the political agenda of many governments. Broadband makes it quicker to get a given piece of information off the Internet, but it also makes it more tempting to stay on the Internet longer. New uses for the net proliferate – transmitting music, social networking, free telephony, and processing digital photographs – and so inevitably do the hours spent online and plugged in.

“But what seems particularly wasteful is the number of gadgets left on standby or in sleep mode. It is a mistake to think that standby mode powers nothing but a little red light. Many devices consume between half and two-thirds of their full power on standby. The European Commission estimated that in 2005 the total of 3.7 billion household and office computers and electronic gadgets in use among the 25 countries then in the European Union used 47 terrawatt hours (TWHs) of electricity while they were in standby mode. This standby consumption caused 19 million tons of carbon dioxide emissions. The average household has up to 12 gadgets on standby at any given time.

“Some products require constant power to keep their time clocks running. TV set-up boxes, which are becoming more common, need to have power in order to download information from digital transmissions which update their electronic program guide and software. But in most cases the standby mode is pointless electricity consumption, designed at most to save people a few seconds delay when they start their computers or gadgets up.”

In general, then, look for ways to promote conservation through personal lifestyle changes in the books listed above, on the websites of environmental organizations, and in the accounts below in Section II of activities by local Small Groups, companies and individuals.

In addition, the task of a Small Group is to promote conservation as much as possible:

- In the area of transportation, travel as much as possible by walking, bicycling, car pooling and mass transportation. Take every opportunity to press local, state and federal governments to increase mass transportation.
- In the area of buildings, increase energy efficiency in buildings under your control – home or business or institution.
- In the area of industry not under your control, bring economic and environmental considerations to the attention of those who are in control.

## **Radically Increase Renewable Sources of Energy – Solar, Wind, Hydro, Geothermal**

**State of the World 2013:** “Our fossil-fuel-based economy is environmentally, socially and economically no longer acceptable. Recent increases in the frequency, severity and regional spread of heat waves, droughts, wildfires, storms, floods and other extreme weather events are an early indication of even more damaging climate change impacts to come.

“Although governments across the world have made a commitment to limit Earth’s warming to 3.6 degrees F over pre-industrial levels in order to avoid disastrous climate impacts, current emissions trends put us on a path to much greater warming. Global carbon dioxide emissions from fossil fuel energy combustion, the single largest contributor to greenhouse gases, grew by 34 percent from 2000 to 2010. Leading research institutions estimate that global average surface temperatures will increase by between 2.7 and 6.5 degrees F by 2100, with the most recent estimates projecting that the high end of this warming range is the most probable if no swift action is taken. This warming will affect millions of people through droughts, water stress, decreased agricultural yield, coastal flooding, global species extinctions, resistance to mass migrations, heat waves and the spread of infectious diseases.

“Reliance on unsustainable energy sources is no longer necessary. The transition to a sustainable energy system based on high efficiency and renewable sources, as well as smart grid and storage solutions, is under way. Renewable technologies broke all growth records in recent years. In 2011, new investments in renewables topped those in conventional energy technologies for the first time in modern history. U.S. wind power capacity almost tripled and solar energy jumped ninefold since 2007.

**“These promising trends need to be accelerated if global greenhouse gas emissions are to peak before 2020, which the consensus among climate scientists deems necessary to avoid climate catastrophes.**

### **Recent (2014) Insights on the Need for Renewables from James Hansen A Reality Check**

“The growth of carbon dioxide in the air has accelerated inexorably, as nations use cheap fossil fuels to power their economies. They recognize the threat of potential catastrophic effects, but continue to encourage the fossil fuel industry to extract almost every fossil fuel that can be found, including the most carbon-intensive and dirtiest, such as coal, tar sands and tar shale.

“But if we are to remain a planet closely resembling the one that we know and love, most of the remaining high-carbon fuels – coal and tar sands – must be left in the ground. The world must move rapidly to clean carbon-free energy.

“After the 1997 Kyoto Protocol, carbon emissions and even the growth rate of emissions accelerated. The largest growth of emissions and energy use was in China, lifting several hundred million people out of poverty. Coal use caused most of the emissions growth and is now the source of nearly half of global fossil fuel carbon emissions. Fossil fuels provide more than 85% of the world’s energy. Non-hydro renewable energies provide only about 3% of global energy and 3% of U.S. energy. Thus, it’s a mistake to think that renewable energy is rapidly supplanting conventional energy.

“Sweden has decarbonized its electricity, mainly via the combination of hydropower and nuclear power. With one additional step Sweden can be at or near the low carbon intensity needed to stabilize

climate. The main remaining need is to produce liquid fuels for transportation from electricity or perhaps a breakthrough in battery technology.

“The growth of global carbon emissions in developed countries climaxed in 1970. Energy use in developed countries continued to increase modestly after 1970, but carbon emissions in those countries stabilized, partly because the increased energy was provided mainly by nuclear power, and partly because of outsourcing of manufacturing to developing countries.

“The stark reality is that global energy consumption will continue to rise for decades, because 1) population will reach nine billion before it begins to decline, and 2) the use of energy in the developing world is still rising in its quest to provide a higher standard of living, and 3) in the developed world, there is no indication of a dramatic decline in overall energy use. Small declines in energy use in the developed world so far are a consequence mainly of outsourcing of manufacturing, not low-energy lifestyles.

“Abundant affordable energy is essential to address the world’s economic and environmental problems. Energy is needed to achieve adequate living standards and a stable human population. Economic progress makes it possible to pay attention to the environment. The best hope, therefore, for preserving Earth’s environment and its invaluable abundance of life is through intelligent economic development, and economic development requires a substantial level of affordable energy. If fossil fuels provide the only realistic available path to development and improved living standards, that path surely will be taken.

“Economic growth is needed to provide resources to phase out global poverty and replace high-carbon energy with clean energy sources. Although exponential growth cannot continue for long on a finite planet, we do not have to go back to pre-industrial life styles. The growth rate of world domestic product will decline, and in fact has been declining in recent decades, and it likely will continue to decline in coming decades. In developing countries, however, high growth rates are needed now to end poverty.

“Climate change will hamper economic growth if climate change spirals out of control, but actions required to avert climate change do not need to hamper the economy. Averting climate change requires restricting fossil fuel carbon emissions, but there is no per se restriction on economic development.

“Carbon Emissions = Gross Domestic Product  $\times$  Energy Intensity  $\times$  Carbon Intensity. Energy intensity is the energy used to produce a unit of gross domestic product (GDP). Carbon intensity is fossil fuel carbon emitted per unit energy. Global energy intensity decreased -0.85% per year during 1964-2000 and carbon intensity decreased -0.40% per year. Thus the global GDP growth of +3.52% in 1965-2000, was partially offset by the declines of energy and carbon intensities. Thus we see carbon emissions growth of approximately 119% over 35 years.

“Explosion of coal use in the 21<sup>st</sup> century reversed the downward trend of global carbon intensity. Energy intensity decreases in developed countries were offset by the increasing energy use in developing countries with higher, albeit decreasing, energy intensity. Consequently, despite a global economic crisis within the 2000-2012 period and a global GDP growth rate of about 2.5% a year, fossil fuel emissions increased 3% a year during 2000-2012.

“The seemingly paradoxical result that global energy intensity is barely declining despite large improvements in individual nations is a readily understood consequence of the increasing proportion of

carbon emissions from developing countries. Shifting of manufacturing to developing countries is likely to continue.

“The carbon intensity of China is stubbornly high because of the high proportion of coal in its portfolio. France achieved the greatest reduction of energy intensity by a shift over a 10-year period to nuclear power for 80% of its electricity. French carbon intensity stalled at about half of global carbon intensity, because of fossil fuel use in transportation, heating and manufacturing.

“Skyrocketing global carbon dioxide, increasing 3% a year in the 21<sup>st</sup> century, have led some people to conclude that global warming of several degrees is inevitable. Such pessimism is uncalled for and such defeatism will be unforgivable in the future when our descendants assess what happened.

“The 2009 Copenhagen Accord of the UN Framework Convention on Climate Change affirmed a target of reducing emissions to keep global warming from exceeding 3.6° F relative to pre-industrial times. However this is well into the ‘dangerous’ range that all nations have agreed to avoid. Warming of 3.6° F (2° C) would lead to eventual sea level rise of several yards, extermination of a substantial fraction of species, and extraordinary increases of extreme regional climate anomalies, including heat waves, drought, forest fires, extreme rainfall and floods, and stronger storms.

“Given the 1.4° F warming that has already occurred, the planet’s current energy imbalance, and energy infrastructure in place, it is now practically impossible to keep maximum warming as small as 1.8° F. Such a goal, which is needed to keep global temperature within or very close to the Holocene range to which civilization is adapted, would require reducing fossil fuel emissions about 6% a year. On the other hand, a target of limiting global warming to 2.9° F, the principal requirement being that fossil fuel emissions peak by 2020 and then decline by 2% per year. In addition, a drawdown of 100 gigatons of carbon dioxide via improved agricultural and forestry practices would be required.

“China’s fossil fuel emissions today (26.9%) far exceed those by the United States (14.5 %), and China’s emissions are continuing to increase rapidly, mostly from coal burning. However, climate change is driven by cumulative emissions (China – 10.7% and the U.S. – 26%), as the carbon dioxide from fossil fuels remain in the climate system of the order of 100,000 years. The United States is, by far, the nation most responsible for excess carbon dioxide in the air today.

“The United States has burned not only its share of the global carbon budget, but a large part of the budget belonging to China, India and other countries. So far, humanity has burned about 380 gigatons of carbon. Preserving creation, a planet that continues to look like the one civilization developed in, requires that we limit total fossil fuel emissions to something close to 500 gigatons.

“Because any reasonable goal for limiting climate change obviously requires pulling globally on both the energy intensity and carbon intensity levers, an across-the-board rising carbon fee/tax is required covering all fossil fuels. The fee would be collected by each participating nation at its domestic mines and ports of entry. Products from nations that did not join would be taxed at the border of the importing nation. Exporting participating nations would rebate that amount to their own manufacturers for exports to nonparticipating nations, thus assuring that industry in participating nations suffer no trade disadvantage.

“The fee is uniform, a single number, in dollars per ton of carbon dioxide in the fuel. The public does not directly pay any fee or tax, but the price of the goods they buy increases in proportion to how much fossil fuel is used in their production. Fuels such as gasoline or heating oil, along with electricity made

from coal, oil or gas, are affected directly by the carbon fee, which is set to increase over time. The carbon fee will rise gradually so that the public will have time to adjust their lifestyle, choice of vehicle, home insulation etc., so as to minimize their carbon footprint. 100% of the money collected from the fossil fuel companies at the mine or well is distributed uniformly to the public. Thus, those who do better than average in reducing their carbon footprint will receive more in the dividend than they will pay in the added costs of the products they buy.

“Carbon fee is a progressive tax. The rich will pay much more than the dividend in added costs because they own large houses and fly around the world. Given the current distribution of wealth and lifestyles, about 40% of people will pay more in added costs than they get back in their dividend.

“A rising carbon fee is the essential underlying policy needed to phase down carbon emissions. However, it is not sufficient. Clean energy technologies must be available to replace fossil fuels at a cost not exceeding true fossil fuel cost. True cost includes the externalities, specifically human health and environmental costs of waste products that the fossil fuel industry presently dumps into the atmosphere without penalty. Waste products include not only carbon dioxide, but also black soot, organic carbon and other aerosols and gases that are highly deleterious to human health, agricultural plants and wildlife.

“Electricity is a clean energy carrier that provides a larger and larger portion of energy use in developed countries. ***The crucial requirement for achieving a clean energy future and a stable climate is carbon-free, pollution-free electricity generation.***

“Abundant affordable carbon-free electricity will allow electricity to provide an increasing proportion of energy for transportation and buildings. ***The essential policy action required to achieve increasing use of clean carbon-free energy for transportation and buildings is a rising carbon fee or tax.*** The carbon fee will accelerate efficiency improvements in vehicles and buildings, and it will spur technology and deployment such as improved batteries for electric and hybrid vehicles.

“China is the urgent case. Global annual carbon emissions have increased 2.9 gigatons per year in the 21<sup>st</sup> century. The increase of China’s carbon emissions from 2000 to 2012 constitutes almost 60% of the global increase. If a pathway and requisite technologies are found for China to achieve its development with much lower carbon emissions, that success may affect the next major developing regions such as India, as well as developed countries, which must phase out their fossil fuel emissions in coming decades.

“It is true that China is leading the world in installation of renewable energies. The new fossil fuel energy output in China, mostly coal, exceeded new wind energy by a factor of six and new solar output by a factor of 27. There are many reasons for China and the United States to cooperate in stabilizing climate. China and the U.S. are the source of more than 40% of today’s emissions. The U.S. and China are responsible for much of the excess carbon dioxide in the air today, the U.S. portion more than 25% and China’s more than 10%. Within a few decades China’s contribution is likely to be comparable to that of the U.S. if recent trends continue.

“Cooperation between China and the United States on two vital matters could change the destiny of our planet and our people.

“First, agreement by China and the U.S. on rising internal carbon fees would be the turning point, opening the door to near-global movement toward ascendancy of clean energies. A carbon fee will

drive all of the important tools for reducing fossil fuel use: energy efficiency, renewable energies and nuclear power.

“Second, the U.S. and China should agree to cooperate in rapid deployment to scale in China of advanced, safe nuclear power for peaceful purposes, specifically to provide clean electricity replacing aging and planned coal-fired power plants, as well as averting the need for extensive planned coal gasification in China, the most carbon-intensive source of electricity. China has an urgent need to reduce air pollution and recognizes that renewable energies cannot rapidly provide needed base-load electricity at large scale. The sheer size of China’s electricity needs demands massive mobilization to construct modern, safe nuclear power plants, educate more nuclear scientists and engineers, and train operators of the power plants. Deep nuclear cooperation between China and the U.S. over the next 1-2 decades could produce both 1) base-load electricity in China that allows China’s carbon emissions to peak within a decade and then decline, and 2) an opportunity for both countries to achieve progress in nuclear technology and thus a basis for comparing the merits of the most advanced renewable and nuclear technologies. Failure of the two largest polluters to cooperate, while there is still time to avert disastrous change, would assure that global warming moves well into the dangerous zone.”

## **Solar**

There are two main categories for solar electricity technologies: photovoltaic (PV) modules that convert light directly into electricity, and concentrating solar power systems (CSP) that focus the sun’s heat to drive a steam turbine. Solar PV can be used at any scale, from small-scale electronic appliances to decentralized household rooftop systems, and from installations that power industrial facilities to utility-scale PV farms.

Solar technology costs are falling rapidly. Crystalline silicon PV module costs fell by 70% from 2008 to January 2012 and are forecast to fall by another 30 percent by 2015, without subsidies. PV and CSP installations are now cost-competitive in locations with strong solar potential and relatively expensive alternative power sources – despite distorted prices for fossil fuels that do not reflect their costs to societies. Projects for PV and CSP systems estimate that, averaged over the systems’ lifetimes, generation costs in strong resource areas like the southwestern United States will fall to 6-8 cents per kilowatt-hour in the near to medium term.

Even when greatly limiting the areas for solar energy development to likely developable resources based on cost and location considerations, the potential capacities are estimated at 340 terrawatts (TW) for PV and 240 TW for CSP – much more than projections for energy demand in 2050.

While land use issues must be considered for individual projects, globally the amount of suitable land area does not pose a significant constraint in installing solar equipment. Existing roof area in the United States alone, excluding areas that are shaded or oriented away from the sun, could support over 600 gigawatts of PV electricity generation, more than 20 percent of the country’s current electricity demand.

Today’s utility scale CSP requires between 3.95 and 7.9 acres per megawatt in areas with strong solar resources. Still, land availability does not pose a significant constraint to CSP either. For example, considering only strong physical resources on uninterrupted available land, the American Southwest has almost 7,500 gigawatts of resource potential and could provide more than four times the current electricity generation. While this estimate does not directly consider desert ecosystem impacts, the potential to supply a large share of electricity demand using just a fraction of this land suggests that

harmful effects could be limited. One study found that in meeting 40 percent of global energy demand in 2030 with solar PV and CSP would require only 0.29 percent of the world's land area. As a comparison, 11 percent of global land area is used for crop production, and urban areas occupy 3 percent of land area worldwide.

**Wikipedia 2014:** "Photovoltaics were initially, and still are, used to power small and medium-sized applications, from the calculator powered by a single solar cell to off-grid homes powered by a photovoltaic array. They are an important and relatively inexpensive source of electrical energy where grid power is inconvenient, unreasonably expensive to connect, or simply unavailable. However, as the cost of solar electricity is falling, solar power is also increasingly being used even in grid-connected situations as a way to feed low-carbon energy into the grid."

**World on the Edge by Lester Brown 2011:** "The growth in solar cell production can only be described as explosive. It climbed from an annual expansion of 38 percent in 2006 to an off-the-chart 89 percent in 2008, before settling back to 51 percent in 2009. At the end of 2009, there were 23,000 megawatts of PV installation worldwide, which when operating at peak power could match the output of 23 nuclear power plants.

"On the manufacturing front, the early leaders – the United States, Japan and Germany – have been overtaken by China, which produces more than twice as many solar cells annually as Japan. World PV production has roughly doubled every two years since 2001, and will likely approach 20,000 megawatts in 2010. Germany, with an installed PV power-generating capacity of almost 10,000 megawatts, is far and away the world's leader in installations. The U.S. is fourth. China has only 305 megawatts installed.

"Historically, photovoltaic installations were small-scale – mostly residential rooftop installations. Now that is changing as utility-scale PV projects are being launched in several countries. The U.S., for example, has under construction and development some 77 utility-scale projects, adding up to 13,200 megawatts of generating capacity. Morocco is now planning five large solar-generating projects, either photovoltaic or solar thermal or both, each ranging from 100 to 500 megawatts in size.

"More and more countries, states and provinces are setting solar installation goals. Italy's solar industry group is projecting 15,000 megawatts of installed capacity by 2020. Japan is planning 28,000 megawatts by 2020. California has set a goal of 3,000 megawatts by 2017.

"With installations of solar PV climbing, with costs continuing to fall, and with concerns about climate change escalating, cumulative PV installations could reach 1.5 million megawatts (1,500 gigawatts) in 2020. This estimate may be conservative, because if most of the 1.5 billion people who lack electricity today get it by 2020, it will likely be because they have installed home solar systems. In many cases, it is cheaper to install solar cells for individual homes than it is to build a grid and a central power plant.

"The second, very promising way to harness solar energy on a massive scale is CSP (Concentrated Solar Power), which first came on the scene with the construction of a 350-megawatt solar thermal power plant complex in California. Completed in 1991, it was the world's only utility-scale solar thermal generating facility until the completion of a 64-megawatt power plant in Nevada in 2007.

"Two years later, in 2009, a group of 11 leading European firms and one Algerian firm, announced that they were going to craft a strategy and funding proposal to develop solar thermal generating capacity

in North Africa and the Middle East. Their proposal would meet the needs of the producer countries and supply part of Europe's electricity via undersea cable.

"This initiative, known as Desertec Industrial Initiative, could develop 300,000 megawatts of solar thermal generating capacity. It is driven by concerns about disruptive climate change and by depletion of oil and gas reserves.

"Even before this proposal, Algeria was planning to build 6,000 megawatts of solar thermal generating capacity for export to Europe by undersea cable. The Algerians note that they have enough harnessable solar energy in their vast desert to power the entire world economy. The German government was quick to respond to the Algerian initiative. The plan is to build a 1,900 mile high-voltage transmission line from Adrar deep in the Algerian desert to Aachen, a town on Germany's border with the Netherlands.

"The United States has more than 40 solar thermal power plants operating, under construction, and under development that range from 10 to 1,200 megawatts each. Spain has 60 such plants.

"One of the attractions of utility-scale CSP plants is that heat during the day can be stored in molten salt at temperatures above 1,000 degrees F. The heat can then be used to keep the turbines running for eight or more hours after sunset.

"The American Solar Energy Society notes that solar thermal resources in the U.S. Southwest can satisfy current U.S. electricity needs four times over.

"The pace of solar energy development is accelerating as the installation of rooftop solar water heaters takes off. China now has an estimated 1.9 billion square feet of rooftop solar thermal collectors installed, enough to supply 120 million Chinese households with hot water. With some 5,000 Chinese companies manufacturing these devices, this relatively simple low-cost technology has leapfrogged into villages that do not yet have electricity. For as little as \$200, Chinese villagers can install a rooftop solar collector. Likewise in other developing countries, as well as Europe, California and New York state. Israel, Spain and Portugal mandate that all new buildings have rooftop solar water heaters."

## Wind

***State of the World 2013:*** "Apart from hydroelectric power, wind has been by far the most successful renewable electricity source to date, with 238 GW installed globally by the end of 2011. Wind power is used mostly for centralized utility-scale generation, though smaller-scale applications are gaining popularity for local and decentralized electricity production.

"Wind energy is one of the most economical renewable energy technologies. At attractive locations, it is already fully competitive with fossil fuels. Industry estimates project that the average onshore wind farm will be fully competitive with conventional energy sources by 2016.

"Wind potential estimates at land-based and near-shore locations that have strong resources and are practical for energy development range from 40 to 85 TW, far more than is needed to meet future worldwide energy needs even under business-as-usual demand projections. According to one estimate, meeting half of the world's energy needs in 2030 with wind energy would require about 1.17 percent of global land area, almost all of which would be due to the space needed between turbines. The land use impacts of wind energy can be significantly reduced by using wind-farm land for other purposes

such as agriculture and by siting some wind turbines offshore. Wind energy is the least water-intensive method of energy production, with operational water use largely limited to what is needed to clean the turbines.

**Wikipedia 2014:** “Wind power is the conversion of wind energy into a useful form of energy, such as using wind turbines to make electrical power, windmills for mechanical power, windpumps for water pumping or drainage, or sails to propel ships.

“Large wind farms consist of hundreds of individual wind turbines which are connected to the electric power transmission network. For new constructions, onshore wind is an inexpensive source of electricity, competitive with or in many places cheaper than fossil fuel plants. Small onshore wind farms provide electricity to isolated locations. Utility companies increasingly buy surplus electricity produced by small domestic wind turbines. Offshore wind is steadier and stronger than on land, and offshore farms have less visual impact, but construction and maintenance costs are considerably higher.

“Wind power, as an alternative to fossil fuels, is plentiful, renewable, widely distributed, clean, produces no greenhouse gas emissions during operation and uses little land. The effects on the environment are generally less problematic than those from other power sources. As of 2011, Denmark is generating more than a quarter of its electricity from wind and 83 countries around the world are using wind power to supply the electricity grid. In 2010, wind energy production was over 2.5 percent of total worldwide electricity usage, and growing rapidly at more than 25% per annum.

“Wind power is very consistent from year to year but has significant variation over shorter time scales. As the proportion of windpower in a region increases, a need to upgrade the grid, and a lowered ability to supplant conventional production can occur. Power management techniques such as having excess capacity storage, geographically distributed turbines, dispatchable backing sources, storage such as pumped-storage hydroelectricity, exporting and importing power to neighboring areas or reduced demand when wind production is low, can greatly mitigate these problems.

“Worldwide there are now over two hundred thousand wind turbines operating, with a total nameplate capacity of 282,482 megawatts as of end 2012. The European Union alone has passed some 100,000 MW nameplate capacity in September 2012, while the U.S. surpassed 50,000 MW in August 2012, and China’s grid connected capacity passed 50,000 MW the same month.

“World wind generation capacity more than quadrupled between 2000 and 2006, doubling about every three years. China is now the world leader. At the end of 2012, worldwide nameplate capacity of wind powered generators was 282 GW, growing by 44 GW over the preceding year.

“Compared to the environmental impact of traditional energy sources, the environmental impact of wind power is relatively minor in terms of pollution. Wind power consumes no fuel and emits no air pollution. The energy consumed to manufacture and transport the materials used to build a wind power plant is equal to the new energy produced by the plant within a few months. While a wind farm may cover a large area of land, many land uses such as agriculture are compatible.”

**World on the Edge by Lester Brown:** “Wind is abundant, low-cost and widely distributed. It scales up easily and can be developed quickly. A 2009 survey by the U.S. National Academy of Sciences reports wind-generating potential on land that is 40 times the current world consumption of electricity from all

sources. Between 2000 and 2010, world wind electric generating capacity increased at a frenetic pace from 17,000 megawatts to nearly 200,000 megawatts.

“Texas is the nation’s leading generator of electricity from wind. It has 9,700 megawatts of wind generating capacity online, 370 more megawatts under construction, and a huge amount under development. If all the wind farms projected for 2025 are completed, Texas will have 38,000 megawatts of wind-generating capacity – the equivalent of 38 coal-fired power plants. This would satisfy roughly 90 percent of the current residential electricity needs of the state’s 25 million people.

“In July, 2010, ground was broken for the Alta Wind Energy Center, 75 miles north of Los Angeles. At 1,550 megawatts, it will be the largest US wind farm. It is part of what will eventually be 4,500 megawatts of renewable power generation, enough to supply electricity to some 3 million homes.

“China has enough onshore harnessable wind energy to raise its current electricity consumption 16-fold. Today, most of China’s 26,000 megawatts of wind generating capacity comes from 50-100 megawatt wind farms. Beyond the many other wind farms of that size that are on the way, China’s new Wind Base program is creating seven wind mega-complexes of 10-38 gigawatts each. When completed, these complexes will have a generating capacity of more than 130 gigawatts. This is equivalent to building one new coal plant per week for two and a half years. China is also planning a total of 23 gigawatts of offshore wind generating capacity.

“In Europe, which now has 2,400 megawatts of offshore wind online, wind developers are planning 140 gigawatts of offshore wind generating capacity. There is enough harnessable wind energy in offshore Europe to satisfy the continent’s needs seven times over.

“Denmark obtains 21 percent of its electricity by wind. Three North German states now get 40 percent. Spain gets 14 percent. In Iowa, enough wind turbines came online in the last few years to produce up to 20 percent of that state’s electricity. Turkey issued a request in 2007 for proposals to build wind farms. It received bids to build a staggering 78,000 megawatts, far beyond its 41,000 megawatts of total electrical generating capacity. Ontario has received applications for offshore wind development rights on its side of the Great Lakes that could result in some 21,000 megawatts of generating capacity. Its goal is to eliminate all coal-fired power by 2014.”

## Geothermal

***The Rough Guide to Climate Change* by Robert Hanson 2006:** “The same forces that can blow the top off a volcanic mountainside can also generate electricity. Geothermal power taps into the hot water produced where rain and snowmelt percolate underground to form pools that are heated by adjacent magma and hot rocks. Some of these power plants draw hot water and steam from more than a mile below ground, while others harvest steam that emerges directly at the surface. Either way, a small amount of naturally produced carbon dioxide escapes into the air, but it’s less than 10% of the amount emitted by a standard coal-fired power plant of the same capacity. Binary geothermal plants avoid even these minimal emissions of carbon dioxide by using water from underground to heat pipes that carry a separate fluid. The geothermal water returns to Earth without ever being exposed to the atmosphere.

“More than eight gigawatts of electric capacity are available from geothermal sources worldwide each year, and geothermal plants can run close to their capacity almost 24/7, since their power source doesn’t vary like sunshine and wind do. The best sites for geothermal plants are where continental plates separate or grind against each other, especially around ‘the ring of fire’ that surrounds the

Pacific Ocean. A third of the global total is generated in the U.S., where the world's biggest plant – the Geysers in northern California – provides more than 700 gigawatts of capacity. Other key users of geothermal power are the Philippines, Italy, Mexico, Iceland and Indonesia.

“On a smaller scale, buildings in many locations can draw on the steady temperature of near-surface soil through geothermal heat pump systems, though whether they are cost-effective depends on climate, household size and other factors. These systems rely on air flowing through pipes buried just underground. A heat exchanger pulls up air from the pipes in the winter, when the ground is relatively warm compared to the air above ground. In the summer, the same system pumps warm air downward and replaces it with relatively cool air.”

***World on the Edge* by Lester Brown 2011:** “The heat in the upper six miles of the Earth's crust contains 50,000 times as much energy as found in all of the world's oil and gas reserves combined. Despite this abundance, as of mid-2010, only 10,700 megawatts of geothermal generating capacity have been harnessed worldwide, enough for some 10 million homes.

“Roughly half of the world's installed geothermal generating capacity is concentrated in the United States and the Philippines. Most of the remainder is generated in Mexico, Indonesia, Italy and Japan. Altogether some 24 countries now convert geothermal energy into electricity. El Salvador, Iceland and the Philippines respectively get 26, 25 and 18 percent of their electricity from geothermal power plants.

“The geothermal potential to provide electricity to heat homes and to supply process heat for industry is vast. Among the geothermally rich countries are those bordering the Pacific in the so-called Ring of Fire, including, Chile, Peru, Colombia, Mexico, the United States, Canada, Russia, China, Japan, the Philippines, Indonesia and Australia. As of 2010, there are some 70 countries with projects under development or active consideration, up from 46 in 2007.

“Beyond geothermal electrical generation, up to 100,000 thermal gigawatts of geothermal energy are used directly – without conversion into electricity – to heat homes and greenhouses and to provide process heat to industry. 90 percent of the homes in Iceland are heated with geothermal energy.

“An interdisciplinary team of 13 scientists and engineers assembled by MIT in 2006 assessed U.S. geothermal electrical generating potential. Drawing on the latest technologies, including those used by oil and gas companies in drilling and in enhanced oil recovery, the team estimated that enhanced geothermal systems could help the U.S. meet its energy needs 2,000 times over. The U.S. has more than 3,000 megawatts of existing geothermal electrical capacity and projects under development in 13 states. The stage is set for a geothermal renaissance.

“After two decades of inactivity, Japan, long known for its thousands of hot baths, is again building geothermal power plants. Kenya now has 167 megawatts of generating capacity and is planning 1,200 more megawatts by 2015. It's aiming for 4,000 by 2030.

“Beyond power plants, geothermal (ground source) heat pumps are now being widely used for both heating and cooling. These take advantage of the remarkable stability of the Earth's temperature near the surface and then use that as a source of heat in the winter when the temperature is low and as a source of cooling in the summer when the temperature is high. The great attraction of this technology is that it can provide both heating and cooling and do so with 25-50 percent less electricity than would

be needed with conventional systems. In Germany, 178,000 ground-source heat pumps are now operating in residential and commercial buildings. At least 25,000 new pumps are installed each year.”

## Hydro

*State of the World 2013*: “Hydropower is the world’s best-established renewable energy resource, providing over 15 percent of global electricity production in 2011, mostly from large hydropower dams. Due to the significant environmental and human impacts of large-scale hydroelectric dams, however – including often devastating effects on river ecosystems, flooding of land ecosystems and human settlements, methane emissions from submerged and decaying vegetation, and consumption of scarce water resources – the discussion of hydropower is limited here to small-scale generation, including both micro-hydropower (0.1 MW or less) and mini hydro (greater than 0.1 MW but less than 10 MW). Global hydropower technical potential in likely developable locations is estimated at 1.5 TW. But hydropower resources do not typically differentiate between large and small generation facilities, so it is difficult to judge the sustainability of developing small hydro’s full technical potential.

“Some new small hydro models call for permanent magnet generators, requiring rare earth inputs. Still, the availability of developable resources, much more than material limitations for hydro generator manufacturing and installation, is the main constraint on significant global expansion of small hydropower.

“A widespread scale-up of small hydro facilities could have large cumulative impacts. These effects include disturbance of aquatic ecosystems, upstream and downstream flooding, and reduced water quality and supply. In some cases, the impacts – especially siltation (sediment buildup) and eutrophication (depletion of oxygen in the water) – can be even greater for small hydro than for large hydro on a per-kilowatt basis. Sound environmental management can mitigate some of these impacts, but implementation of best practices should not be taken for granted, especially with widespread proliferation in countries with limited capacities for monitoring and enforcement. Less-damaging applications, such as small scale run-of-the-river hydro to power remote locations, should be the focal point of small hydro development.”

## Nuclear

*The Rough Guide to Climate Change by Robert Hensen 2006*: “Just when it looked as if it might keel over from the weight of negative public opinion and high start-up costs, nuclear power got a new lease on life thanks to climate change. It’s hard to dismiss a proven technology that produces massive amounts of power with hardly any carbon emissions. Yet it’s also impossible to ignore the political, economic and environmental concerns that made nuclear power so contentious in the first place.

“Nuclear power provides around 18% of the world’s electricity overall, and much more than that in some countries – particularly France, which embraced nuclear power in the 1950s, and never looked back. France now gets close to 80% of its electricity from 59 nuclear plants. The U.S. has even more nuclear plants – 104, although none have been ordered since the 1970s or completed since 1996.

“Global warming has already changed the nuclear equation in tangible ways. In 2003, Finland’s legislature voted narrowly in favor of building its fifth nuclear plant – the world’s largest, to be completed in 2009 – partly because of the hope that it might help Finland to meet its Kyoto goals.

“Though a certain amount of carbon dioxide is released in the process of building a nuclear plant, there’s no question that nuclear power is far kinder to the climate than fossil fuels. That simple fact has engendered some powerful crosscurrents. Environmentalists who oppose an expansion of nuclear power run the risk of appearing callous about climate change. Thus, the anti-nuclear arguments have shifted somewhat in recent years. The unsolved problem of disposing of nuclear waste remains a key point, as does the risk of accidents. The massive cost of building and decommissioning nuclear plants, terrorism and uranium supplies are all problematic.

“On the other side of the coin, nuclear advocates argue that nuclear is the only low-carbon energy source that’s sufficiently developed and reliable that it could be rolled out on a big enough scale to take a meaningful chunk out of the world’s greenhouse emissions in the short and medium term.”

**New York Times 2/9/14:** “Half a mile beneath the desert surface, in thick salt beds left behind by seas that dried up hundreds of millions of years ago, the Department of Energy is carving out rooms as long as football fields and cramming them floor to ceiling with barrels and boxes of nuclear waste. The salt beds are what the federal government sees as a natural sealant for the radioactive material left over from making nuclear weapons. Plutonium waste is packed into holes bored into the walls of rooms carved from salt. At a rate of six inches a year, the salt closes in on the waste and encapsulates it for millions of years.”

**New York Times:2/12/14** “After years of disappointing results and missed deadlines, a \$5 billion laser complex has now achieved a step that revives optimism that thermonuclear fusion, the process that powers the sun, can one day be harnessed for almost limitless energy.

“At the Lawrence Livermore National Laboratory in California, 192 enormous lasers in a structure the size of a football stadium fire at a small gold cylinder, vaporizing it. That generates an onslaught of X-rays rushing toward a fuel pellet smaller than a peppercorn, crushing the hydrogen inside into helium, and releasing a burst of energy – effectively, a miniature hydrogen bomb.

“For four years, since the facility began operations in 2009, the last step – the fusion of hydrogen atoms into helium – did not happen. Then, last September, it did. The hydrogen fusion generated more energy than had been deposited into the hydrogen. However, laser-driven fusion remains far from practical, because only about 1 percent of the initial laser energy reached the hydrogen. A long-standing hope is that fusion can become a bountiful, cleaner energy source than fossil fuels or nuclear fission.”

**James Hansen on nuclear power (2014):** “Indoor wood, coal and biofuels kill more than 1,000,000 people per year. The Three Mile Island nuclear power plant accident, which exposed nearby Pennsylvania residents to a level of radiation less than the natural annual background level, will cause few if any deaths.

“There have been two much more serious nuclear accidents, at Chernobyl and Fukushima. Deaths caused by Fukushima radiation will be few, but the radiation release was a catastrophe for 300,000 people forced to leave their homes. The Japanese government forced many more people to evacuate than necessary.

“Are those accidents sufficient reason to abandon nuclear power? Early airliners had many accidents that killed hundreds of people, but we improved both the technology and the safety of operations via pilot training, aircraft control systems and safety protocols and culture. Similarly, improved nuclear

technologies and operations have the potential to make nuclear power the safest of all energy systems. Nuclear power, in supplanting fossil fuels, has saved 1.8 million lives and billions more tons of emissions.

“People who entreat the government to solve global warming but offer support only for renewable energies – solar, wind, geothermal – will be rewarded with the certainty that the U.S. and the rest of the world will be fracked-over, the dirtiest fossil fuels will be mined, mountaintop removal and mechanized long-wall coal mining will continue, the Arctic, Amazon and other pristine public lands will be violated, and the deepest oceans will be ploughed for fossil fuels. Politicians are not going to let the lights go out or stop economic growth. If we give them no viable option, we will be fracked and mined to death, and have no one to blame but ourselves.

“Conventional nuclear reactors fission only about 0.6% of the mined nuclear fuel. The rest remains a very long-lived radioactive ‘waste’. In fact, this waste can be used as fuel for ‘fast’ reactors, which combined with recycling facilities can raise this figure up to about 99%. Fast reactors have the potential to leave a significantly smaller amount of waste which is dangerous for a few hundred years rather than tens of thousands of years. The U.S. terminated R&D on fast reactors in 1993 because the Democratic Party had embraced the anti-nuke agenda. Fast reactors are being developed in several countries.

“How can China and the United States cooperate?

- First, fossil fuels must be made to pay their costs to society. These costs include the health impacts of air pollution and water pollution, as well as the impacts of climate change. China and the U.S. should agree to simultaneously initiate a rising across-the-board (oil, gas, coal) carbon fee.
- Second, China and the U.S. should embark on an intensive cooperative program to develop and deploy modern, safe nuclear power in China, and to cooperate in research and development of even more capable advanced generations of future nuclear power. However, the urgent requirement is for clean baseload electric power that can replace coal and avert the need for coal gasification at a price that is competitive with fossil fuels. Rapidity required for development of large scale baseload electric power in China requires initial focus on nuclear power.

In light of the above, the task of a Small Group is to promote solar, geothermal, wind and nuclear power as much as possible and to keep abreast of developments in the area of nuclear waste disposal and nuclear fusion:

- Install solar on your own house if possible.
- Likewise for geothermal.
- Encourage your place of work to do the same.
- Press your county, city, state to install solar, wind, geothermal wherever possible.
- Likewise for privately owned companies.
- Investigate the development and usage of nuclear power and promote it if you think it advisable.

**Again I’ll say that conservation and renewables are the two primary measures for combating Climate Change. Although each of us can and should engage in personal lifestyle changes on behalf of these two measures, it is imperative that those who are concerned about Climate Change do everything possible to bring the federal, state and local governments to undertake a crash program to maximize these two measures.**

**In Section II you will find descriptions of the work of two solar architects and two solar and geothermal contractors.**

### **Part III Engage in Current Activities:**

#### **Fight the Keystone Pipeline**

***The Pipeline and the Pipeline: The Keystone XL, Tar Sands and the Battle to Defuse the Carbon Bomb by Samuel Avery 2013:*** “The 1,600 mile long Keystone XL Pipeline would transport oil from the Alberta tar sands in Canada to American refineries at the Gulf of Mexico. Digging up new sources of fossil fuels will inevitably increase the amount of carbon dioxide in the atmosphere; tar sands produce higher carbon emissions than even conventional oil.

“Tar sands (a.k.a. oil sands) are unconventional deposits of petroleum containing bitumen, which is a very viscous form of petroleum generally known as tar or very heavy crude oil. Alberta, Canada contains the largest deposits of crude bitumen in the world, the biggest of which is the Athabasca tar sands.

“Tar sands mining operations involve clearing trees and brush from a site and removing the overburden soil (think mountain-top removal) that sits atop the deposit. In Alberta, this results in significant destruction of boreal forest. The mining process also requires vast amounts of water. Water quality monitoring in this region is lacking.

“Canada’s guidelines for the protection of aquatic life will be exceeded for seven pollutants – cadmium, copper, lead, mercury, nickel, silver and zinc. Additionally, there are always concerns about environmental impacts related to potential oil spills and leaks. On a similar pipeline, Keystone I, there were 12 spills over a period of less than a year.

“Making liquid fuels from bitumen requires energy for steam injection and refining. Currently the energy is produced from natural gas. This process generates more greenhouse gas emissions per barrel of final product than the production of conventional oil.”

As of this writing, March 2014, the Keystone Pipeline approval by President Obama is in doubt. It’s possible that within a few months the issue will be resolved, after the decision by Obama, who has always been in thrall to major corporations. The key to understanding Obama is to judge not by what he says but by what he does.

The major objection to the Pipeline stems from the vast amount of oil which it could carry to refineries and then be burned, adding greatly to the amount of carbon dioxide in the atmosphere. So much new carbon dioxide that, in the words of James Hansen (see below), it would be ‘game over’ for this planet.

There is much popular opposition to the Pipeline, which is good. But, it must be recognized that even if we succeed in preventing the construction of the Pipeline, there would remain a great deal to be done to bring to a halt the burning of fossil fuels. Which is the reason for the Coalition’s current effort to facilitate the creation of great numbers of Small Groups.

**James Hansen** points out that “The U.S. Department of State seems likely to approve a huge pipeline known as Keystone XL. It will carry the oil from the Canadian Tar Sands (about 830,000 barrels per day) to Texas refineries unless sufficient objections are raised. The environmental impacts of tar sands development include: irreversible effects on biodiversity and the natural environment, reduced water quality, destruction of fragile pristine boreal forest and associated wetlands, habitat fragmentation, habitat loss, disruption to life cycles of endemic wildlife, particularly bird and caribou migration, fish deformities and negative impacts on human health in downstream communities.

“An overwhelming objection is that exploitation of the tar sands would make it implausible to stabilize climate and avoid disastrous global climate impacts. The tar sands are estimated to contain at least an amount of oil capable of raising the parts per million of carbon dioxide by 200, from the current amount to 603 (the safe level of carbon dioxide is now held to be far below 350 parts per million).

“Phase-out of emissions from coal is itself an enormous challenge. However, if the tar sands are thrown into the mix, it is essentially Game Over. There is no practical way to capture the carbon dioxide emitted while burning oil, which is used principally in vehicles. We cannot get back to a safe carbon dioxide level if all coal is used without carbon capture or if unconventional fossil fuels like tar sands are exploited.”

**New York Times article by James Hansen:** ‘The tar sands contain twice the amount of carbon dioxide emitted by global oil use in our entire history. If we were to fully exploit this new oil source and continue to burn our conventional oil, gas and coal supplies, concentrations of carbon dioxide in the atmosphere eventually would reach levels higher than in the Pliocene era, more than 2.5 million years ago, when sea levels were at least 50 feet higher than they are now. That level of heat-trapping gases would assure that the disintegration of the ice sheets would accelerate out of control. Sea levels would rise and destroy coastal cities. Global temperatures would become intolerable.’”

**Huffington Post 10/21/13:** “Approval of the Keystone Pipeline could generate \$100 billion in profits for the billionaire Charles and David Koch brothers. Koch Industries holds up to 2 million acres of land in Alberta, Canada, the proposed starting point for the Pipeline. Several Koch Industries’ subsidiaries stand to benefit from the Pipeline’s construction. The Koch brothers have given about \$50 million to think tanks and members of Congress who have pushed for the pipeline to be built. The Kochs are known for their heavy investment in the Tea Party and for their support for Congressional inaction on Climate Change.”

**Common Dreams 12/23/13:** “Secretary Hilary Clinton’s State Department allowed the environmental impact statement on the proposed Keystone XL Pipeline to be performed by a petroleum industry contractor that was chosen by the company that was proposing to build and own the pipeline, TransCanada. That contractor had no climatologist, and their resulting report failed even at its basic job of estimating the number of degrees by which the earth’s climate would be additionally heated if this pipeline is built and operated. President Obama himself is now trying to force the European Union to relax their anti-global warming regulations so as to permit them to import the Koch’s dirty oil. Koch Industries owns 63% of the tar sands, and the Koch brothers own 86% of Koch Industries. The other owners are Conoco-Phillips, Exxon-Mobil and Chevron-Texaco.”

**The Pipeline and the Paradigm by Samuel Avery 2013:** “Thousands of people blocking the right-of-way, delaying construction, even stopping the Pipeline altogether will raise the consciousness and solidarity needed for the next step, but none of that will directly reduce carbon emissions. Civil disobedience will not prevent climate disaster in the long run. The way to defeat the fossil fuel industry

ultimately will be to dismantle its customer base. People everywhere will have to stop buying what the fossil fuel companies have to sell.

“Consumers rule the world. They are the ones who make the final decision. Not politicians, not protesters – consumers: people who vote with their dollars to mine tar sands and blow tops off mountains. Consumers are the gas frackers and the pipeline builders. They are the ultimate polluters, and only they can stop pollution completely. We are those consumers. We are all in this together, and there is no one else to blame. **Editor’s Note:** “Not exactly true; the sellers are heavily involved, as well as elected officials and their paymasters – corporate CEOs.”

“When you buy an item at Walmart and have it scanned at the checkout counter, a signal goes to a central computer recording the sale and removing the item from inventory. Once the inventory is depleted below a given level, another signal places an order at a factory somewhere on the other side of the planet to make more copies of what you just purchased. The money you spend today determines what gets made tomorrow. The dollar bill slipping out of your hand makes people do what they do all over the world. This happens when you stop at the gas pump or write a check for your utility bill. You may not be thinking about it, but every dollar you spend sends signals into the economy that determine what happens next. The fact that you don’t think about it means that the economy has no consciousness. Its business is to get people in other places to organize their working lives around getting you what you want.

“But it doesn’t have to be that way. Consciousness can be injected into the economy by spreading awareness of where dollars go when they are spent. Dollars can be sent deliberately toward good places and away from bad places. But buying consciously is far more difficult than buying what you want when you want. It takes organization, commitment and discipline. It takes not having what you may want to have and accepting the pain of not having it.”

Since the status of the pipeline is constantly changing, it’s best if, when you are ready to act, you check out the websites of these organizations:

- The Center for Biological Diversity
- The National Wildlife Federation
- 350.org
- Green party
- Citizens for Legitimate Government
- Exxon Secrets
- Rainforest Action Network
- Friends of the Earth

Appropriate activities include:

- Curtail purchases of goods and services that require the use of oil.
- Participate in protests against the Pipeline.
- Express your disapproval of the Pipeline to your elected representatives, especially to Obama.
- Refuse to buy at ExxonMobil, America’s largest oil company, which has spent millions of dollars to deceive us regarding Climate Change and Exxon’s role in sustaining it.
- Likewise for the other two of the Big Three: Shell and BP.

## Divestment from Energy Companies

Students at several colleges are pressing their colleges to divest from coal, oil and gas stocks. Over the last two years, thousands of students have started fossil free divestment campaigns on hundreds of campuses. These campaigns are taking on the fossil fuel industry, an industry that has far too easily and for far too long destroyed communities, corroded the democratic process, and profited by diminishing the possibility for a livable future.

The movement is spearheaded by 350.org, which is working to convince colleges and cities to sell their holdings in 200 publicly traded companies that hold the vast majority of the world's proven coal, oil and gas reserves. Providence RI and Seattle WA have voted to implement a divestment plan.

Industry officials assert that such actions are a drop in the bucket. Fossil fuels are projected to make up 80 percent of world energy consumption through 2040. Oil and gas stocks held by colleges and universities average 7.9 percent annual five-year returns. That's 172 percent higher than the average 2.9 percent returns on all US stocks and 69 percent higher than the average 4.7 percent returns on all college and university endowment assets. Divestment activists counter by asserting that those numbers don't tell the whole story. The threat of future regulations, geopolitical instability, and overestimated reserves make fossil fuels financially risky.

To obtain current information about divestment, check out the websites of:

- Fossil Free
- Power Shift
- 350.org

Learn the current status of Divestment and what is going on to implement it. Act appropriately.

## Fracking

***Gasland: A Film by Josh Fox:*** “Hydraulic fracturing (fracking) is a means of natural gas extraction employed in deep natural gas well drilling. Once a well is drilled, millions of gallons of water, sand and chemicals are injected under high pressure into the well. Fracturing shale gas wells requires between 2.3 million and 3.8 million gallons of water per well. The pressure fractures the shale and props open fissures that enable natural gas to flow more freely out of the well. An additional 40,000 – 1,000,000 gallons are required to drill the well.”

***Dollars and Sense 8.10/13:*** “Water supplies are a major concern. Duke University scientists surveyed rural Pennsylvania water wells for residential use, measuring concentrations of methane. Concentrations rose far above natural levels closer to drill pads, spiking to within a half mile of active gas development sites to a level that ‘represents a potential explosion hazard’.

“In parts of the country where water is scarcer, the issue is more ominous. The EPA has found toxic alcohols, glycols and carcinogenic benzene in underground aquifers in Wyoming. In parched Texas, the volume of water adequate for irrigating \$200,000 worth of crops can be used to frack \$2.5 billion worth of gas or oil. Companies have been on a buying spree.”

***Common Dreams 2/4/14:*** ‘Nationally, only about 50 percent of fracking wastewater is recycled. Billions of gallons of wastewater are still taken from rivers, streams and wells annually, and, after

being irretrievably polluted, this water usually ends up being injected into the deep disposal wells. That means it's no longer available to the hydrological cycle that sustains all terrestrial life.

“Over 55 percent of the wells hydrologically fractured were in areas experiencing drought and 36 percent overlay regions with significant groundwater depletion, key among them being Texas and California – areas of drought.

“In Texas, more than half of the wells were in high or extremely high water stress areas. In Colorado and California, 97 and 96 percent of the wells, respectively, were in regions with high or extremely high water stress areas. Nearly comparable trends were also shown in New Mexico, Utah and Wyoming. Much of the fracking boom is centered in the western United States – Texas, Oklahoma, Colorado and California – which just happens to be drying up - likely as a result of Climate Change. And Climate Change, in turn, is happening because we're burning fossil fuels like oil and natural gas.

“California, in 2014, is experiencing a 500-year drought. The grape wine industry in Sonoma County is facing disaster. Farmers in the Central Valley are weighing whether to plant at all this year. The governor wants to spend what little water the state has on fracking.”

***Dollars and Sense: 8/10/13:*** “The heavy use of often-secret synthetic chemicals has also cast a shadow over the fracking debate. In 2012 energy companies and well operators were refusing to disclose the chemical formulas of thousands of substances used in the fracking process. Many states allow drillers to withhold the ingredients used in their chemical mixes. Drillers withheld information about the ingredients used in their chemical mixes about 19,000 times in the first eight months of 2012 alone. A team of Colorado endocrinologists set out to catalogue these synthetic compounds used in wells across the country. They found that over 75 percent of the chemicals were harmful to the sensory organs, nearly half could affect the nervous and immune systems, and 25 percent could cause cancer and mutations. Fracking is increasingly located near where people live, work and play. Air sampling found strongly elevated health risks within about a half mile from fracking sites. The effects ranged from headaches and eye irritation to tremors, temporary limb paralysis and unconsciousness.

“Perhaps more alarming than the burning water and the secret chemicals is the association of fracking with earthquakes. The Oklahoma Geological Survey surveyed the timing of tremors and their proximity to fracking sites and found a strong correlation in time and space and thus a possibility that these earthquakes were induced by fracking. An article in the journal *Science* stated that: “The quakes began only after injection began, surged when the rate of injection surged, were limited to the vicinity of the wells, and trailed off after injection was stopped.”

Bans on fracking are increasingly common in cities, towns and even counties across the country, including Pittsburgh (2010) and Highland Park NJ (2013).

Fracking has been made exempt from the Clean Water Act, the Safe Drinking Water Act, the Clean Air Act and the Superfund law in the Energy Policy Act of 2005, an offspring of VP Dick Cheney's secretive energy committee. This limits the ability of the EPA to regulate fracking.

***New York Times 9/24/13:*** “Finally, the question arises: Is natural gas clean? One reason it's called clean is that it emits 50 percent less carbon dioxide than coal. But it's not clean the way solar and wind are clean. It's better than the worst; that's all.

“The current situation is actually too dire for a bridge fuel. Experts say we must stop adding carbon into the air within the next few decades or face a climate ‘feedback loop’ in which global warming continues regardless of subsequent human activities, a point at which we cannot make things better.

“Natural gas is made up mostly of methane, and methane, unburned, is around 70 percent as potent a greenhouse gas as carbon dioxide. There isn’t nearly as much of it, and it’s shorter lived, but it’s not so short-lived that we can allow a great deal to escape into the atmosphere, which it does when anything in the production, transmission or distribution processes leaks. If as little as 3 percent of the methane produced escapes, you might as well be burning coal. People have seen wells sending off huge plumes of gas in residential areas, compressors that are spewing methane so badly that scientists won’t go near them without gas masks, and well fields where methane levels skyrocketed over ‘normal’ background levels.”

Although burning natural gas as a transportation fuel produces 30 percent less planet-warming carbon dioxide emissions than burning diesel, the drilling and production of natural gas lead to leaks of methane, a greenhouse gas 30 times more potent than carbon dioxide. These methane leaks negate the climate change benefits of using natural gas as a transportation fuel. There is already about 50 percent more methane in the atmosphere than previously estimated by the EPA, a signal that more methane is leaking from the natural gas production chain than previously thought.

New EPA regulations will not affect the millions of old wells. Nor do they affect transmission and distribution pipelines, which are most likely big sources of emissions. There are more than 2 million miles of these, some 100 years old.

***The Pipeline and the Paradigm by Samuel Avery 2013:*** “In 2100, the U.S. House of Representatives investigated the chemicals used in fracking and found that, of 2,500 products used, 650 were known carcinogens or listed as hazardous air pollutants. Of these, 279 had at least one component that was listed as ‘proprietary’ or ‘a trade secret’, meaning that fracking companies had no legal obligation to tell federal, state or local regulating authorities what they were pumping into the ground and potentially into the drinking water of nearby wells. The House report concluded that ‘companies are injecting fluids containing unknown chemicals about which they may have limited understanding of the potential risks posed to human health and to the environment.’ People living near fracking wells do not know what they may be drinking. To provide some legal protection, residents may, at their own expense, hire a laboratory to test their drinking water, but they must do so before fracking begins in order to establish a baseline comparison with samples tested after fracking. Another study in 2011 identified 632 chemicals used in natural gas operations, many of which could affect skin, eyes, respiratory and gastrointestinal systems, the brain and nervous system, immune and cardiovascular systems, the kidneys and endocrine system.”

We’re running out of time to measure emissions, and we’ll never arrive at an absolute number. Embarking on a huge push to real renewables, and accepting the costs is the only responsible path to take. The real bridge to renewables is to begin to dismantle the existing infrastructure, starting with coal and nuclear, while using gas as necessary to fill in the inevitable gaps as we build a new infrastructure of power from solar, wind and more.

***In the Carbon Wars, Big Oil is Winning by Michael Klare 2/13/14:*** “A series of recent developments highlight the way we are losing ground in the epic struggle to slow global warming:

- In the past few years, the ever more widespread use of new extractive technologies – fracking and steam-assisted gravity drainage (for tar sands) – has led to a significant increase in fossil fuel production. Global fossil fuel consumption is expected to grow by an astonishing 40% by 2035. Fossil fuels will continue to dominate the global energy market, with only one plausible outcome: vastly increased carbon emissions leading to rising temperatures and catastrophic climate change scenarios.
- The defeat of renewables. The global supply of fossil fuels will remain substantial for years to come. In 2035, gas and coal will account for 54% of global energy demand, and oil another 27%. The share of renewables will reach just 7%.
- Europe, which has long exercised global leadership in the struggle to reduce greenhouse gas emissions, is preparing to rein in the pace of its drive to slow global warming. In the EU’s climate blueprint for 2030, there is no mandate for a further increase in energy efficiency; and the mandate for increased reliance on renewables is not binding on individual states, which makes implementation and enforcement questionable. Concern over high energy prices has taken precedence over climate concerns.
- The U.S. State Department’s recently released report on the Tar Sands that the extraction and delivery to refineries by alternate means – mainly rail – will increase the pace of carbon emissions. Moreover, Canadian producers and their U.S. partners are increasing their reliance on rail cars to deliver tar sands.”

The projections above by Michael Klare assume that the status quo will remain, that citizen efforts to promote renewables over fossil fuels will have no greater effects than now. But that is by no means necessarily true. If we who care grow in numbers and effectiveness, it will be a different ball game.

If your group chooses to investigate fracking, sources of information include:

- Americans Against Fracking
- Sierra Club
- Friends of the Earth
- Energy Action Coalition
- Food and Water Watch
- Natural Resources Defense Council
- Community Environmental Legal Defense Fund
- The movies Gasland and Gasland II - Josh Fox

If your Group chooses to oppose fracking, appropriate activities include:

- Arouse the local citizenry to attend any meetings regarding fracking and voice their opposition.
- Contact the groups above and learn what actions are effective.
- Protest the fracking in your area.
- Invite as many people as possible to your group’s meetings.
- Advise those who are considering signing a lease to have their water tested before signing so that they can use the report in legal actions against the fracking company after their water becomes poisoned.
- If people come to your area to sign up property owners for fracking, do your best to provide accurate information to those property owners regarding the negatives of fracking.

## **Protect Existing Forests and Replant Destroyed Forests**

***Our Choice by Al Gore 2009:*** “Consider the Amazon rain forest, the largest rain forest on Earth. Each year more than 3,900 square miles of it are destroyed. The biggest direct cause of deforestation is the ‘slash-and-burn technique used to rapidly clear forests for subsistence farming, plantation agriculture and cattle ranches. 54 percent of current deforestation is due to slash-and-burn agriculture, 22 percent to the spreading of palm oil plantations, 19 percent to logging, and 5 percent to cattle ranching.

“Slightly more than one acre of forest is cleared every second. That amounts to almost 100,000 acres every day, and more than 34 million acres per year – an area the size of Greece.

“This frenzied destruction of forests has a double impact on the climate crisis: first, most of the carbon contained in the trees is emitted into the atmosphere; and second, the planet loses part of its ability to reabsorb carbon dioxide because the forests, once destroyed, no longer pull carbon dioxide from the air. More than 60 percent of all deforestation in the world today is occurring in Brazil and Indonesia. Almost 20 percent of the Amazon forest has been destroyed.

“The Amazon has been under assault from developers, loggers, cattle ranchers and subsistence farmers for decades. The Amazon region was hit hard in 2005 and again in 2010 by ‘once-in-a-century’ droughts.

“An increasing amount of the world’s carbon dioxide emissions are coming from the cutting, drying and intentional burning of peat forests and peat lands – especially in Indonesia and Malaysia – in order to establish palm oil plantations. Peatlands contain more than one-third of all the global soil carbon. Extremely poor governance practices are among the chief causes of deforestation almost everywhere it is occurring – partly because 80 percent of global forest cover is in publicly owned forests.

“In many tropical countries, the increased demand for meat in the world’s diet has contributed greatly to the clearing of forests for ranching – especially cattle ranching. Each pound of animal protein requires the consumption of more than seven pounds of plant protein.

“The enormous northern boreal forests in Russia, Canada, Alaska, Norway, Sweden and Finland and parts of China, Korea and Japan are at great risk. Recent estimates of the amount of carbon dioxide stored in these forests – not only in the trees, but also in the deep soils, calculate that as much as 22 percent of all carbon stored on and in Earth’s surface is in these boreal forests.

“In both Russia and North America, forests are being ravaged by the impact of global warming on droughts, fires and insects. Beetles have expanded their range as average temperatures have increased, and have multiplied quickly, and the number of cold snaps that used to hold them back has diminished. In the last decade, more than 27 million acres of forests in the western U.S. and Canada have been devastated by an unprecedented outbreak of the Mountain Pine Beetle.

“Drought conditions weaken the trees and make them more vulnerable to beetles. And the increasing number of forest fires is going up in direct proportion to rising temperatures.

“The scale of losses in the areas being deforested is completely unprecedented, and as a result, enormous quantities of carbon dioxide are being released into the atmosphere. Like the Arctic tundra, the great forests of the world contain large amounts of carbon dioxide, in the trees and plants themselves, in the soil beneath them, and in the forest litter that covers it.

“The amount of carbon sequestered in the first few feet of soil is almost twice as much as all the carbon in the vegetation and the atmosphere combined. Indeed, before the Industrial Revolution, the release of carbon dioxide from plowing and land degradation contributed significantly to the excess of carbon dioxide in the air. 60 percent of the carbon that used to be stored in soils, trees and other vegetation has been released to the atmosphere by land clearing for agriculture and urbanization since 1800.”

***Eaarth – Making a Life on a Tough New Planet* by Bill McKibben 2010:** “We’ve been burning down rain forests for a long time to create cheap agricultural land in the Amazon, and that obviously puts carbon into the atmosphere. It was such a worry that Brazil started enforcing its conservation laws, and the rate of loss began to ebb. But as oil became more expensive, the market for biofuels strengthened. All of a sudden soybean farmers started pushing deeper into the jungle; deforestation jumped 64 percent in 2008 as oil prices rose. Meanwhile, Britain’s Meteorological Office released new research in November 2008 which showed that Climate Change was producing drier conditions over much of the region, making the rain forest more prone than ever to natural fires – within a decade much of southeast Amazonia would be in the zone of higher fire risk. Those fires produce even more carbon, and by destroying the forest they also remove a natural sink for carbon. What is left behind is a hotter, drier clearing. African research shows that the daytime temperature in the soil above a cleared patch is eight degrees higher than in the nearby forest, and the humidity is 49 percent, compared with 87 percent in the forest.

“Something like that appears to be what’s happening across the tropics. In the Amazon, we are seeing parts of the basin drying out and forming savanna, with its drought-tolerant shrubs and grasses, in what may well be the beginnings of a savannizing process that could lead to desertification. In normal times, the Amazon managed to move water much farther inland from the oceans than the rain would normally fall. The first swath of jungle gets wet, and then transpires the moisture through its leaves, forming new clouds that produce new rainfall farther west – all in all, a series of six pulses that move the ocean’s bounty all the way to the Andes. The energy involved is prodigious – the equivalent of four million or more atomic bombs worth a day. The forest, in essence, is a ‘gigantic, irreplaceable water pump which in turn powers much of the planet’s current air circulation system, taking energy out and away from the Amazon Basin to the higher latitudes, to the more temperate parts of the planet. Argentina gets no less than half its rain courtesy of the rainforest. The U.S. receives its share of the bounty, particularly over the Midwest.

“The Amazon is one of our planet’s largest physical features, and it is far more vulnerable than we’d assumed, both to the onslaught of deforestation for food and biofuels, and to the changes in temperature that we’ve kicked off. The net result of the various forces will be a much-diminished rainfall regime over the Amazon, with rapid forest dieback and death. And as that happens, the decomposition of all the old forest may lead to more than 70 gigatons of carbon escaping as carbon dioxide into the atmosphere. The great green jungle will turn into one more smokestack.

“Here in the U.S, temperatures have warmed during winter and early spring storms. Consequently, the fraction of precipitation that fell as snow declined, while the fraction that fell as rain increased. When the snowpack melts early, the sun now has time to dry out the forest, guaranteeing a longer dry season and drier trees. The average California fire season runs 78 days longer than it did in the 1970s and 1980s. It used to start in June and end in September, but now it starts in April and ends in November.

“It’s not just more fires, but bigger ones. On average, large fires now burn four times as long as a generation ago, and in recent years three-quarters of the bad fires across the West came in years when the snow melts were well ahead of schedule.

“And of course it all feeds back on itself. The Moonlight Fire in 2005 near Lake Tahoe burned for two weeks and in that time pumped an estimated 5 million tons of carbon dioxide into the atmosphere, the same as 970,000 cars driving for a year, the same impact as a coal-fired power plant.

“Researchers now believe that more large fires will lead to thinner, scrubbier woods. One result? Western forests, which are currently responsible for 20-40 percent of total U.S. carbon sequestration, may soon become a source of carbon dioxide, not a sink for the gas.

“A few hundred miles east, to the spine of the Rockies, trees are dying in incredible numbers. Partly it’s chronic; heat stress and lack of water have doubled the ‘background mortality’ of trees in the area. But there’s also acute trouble. By 2008, Colorado and Wyoming alone housed more than three million acres of dead trees. In the next five years Colorado expects to lose another 5 million acres – virtually every Lodgepole Pine larger than five inches in diameter. In British Columbia, 33 million acres of Lodgepole Pine have already turned from green to rust-red, all dead. The culprit is the Mountain Pine Beetle. Once the Beetle drills into the bark, the tree gives off a white, waxy resin in an attempt to seal the insect in its hole. But the attacker can give off a pheromone that draws swarms of other beetles. Eventually the tree is overwhelmed.

“Why is it happening? Because we’ve raised the temperature enough that the beetles can overwinter more easily. Milder winters since 1994 have reduced the winter death rate of beetle larvae in Wyoming from 80 percent per year to less than 10 percent. You need stretches of 30-40 degrees below zero F up in the mountains to kill off the beetles, and that doesn’t happen much anymore. Meanwhile, hotter, drier summers have made trees weaker and less able to fight off the swarming beetles.

“One result is lots more carbon flooding into the atmosphere. The widespread tree mortality reduces forest carbon intake and increases future emissions from the decay of killed trees. Since these outbreaks are an order of magnitude larger in area and severity than all previous recorded outbreaks, the impact converted the forest from a small net carbon sink to a large net carbon source. Canada’s forests alone contain 186 billion tons of carbon, or the equivalent of 27 years of global emissions from burning coal and gas and oil.”

Organizations to check out for appropriate activities include:

- U.S. Forest Service
- Natural Resources Conservation Service
- American Forests
- American Forest Foundation
- Rainforest Action Network
- Native Forest Council
- Sierra Club

Appropriate activities include:

- Since it’s Climate Change that’s causing the deaths of forests, work to halt and reverse Climate Change in the ways described in these pages.
- Plant trees on property you own.

- Oppose logging on public lands, both locally and nationally.
- Reduce or eliminate your purchases of wood from rainforests.
- Reduce or eliminate your intake of meat.

### **Transform Agriculture** **Promote local, vegetarian, organic food**

***Rough Guide to Climate Change* by Robert Hensen 2006:** “Food, and the lack of it, could be where a changing climate exerts some of its most troubling impacts for society. While the changes could affect ranching and grazing as well as arable farming, much of the research to date has focused on croplands. Because of longer dry spells, hotter temperatures, and more climatic uncertainty, the next century is likely to see major shifts in the crops sown and grown in various regions. The most problematic impacts on agriculture may wind up occurring in the poorest countries, those with the least flexibility and the most potential for catastrophic famine.”

***World on the Edge* by Lester Brown 2011:** “In many industrial countries there is a growing interest in fresh, locally produced foods. In the United States, this interest is driven both by concerns about the climate effects of transporting foods from distant places and by the desire for fresh food that supermarkets with long supply chains can no longer deliver. This is reflected in the growth of both home gardens and local farmers’ markets.

“With the fast-growing local foods movement, diets are becoming more locally shaped and more seasonal. In the United States, this trend toward localization can be seen in the recent rise in farm numbers. Between the agricultural census of 2002 and that of 2007, the number of farms increased by nearly 80,000 to roughly 2.2 million. Many of the new farms, mostly smaller ones, cater to local markets. Some produce fresh fruits and vegetables exclusively for farmers markets. Others, such as goat farms that produce milk, cheese and meat, produce specialized products. With many specializing in organic food, the number of organic farms in the United States jumped from 12,000 in 2002 to 18,200 in 2007.

“Many market outlets are opening up for local U.S. produce. Farmers’ markets, where local farmers bring their produce for sale, increased from 1,755 in 1994 to over 6,100 in 2010, more than tripling over 16 years. These markets facilitate personal ties between producers and consumers that do not exist in the impersonal confines of a supermarket.

“Many schools and universities are now making a point of buying local food because it is fresher, tastier and more nutritious and it fits into new campus greening programs. Supermarkets are increasingly contracting seasonally with local farmers when produce is available. Upscale restaurants emphasize locally grown food on their menus. Some year-round food markets are evolving that supply only locally produced foods, including not only fresh produce but also meat, milk, cheese, eggs and other farm products.

“There is a huge gardening potential for home gardening, given that the grass lawns surrounding U.S. residences collectively cover some 18 million acres.

“Many cities and small towns in the U.S. are creating community gardens that can be used by those who would otherwise not have access to land for gardening. Providing space for community gardens is now seen by many local governments as an essential service.

“In Bolivia, the UN supports a highly successful micro-garden program for low-income families. Using small, low-cost greenhouses covering about 50 square yards each, some 1,500 households grow fresh vegetables year round. Some of the produce is consumed at home; some is sold.

“School gardens are another welcome development. Children learn how food is produced, and they get their first taste of fresh salad greens or vine-ripened tomatoes. School gardens also provide fresh produce for school lunches. California has 6,000 school gardens.

“Food from distant locations boosts carbon emissions while losing flavor and nutrition. A survey of food consumed in Iowa showed conventional produce traveled an average of 1,500 miles, not including food imported from other countries. In contrast, locally grown produce traveled an average of 56 miles. In Ontario, Canada, 58 imported foods traveled an average of 2,800 miles.

“An American living high on the food chain with a diet heavy in grain-intensive livestock products, including red meat, consumes twice as much grain as the average Italian and nearly four times as much as the average Indian. Adopting a Mediterranean diet can cut the grain footprint of Americans roughly in half, reducing carbon emissions accordingly.

“If we do not quickly cut carbon emissions, the world will face crop-shrinking heat waves that can massively and unpredictably reduce harvests (look what’s happening in California). Saving the mountain glaciers whose ice melt irrigates much of the cropland in China and India during the dry season is imperative.

“If we do not restore tree cover and reduce floods and soil erosion, grain harvests will shrink not only in smaller countries like Haiti and Mongolia, as they are doing, but also in larger countries, such as Russia and Argentina.

“And because water shortages reduce food output, we need to do everything possible to raise national water productivity. With water, the principal potential now is in increasing efficiency, not expanding supply.

“Because cropland is scarce and becoming more so, we need to replace land-consuming, auto-centered transport systems with more diversified systems that are much less land-intensive.

“In the end, it is up to governments to reallocate resources in a way that recognizes the new threats posed by agriculture’s deteriorating natural support systems, continuing population growth, human-driven climate change, and spreading water shortages.”

Check out the following websites:

- Vegetarian Resource Group
- St. Petersburg (FL) Permaculture Guild
- GaiasGuardians (a collective on sustainable food production and permaculture solutions)
- Community Supported Agriculture (CSA) – see below

In accordance with the above, we are called to:

- Eat less or no meat.

- Switch to locally grown, organic food. Press our food stores, churches and schools to do likewise.
- Reduce the size of the car we drive to the food store.
- Hold the line at two children.
- Promote urban gardens, especially in our own yards. And school and church gardens.
- Join a local CSA (Community Supported Agriculture), in which a farmer contracts with a number of families to buy his/her produce. Sometimes the families help out on the farm, reducing the cost of the produce.
- Above all, press your elected representatives to fund programs in accordance with the conditions described above.

### **Make Appropriate Personal Lifestyle Changes**

There are so many needed lifestyle changes that the best course of action for each member of the Group is to obtain one of the books recommended above and abide by its recommendations, sharing your learning and lifestyle changes with the others in your Group.

Check out these websites:

- Pachamama Alliance (Bridging indigenous wisdom with modern knowledge)
- Connection Partners

### **Start New and Patronize Existing Democratically-run, Worker-Owned Cooperatives e.g. Mondragon**

#### **The Mondragon Cooperatives**

In the Basque country of Spain is the highly successful association of worker-owned cooperatives called Mondragon. In 1956, a Catholic priest, Father Jose Arizmendi, with a vision both moral and economic, initiated a small industrial cooperative with five of his students. Although Father Arizmendi never had an official position within the initial cooperative or in the cooperatives that have developed out of the original one, he provided the vision and articulated the practical framework by which the cooperatives developed and prospered.

Drawing upon the historical cooperative and industrial tradition of the Spanish Basque country, and integrating his understanding of Catholic social thought, Father Arizmendi was possessed of a vision of a just and moral society: “The economic revolution will be moral or it will not be at all. The moral revolution will be economic or it will not be at all.”

As a priest, he understood the sacred value of each individual life and also the necessity to serve others through Christian love. His ideal of work, consistent with papal encyclicals and Catholic social thought, was that its purpose should be self-realization and simultaneously service to the common good. Neither the individual nor society should be diminished by economic activity. On the contrary, Arizmendi stressed human values, derived from a religious core, as the framework by which one was to build economic institutions. Hence, the revolution must be moral. However, it must also be economic because work and wealth-creation pervade so much of life’s activities.

Fundamental to his vision was the belief that moral values could enhance the efficiency of technical and economic activity. His moral philosophy, then, was not an appendage to business activity, or pious

platitudes to justify the creation of wealth and power. Rather, his was an integrated vision of the moral and the economic, a principled vision, with the well-being of the worker in relation to his/her community as an inseparable reality.

Today the Mondragon complex includes firms engaged in automotive components, domestic appliances, machine tools, industrial components, engineering, construction and retail distribution, with a workforce of 84,000 worldwide and over \$6.3 billion in annual sales. Members each hold one member-share in the corporation they own, have direct authority for governance of their employing firm on a one-person, one-vote basis, and elect representatives to a Cooperative Congress that has final authority on policies governing all the member firms and their associated organizations. Employment and wealth creation for the community as a whole is their primary corporate mission. They are not successful because of their business drive or their ideas about sharing ownership but because they link both ideas. The Mondragon experience demonstrates that democratically-governed businesses are high-performance businesses, that capitalism combined with community responsibility creates real prosperity for a region, and that successful economic development is all about grassroots efforts that involve interlinked, locally based research, education and financial partnerships.

The comparative research that is available generally shows that Mondragon outperforms its conventionally-owned counterparts. Preliminary data on the machine tool sector, for instance, indicates that companies in Mondragon's machine tool division are approximately 5.6% more efficient than competitors in the region. Mondragon also has an excellent record of employment growth, a strict no-layoff policy for members and an extraordinarily high enterprise survival rate.

Mondragon is the best known and most successful democratically-run, worker-owned cooperative in the world. It is a guide and an inspiration to all who prize economic justice.

Here in the United States, there are hundreds of similar but smaller operations.

If all major corporations were to become copies of Mondragon, most of the world's injustices would vanish.

If your Group feels a desire to explore ways to promote worker-owned cooperatives, either by patronizing existing ones, or by starting new ones, check out the following websites:

- Mondragon Cooperative Corporation.
- Ohio Employee Owned Network
- Evergreen Cooperative Development Project
- Wages Cooperatives
- US Federation of Worker Cooperatives

And also a new book called *What Then Must We Do?* By Gar Alperovitz

And finally the Coalition has a good DVD on Mondragon which you can borrow.

Appropriate activities include:

- Seek out and patronize worker-owned companies.
- It won't be easy but if possible, raise enough funds to start your own worker-owned company.

## **Boycott Existing Companies that Operate in an Unjust Manner**

A list of some such companies includes:

- Exxon-Mobil
- Shell
- Monsanto
- Cargill
- BP/Amoco
- Tobacco companies
- Fast food restaurants except Chipotle
- Walmart
- Imported food at supermarkets

Please contact us with additional companies to boycott.

## **Patronize Existing Companies that Operate in a Just Manner**

In Washington DC there is an organization called Green America, which every year publishes a document called National Green Pages, which connects readers to socially and environmentally responsible businesses that provide green products and services.

*National Green Pages 2013*: “A green business operates in ways that solve – rather than cause – social and environmental problems. Green businesses adopt principles, policies and practices that improve the quality of life for their customers, employees, communities and the planet. In the National Green Pages, ‘green’ always means social and economic justice, and community and environmental health. To get listed in the National Green Pages, businesses complete a detailed screening assessment, considered the toughest in the country. Then, Green America’s Standards Committee, which is appointed by and reports directly to our board of directors, investigates each company to determine the depth of its commitment to social and environmental responsibility.

“The team looks for companies that focus on using business as a tool for positive social change, are values-driven as well as profit-driven, are socially and environmentally responsible in the way they run their offices and factories, source, manufacture and market their products, and benefit workers, customers, communities and the planet.”

To become a member and receive National Green Pages, send \$20 to Green America, 1612 K St. NW, Suite 600, Washington DC 20006.

For each category of product or service, there are many ads. Among the categories are:

- Arts, Gifts and Specialty Products
- Body, Health and Personal Care
- Business Services and Office Supplies
- Children’s Products and Services
- Financial
- Food
- Home Goods and Home Construction
- Publishing, Paper and Media

- Transportation, Travel and Events

In the latest issue, there are about 200 pages, with about 25 ads on each page, which means about 5,000 ads in total, divided into the categories listed above. One way to differentiate among the ads for any one product e.g. clothes (women's, men's, children's), toys, cleaning products, personal care, paper products, food etc., is to look up the websites of the companies that appeal to you.

### **Press Elected Representatives to Pass Current Legislation**

Keep informed of measures proposed by major DC environmental organizations – Union of Concerned Scientists, Sierra Club, League of Conservation Voters, Common Cause, Rainforest Alliance, Friends Committee on National Legislation, EarthJustice, National Wildlife Federation etc.

When you examine these websites, you will be in a position to decide which of the organizations you prefer to work with.

In order to influence government:

1. Urge Congress to pass or not pass appropriate legislation
2. Urge the White House to endorse and propose appropriate measures.
3. Use the traditional means for these activities: letter-writing, not emails, visits to both their Washington and local offices (best), voting, publicizing the activities of your elected representatives, demonstrations, protests.

### ***The Citizen's Guide to Lobbying Congress* By Donald deKieffer (2007)**

**Note: The advice below is no doubt useful, but it's imperative to keep in mind that our objective is threefold: 1) Accomplish as much as we can now in working with the federal government; 2) Work as hard as we can to increase our numbers so that our elected representative will be compelled to respond to our demands, if they wish to stay in office; and 3) Strive continually to put into office those whose primary concern is the common good, not amassing obscene wealth.**

### **Know your enemies**

Find out as much as possible about your opponents – who they are, who supports them and what their arguments are. A good first step is to get your hands on as much of their propaganda as possible – pamphlets, books, newspaper articles and Web pages. Review anything in which they have made a public statement. This will give you a good initial idea of the types of arguments you can expect to face on the Hill. It may be that you have identified some issues that your opponents have not recognized, but you should first be sure that you can persuasively rebut the arguments they believe are important.

### **Know Your Friends**

Spend time and energy cultivating friends. If there are any groups that could be affected positively by your plans, contact them. You can broaden your influence far beyond the membership of your group if you can legitimately claim the endorsement of other organizations. Better yet, these groups can lend you money, manpower and expertise that might otherwise be unavailable to you. In most cases, the more diverse your alliance, the better.

In your search for friends, you should base your decisions on the issues presented, not the general philosophical inclination of your potential allies. Don't let initial distaste dissuade you from forming temporary alliances with otherwise unsympathetic groups. This is hardball politics, not a college debating society, and the credibility of your campaign can be enhanced by bringing together apparently disparate groups. Swallow your prejudices and do it.

Politics is the art of compromise. You will generally find that the art of accommodation is a much better tactic than absolutism – especially if it gets you allies. Partial victories are much better than defeat, and you will be able to build on the progress you have made.

To the uninitiated this can be a frustrating and disillusioning experience. Promises will be broken, personal vendettas begun and outright treason committed. But you are still best served by having allies. It's hard to live with them, but you can't live without them.

### **Who Are the Players?**

Once you have recognized enemies, recruited friends, and determined the status of the law, you need to locate the individuals on the Hill who will consider your issue. They will be your primary focus in your lobbying campaign.

When legislation is introduced in either the House or the Senate, it is immediately referred to a committee. Although the committee structure is rather complex, you should be able to determine which of its subcommittees will consider your bill. Once you know the appropriate committee and subcommittee, you can start making your list of congressional contacts.

First, list all committee and subcommittee members (by party) and all the members of the House Rules Committee (considers almost all legislation at one point or another). Next, list the names of all congresspersons and senators traditionally on your side of the issue. For this, check with the League of Conservation Voters.

Finally, you should categorize every member on your list according to your access to him or her. For instance, is anyone in your organization a constituent of the member's state or district? Does anyone have a personal connection to the member or to someone on the member's staff? Would the legislation have an immediate effect on the member's state or district? List every access route to each member on your list, and then determine how best to approach him or her, through either your own members of the allies you have cultivated.

At this stage, it is also important to identify the administrative agency – for instance the Department of Education or the Department of Agriculture – that will have primary responsibility for enforcing the legislation with which you are concerned. Without its support, the executive branch will likely oppose your activity on the Hill, and the administration can field more lobbyists than you can. Look not only to the primary administrative agency but also to the other departments and bureaus that would be touched by your project.

## **The Action Plan**

### **Press Relations**

How members of the press perceive your lobbying campaign is crucial, especially if your position is controversial.

Specify all persons who are authorized to speak for your group to the press. Explicitly list the names of one or two authorized press contacts; all others should refer inquiries to them.

Although this may appear to be an undemocratic or oppressive policy, it is a necessary precaution. Otherwise the media may imply internal dissension. The worst thing you can do is permit just anyone to represent your group's views to the public.

The press contacts section should include the names, addresses, telephone numbers and email addresses of reporters for publications that have an interest in your issue, those with whom you have a reasonable working relationship. All of these should receive copies of your organization's press releases as they become available.

### **Clearance Procedures**

Few issues can lead to more acrimony within a group than unauthorized press releases, so this section should describe in detail the procedures you intend to follow when issuing official statements to the media. It is generally best if only one person be designated to prepare press statements. These draft statements, however, should always be reviewed by several other high-ranking persons in your group. Outline the procedures for how such clearances should be accomplished. The clearance methodology should be agreed on in advance by as many people as possible, but the procedure itself should be rather simple. Three or four individuals should be given sole discretion to decide on the release's final form. Most news items are time sensitive, so you should not wait for a formal meeting, but instead establish a protocol for approving the releases over the phone or by email.

This section should also specify the contact persons who can answer additional questions about your press releases, and make it clear that their names should be included in every release. These people should be the same people authorized to clear the original press release. Within your group you should discuss the nature and extent of additional information these contact persons are authorized to discuss. Although you cannot anticipate every question the press might ask in a particular case, your action plan should set down some general guidelines.

### **Congressional Contacts**

This section should include at least the following:

- Names, addresses, phone numbers and email addresses of members of Congress with whom your group has exceptionally good relations, particularly in those states or districts where your organization is strong, whether or not those members sit on the committees directly affected by your issue.
- Contacts on the staffs of both committees and members of Congress. The staff list should include each staff member's personal phone numbers and email addresses, and describe any

previous contact you may have had with him or her. It should also include any further relevant details about the staff member's background.

- Congressional demographics. You should prepare a complete demographic sketch of the congressional district or state represented by each member of Congress whom you list. Include a district map where appropriate and an analysis of the district. You should also include an analysis of any constituent relationships that members of your group may have with members of Congress.
- Complete analysis of each member of Congress listed and that member's record on similar issues.
- Incidental information about ancillary groups' influence with individual members of Congress and the method by which the members may be approached through such groups.

### **Letters**

Your action plan should contain a section devoted to your letter-writing campaign. It should contain a sample format for letters to the Hill, and a check-off list to track the letters sent. The list should include all the congressional contacts listed above, cross-referenced by the members of your group with whom they have constituent relationships.

Email attachments or photocopies of all letters sent to the Hill should be forwarded to your group's headquarters or to a committee established for this purpose. That committee will be responsible for assuring compliance with the letter-writing assignments. This committee should also be responsible for preparing response letters to members of Congress who request further information, or whose replies contain errors that need to be corrected. The constituent who sent the original letter should sign such follow-ups; the drafting committee should not respond to the member on its own initiative.

### **Demonstrations**

Demonstrations are rarely as effective as a well-planned lobbying campaign. Get your members off the streets and into the halls of Congress, where they can make a much greater impact. Demonstrations are sometimes the only alternative, however, when you have a large, loosely structured 'cause' and it is impossible to effectively direct the activities of your membership. If you decide that a demonstration is necessary or desirable, it should be very carefully planned.

The demonstration section of your action plan should include the following:

- Names, addresses, phone number and email addresses of groups expected to participate in the demonstration, together with names of the leaders of such groups.
- Names, addresses, phone numbers and email addresses of all public authorities with whom you have spoken while arranging for permits and other logistics.
- List of speakers invited to the demonstration, time and place of their appearances and subject matter of their remarks.
- Housing information. For a large demonstration, including many people of moderate means, housing must be arranged well in advance. List all places where demonstrators can be housed before and after the rally.
- Plans for providing marshals. It is always best if your group can provide its own security. Establish programs to recruit and train as many marshals as it will take to keep your demonstrators from being marred by outside police action.

- Transportation. The best way to transport demonstrators from outside the Washington area to the rally is by bus. Have a complete list of all buses, their estimated time of arrival and parking arrangements.
- Instructions. Include a 1-2 page instruction sheet that will be provided to all demonstrators. Include such information as parade route and time, rally location and speakers, housing location and cost, instructions on obeying marshals, and procedures for demonstrators to follow if they are arrested.
- Procedures for dealing with arrests and detentions. The more emotional the issue, the more likely it is that arrests will occur. Outline procedures for your organization to follow if any members are detained by the police. Include names, addresses, phone numbers, email addresses of attorneys, of responsible police officers, of the prosecuting attorney's office and of the individuals in your group assigned to coordinate the release of your arrested members.

All of these items must be carefully planned in advance. If not, the demonstration may be disastrous.

### **Press Release**

From time to time your group should issue press releases, if only to reestablish your identity with the media. The occasions for press releases are almost infinite, but some of the most common are these:

- Issuance of a major policy statement.
- Announcement of a press conference.
- Reaction to a statement or action by the government or your opponents.
- Issuance of a study supporting your viewpoint by your group or some other group or agency.
- Announcement of major media events sponsored by your group or an affiliated organization.
- Announcement of changes in the composition of your group.
- Announcement of major policy changes, endorsement of political candidates or endorsement of the positions of other groups.

But don't overdo it. Releases should be issued only when there is a news peg to justify them. By their nature, releases should be irregular; this establishes their credibility and newsworthiness.

Press releases should be cleared through a committee of your organization. No one individual should be given sole authority to prepare and issue releases. They are the public statements of your position.

A press release should be carried by hand to the Washington offices of the publications you wish to reach. Sending it through the mail is an acknowledgement of the lack of urgency of your release and will substantially diminish the chance that it will be picked up by the press. Releases by email are often disregarded. If you use email, call before and after.

### **Letters to the Hill**

Each year, millions of letters arrive on Capitol Hill. Only a very small portion has a discernible effect upon the course of legislative events. Most of the balance is treated as junk mail, warranting a 3-second glance by an unpaid intern and a form letter for an answer.

## **Short and Simple: Ask for Action**

Mail arriving in an office is routed through the staff. The only letters to reach the member will be those that the staff feels merit his or her attention.

One criterion is length. Five-page, single-spaced letters almost never qualify for the member's attention. The best format is a regular business letter not exceeding two pages. Handwritten letters often receive special attention, particularly those written on the letterhead of a corporation or organization. The letter should be brief and to the point and should always include a request for action. Include the following elements:

- Brief description of your organization and its objectives.
- Description of the issue.
- Status of current law and/or pending legislation.
- Effect of passage or defeat of legislation on the member's constituency.
- Your group's position with regard to the issue.
- Request for specific action by the member.
- Reaffirmation of your group's interest in the member's position.

## **Names, Addresses and Serial Numbers**

A well-organized letter-writing campaign can be one of your most effective tools for influencing the outcome of legislation. In addition to the 'organization' letter, individual members of your group should also be encouraged to write to key members of Congress. Prioritize letters as follows:

- Letters to senators and congress members in your members' states or districts who have direct legislative influence over your issue.
- Letters to other senators and congressmembers in your members' state and district.
- Letters to other senators and congressmembers who serve on the relevant committees, but with whom your members do not have constituent relationship.
- Letters to any other senators or congressmembers.

Don't try to reach everyone on the Hill. Focus on the narrowest possible group, whether it be individual congresspersons, subcommittee members, full committee members, or caucuses.

If a bill has been introduced recently, it will be referred automatically to a committee and subsequently to a subcommittee. Most subcommittees do not have more than 20 members, and some have as few as 5-6. It is the subcommittee members who should be the first target of your letter-writing campaign. You will need the support of a congressional leader in any lobbying campaign, and a subcommittee member, particularly if he or she is of the majority party, can be indispensable. See if any members of your group have direct constituent relationships with any of the subcommittee members. These relationships are particularly useful if the subcommittee member in question is already inclined to be sympathetic to your position.

If the legislation has already been reported out of subcommittee, or if it is likely that it will be reported out, your next line of offense is the full committee. Since the full committee will have many more members, it is much more likely that your members will have direct constituent relationships with at least one or two of them. Concentrate your efforts on their offices, and work with friendly staffers to determine the best tactics.

Since legislation must go through an identical procedure in both the House and the Senate, you have four opportunities to focus your campaign before the issue goes before the full House and Senate. On the House side, you will have an additional opportunity. Almost all bills are routed through the Rules Committee, which acts as a traffic cop for legislation, assigning priorities for debate and establishing rules for floor consideration. This is a small but influential committee; if you can take advantage of any direct constituent relationships here, you should.

If your issue requires the expenditure of federal funds, you will get yet another chance to present your case. In both the House and the Senate, virtually all revenue measures must be considered both by the committee with jurisdiction over the subject matter and by the Appropriations Committee and its relevant subcommittee.

In addition, many bills affect more than one committee's jurisdiction. Be especially alert to this. Some of your strongest supporters may serve on one committee and be unaware that relevant legislation is pending in another committee.

### **Form Letters are Weighed, not Read**

A clear majority of all the mail received in a congressional office consists of preprinted post cards, form letters and handwritten letters with identical wording. Promoters of this type of letter-writing campaign must have incredibly low estimation of the intelligence of congressional staffers. The person charged with opening and routing mail needs to see only 3-4 identical letters before he or she starts putting them in the junk mail category. The writers of such letters will get a form letter in return. It is almost a certainty that the member of Congress will never see such communications.

The more personal your letter, the less likely the congressional office will be able to adapt its form response. Because of this, you can test a member's responsiveness to your letters and attention to your issue by analyzing his or her reply. If your original letter identifies specific individuals, issues and organizations, you can usually tell whether the member or the member's staffers have given it attention by noting whether your answer makes direct reference to those specifics.

In sum, it is a waste of energy to engage in a war of computers. Your form letter will be answered by form letters and you can be absolutely sure that the Hill's computers are better than yours.

### **The Fact Sheet**

The heart of an effective letter-writing campaign is apparent spontaneity. Members of your organization should write to members of Congress in their own words. They should be encouraged to include personal anecdotes. Misspellings, grammatical errors etc. are not important. The only thing that counts is that they wrote and that the facts contained in their letters are accurate. To assure that your members write, it is often helpful to provide them with paper, pens and stamped envelopes at a meeting and have them write out letters at that time.

The only written material you should provide to your members is a 3-4 page fact sheet that outlines the facts of the particular issues and your position. Never give a sample letter to the members of your group. Tell them not to send the fact sheet with their letter. It will destroy the spontaneity of their response.

The fact sheet should contain:

- Statement of the issue.
- Statement of your group's position.
- Status of proposed legislation or administrative action.
- List of reasons to support pending legislation.
- Proposed action you wish the member of Congress to take.

Unless your group's members are very sophisticated, the wording of the fact sheet should be relatively simple. If your members would not be expected to have an intimate knowledge of congressional procedures, do not include anything in your fact sheet that would give the impression that they have been coached.

The fact sheet should be sent with a cover letter to all of your members, which should also give the complete names and addresses of the members of Congress to whom you wish your members to write.

### **Following Up**

As the coordinator of a lobbying campaign, you will have to follow up both with your own members and with the Hill. During the course of the letter writing campaign, almost everyone in your organization will promise to write, but very few actually do. About a week after you send the request to your members, call them to inquire whether they have written their letters. Ask them to give you copies of their original letters or the responses from the Hill. You must actively seek a reputation as a nag if your letter-writing campaign is to be successful.

You should get sample copies of the types of letters that individual congressional offices are sending back to your members. They will give you a good idea of where the members of Congress actually stand on your issue – who your supporters and opponents are. Pay particular attention to letters that suggest a general sympathy with your cause, but state that the member cannot vote on your side on this particular issue. If a member takes this position, he or she may be a prime candidate for follow-up meetings in which you could discuss facts or answer questions about your issue.

If the responses include congressional critiques of your position, they may give you an idea of what kind of adjustments you should make in your lobbying campaign, especially if your views are misunderstood number of respondents. These critiques can also help you detect whether your opponents have been active. If the same objections or statistics appear in a number of negative responses, it's likely that your opponents have provided the information. It is incumbent upon you to rebut them.

If a response from a particular member of Congress includes facts, statistics etc. that are simply erroneous, you should immediately draft a polite response including the correct information and inviting the member to contact your organization for additional data. This draft response should be sent to the person who originally contacted the member of Congress and that person – not you – should forward it to the appropriate congressional office.

If a member of Congress continues to oppose your cause even after you have corrected his or her errors, it would probably be a waste of time and energy to continue the correspondence. If the individual is critical to the passage or defeat of the legislation, it might be worth your time to pay his or her office a personal visit, but endless correspondence is rarely productive, particularly since the

member is probably not drafting the letters personally. You should find out which staffer is putting these words in the member's mouth and speak with that person directly.

Some congressional offices are overwhelmed with letters. If a member of Congress does not respond to your letters within 2-3 weeks, it is advisable to send a second letter. Some offices respond only to letters originating within their district or state. Which may mean personal visits.

### **E-mail**

Many groups try to flood the Hill with email. But congressional offices hate spam, and they employ sophisticated spam filters to detect and delete mass mailings. Many limit their reading to mail coming directly from constituents.

Most offices also require that you specify the general topic of your note before they will allow you to send it. Many offices have very tight rules against attachments, fearing attempts by hackers to disrupt their systems.

### **The Congressional Visit**

Success seldom results from a concentration on face-to-face meetings to the exclusion of other lobbying methods, particularly good staff contacts and adequate homework. Meeting a member of Congress may be only a small part of a complete lobbying campaign, but it is essential nevertheless, and you should be sure to include it in your plans.

### **Whom To See**

Most of the real work of a lobbying campaign is done at the staff level and through your letter-writing and grassroots campaigns. It is essential, however, that you be in direct personal contact with your congressional allies. You should also plan on seeing swing members, whether they agree with your position or not. A swing member is one who can either control a number of other votes or decide a particular issue with his or her own vote. This includes committee and subcommittee chairmen, ranking minority members of all appropriate committees and subcommittees, and any other members of Congress who are known to have an active interest in your position. Finally, you owe a visit to members of Congress whose constituencies are particularly favorable to your position.

Before meeting with anyone, you should prepare a list of all members of Congress with whom you wish to speak. Develop a must-see list and a secondary list of members whom it would be helpful but not essential to have on your side.

When visiting a member of Congress who is not directly involved with your issue in committee, you should go out of your way to be sure that he or she is aware of a vital constituent interest in your matter. It is best if you can include one of the member's constituents in the group that meets with him or her – but never permit a powerful but uninformed constituent to speak for your group, even in the confines of the member's office. The constituent in question should always be accompanied by a person who is adequately briefed on all the issues and who is capable of following up on any questions that may arise during the course of the meeting.

## **The Summary Sheet**

For each of the congresspersons on your list, you should prepare a summary sheet. This will include data on the member.

The summary sheet should include analyses of what other groups think about the member. Dozens of lobbying organizations rank members according to how they vote on issues of concern to those organizations. The weight given to each vote and each issue varies from group to group, so the rankings compiled by one organization may not be directly comparable to another's grading policies. You should carefully note precisely what criteria are used by each group before making any sweeping judgments. A review of such rankings can provide a general idea of the political proclivities of a member and is a useful tool for preliminary analysis.

The next page of the summary sheet should outline your presentation to this particular member of Congress, stressing the factors you wish to discuss with him or her. You should tailor the summary sheet to the particular issues that will affect the member's vote, with particular emphasis on constituent relationships.

## **Arranging a Visit**

After you have prepared your summary sheet and contacted your constituent members, you should arrange for a meeting with the member of Congress by phoning his or her personal secretary. Tell the staffer with whom you speak that you will take no more than 15 minutes of the member's time, and emphasize the presence of the member's constituent at the meeting. If possible, the meeting should be arranged for a time when the member's committee is not scheduled for a session, and when the staffer can clear his or her own calendar. After you have arranged a time, be sure to coordinate with your own members who will be attending the meeting.

All these arrangements should be made at least a week prior to the actual appointment. Be sure to fax or email the personal secretary a brief summary of the issue you will be discussing and the names and positions of the persons who will be accompanying you to the meeting.

## **Staff Contact**

Be sure that the persons with whom you have been dealing on the congressional staff are fully briefed on the reasons for the meeting. Before the meeting, the staffers will have already briefed their boss. When you arrive at the office, the member will have a very good idea of the issues you wish to raise, as well as a proposed plan of action. You should work with the staffers on briefing papers that they will give to the member. In some offices, the staff will want to have dossiers on the constituent you will be bringing, on you, and on your group. You should provide these on request.

Failure to brief the relevant staff members is not merely a breach of protocol. It can be destructive to your entire presentation. After the meeting, if the member asks a staff aide what that was all about, and the aide does not know, you might just as well have stayed home.

## **What To Say and How To Say It**

Your meeting is arranged; you have briefed the staff; prepared your summary sheets, and made sure your constituent is aware of the issues. Now you must explain your position to the actual member of Congress.

When you arrive, first ask to see the members of the staff who will be sitting in on the meeting. You should discuss any last-minute developments with them and introduce them to the other people in your delegation. Eventually you will be ushered into the boss' office. If you have not met him or her before, the staffers should be given the opportunity to introduce you. If you have met, take the initiative and say how glad you are to see him or her again – stress the again – and introduce your other delegation members.

Give the member a one-page write-up of your issue and your position. If the staffers have done their jobs, the member will already have been briefed on most of the salient points, but you should stress the elements outlined in your write-up. If you have a constituent attending the meeting, that person should do most of the introductory presentation; you should merely fill in as necessary. If no constituent is present, you should still highlight the ways in which your case will benefit the member's constituents.

During the course of the meeting, take careful notes on both the points made and the questions asked of you – keep a legal pad on your lap for that purpose. Do not take notes on a laptop. Although it may seem more efficient, tapping on a keyboard during meetings with a member is distracting and vaguely disrespectful.

Never under any circumstances should you attempt to intimidate, threaten or bribe the member or make promises that you cannot keep. Most members of Congress simply will not respond to threats, bribes, unsupported allegations or skullduggery. That does not mean your presentation should be formal, however. You and your constituent should be straightforward, frank and explicit. You should present your case and ask the member in specific terms to commit to your objectives. This is a briefing session, but more important, you are attempting to get him or her to commit to a favorable or at least neutral position on your issue. Remind the member of his or her past votes and the issues involved in them. Stress the factual and political factors that you feel are most important to him or her, taking your lead from the staff members present. If someone in your delegation gets out of line, cut that person off short; you cannot afford the enmity of a member of Congress for personal reasons. Above all, keep your comments short. You should be able to present your entire case in 15 minutes unless the member extends the meeting by asking questions.

Be polite; be succinct; be aggressive. Don't be awed by a member's title. Since you have only 15 minutes, you should not be distracted by secondary issues – stick to the subject. Politicians have a penchant for diverting the conversation from uncomfortable subjects; don't let that happen to you.

At the conclusion of the meeting, leave a typed list of the names, titles and addresses of all your people who attended the meeting so the member can assess your importance and write follow-up letters if appropriate. You should also leave business cards. Often, the other members of your delegation will not have formal cards, but no matter how cursory your lobbying effort, you should have them made for yourself. They should be distributed not only at congressional meetings, but also at any session you have with staff members. A business card need not be elaborate. Your name, organization, address, email address and phone number on a simple white card is sufficient.

## **Follow-up**

After the meeting, you and all the other participants in your group should write thank-you letters to the member. All participants should also write separate thank-you letters to the staff members who took part. If you have been dealing with a particular staff member who was not able to attend the meeting, you should send that person a letter informing him or her of the meeting and the relative success you achieved.

In your thank-you letters, be sure to restate the basic points you made during the meeting itself and ask the member of Congress to take action on your behalf.

About a week after your meeting, you should call the member's staff to make sure the member has performed the tasks he or she promised. This should be done in a very low-key manner; no one likes to be nagged, but nag you must if you are to be successful. As soon as the member acts on a promise, you should be sure to write even more effusive thank-you letters and tell your constituents that the member has kept his or her word.

## **Demonstrations or Lobbying**

Demonstrations, though sometimes necessary, are rarely the most effective or desirable means of communicating your group's views to Congress. The chanting of slogans by faceless bodies is hardly the essence of rational debate. For example, environmentalists have largely abandoned mass demonstrations as their primary tool and have developed sophisticated networks of citizen lobbyists to influence legislation. Their effectiveness has been manifest. Literally hundreds of laws have been adopted in the past decade that protect everything from native grasses in Kansas to air quality in the Everglades. Similarly, your members can be infinitely more effective if they walk the halls of Congress rather than the streets of Washington. One hundred lobbyists, if properly motivated and trained, can be much more powerful than one thousand demonstrators.

The only circumstances in which demonstrations might be more effective than face-to-face lobbying are when you have minimal control of your own group or when supporting organizations are committed to your goals but you have no control whatsoever over their activities. In such cases it is sometimes better to keep them away from members of congress; they may do more to confuse the issue than to clarify it.

If you decide that a demonstration is the safest route, make sure you do it right:

- Recognize that the demonstration is as much for the benefit of your own supporters as it is to convince the Congress of the rectitude of your views. Demonstrations can build a feeling of solidarity within your organization and encourage your members to commit themselves to your group's objectives. A Washington demonstration is a political pep rally.
- Understand that demonstrations are media events designed to draw public attention to your issue. If your demonstration is to be effective, the media must be carefully apprised of your plans. The mere fact that you are having a demonstration or rally will not necessarily excite the press. You must also provide newsworthy events, in the form of either gimmicks or well-known public speakers.
- Since the news media are an integral part of your demonstration, don't allow too many of your warts to show. A noisy demonstration is one thing; an unruly one is another. Reporters are

always alert to newsworthy events; and massive arrests are certainly newsworthy. It is rarely beneficial to encourage or even tolerate disruptive activity.

- Because demonstrations are media events, be as visual as possible. Flags, posters and picket signs are de rigeur in any Washington demonstration. You should not, however, encourage the display or chanting of obviously anti-American symbols or slogans. An anarchist flag will alienate many observers who might otherwise be sympathetic to your cause. Symbols are indeed powerful, and they should be carefully chosen.

## Section II

### Ongoing Activities by Existing Small Groups

**Below are descriptions of activities of several groups/companies in different parts of the country. The information is taken primarily from their websites. The purpose of providing these descriptions is to enable you, the reader, to learn what is possible and desirable – what is now going on that is relevant to the conditions described in the pages above. And since you will probably not live near the groups/companies indicated, we encourage you to use the information provided here to 1) in the case of products/services, seek out competent nearby providers of the products/services, or 2) in the case of activism, join with existing activist groups or start your own group. We will do our best to help you with # 1 and #2 if needed.**

#### State and City Efforts to Limit Carbon Dioxide to 350 Parts per Million

**350 Massachusetts A Better Future Project 30 Bow Street Cambridge MA 02138  
info@betterfutureproject.org Sophie**

350 Massachusetts, a Better Future Project, is building a thriving, volunteer-led, statewide movement to address the urgency of the climate crisis. 350MA organizes and executes grassroots campaigns that advance a just transition away from fossil fuels toward sustainable energy practices and a carbon dioxide concentration of less than 350 ppm. 350's campaigns are distinguished by excellence in direct action, political advocacy, and diverse alliances.

In support of its mission, 350MA engages residents across Massachusetts, inviting them to become 350MA Node Team Members who participate in 350MA campaigns and support 350MA best practices. In addition, 350MA Node Team members may participate in local initiatives consistent with the goals and principles of 350MA. 350MA Nodes, Node Campaign Teams, Best Practices Teams, Statewide Steering Team and Local Initiatives are defined in 350MA Network Structure and Rules. 350MA cooperates with other state-level 350 networks in New England and beyond that carry out state and regional campaigns.

We now have Nodes across Massachusetts and are expanding. Current nodes are in Boston, Cambridge, Lowell, North Shore, Pioneer Valley, Metro-West, South Shore and Worcester.

Our newsletter goes to thousands of addresses every Monday. Our website provides references and community information.

350MA was not founded by and is not staffed or funded by 350.org.

Examples of our efforts include:

- Our executive director is on a panel with the MA Undersecretary of Energy to talk about the climate crisis and what the next steps are for Massachusetts.
- We shall attend a divestment panel, where local experts and allies will come together to discuss the pension fund divestment bill.
- We shall attend a huge rally to stop the proposed natural gas plant.
- We write letters to state officials urging them not to replace coal with natural gas.
- We went to a Climate Action Orientation Session – a friendly talk and a screening of Bill McKibben’s “Do the Math.”
- We shall go to: Indigenous activist Eriel Deranger and National Geographic photographer Garth Lenz talk about their experiences on the frontlines of tar sands oil extraction.
- We shall go to: Environmental Action 2014 – a day to learn and to network. Join 300 citizens, activists and experts for 20 high-caliber workshops. From the future of energy in New England to environmental health, to trainings on lobbying elected officials and fundraising.

For more information about 350MA, contact Malcolm Bliss – malcolm@350ma.org

**350 Local Groups:** “We believe a powerful global network of local movements working to stand in solidarity with one another at the global level and to transform their communities through popular education, grassroots organizing, and campaigning at the local level, is essential to stopping global climate change.

“350 groups do whatever is most crucial to stopping climate change in their communities, whether it be education, recruitment and team-building, campaigning and policy change, or working directly on solutions to cut carbon emissions. When key moments arise such as a critical decision about a devastating fossil fuel project or a global day of action, we hope 350 groups will take action in solidarity, knowing that our voices are louder and more persuasive when we take action as a global movement.”

### **Citywide Effort that Focuses not only on Climate Change but also on Other Injustices**

**Community Organizing Center Mark Stansbury 1101 Bryden Road Columbus OH 43205  
614-252-9255 walk@igc.org**

Community Organizing Center works in four work task areas: 1) Economic and Environmental Justice Networking; 2) Ohio Cuba Action Group; 3) Congregation-based Community Organizing; and 4) Indigenous Peoples Observations. We focus on world nuclear disarmament, human/native rights, poverty politics, Earth politics and war/peace issues.

Energy and Environmental justice concerns have grown to be critically central to most of how we look at other issues, such as economic development, energy politics and ecological balances.

Two upcoming events are the Tear Down the Walls national tour that we are helping to host, March 28, 2014, 7 PM, at the Barack Community Recreation Center, 580 Woodrow Ave, Columbus Ohio 43207. Also we are organizing a DIY series of workshops (May 17, 2014) on sustainability on the

community level: community gardening, wellness practices, bike maintenance and safety, personal safety for female residents, youth employment incubator and prisoner solidarity.

### **Conservation and Renewables**

**JK Mechanical 202 West Kendig Road Lancaster PA 17584**

**800-JKM-0028 717-464-0111 410-656-2700**

**Ken Leaman – Owner/President Chris Leaman – Owner/Vice President**

Turn your home into a power source with a solar panel system from JK Mechanical. Nothing generates more power than the Sun, so why not take advantage of it? As traditional energy sources become more costly, using a solar energy system to power your home, business or farm is a smart choice – for your wallet and our world.

JK Mechanical can help you determine the right system for your property and your usage. With more than 30 years of experience and expertise in installing solar systems, JK Mechanical understands the technology...and incentives available to make your solar panel system more affordable.

With JK Mechanical's smart energy solutions, you get:

- Fast installation by a factory-trained company
- Guaranteed performance for up to 25 years
- Management of your SREC paperwork with the state and your energy company
- Lowered electricity bills immediately

Since our start in 1979, we've been bringing smart energy solutions to families and businesses in Pennsylvania and now proudly serve Maryland. Our clients put a high level of trust in our people and products and value the comfort we provide.

Whether you need routine maintenance, emergency repair, replacement equipment, energy saving tips or a complete system – we promise to put you first to bring you the comfort that you desire:

- Heating and cooling
- Geothermal
- Solar

**Mission Statement:** To strive for excellence in providing smart energy solutions, comfort and security to our clients, employees and partners through relationships built upon integrity and trust.

#### **Core Values:**

- We recognize that everything we have is a gift from God. He has entrusted this company to us and we honor Him in all we do.
- We strive to live our core values through our corporate and personal actions, and we will not compromise those values to achieve desired business results.
- We strive to treat everyone as we would like to be treated. We recognize the importance and value of our co-workers and their families, our clients, and our business partners. We believe they are an integral part of our overall success.
- We pursue excellence and seek continuing improvement in all we do.
- We have a responsibility to earn consistent and satisfactory profits. As good stewards, we believe that profit is an integral part of caring for our people, our partners and our community.

**Solar PV.** With our solar PV systems, we have a solution for every application. Our PV systems deliver high solar output to generate free electricity for homes, businesses and farm operations. Our solar systems include everything needed – modules, inverter, switch, mounting hardware and installation. We can also combine solar PV with our solar thermal products for an all-inclusive solar energy solution that includes domestic hot water. Bear in mind that:

- Solar is sustainable and renewable, meaning we will never run out of it.
- Power is generated by solar panels, not by a utility company, so you don't pay for electricity.
- Solar systems are virtually maintenance-free.
- Solar electricity produces zero emissions and does not negatively affect our environment.
- If you produce more energy than you use, you can sell it to the utility company for electricity credits.

**Solar Water Heating.** Solar thermal is the collection, storage and use of heat from the sun to make hot water. By using solar to heat your water, you can lower your utility bills – without inconveniencing your lifestyle or comfort.

**Geothermal.** Save up to 70% in heating and cooling costs. With more than 30 years of experience in geothermal systems, JK Mechanical is recognized as the geothermal authority in Pennsylvania and Maryland, installing nearly one thousand systems in the last five years alone.

Whether you're building a new home or replacing or retrofitting an existing system, JK Mechanical works with you or your builder to install the new system. Have a home without an existing air distribution system? No problem. Our team of designers, project managers and installation technicians are experts in adding ductwork to even the most challenging floor plans.

Contact our geothermal experts for a free analysis to find out if geothermal is right for your home. They will help you better understand the following:

- The type of geothermal system needed for your home
- Your projected savings and return on investment
- Tax incentives
- Financing options.

**How does geothermal heating and cooling work?** Outdoor temperatures fluctuate with the changing seasons but underground temperatures don't. Six to nine feet below the Earth's surface, temperatures remain relatively constant year-round. A geothermal system, which typically consists of an indoor unit and a buried earth loop, capitalizes on these constant temperatures to provide 'free' energy. In winter, fluid circulation through the system's earth loop absorbs stored heat and carries it indoors. The indoor unit compresses the heat to a higher temperature and distributes it throughout the building. In summer, the system reverses, pulling heat from the building, carrying it through the earth loop and depositing it in the cooler earth. Unlike ordinary systems, geothermal systems do not burn fossil fuel to generate heat. They simply transfer heat to and from the earth to provide a more efficient, affordable and environmentally friendly method of heating and cooling. Some geothermal heat pumps can provide all of your hot water needs at the same high efficiencies as the heating/cooling cycles.

**Home energy audits.** JK Mechanical's certified BPI experts can evaluate a home or building to identify energy use and hidden energy wasters. Using state-of-the-art thermal imaging technology, we

can detect problem areas that affect the efficiency of your home or business. Our home energy audit includes:

- Insulation inspection
- Air leakage/infiltration
- HVAC component inspection
- Lighting evaluation
- Appliance evaluation
- Indoor air quality test
- Duct work inspection

**John Patterson   jpmoney@juno.com   SOGREENGO.COM   607-723-0759   Binghamton NY**

“Six years ago I took two BPI (Building Performance Institute) courses and became a certified energy auditor. The name of my company is Southern Green Tier Consulting. I saw a great service in helping people to reduce their use of energy. I decided not to be a contractor, but to do consulting on how to reduce energy consulting, point out safety issues and reduce the cost of energy, all of which leads to a reduced carbon footprint. If the suggestions I make are followed, energy use can be reduced by 15-50% for less than \$1,000.

“Some of my special projects have been: residential buildings, industrial warehouses, churches and fraternity houses, in which I have handled moisture problems, energy auditing and HEAP energy programs

“Last June 2012 I had 12 solar panels installed at my residence. What a difference in cost! My electric bill has not gone over \$17 per month. I derive great satisfaction from seeing my solar energy sent back to the grid. I am part of a newly organized non-profit to organize group-buying of solar for Tioga and Broome NY counties. Our goal is to cut the cost of electricity in half and to do up to 200 buildings.

“If you are interested in conservation and/or solar, communicate with me by email. I’ll respond ASAP.

“If you live within 40 miles of Binghamton, I’ll gladly come to your house, but if you’re farther away, I need to charge a little for travel costs.”

**The BPI website:** “In 1993 a group of building tradesmen and weatherization program professionals had a vision for independent, third party verification of worker skills in the weatherization industry. From this vision the Building Performance Institute took its first steps.

“BPI has played a pivotal role in shaping the nascent home performance industry by developing technical standards, credentials and quality assurance relied upon by thousands of contractors. Today, BPI-certified professionals hold over 35,000 active certifications across all 50 states and four foreign countries. More than 130 energy efficiency programs specify BPI credentials to ensure quality.

“BPI develops standards for energy efficiency retrofit work using an open, transparent, consensus-based process built on sound building science. From these standards, we’ve developed professional credentials for individuals, accreditation for contracting companies – including quality assurance programs – that help raise the bar in home performance contracting.

“For many homeowners and tenants, energy bills account for far too much of their monthly budget. These homes often suffer from performance problems ranging from inflated energy consumption to poor thermal comfort to indoor air quality issues.

“By building confidence in the capabilities of the home performance workforce, we help to create sustainable, green-collar jobs in local communities – jobs that cannot be exported – while helping to improve the comfort, health, safety, durability and energy efficiency of America’s existing homes.”

### **Wesson Energy**

**165 Railroad Street Waterbury CT 06708 203-756-7041**  
**customerservice@wessonenergy.com websales@wessonenergy.com**

Wesson Energy believes in a whole-home approach to home energy efficiency. This means making sure that the entire house functions as a system: that HVAC equipment is installed correctly, that there is suitable installation and ventilation, and that ductwork is properly sealed and sized. This approach is called home performance contracting.

As part of this approach, Wesson will systematically inspect your entire home to determine how to make it more safe, healthy, comfortable and energy-efficient. This helps you identify and prioritize your options. For example, Wesson might identify insulation as a more immediate (and cost-effective) improvement than replacing a furnace.

Wesson offers experienced, fairly-priced contractor services and can also refer you to specialists if needed. Wesson contractors work closely with our home energy auditors to make sure that the work is properly targeted to your specific needs and budget. In addition, we offer a wide variety of services – including testing, diagnostics, HVAC, plumbing, electrical and insulation – and we understand how they work together.

Wesson’s contractor services are accredited through BPI, the nation’s premier standards development and credentialing organization for residential energy efficiency retrofit work. Wesson uses state-of-the-art equipment to test, identify and implement energy efficiency improvements. Our goal is to transform an energy-inefficient, uncomfortable and unhealthy home or workplace into an energy-efficient, draft-free, comfortable and healthy one, while lowering your energy costs and providing ‘green’ eco-friendly solutions.

Weatherizing your home is about cutting your energy costs by reducing heating, cooling and electrical demand. Depending on your home, it can mean air-sealing by weather-stripping and caulking windows, installing attic and sidewall insulation and other activities designed to cut energy consumption. Insulation plays a big role in energy savings.

Of the 130 million homes in this country, many of them – especially in the Northeast – were constructed before modern energy and building codes were established. If yours is one of those homes, it’s wasting energy and money by leaking warm air in the winter and cold air in the summer. Our certified technicians can address these issues by installing insulation, sealing leaks and many other weatherizing options. We employ BPI-certified energy installers to ensure that the insulation we install in your home is done safely, properly and cost-effectively.

Insulation materials (cellulose, fiberglass, foam etc.) are applied to areas of your home that separate conditioned spaces (heated or cooled) from non-conditioned spaces (unheated or uncooled). Without insulation in the walls and ceilings, your heating and cooling units have to work harder to maintain desired indoor temperatures. How well your insulation performs is measured by R-value – its ability to resist heat flow. Higher R-values mean more insulating power. Different R-values are recommended for walls, attics, basements and crawlspaces, depending on your area of the country. Insulation works best when air is not moving through or around it, so it is very important to seal air leaks before installing insulation to insure that you get the best performance from the insulation.

The best place to begin is by assessing all the insulation levels in your home, including the attic, exterior walls, basement and even connecting garages. You will want to note each type of insulation (cellulose, fiberglass) because each type has a different R-value per inch. Once you know what type and what R-values you have, you'll want to make sure that you are at the recommended insulation levels for your area.

Whether you're paying to heat or cool your home, the last thing you want is for the heated or cooled air to be leaking out through cracks in your home's exterior shell – a waste of energy and dollars. These leaks are preventable if you know where to look and have your caulk tube ready to use. To obtain an exact measurement, hire a professional technician.

Properly ventilating insulated areas is also a critical component of a safe insulation job. Roof vents are needed to expel moisture that could cause insulation or other building materials to deteriorate during winter weather. Summer roof temperatures are greatly reduced with proper ventilation, thus lengthening the life of your roof.

Some criteria for a home energy efficient company:

- Runs specific tests and measurements to properly size equipment.
- Checks all registers and grilles in each room for proper sizing.
- Looks over your existing duct system, do an air flow test and make suggestions for improvements.
- Measures your windows, doors, rooms and look at the insulation in the attic and crawlspace.
- Licensed by the State and have all the proper insurances.
- Provides references.
- Will obtain the proper permits.
- Provides you with a warranty on the installation.
- Discusses possible upgrades and benefits of higher efficiency equipment.
- Discusses Energy-Star rated equipment and possible rebates and tax credits.
- Provides an AHRI certification to prove system performance and to verify that the equipment is eligible for the tax credits.
- Provides a written quote including everything you'll need, that includes all electric work, states that the job will be to codes of your town and the state, states that the contractor will remove and dispose of your existing equipment, covers the installation of all the gas lines and tanks that may be needed with the installation.

### **Solar and Conservation Architecture**

**Watrous Associates 2711 West Main Street Louisville KY 40121 502-776-7007**

Watrous Associates specializes in passive-solar construction. Our designs produce beautiful, light-filled and energy-efficient homes and businesses. Since 1985, Watrous Associates has given clients the highest quality personalized service to ensure that the constructed space meets their unique expectations. We have set the standard in the Midwest for passive-solar designs for: residences, businesses, schools, churches, institutions, additions and renovations, eco-villages and communities and solar electric designs.

**Vision Statement:** “The 21<sup>st</sup> century requires a new vision of architecture and of our relation to planet Earth.

“In order to properly sustain ourselves as a people, we Americans must see how we are interconnected to all peoples of the Earth. Not only in a ‘global economy’ but in a global family.

“NASA’s famous photo of the Earth as seen from the moon should become our guiding image. It will enable us to see that we are already in outer space. As Buckminster Fuller said: “The only difference between the Earth and a regular spaceship is that we have not found the operation manual yet.”

“We must envision the life-support systems of the Earth as resembling those of a spaceship we need in order to reach the nearest star. Each generation will complete one leg of the journey, and our ultimate destination will be reached by our grandchildren’s grandchildren. In order to complete the journey, each crew must sustain the ship and leave it in excellent condition for the next crew. If we treated the earth as a spaceship, we would treat her in the proper way and maximize the sustainability of ourselves and other species.

“An important way to actualize this vision is constructing environmentally-sustainable, energy efficient buildings now. This is why Watrous Associates is committed to creating state-of-the-art, super-insulated, passive solar Sun-Earth homes and other energy-efficient buildings.”

What is Passive Solar? The term ‘passive solar’, in its purest sense, means collecting the sun’s heat without any machines or moving parts, like pumps or fans. Think of the way an automobile sitting unused for several hours can still be nice and warm on a sunny but cold winter day. The sun simply shines in through the windows and heats the interior of the car. This is passive solar in action.

In contrast, ‘active solar’ means collecting the sun’s energy and using machines, pumps, fans or moving parts to move the heat where it is needed. For a house, this form of solar requires specially manufactured solar collectors on the ground or roof of a house. If a water mixture is run through the collector, a pump and piping are required to move the fluid to a heat-exchanger inside the house. If air is run through the collector, fans, ductwork and a heat exchanger are required.

Watrous Associates designs for year-round energy efficiency. Their designs for homes and other buildings, such as churches, offices and daycare centers, are based on national standards developed by the National Renewable Energy Laboratory in Golden, Colorado.

Passive solar, rather than active solar, is best for energy efficiency in the Midwest region. This is because active solar requires clear days, while passive solar works well on partially cloudy days more typical of our region. And even on an overcast day, more solar energy is gained through south-facing windows than is lost – just as one can get a sunburn at the beach on an overcast day.

When the sun shines in through the south-facing glass of one of our homes, the concrete subfloor is heated, as well as the air in the room. The warm air is drawn off near the ceiling and driven by a regular furnace fan into the house heating ducts. The ductwork then delivers the passive solar heat into all the rooms of the house through the hollow concrete subfloor. This cycle is repeated over and over, transmitting the solar heat to the floor for radiation back to the house at night. On cold, cloudy days the furnace functions normally, providing the fast heat-up of a regular gas-fired system as well as the benefits of radiant floor heating.

Super insulation techniques cut summer air-conditioning bills in half compared to conventional construction. In addition, we use methods such as radiant barriers, natural ventilation, sunshading by trees and vegetation, whole house fans, and building placement on the site to take advantage of summer breeze, sunshading from trees etc. to further reduce cooling costs.

Our homes feature:

- Super-insulated walls and ceilings that minimize energy bills in winter and summer
- Passive solar systems that provide 30% to 50% of winter heat
- Windows placed to maximize solar energy capture and minimize energy loss
- Open interior design that provides bright natural lighting and a connection to the outdoors
- A patented Airfloor system that stores solar heat in the concrete subfloor and provides comfortable radiant heat in winter
- Over the course of a lifetime of a home, savings on energy bills can equal the entire original construction cost.

Airfloors are key to achieving the remarkable energy-efficiency of our homes. An Airfloor unit is a piece of sheet metal stamped into a bowl shape, with an opening on each of four sides – like an igloo with four entrances. Hundreds of these units are hooked together on top of the home's subfloor, and regular concrete is poured 3 inches deep over all of them. The result is a hollow floor which can be finished with wood, tile or carpet. This floor system takes the place of first floor ductwork for heating and cooling. In winter it provides a convenient way to store solar heat underfoot – providing a pleasantly warm surface. The Airfloor functions like a 'heat battery' for the sun's energy. By using the fan (but not the burners) in the furnace, warm air heated by the sun is cycled many times through the floor. Heat is thus distributed to all rooms in the house, and the floor is 'charged up' to radiate the heat into the house at night. This type of air-powered radiant floor achieves the rapid heat-up and cool-down of a regular forced-air system.

**David Wright Architect 563-B Idaho Maryland Road  
Grass Valley CA 95945 530-477-5057**

As an early pioneer in passive solar design, David has designed solar architecture for virtually all climate zones and has authored three books which have helped define the principles of architectural climate design and the types of architectural solutions which are the mainstream concepts today. Throughout his architectural career, he has developed techniques which can address almost any architectural and lifestyle needs in almost any climate zone. We do: space heating, space cooling, domestic water heating, natural ventilation, natural cooling and daylighting.

We are experienced with all types of solar systems, and have organized a team of design and installation consultants who can provide complete services for conditioning needs of any type of

building. We do: space heating needs, radiant heating systems, domestic water heating, solar mechanical systems and evaporative cooling systems.

Our expertise also includes the integration of solar photovoltaic systems (PV) with our building designs. We work with consultant teams for design, installation and maintenance of PV roof arrays, remote arrays, battery storage and grid interface systems for: lighting, sound, refrigeration, power, communication, cooling and water pumping.

As solar environmental architects, we have over 35 years of experience with alternative and appropriate building materials and systems. We've designed buildings that integrate structural and finish materials which are non-resource depleting, environmentally green and clean, and which perform well for a wide range of individual and architectural needs. Each project calls for a certain combination of appropriate systems and materials which respond to the climate zone, construction parameters, and budget. We work with a varied team of engineers and builders. All are experts in their fields. Together we are conversant with and specialize in many types of construction, such as: adobe, earth sheltered, engineered lumber, insulated concrete, post and beam, rammed earth, steel frame, straw bale, structured insulated panels and wood frame.

We have a working knowledge of and expertise in many performance type attributes of construction, notably: sustainability, high thermal efficiency, daylighting, natural ventilation, fireproofing, non-toxicity, low maintenance, earthquake and hurricane resistance and acoustic control.

We have been designing Structural Insulated Panel (SIP) system applications for over 15 years. This relatively new technology uses material resources in an extremely efficient way. A typical panel is comprised of a solid core of Expanded Polystyrene (EPS) with a skin of Oriented Strand Board (OSB) structurally laminated to each side. The resulting panel acts as a stress skin panel or 'surf board' type building element. SIPs exhibit the best characteristics of engineered building materials and systems: high strength, high thermal performance, resistance to insects, non-toxic, exact true and stable framing, high sound proofing and extreme ease and speed of construction.

The SIPs are first laid out to best suit the building design, and engineered for the structural requirements. Then a fabrication company prepares CAD Shop Drawings and prefabricates the roof and exterior walls in a shop environment. The labeled and quality-checked panels are bundled and delivered to the job site, where a small team erects the structure in a matter of hours or days, rather than days and weeks.

The majority of our work today includes the introduction of SIP technology for office buildings, commercial buildings and residential applications. We foresee the day that this technology will be mainstream and dominant, perhaps using sustainably harvested material sources.

## **Keystone XL Pipeline/Tar Sands**

### **Sustainable San Rafael**

**Bill Carney – President    To email Bill, look on our website**

Sustainable San Rafael is an all-volunteer group of folks dedicated to advocacy and education to help bring about a healthy and aware society. We are organized around the idea that we can and must do more to fight climate change and encourage sustainable living.

Some of the educational events we've sponsored: a candidates debate specifically about sustainability issues, a public forum on the future and value of county-wide planning and an evening with author Mark Hurtzgaard on how to manage the unavoidable climate change that is already occurring while working to avoid the unimaginable impacts we're heading toward.

Our advocacy successes include working with the City of San Rafael to adopt both a Green Building ordinance and a Climate Change Action Plan that have become models for many other jurisdictions.

Additional events:

- Environmental Forum 2014 Lecture Series - Fracking
- Climate Leadership Forum: What would climate leadership look like in Washington?
- Sonoma County Board of Supervisors voted to move ahead with setting up a Community Choice Aggregation clean power agency
- We've prepared a letter for you to send to Obama, urging him to "take Executive action now to demonstrate that climate is a national priority by drawing a line in the Tar Sands and rejecting the Keystone Pipeline."
- With Marin organizations, we sponsored our second forum on the topic of planning the future of our communities in the era of Climate Change.

### **Native American Alliance**

A Native American Alliance is forming to block construction of TransCanada's proposed Keystone XL pipeline which still needs final approval from US President Barack Obama after the State Department released an environmental report indicating the project wouldn't have a significant impact from Alberta tar sands production.

Members from the seven tribes of the Lakota Nation, along with tribal members and tribes in Idaho, Oklahoma, Montana, Nebraska and Oregon have been preparing to stop construction of the 870 mile pipeline, which is slated to run, on the US side, from Morgan, Montana to Steel City, NE, and pump 830,000 barrels per day from Alberta's tar sands. The pipeline would originate in Hardisty, Alberta.

"It poses a threat to our sacred water and the product is coming from the tar sands and our tribes oppose the tar sands mining," said Deborah White Plume, of the Oglala Sioux Tribe, which is part of the Lakota Nation in South Dakota. 'All of our Tribes have taken action to oppose the Keystone XL Pipeline.'

The Lakota Nation is preparing for the eventuality the pipeline receives approval. The Nation has led the formation of a project called 'Shielding the People' to stop the pipeline. The Lakota also launched a 'moccasins on the ground' program to train people in indigenous communities to oppose the pipeline.

There are also plans to set up spiritual camps along the pipeline's route. But when and where those camps will spring up remains a closely guarded secret.

"It will band all Lakota to live together and you can't cross a living area if it's occupied," said Greg Gray Cloud, of the Rosebud Sioux Tribe. "If it does get approved, we aim to stop it."

The Nez Perce tribe has already used its treaty rights to block the transport of so-called megaloads of mining equipment headed for Alberta's tar sands through its territory. The Tribe launched blockades and won a court battle to stop the shipments from traveling its lands.

"It will be obvious, it will be concrete, and I think once it starts and they start building, you will start to see the momentum and the force of the tribal people.....it is an epic project, and it will have an epic response from the tribal people," said Gary Dorr of the Nez Perce tribe in Idaho. "The tar sands is already affecting the people, climate change is already obvious. To facilitate that is not something the Native people of the US are going to do. We are not going to sit idly by and let it happen."

Paula Antoine, who works for the Rosebud Tribe's land office, said while the pipeline does not cross any Lakota reservation lands, it comes close, sometimes yards away. Antoine said the pipeline, however, cuts through their treaty territory, sacred sites and waterways. "They aren't recognizing our treaties, they are violating our treaty rights and our boundaries by going through there," said Antoine.

The battle lines have already been drawn in tribal council chambers. The Oglala Sioux tribe passed a resolution banning TransCanada from entering its territory. The resolution received unanimous consent.

The Lakota, Dakota and Nakota make up the Lakota Nation. The Nation includes the tribes of Rosebud, Oglala and the Cheyenne Indian reservation, the Yankton Sioux Tribe, Standing Rock, Flandreaux Sioux Tribe and the Crow Creek Sioux Tribe.

## **Fracking**

**Faith Communities for Frack Awareness (FaCT) 440-940-6427**

**Ron Prosek rprosek.fact@gmail.com**

**Our Mission:** As members of faith communities in Ohio, we will work together to protect God's creation from the harm caused by the extraction of resources such as oil, natural gas, coal and other non-renewable sources of energy. We will do this by:

- Working to educate the public about these harms, including harm to our clean water resources, especially those caused by high volume, high pressure, slick water hydraulic fracturing (fracking) for natural gas and oil.
- Working to end the exploitation of workers and landowners involved in these activities, many of whom are impoverished and disadvantaged.
- Encouraging faith communities not to lease parish land for fracking and to warn their members to not lease their personal lands for fracking.
- Mobilizing faith communities to help pass federal, state and local laws which protect our water and air, as well as human health and safety in the communities where any step of energy production is practiced.
- Mobilizing faith communities to work for the conservation of energy and protection of our potable water, and for the development, promotion and utilization of truly clean, renewable sources of energy now.

**Our Vision:** We envision an Ohio where clean, renewable energy is safely produced and where hydrocarbons are used only in a limited way as a transitional source of energy until all energy is supplied by clean, renewable sources. When needed, hydrocarbons will be extracted in the safest

possible manner under a regime of thorough and appropriate regulations that are rigorously enforced so that the human rights of workers, landowners and the community are honored and respected. We further envision an Ohio where citizens are educated and empowered to conserve energy, and where citizens value the blessings of clean air and water.

**Marcellus Protest c/o Thomas Merton Center 5129 Penn Avenue Pittsburgh PA 15224  
724-485-9835 info@marcellusprotest.org**

Marcellus Protest is an information clearing house about Marcellus Shale gas drilling and activism and related issues. Although this website's primary geographic focus is Western Pennsylvania, Marcellus Protest also includes content pertaining to the five states in which the Marcellus Shale is located – as well as other shale gas formations across the U.S. A new social movement is in the making, and it's going national.

Marcellus Protest is an alliance of Western PA groups and individuals building a broad movement to stop the destruction of our environment and communities caused by Marcellus Shale gas drilling as well as to support other directly affected communities.

On November 3, 2010, we held our first demonstration. More than 500 people were in attendance.

In addition to organizing this protest, we organized rallies and other activities to support Pittsburgh's ban on state gas drilling. The ordinance passed by a vote of 9-0.

Since then, we have continued to be engaged in the following activities:

- Advocating for legislation to ban shale gas drilling throughout the region
- Creating and distributing publicity and educational materials
- Organizing video screenings
- Helping to project and amplify the voices of directly affected communities
- Pitching stories to the media
- Supporting and promoting other protests and actions as the need and opportunity arise
- Fundraising and dispersing funds for our activities.

### **Information about Hydraulic Fracturing from Marcellus Protest**

Hydraulic fracturing is a means of natural gas extraction employed in deep natural gas well drilling. Once a well is drilled, millions of gallons of water, sand and proprietary chemicals are injected, under high pressure, into a well. The pressure fractures the shale and props open fissures that enable natural gas to flow more freely out of the well.

Horizontal hydrofracking is a means of tapping shale deposits containing natural gas that were preciously inaccessible by conventional drilling. Vertical hydrofracking is used to extend the life of an existing well once its productivity starts to run out, sort of a last resort. Horizontal fracking differs in that it uses a mixture of 596 chemicals, many of them proprietary, and millions of gallons of water per frack. This water then becomes contaminated and must be cleaned and disposed of.

In 2005, the Bush/Cheney Energy Bill exempted natural gas drilling from the Safe Drinking Water Act. It exempts companies from disclosing the chemicals used during hydraulic fracking. Essentially, the provision took the EPA off the job. It is now commonly referred to as the Halliburton Loophole.

In 1974, the Safe Drinking Water Act was passed by Congress to ensure clean drinking water free from both natural and man-made contaminants.

The FRAC Act is a House Bill intended to repeal the Halliburton Loophole and to require the natural gas industry to disclose the chemicals they use.

The average well is up to 8,000 feet deep. The depth of drinking water aquifers is about 1,000 feet. The problems typically stem from poor cement well casings that leak natural gas as well as fracking fluid into water wells. Generally, 1-8 million gallons of water may be used to frack a well. A well may be fracked up to 18 times.

For each frack, up to 80-300 tons of chemicals may be used. Presently, the natural gas industry does not have to disclose the chemicals used, but scientists have identified volatile organic compounds (VOCs) such as benzene, toluene, ethylbenzene and xylene.

The gas comes up wet in produced water and has to be separated from the wastewater on the surface. Only 30-50% of the water is typically recovered from a well. This wastewater can be highly toxic. Evaporators evaporate off VOCs and condensate tanks steam off VOCs, 24 hours a day, seven days a week. The wastewater is then trucked to water treatment facilities. As the VOCs are evaporated and come into contact with diesel exhaust from trucks and generators at the well site, ground level ozone is produced. Ozone plumes can travel up to 250 miles.

### **What's the Big Deal?**

The well pads are 20 acres on average, and massive amounts of space are cleared for additional infrastructure such as holding ponds and condensate tanks. Communities with many tanks will see the addition of compressor stations, gathering and processing facilities, and miles of new pipelines.

Slickwater hydrofracking adds tons of toxic chemicals to the frackwater. When the wastewater comes back out, it is full of even more toxic chemicals that occur naturally in the Marcellus Shale formation:

- Benzene, toluene, ethylbenzene, xylene (BTEX)
- Radioactive elements including radium, barium, strontium and uranium
- Heavy metals including lead and arsenic
- High levels of mineral salts such as bromides and chlorides. This wastewater is being dumped with little or no treatment into the same rivers and streams from which we draw our drinking water.

Wherever Marcellus development has occurred in Pennsylvania, reports of poisoned water, sick kids and dead animals have followed. And every month or so, there is another blowout or explosion.

Shale drilling gives off massive amounts of particulates and volatile organic compounds, which combine to form ozone and smog. We already have unhealthy levels of these pollutants in our region. Unhealthy means higher numbers of deaths from lung and other cancers, higher rates of death from heart disease, and higher rates of asthma and other respiratory distress, especially in children

Leaky valves abound at the well site. Wells are flared into the open air for days to test their contents. Wastewater full of volatile organic compounds is left in huge open-air ponds near home sites. People

who live near well sites, compressor stations or wastewater treatment facilities are likely to be exposed to high levels of toxic air pollutants. Out West, many cases have been documented where residents developed debilitating illnesses after drilling moved in. Symptoms include nosebleeds, skin problems, chronic fatigue, confusion and nervous system damage.

After two years of intensive drilling in PA, the DEP has done no more than ask drillers to voluntarily cease dumping untreated frackwater into our rivers. The governor and many legislators have received thousands of dollars in campaign contributions from drillers.

A few sad facts:

- Warnings of contaminated water are now posted in the Allegheny and Moshannon State Forests.
- The gas companies are now selling their leases to China, Korea, Japan, India, Norway, Germany and England.
- Fourteen waste disposal facilities along the Monongahela Watershed are accepting chemically contaminated 'frack' water, diluting it and dumping it directly into our rivers. 824,825 lbs. of total dissolved solids, 15,053 lbs. of barium, 16,737 lbs. of strontium, and 486,812 lbs. of chloride are permitted disposal into the Mon River every day.
- Costs related to health impacts resulting from contaminated air and water and environmental cleanup will far outweigh any benefits from this industry.
- Banks are not lending against frac-drilled and adjoining properties.

### Forests

**Allegheny Defense Project 117 West Wood Lane Kane PA 16735**  
**Ryan Talbott 503-887-7845 rtalbott@alleghenydefense.org**  
**Cathy Pedlar 814-454-7523 cpedlar@alleghenydefense.org**  
**Bill Bellitskus 814-778-5173 bbellitskus@alleghenydefense.org**

The Allegheny Defense Project is dedicated to protecting and restoring the wild forests and rivers of the Allegheny Plateau and the Allegheny National Forest, Pennsylvania's only national forest.

We have been engaged in monitoring and research, education, participation in the public decision-making process, litigation, and promoting responsible outdoor recreation since 1994. We are the only grassroots organization with a restoration-focused vision for the Allegheny. We support a citizen-led, public land ethic that promotes biological diversity and protects water quality, wildlife habitat, natural heritage, wilderness and recreation opportunities.

**Water quality and watersheds.** There are 3,000 miles of roads in the Allegheny National Forest. Two thousand miles of these are non-system, oil and gas roads, which are not constructed or maintained according to Forest Service standards. The resulting runoff and sedimentation impacts the Forest's springs, streams and the Allegheny River. The problem is worsened by the acidic sandstone used to build the roads, which causes the acidification of the Forest's water resources. The density of well drilling, lack of monitoring and weak regulations result in oil and gas spills, and drilling products finding their way into the Forest's waterways. Marcellus Shale development has begun. The chemicals used in this deep drilling process, many known carcinogens, are unregulated. Massive water withdrawals from surface resources and aquifers are also allowed with no regulation and no monitoring. Deep gas well drilling requires millions of gallons of water for each well. No facilities to treat the toxic waste from the deep drilling process currently exist in Pennsylvania.

**Natural Heritage.** The Forest has a rich natural and cultural heritage. Since its designation in 1923, decades of clearcutting and oil and gas drilling have left a large human footprint on the forests and rivers.

The landscape of the Allegheny has been drastically altered over the last 120 years by continuous commercial logging and oil and gas development. Few remains of our original Allegheny Hemlock-Beech forests remain. These remnants are a repository of biological information that gives the forest its ability to weather ecological crises. Strong protections are vital to the Forest's ability to respond to continuing threats imposed by air pollution, invasive species and climate change. By protecting and expanding our elder forest remnants as biological databases we are providing a tool for restoration of our native Allegheny forests.

**Industrial Extraction.** The Allegheny National Forest is one of the most mismanaged national forests in the US. The Forest Service manages much of the Allegheny for the primary purpose of promoting the commercially valuable but naturally rare Black Cherry tree. This tree would not survive in the proportions it does without intensive management, which includes clearcutting, herbicides, fertilizing and fencing. The Forest Service has also ignored the harmful consequences of oil and gas development, failing to recognize or analyze its impact on the public's surface resources for 30 years.

**Recreation.** One of our goals is to encourage responsible use of the Forest by educating the public on recreational opportunities and how to take advantage of them in a sustainable way. By working with local outfitters and guides, promoting forest recreation at public events and festivals and greeting folks on the trail, we get word directly to the people.

Some of our activities:

- Wild and scenic film festival
- Photo essay
- Letter writing to stop drilling
- 20<sup>th</sup> annual fall gathering
- Public lands watch training
- Celebrate Earth Day
- Spring outing
- Promote non-timber forest products
- Appeal to Third U.S. Circuit court re oil and gas development
- Summer outing and river float
- Winter outing – backpack and camp

**Olympic Park Associates**

**14905 Bothell-Everett Hwy #270 Mill Creek WA 98012 [info@olympicparkassociates.org](mailto:info@olympicparkassociates.org)**

OPA was founded in 1948 when conservationists who helped create Olympic National Park regrouped to fend off timber industry efforts to remove the Park's spectacular rain forest valleys. OPA rallied again in the 1950s and 1960s to successfully defend the Park's incomparable lowland forests.

We lobbied to aid the Olympic coastal strip and Queets corridor to the Park in the 1950s and organized a national effort to stop the 'salvage logging' of Olympic's forests. We organized two hikes led by

Justice William Douglas to turn back efforts to build a highway along the Olympic coast, and we led the effort to add Shi Shi Beach and Lake Ozette to the Park in the 1970s.

During the following decade OPA was successful in gaining permanent wilderness protection for nearly 100,000 acres of spectacular wildlands in Olympic National Forest and over 95 percent of Olympic National Park. We defeated proposals for hydroelectric dams on the Dosewallips and Duckabush rivers, and in 1992 helped pass the Elwha River Ecosystem Restoration Act, which resulted in the removal of two salmon-blocking dams on the Elwha River, the Park's largest watershed. Two years later, we helped create the Olympic Coast National Marine Sanctuary. More recently we succeeded in banning noisy jet skis from Lake Crescent, halted the airlifting of new shelters into remote locations in Park wilderness, and helped guide development of the Park's 2008 general management plan.

As part of the Wild Olympics Coalition, we worked to introduce bills in Congress in 2012 that would designate 126,000 acres of wilderness and 19 wild and scenic rivers in Olympic National Forest.

Much remains to be done to protect and preserve the wilderness and ecological integrity of Olympic National Park and the Olympic ecosystem. OPA will continue to be at the forefront of conservation efforts to protect this world-class ecological preserve.

In January 2014 OPA joined conservationists across the Northwest celebrating the introduction of the Wild Olympics Wilderness and wild and Scenic Rivers Act of 2014. This bill would permanently protect more than 126,000 acres of new wilderness. It would also protect 19 Wild and Scenic Rivers in the National Forest and the National Park.

The bill is endorsed by 38 conservation and civic organizations and more than 3,470 local supporters, including businesses, farms, faith leaders, local elected officials, hunting, fishing and recreation groups. In addition, more than 50 current and past elected officials on the Peninsula have endorsed the proposal, along with ten thousand individuals statewide.

### **Community Supported Agriculture**

**Lancaster Farm Fresh Cooperative 48 Eagle Drive Leola PA 17540  
717-656-3533 [csa@lancasterfarmfresh.com](mailto:csa@lancasterfarmfresh.com)**

Community-supported agriculture (CSA) is an alternative, locally-based economic model of agriculture and food distribution. A CSA also refers to a particular network or association of individuals who have pledged to support one or more local farms, with growers and consumers sharing the risks and benefits of food production. CSA members or subscribers pay at the onset of the growing season for a share of the anticipated harvest. Once harvesting begins, they receive weekly shares of vegetables and fruit. Often, CSAs can also include herbs, cut flowers, honey, eggs, dairy products and meat, in addition to conventional produce offerings. The majority of CSA operations tend to provide produce, fruits and various edibles. Some CSAs provide for contributions of labor in lieu of a portion of subscription costs.

CSA farms in the United States today share three common characteristics: 1) an emphasis on community and/or local produce, share or subscriptions sold prior to season, and weekly deliveries to members. The functioning of a CSA also relies on four practical arrangements: 1) farmers know the needs of a community, 2) consumers have opportunity to express to farmers what their needs and

financial limitations are, 3) commitments between farmers and consumers are consciously established, and 4) farmers' needs are recognized.

Three main goals of CSAs:

- New forms of property ownership: the idea that land should be held in common by a community through a legal trust, which leases the land to farmers.
- New forms of cooperation: the idea that a network of human relationships should replace the traditional system of employers and employees.
- New forms of economy: that the economy should not be based on increasing profit, but on the actual needs of the people and land involved in an enterprise.

But change occurs, And today, most CSAs are commercially oriented and are seen predominantly as a beneficial marketing strategy.

CSAs provide access to local, fresh produce. Most CSAs are organic. Transportation is minimized. A large majority of CSAs organize social or educational events. They include potlucks, farm tours, events for children and educational opportunities for the community and local schools. Most offer work-trade programs for low-income people.

**Lancaster Farm Fresh Cooperative.** We are 75 certified organic farmers in Lancaster County PA. We focus on creating healthy, quality food from our highly maintained and enriched soils.

Our members are invited to attend any of our six on-farm potlucks, Once a month, one of our farmers opens his or her home to our members for a meal, tour of the farm and an opportunity to participate in harvest activities. Our farmers are constantly building up soil, testing plants, and consistently maintaining a healthy environment for our products.

CSA shares are delivered on a weekly basis, and share contents are based on what is in season and available from our farmers. In May and June the shares are very light, filled with lots of greens, mushrooms, radishes and spring onions. In July, August, September and October, the shares are much heavier, bursting with cabbage, tomatoes, peppers, potatoes and squash. In November, production slows and cool-weather crops like winter squash, cooking greens, lettuce and root vegetables prepare us and our pantries for winter.