CARBON EMISSIONS AND THEIR EFFECT ON U.S. BUSINESSES

April 16, 2010

QUEST CLUB

By:

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Twenty-two years ago in Ted Koppel grimly warned in a Nightline Broadcast: "From the Greenhouse Effect to the floods devastating Bangladesh to the forest fires sweeping the American west, the culprit may be man himself."

As he posed the question whether the American passion for automobiles could be remotely responsible for the flooding in Bangladesh or, as he put it, the "more bizarre" question of whether flooding could be linked to the Industrial Revolution, images of flooded streets, forest fires, hurricanes, and other natural disasters filled the screen. The evening's program was entitled "Greenhouse Effect" and warned of the numerous dangers resulting from the phenomenon known as "global warming": flooding, famine, drought, ice storms, and a host of other horrors.

Fast forward to March 25, 2010. New Moore Island, a tiny island in the Bay of Bengal has disappeared, overtaken by the rising sea. Prior to that on August 29, 2005, the most powerful hurricane ever to hit the United States, Hurricane Katrina, devastated the city of New Orleans. And in the winter of 2009, Fort Wayne, Indiana was paralyzed by an ice storm. Are these just random acts of weather or signs of more permanent changes?

In a recent New York Times Op-Ed Al Gore writes that we are continuing to dump 90 million tons of global-warming pollution every 24 hours into the atmosphere as if it were an open sewer.

What's this all about?

Climate change is nothing new. Borings in the arctic ice reveal that the earth has experienced extreme periods of warming and cooling in its nearly 4 billion year history. In fact, between 35 and 15 million years ago the earth's temperature was actually warmer than it is now. While no one knows exactly why climate change occurs, events such as earthquakes, volcanic eruptions, the colliding of the Indian and Asian plates, the formation of plant life, oceans and glaciers, have all been linked to the earth's climatic changes.

"Greenhouse Effect" simply refers to the fact that not all of the sun's radiation is reflected off of the earth back into space. The earth's atmosphere acts like a greenhouse

because it lets in higher frequency light and traps lower frequency heat. Naturally occurring atmospheric gases such as carbon dioxide and methane assist in trapping the heat, thereby allowing the earth's atmosphere to stay warm.

Carbon dioxide benefits human beings in that its existence in the earth's atmosphere helps to retain the warmth of the sun and maintains the earth at a temperature that can sustain human life. Without carbon dioxide in the atmosphere, life as we know it would not be possible. Carbon dioxide is naturally emitted from animals and humans through respiration but carbon is also stored in deep ocean floor sediment, in sedimentary rock, in the remains of organisms as well as in living organisms such as trees and plants.

When humans first made their entrance on earth's stage they and other animals emitted carbon dioxide naturally through respiration while plants absorbed it through photosynthesis resulting in a lovely, non-atmosphere-disturbing balance. However, energy is needed to sustain human life which in turn requires dependence upon the environment. Early human beings needed to stay warm, to cook the food they captured, to travel and to make life more comfortable and enjoyable, all of which require energy.

One of the first forms of "man-made" energy was fire. Carbon dioxide is released when wood and other organic matter is burned or trees are felled. It is also one of the first forms of man-created "carbon emissions."

In our quest for energy we not only harvested wood from on top of the earth, but we dug deep into the earth and found coal and later oil and natural gas. All of these natural resources were used to create additional, sustainable energy which has benefitted us and enhanced our lifestyles greatly. We have also learned to utilize the power of the sun, the wind, the oceans and rivers, as well as the atom to create energy.

So why are carbon emissions, which seem so necessary and beneficial, suddenly such a "hot" topic? The current concern stems from a steady increase in the earth's average temperature which, although there is debate about it, scientists believe has been caused by the additional man-made release of carbon dioxide into the atmosphere which is disturbing the natural balance of atmospheric gases. If this is true, it then follows that the more carbon dioxide that is emitted, the warmer the earth will become as a result of too much of the sun's energy being trapped in the atmosphere leading to an earth that could, quite possibly at some future time, become too hot to sustain human life.

Whether or not the climate is changing is a point of great debate. Scientists in the late 1800's predicted carbon dioxide would warm the world. However, from the verifiable melting of polar icecaps and permafrost to record high temperatures, it is clear that climate change is occurring, even if the cause of the change is in dispute. What is alarming about the current climate change is the fact that it is now taking place over decades, rather than thousands of years.

The statistics that support this are alarming. In 1990 the atmospheric concentration of carbon dioxide was between 180 to 300 parts per million whereas a mere fifteen years later, in 2005, it exceeded 380 parts per million.

According to the National Oceanic and Atmospheric Administration and NASA, the earth's average surface temperature has increased by about 1.2 to 1.4ºF in the last 100 years. The eight warmest years on record since 1850 have all occurred since 1998, with the warmest year being 2005. Other aspects of the climate are also changing such as rainfall patterns, snow and ice cover, and sea levels.

If the emission of greenhouse gases continues to increase, climate models predict that the average temperature at the Earth's surface could increase from 3.2 to 7.2ºF above 1990 levels by the end of this century.

One study even suggests an increase of a whopping 8.6 Degrees Fahrenheit under a "business as usual" scenario .

The dangers of carbon emissions were summarized in the 2001 Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) which concluded:

1. The global average surface temperature is rising.

2. There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities, in particular emissions of the greenhouse gases carbon dioxide and methane.

3. If greenhouse gas emissions continue, the warming will also continue and accompanying this temperature increase will be increases in precipitation and evaporation, some types of extreme weather events such as hurricanes, and a projected sea level rise.

Wow.

In the United States, energy-related activities account for three-quarters of human-generated greenhouse gas emissions, mostly in the form of carbon dioxide emissions from burning fossil fuels. Of all of the many forms of energy, it is the burning of wood, coal, oil and natural gas which releases the greatest amount of carbon dioxide into the earth's atmosphere. More than half the energy-related emissions come from large stationary sources such as power plants, while about a third come from transportation. Industrial processes, such as the production of cement, steel, and aluminum, agriculture, forestry, other land use, and waste management are also important sources of greenhouse gas emissions in the United States. According to the EPA's latest greenhouse gas inventory, in 2007 the United States emitted over 7 billon metric tons of greenhouse gases.

Let's get down to business. Emitting carbon isn't all bad: it is the lifeblood of many industries and has been for the last 150 years. Transportation, electricity generating, steel and automobile manufacturing are all industries which depend upon carbon emissions for their fiscal health. If emitting carbon were not perceived as a threat to the earth's climatic stability, then we could simply say that carbon emissions are good for business because so many businesses depend upon them. In fact, carbon emissions have a positive effect on U.S. businesses in that the more carbon emitted, presumably the more successful the business.

However, if we accept the hypothesis that carbon emissions are a danger to the environment and are the sole or at least the primary cause of global warming, and we further accept as true that global warming is occurring and that it is caused, at least in part,by man-made carbon emissions, then the reverse, that is, carbon emissions are bad for business, does not necessarily follow. It depends upon whether you see the proverbial glass as half empty or half full.

So what happens if we view the glass as half full and conclude that slowing down man-made carbon emissions is actually good for business? Before we analyze how carbon emissions reductions are good for business, we need to understand how it is possible to alter emissions in the first place.

Reducing the amount of carbon in the atmosphere can only be achieved by increasing the rate of carbon absorption, reducing the rate of carbon emissions or by utilizing alternate sources of energy.

In 1997, in an effort to address the problem globally, The Kyoto Protocol was adopted in Kyoto, Japan. The Protocol set binding targets for 37 industrialized countries and the European community to collectively reduce greenhouse gas emissions to 5.2% below 1990 levels. To date 187 countries have ratified the Protocol. One notable exception is the United States which signed the Protocol but never presented it to the Senate for ratification.

The problem with the Protocol is that it places a heavier burden on industrial nations to reduce greenhouse gas emissions when, in fact, it is the developing nations that are likely to become the greatest offenders because of their growing need for energy. For example, in developing countries more and more people are using inefficient wood and coal-burning cookstoves which release tons of toxic carbon dioxide into the air. These people are going to want and need automobiles, furnaces, and electricity, all of which pour tons of carbon into the atmosphere. In addition, as with many international accords, there is also the difficulty of monitoring compliance.

If an international agreement isn't possible, the other alternatives to solving the carbon emissions problem are government regulation of carbon emissions, voluntary

emissions reductions, and finally, projects designed to sequester or "capture" carbon, all of which are in addition to developing renewable and alternative sources of energy.

The U.S House passed the American Clean Energy & Security Act in 2009. Supporters believe that it will create jobs and lead to development of alternative sources of energy such as wind, solar, geothermal, biogas and others. It has been claimed that 15,000 jobs were created in the U.S. solar energy industry and 35,000 jobs in the wind industry as recently as 2008. The Act is seen as favorable to farmers and other entrepreneurs who can sell carbon credits, lease their land for wind turbines and receive energy efficiency tax credits for operating cleanly.

A study conducted by the Union of Concerned Scientists claims that if Americans were required to produce 25% of all of their electricity from renewable sources, it would result in $263 billion in new capital investment and nearly 300,000 jobs by the year 2025.

One way the United States can achieve emissions reductions is through emissions trading, also known as "cap and trade." Cap and trade in the U.S. was first tried 20 years ago under the first Bush administration as a way to address the problem of acid rain. An effective cap and trade scheme provides economic incentives for compliance. Typically the government will set a limit or "cap" on the amount of, in this case, carbon emissions. The government then issues credits or allowances to the company setting a maximum amount of carbon that can be emitted by it. The total amount of allowances

and credits cannot exceed the cap. As a practical matter businesses that can operate with fewer emissions would not use all of their credits and could then sell them to companies who either cannot operate within the cap due to the nature of the business or to whom the cost of achieving the targeted reduction would outweigh simply purchasing the surplus emissions credits from others. Cap and trade would be good for business in that new jobs would be created for carbon monitoring, trading, and consulting. There would likely be energy innovation and a jump in growth for "clean tech" companies leading to economic activity and creation of a green economy.

Although cap and trade legislation is currently pending in the U.S. it is being met with great opposition. The U.S. Chamber of Commerce claims that if the Climate Security Act or something like it becomes law 3.4 million Americans will lose their jobs and the gross domestic product will decline by $1 trillion. Environmentalists worry that cap and trade will just encourage continued pollution. In the Midwest, which is dependent on coal-fired power plants for electricity, costs of electricity could rise sharply. Because 25 states depend upon coal, others say that cap and trade is, in effect, a disproportionate tax on consumers in those states. A cap and trade scheme, if implemented, could be deadly to the industries in those states, which include steel mills, and other coal-dependent industries. According to the Energy Information Agency, Indiana spent $1.29 billion in 2008 to import coal from other states. Indiana's

dependence upon coal and oil makes it particularly vulnerable if cap and trade legislation is adopted.

Another problem with a government mandated cap and trade approach is that it is difficult to monitor. The Wall Street Journal recently reported that Hungary admitted to reselling “certified emission reduction” credits that companies had already relinquished, or “spent.” Emission reduction credits mark out a project, such as reforesting, to counteract a company’s carbon emissions. Reselling the credits was, in effect, like being rewarded for planting the same tree twice.

According to a recent New York Times article, the much-debated Waxman Markey cap and trade legislation is dead. Senator John Kerry and Senator Lindsey Graham are authors of a new bill to address global warming. Their plan reportedly includes a cap on greenhouse gas emissions, but only for utilities, with other industries phased in perhaps years later. It is also said to include a modest tax on gasoline, diesel fuel and aviation fuel, accompanied by new incentives for oil and gas drilling, nuclear power plant construction, carbon capture and storage, and renewable energy sources like wind and solar.

Senators, Maria Cantwell, and Susan Collins have proposed an alternative that they call "cap and dividend" under which licenses would be auctioned to producers and

wholesalers of fossil fuels, with three-quarters of the revenue returned to consumers in monthly checks to cover their higher energy costs.

Indiana Senator Richard Lugar disagrees with cap and trade legislation and believes that a better alternative is for federal and state governments to take more practical and cost-effective steps such as rewriting building codes to require more energy-efficient buildings, implementing requirements for more fuel-efficient vehicles, and national mandates that encourage states to use clean energy should be considered.

Even without climate legislation, there are other ways in which to punish polluters. On December 9, 2009, the Environmental Protection Agency made an "endangerment finding" and announced that carbon dioxide and other so-called greenhouse gases threatened public health and welfare. This is the first step to insuring the EPA's ability to regulate carbon emissions which could greatly impact businesses through compliance costs and fines. The EPA Administrator also made the following finding under section 202(a) of the Clean Air Act:

"Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare."

This finding is crucial and necessary in order for the EPA to issue greenhouse gas emission standards for light-duty vehicles.

According to the EPA website the EPA has "pledged to take sensible steps to address the billions of tons of greenhouse gas pollution that threaten Americans' health and welfare, and is providing time for large industrial facilities and state governments to put in place cost-effective, innovative technologies to control and reduce carbon pollution. "

EPA Administrator Jackson states: "With a clear process in place, it's now time for American innovators and entrepreneurs to go to work and lead us into the clean energy economy of the future. "

The EPA has implemented many initiatives, such as ENERGY STAR, to encourage emission reductions from large corporations.

The federal and state governments are also providing emission-reducing tax incentives to individuals and businesses. The U.S. Energy Policy Act recently implemented a 30% tax credit for installing solar water heating systems. The purchase of geothermal and solar heating, and purchasing a hybrid vehicle also result in tax credits. Clearly if there's a benefit to the consumer, corporations will rise to meet consumer expectations.

Other opportunities include increasing public transportation and passenger rail availability as well as bike paths, trails, and lanes. If the government does get involved and imposes regulations on building codes and requires electric utilities to increase the amount of renewable energy resources in their power supplies this will also require innovation and lead to the development of new technologies.

In California the Million Solar Roofs Program mandates that new home-buyers must be offered solar panels as a standard option and offers cash incentives on the purchase of solar systems. Combined with federal tax incentives, up to 50% of the total cost of a solar panel system can be covered.

In 1998 fossil fuels accounted for 80 percent of the global energy supply and although businesses which relied heavily on fossil fuels prospered, in that same year British Petroleum, General Motors, Monsanto and the World Resources Institute recognized that there was going to be a need to develop technology to create energy that was less carbon oriented. Together they published a slim paperback entitled "Building a Safe Climate, Sound Business Future." In it they conceded the need for change in the way energy is created and while acknowledging that protecting our climate was critical they also stated that protecting the climate did not have to mean the end of corporate economic prosperity. The authors concluded that there were major business opportunities to be had but also suggested that governments likewise needed to offer incentives and be cooperative. These words have proven to be prophetic.

Each of the four organizations claimed to have taken initiatives to both sequester carbon dioxide as well as to reduce greenhouse gas emissions. They felt that significant technological advances needed to be made in order to halt global warming and identified four key areas:

1. Development of renewable and cleaner energy sources;

2. Reducing energy demand by improving energy efficiency;

3. Finding ways to capture and sequester carbon; and

4. Shifting to cleaner energy carriers such as electricity and hydrogen.

Concern about carbon emissions has led to innovation and development and growth of new industry. Examples of "green businesses" abound. Architects compete to design carbon neutral homes; automobile manufacturers are designing hybrid cars; potato chip makers tout a 100% recyclable bag; the first solar airplane is being advertised on television. The examples are endless.

In grocery stores rather than being asked if you want paper or plastic, you are encouraged to bring your own reusable bag. I was recently asked at Office Depot if I wanted to save the environment and NOT take a bag for my purchase. Product innovations are everywhere and the message is clear: save the planet. Stop global warming.

And even if the federal government is slow to address climate change, or the "climate crisis" as some call it, it is still possible for businesses and individuals to voluntarily reduce emissions or fund projects that sequester or limit carbon. Some examples of voluntary business reductions or offsets are British Petroleum's promising to offset emissions generated by use of an ultimate grade of gasoline or NIPSCO promising to contribute to a carbon offset project if you elect to receive your monthly statement online.

Since there is no federal regulation yet on carbon emissions, many businesses which are environmentally aware have elected to voluntarily purchase and trade their own carbon credits. This is referred to as the "voluntary carbon market." In 2003 the Chicago Climate Exchange opened its doors. Companies that joined initially agreed to reduce emissions by 1% per year. The current goal is to reduce emissions 6% below the baseline. If they can't, then they can purchase allowances by funding projects to reduce greenhouse gases or by purchasing credits from other members. The majority of the available credits derive from members who have reduced emissions and have credits to sell. It therefore operates as its own cap and trade system

In 2007 the Chicago Climate Exchange had over 131 members. Among them were Ford Motor, IBM and AEP. The problem with the Chicago Climate Exchange and other voluntary markets which invest in carbon offset projects such as tree-planting, is that there are no standards in the voluntary market and third party verification is

needed to confirm the project's integrity. On the positive side, however, is the fact that the voluntary market projects are often less costly to initiate because they are not subject to governmental oversight and regulation, which often adds tremendously to the cost of the project.

Corporations are very aware of the impact of carbon emissions. As part of corporate responsibility they are developing ways to become more fuel efficient and green. The more aware consumers are, the more pressure will be placed on companies to operate in a manner that is friendly to the environment. In addition, reducing emissions generally leads to an increase in efficiency which will have a positive effect on company profits. By demonstrating environmental values and responsibility, consumers will respond as will employees.

Carbon offsetting is another way for businesses to purchase credits from projects that reduce emissions. For example, in 2004 HSBC decided to make its operations carbon neutral. The company spent $750,000.00 buying offsets from projects worldwide. The way this works is simple: a project is created, emission reductions are verified and quantified, the credits are sold to middlemen who then sell them to businesses or directly to consumers in such venues as eBay.

One issue that is critical to the certification and verification process is the concept of "additionality". Simply put, this means that the project wouldn't occur unless the

credits were sold and the project has to be more than just "business as usual." The project must also be able to guarantee greenhouse gas reductions and no transfer of emissions, i.e. "leakage," to another location is allowed. The problem with carbon offsets is that the market is not regulated and often projects have their own independent financing such that the offsets really do no good. Ben & Jerry's Ice Cream and Clif Bar energy bars have both invested in carbon offsets. And in 2007 the Academy Awards purchased carbon credits to make up for the 250,000 pounds of carbon dioxide released during the ceremony.

Another type of carbon offset is planting trees. Trees capture and store carbon. It is estimated that US forests absorb between 1 and 3 million metric tons of carbon dioxide offsetting between 20 and 46 percent of the country's greenhouse gas emissions. Unfortunately, cutting down trees releases carbon which is one of the main reasons destroying the rain forest is such an lightning rod. Businesses can also offset their emissions by contributing to programs which help recapture carbon such as reforestation programs. Carbonfund, for example, supports the reforestation of 800 acres in Nicaragua.

In the event the government decides to enter the market, a carbon offset certification process will need to be crafted. This compliance aspect will create new jobs such as that of an "emissions assessor" which is a profession that did not even exist a

decade ago. Other new careers are also cropping up, for example, carbon developers, who travel all over the world looking for carbon-reduction projects to sell.

Businesses can also reduce emissions by utilizing alternative sources of energy such as nuclear energy, solar, wind, geo-thermal, or by burning fossil fuels such as coal, oil, and natural gas more cleanly or by making technological adaptations and improvements to their factories and products.

In the event a business cannot make the necessary changes in the energy it uses to manufacture its product, it can utilize greener energy in terms of basic power consumption for lighting, water consumption, and the like, saving its most destructive energy for creation of the ultimate product.

Even with the obvious problems surrounding the voluntary carbon market and carbon offsets, major businesses are still jumping aboard the carbon reduction bandwagon. As with any successful enterprise, businesses must be mindful of what consumers desire.

Consumers are aware of the environment and support products and brands that are environmentally conscious and businesses are rising to the challenge. Coca Cola claims to be working on improving the energy efficiency of its vending machines and coolers by 40% by the end of this year. It is also recovering and reusing bottles and cans aiming towards zero waste. It is also piloting a "Plantbottle" package made partially

from plants and which is 100% recyclable, as well as using more hybrid diesel-electric delivery trucks to save fuel. Most major companies offer shareholders the ability to go paperless by registering at websites and some will even make a donation to a reforestation or other carbon recapture project if its customers elect to receive paperless statements.

New York City has over 1,000 low emission buses and more and more hybrid taxicabs which are identified by their "clean air vehicle" logo sticker.

GM is debuting the Volt, which has lithium-ion batteries and a gasoline motor used only for recharging which is designed to run 40 miles on electricity alone. It is also launching the EN-V (Electric Networked Vehicle) which is petroleum and emissions-free.

Delta Airlines recycled 273 tons of aluminum cans and plastic material collected from flights in 2009. It has also reduced carbon emissions by 30% since the year 2000 and its current fleet is approximately 35% more fuel efficient. It has also replaced heavy meal carts and cargo containers with lighter weight models resulting in a savings of millions of gallons of fuel.

Being green is becoming big business. Walmart, Google, Coca Cola and others are embracing zero waste and emissions not because it's good PR but because it is good for the bottom line. Mercedes Benz has developed a hybrid diesel truck, as it says, "for

the world". Mercedes is spending $1.4 billion in each of the next two years to develop batteries that can last at least ten years and is also developing fuel-saving engines. The goal is to get rid of the engine and use only the battery. It is also developing electric cars for China with the carmaker BYD, Co., the carmaker backed by Warren Buffett.

On television there are advertisements for solar-powered airplanes. And at Brandeis University, new buildings are equipped with solar panels in an effort for the university to achieve carbon-neutral status by 2020. And if inefficient, coal-spewing cookstoves are used by over 2 billion people world-wide, development of more energy-efficient ways to heat and cook food could also become big business for some entrepreneur.

Lighting is responsible for 30 to 50% of an average building's energy consumption. In England businesses which leave lights on after they are closed are fined. The new compact fluorescent light bulbs last 10 times longer and use one-fourth of the electricity of a regular incandescent bulb. One author claims that if every household in the United States replaced only one conventional bulb with a CFL it would have the same effect on pollution levels as removing one million cars from the road. Other simple things like purchasing energy star appliances, driving at the speed limit and purchasing a fuel efficient vehicle also reduce carbon emissions.

Unites States businesses are reacting to carbon emissions in other ways. Hotels are touting "eco facts" in their promotional materials bragging about retrofitting rooms with water efficient showerheads and faucets and using energy efficient light bulbs. They ask guests to reuse towels and recycle. At Kimpton Hotels, the hotel claims that its energy-saving efforts will save approximately 1,080 kilowatt hours of electricity and will prevent over a ton of carbon dioxide emissions.

Alternative sources of energy are also inspiring entrepreneurs. According to Dr. Sanjayan, Nature Conservancy's lead scientist, solar, geothermal and wind energy are growth industries all around the world. Wind energy production is big business. Twenty-eight states have mandated using wind energy as an alternative to burning fossil fuels. Some of the newer wind turbines are 40 stories tall and can produce 2.5 million watts of electricity annually. Wind power is competitive with coal in terms of cost. The main problem with wind power, however, is storing it and transferring it to where it is needed. One problem with renewable energy sources such as wind turbines is that they often require more land to produce a unit of power, that is, four times more than natural gas, seven times more than coal and thirty times more than nuclear energy. However, an argument in favor of using renewable energy like wind, is that it is ultimately less destructive to the environment than traditional sources. For example, an acre of windfarm that's really only 5% disturbed is a lot different than an acre of mountaintop removed for coal.

The Union of Concerned Scientists states that a recent study showed Indiana would see up to 5,000 new jobs by 2020 and up to 10,000 new jobs by 2025 if strong federal renewable energy policies were enacted. Such jobs include growing and selling alternative fuels, manufacturing wind turbines, weatherizing homes, and designing other hi-tech energy efficiency solutions. Energy consulting firms are also viable new businesses.

Even the Summit City is joining the EPA's Community Climate Change Initiative by planning to reduce energy consumption by 10% and to use alternate energy sources such as solar power and biogas for heating and cooling in its buildings. Novi Energy, a consulting firm hired for this purpose, will be paid $92,500 to examine the appropriate alternative energy sources for the city's water and sewer plants. Energy consulting is clearly another business opportunity arising from the carbon crisis.

Yet in spite of depleting resources and an expected extinction of petroleum, natural gas seems to be alive and well, at least for another century. In a recent article in USA Today, James Mulva, Chairman and CEO of Conoco-Phillips urges the government to coordinate its energy and climate policies to encourage development of all energy sources. He suggests that there should be clean electricity standards that will allow the various sources of energy to compete on their "environmental merits." He writes, "Natural gas is so abundant that it promises a viable path to energy supply security and affordability, economic growth, job creation, and lower greenhouse gas emissions."

According to Mr. Mulva, the U.S. oil and gas industry supports 9.2 million jobs and he predicts at least a century's supply of domestic natural gas still exists.

While grain-based ethanol (which is 85% corn and 15% petroleum) is presently in vogue, it is not that efficient and threatens the world food supply in its production. One study in 2001 claimed that if all of the automobiles in the United States were fueled with 100 percent ethanol 97 percent of all of the US land would be needed to grow corn. However, there are other, non-grain based forms of energy, referred to as "second generation biofuels" such as orchard pruning's, crop waste, wood pulp and switchgrass which can be used in place of ethanol. Switchgrass has become popular because it is believed to sequester carbon in its deep root biomass thus aiding in capturing carbon and preventing it from entering the atmosphere. Its efficiency ratio is thought to be much higher than that of corn as well.

So what can and should be done about carbon emissions? In the book "Plan B 3.0," drastic but arguably necessary climate stabilization measures are summed up as follows:

1. Replace fossil fuels with renewable sources of energy for generating electricity;

2. Reduce oil use in the transport sector by using plug-in hybrid cars, and shifting from trucks to electric freight trains, stop deforestation, plant trees and alternate land use.

In his book, "A Question of Balance," William Nordhaus analyzes various scenarios ranging from doing nothing, i.e. "business as usual" to taking the drastic measures suggested by Al Gore in his 2007 address to the Senate. He suggests a hybrid approach of "cap-and-tax," for example a base carbon tax with purchases of additional permits at a premium. Mr. Nordhaus concludes by stating: "the best approach is one that gradually introduces restraints on carbon emissions. …A sure and steady increase in harmonized carbon taxes may not have the swashbuckling romance of a crash program, but it is also less likely to be smashed on the rocks of political opposition and compromise. Slow, steady, universal, predictable, and boring--these are probably the secrets for successful policies to combat global warming."

Earth Day is only 6 days away.

Human beings have a new consciousness regarding saving the environment. Even our language reflects this change by embracing the terms "carbon footprint" "renewable energy" "greenhouse effect," "going green," "carbon neutral" and "carbon offsets". Green is no longer the color of grass, or what you wear on St. Patrick's Day if you don't want to be pinched. Pay attention to the new, green, world. Read your electric bill this month. On my recent REMC bill I learned the following: "To learn more about what YOU can do to ensure that everything possible is being done to meet the growing demands for electricity, and that climate change issues and clean air legislation are being properly addressed, visit www.ourenergy.coop." A recent NIPSCO billing

included an enclosure stating "go green and we'll contribute $10 to The Nature Conservancy!" It also stated: "This reforestation effort will remove 10 million tons of carbon dioxide from the atmosphere every year." and "For every 38,500 paperless bills NIPSCO provides the environment saves 5,058 pounds of greenhouse gases."

At one point in his broadcast, Ted Koppel stated: "It would be great if the American public could get energized over some perceived threat 40 years down the road but I don't see it." He also referred to Americans having to make what he referred to as "painful choices" such as eliminating creature comforts such as cars in order to curb global warming. I hope that Ted is pleasantly surprised by the green movement. For while the government is dragging its feet, United States businesses are taking the lead in the development of alternative energy and fuel-saving technologies. Businesses like Wal-Mart and Coca-Cola recognize that recycling and operating more efficiently results in greater profits and consumer satisfaction.

Regardless of whether you believe that carbon emissions are negatively impacting our world, businesses are aware that there is a finite supply of fossil fuels and that alternate sources of energy need to be developed and utilized. What Monsanto, British Petroleum, GM and others recognized in 1998 and recognize even more so today is that carbon emissions are lemons. And when life gives you lemons, you make lemonade.

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