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April 14 - 20, 2005

Nicholas F. Benton

The 'Peak Oil' Crisis

The king of doomsday scenarios is lighting up the Internet and broke into Rolling Stone magazine last week.

Forget total thermonuclear war, global warming, a direct hit by an asteroid or an invasion from Mars. This is the scariest one of all, if for no other reason than it is chillingly real and about to happen.

It has to do with the planet's exhaustion of oil.

And according to James Howard Kunstler, whose book, *The Long Emergency*, is due out in May and was adapted into a short essay in the April 7, 2005 edition of *Rolling Stone*, the effects are already beginning to be felt.

Life as we know it will begin to change drastically the minute the level of world production of oil begins to decline due to a depletion of the supply. That moment may have already arrived.

The world doesn't have to be out of oil for crisis conditions to emerge. It only has to begin to feel the effects of a diminishing supply, namely, the higher cost of getting at the resource and the growing competition over scarcity.

The United States, by far the world's biggest consumer of oil, stands to suffer the most from this. Just as the ability to extract and market oil on the planet may have peaked, China has entered the picture as a rapidly industrializing nation that has eclipsed Japan as the world's second-largest oil consumer.

Gas prices at our local service station are just beginning to reflect this reality. According to some experts, when they hit \$4 a gallon, a fundamental sea change will occur, sending wave upon wave of cold shivers through the entire U.S. economy. Everything will begin to change, because everything depends on oil.

It's already the case that the stock market is in a stall and a quandary over the price of oil. Name the bottom line of a major corporation in the U.S. that will not be profoundly impacted by \$4 a gallon oil. Not only will the stock market unravel, but the impact on the individual consumer, and worker, will be mammoth. Basic staples of life, not to mention luxury items, will become scarcer and much more expensive. The disparity between those who can afford to travel and everyone else will become more and more acute. There will be no solution in sight, at least not in either the short or intermediate term.

We're talking about a profound change in life as we know it. A society based on boundless resources and individual mobility will be severely contracted.

As Kunstler writes, "It has been very hard for Americans — lost in dark raptures of nonstop infotainment, recreational shopping and compulsive motoring — to make sense of the gathering forces that will fundamentally altar the terms of everyday life in our technological society. Even after the terrorist attacks of 9/11, America is still sleepwalking into the future."

The only questions are how fast and how severely the transformation will hit. But once the process begins, it will not abate but will worsen for a very long time. And every indication is that the process has begun.

There is a contrary view which says that the planet is awash with a limitless ocean of "abiotic" oil just beneath its surface. But there is no evidence. There has been no natural replenishment, for example, in fields where oil has already been extracted.

According to Kunstler, President Bush is aware of the emerging "peak oil" crisis, as it is called. Coco McPherson, in a sidebar to Kunstler's Rolling Stone piece, notes that Matthew R. Simmons, CEO of the world's largest energy investment bank and member of the President's 2001 energy task force, has briefed the president more than once.

Simmons is quoted, "Peak oil is a far more serious global and societal issue than global warming. It's been cast as something on the lunatic fringe, but it's very real."

McPherson writes, "Does Simmons think we can avoid a cataclysm? `Oh no, we're going over the brink on this,' he says. 'I just don't know how far.'"

The prospect of fighting over the dwindling resources of oil might have inspired Bush's decision to occupy Iraq, hoping to stem a potential military march westward by China, for example, in search of oil fields. But the futility of exhausting U.S. resources on the steppes of Asia would soon become evident, leaving the nation and the world challenged by the need to develop a valid, dense and abundant energy alternative to replace oil and restore global economic and political stability.

In the meantime, fasten your seatbelts.

April 28, 2005
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NO. 8

Why The World Will Never Be the Same

By Tom Whipple

If you have never heard of M. King Hubbert or his peak, read on because it is going to change the rest of your life.

Fifty years ago, Hubbert, a geophysicist working for Shell Oil, gave a talk to an American Petroleum Institute meeting in San Antonio, where he reported on a new technique that he had developed to measure petroleum reserves. This technique allowed him to calculate how long petroleum would continue to be produced in the United States. His calculations showed that *circa* 1970 would be the peak year for US production and that after that oil production would decline -- despite the discovery and exploitation of new fields -- until all the oil was gone.

This revelation was met with controversy. A lot of people, especially in the oil industry, did not want to hear news like this and pointed out that there had been false prophets before, each predicting that the oil would be gone in ten years.

From the vantage point of 50 years later, we can say that Hubbert got it right. Oil production in the US did indeed peak in 1970, and despite the discovery of new fields, tax breaks, new production technology, and tearing up the tundra, production has been going down ever since. Thus, the year in which petroleum production tops out in a field, a country, or the world, has come to be known as Hubbert's peak or just "peak oil".

Hubbert's peak is the point in time when half the oil in a field, a country or the world has been pumped out of the ground. The key point is that the first half of the oil is easy to produce, but after the peak is reached it becomes harder and harder, and more expensive, to extract the oil so output starts to decline.

In the mid-1990s, and indeed earlier, a number of geologists turned their attention to world petroleum production and by applying Hubbert's methods calculated that peak worldwide production would occur just about now, 2004-2007. The big difference from Hubbert's 1956 calculation time, of course, is that the world peak is the ultimate one. All the oil pools with which the earth has ever been endowed are starting to run out. When the worldwide peak is reached there is no place else to obtain oil. The oil age will run its course over the next 20 to 40 years with increasing prices punctuated with shortages and some of the worst social and economic upheaval we have seen in a long time.

If this notion is new to you, let this sink in for a minute. A rapidly increasing number of knowledgeable scientists, without any political or economic axes to grind, are saying that serious worldwide economic disruptions caused by declining oil production are now months rather than decades away. Indeed, the first tremors may have already begun.

The immediate problem is increasing demand. We all know that China and India are industrializing rapidly and therefore increasing their imports. U.S. demand for oil continues to increase with economic growth. If, as some knowledgeable people suspect, OPEC is no longer able to pump additional oil in meaningful quantities, we are, for the first time, entering uncharted territory where there simply is not enough oil available to meet demand. Throw in a terrorist attack on a vital installation or an unstable government in an oil producing state, and the world, particularly the United States, has a big, big problem.

"Just a minute" you say. If the end of our oil-based civilization (or at least the end of cheap gas) is really coming, why aren't we hearing more about it? Where is the Government? The President? Congress? The Press? Or, at very least, the Energy Information Administration (EIA) down at DOE.

The answer to this is simple. Should the President get on television some evening and announce that his administration has regrettably concluded that world oil production can no longer increase, the stock market, his standing in the polls and his effectiveness as a leader would collapse.

The President would be obliged to point out that we should no longer expect OPEC to cover shortages that develop as worldwide demand for petroleum continues to increase. And, if he wants to be impeached, he might go on to say that gasoline will certainly reach several dollars per gallon shortly and that the cost of nearly everything we buy as well as our taxes will be going up markedly to cover the increase in the cost of energy.

No government official will ever make this speech, for very few of us are ready to hear it.

DOE released its energy projections for the next 20 years in February and one is hard pressed to find even a hint of Hubbert's peak. In fact it is hard to recognize that DOE and the "peak-oil-is-here folks" are talking about the same planet. DOE says that "Projected U.S. crude oil production will increase from 5.7 million barrels per day in 2003 to a peak of 6.2 million in 2009." Then, "beginning in 2010 U.S. crude production begins to decline, falling to 4.7 million barrels per day in 2025."

As for imports into the U.S., EIA's "reference case" has them going up from 11 million barrels per day in 2003 to 19 million in 2025. Prices, which were about \$28 per barrel in 2003, creep all the way up \$30 in 2025 according to EIA projections. No alarm bells here. The administration acknowledges that worldwide oil production will peak some day but has set this unhappy date *circa* 2016, or perhaps 2036, long after we have transitioned to the "hydrogen economy."

Is anybody else out there worried that Hubbert's peak is imminent besides the usual suspects -- university professors, environmentalists, retired geologists, and lunatic fringers? Yes, a few others are starting to express concern. On March 14th, Congressman Roscoe Bartlett (R-Md.), in a speech on the House floor largely unattended and unreported, lucidly laid out the case for an imminent peak oil. Later Bartlett added to his earlier remarks and voted against the administration's energy bill.

A couple of weeks ago, former CIA Director James Woolsey, testifying before a House Subcommittee on Energy and Resources on behalf of the National Commission on Energy Policy, noted the potential for problems ahead and called for more alternative fuel vehicles including plug-in hybrids. Again there was no note of urgency, as the bi-partisan commission seems to believe 2010 is a good year to phase in more fuel-efficient cars.

Recently a bi-partisan coalition of environmentalists and conservative national security folks called "Set America Free" have likewise foreseen trouble ahead and have been putting forth proposals for more gas-saving hybrids. The environmentalists have been there for years, it is the conservatives that are starting to understand that it is America, which consumes some 25% of the world's oil, that will be country in the most trouble when oil prices climb.

In recent days, the rise in gas prices has elicited a spate of what-the-price-is-now newspaper stories and TV segments. So far the mainline media has largely stuck with "pretty soon I can't afford it" stories, although a few have mused about the impact of high gas prices on the President's popularity and the economy. For now the administration's position, as expressed by EIA Administrator Guy Caruso, is that the cost of gasoline has only gone up by \$180 per car per year so what are you worried about?

If any of you doubt that peak oil and all it implies will be here shortly, just Google "peak oil" and start reading. In the meantime, keep an eye on that big sign in front your gas station. It will never lie about the price over at the pump and one day soon will become the incontrovertible voice that the world has reached the summit of Hubbert's peak.

(Next week: The challenge of the next 25 years).

Pasted from <<http://www.fcnp.com/508/story3.htm>>

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May 5, 2005
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A Sobering Road Ahead

By Tom Whipple

Before speculating about what life in America will be like as we lurch down Hubbert's Peak, theory that costs will skyrocket irreversibly when the ability to extract the world's oil becomes more difficult as supplies exhaust, it is useful to reflect for a minute as to where we are as a society at the pinnacle of our cheap energy consumption.

There are currently 296 million of us in America. Together we consume 20 million barrels of oil a day, or just under 25% of the world oil production of some 84 million barrels per day. As our domestic production peaked 35 years ago, we now import 11 million barrels of oil and oil products a day.

Some 70% of our oil consumption goes for transportation, while the rest goes for heating, power generation, or as the raw material for a myriad of industrial products from plastics to fertilizer.

When the slide down Hubbert's Peak starts, be it this year or five years from now, the experts agree, that annual decline in production will be between three and five percent each year. This means that if world production peaks around the current 84 million barrels per day, by 2030 it will be down to 30 million barrels per day and falling.

If America's share remains at 25% of world consumption, a problematic assumption, then we will have the use of only seven million barrels per day or less compared to the current 20 million. Clearly there are some big changes accompanied by the hard times ahead and a lot of choices will have to be made.

In the most general terms, the effect of peak oil on America (and other western economies) will be:

- Financial turmoil and recurring recessions.
- Increased unemployment.
- Bankrupt companies.
- Collapse in investments (stocks, pension funds, housing).
- Major increases in the cost of transportation (especially air travel).
- Increasing costs for energy, food, and nearly everything else.
- Major changes in the American lifestyle, including a decline of suburban living, shopping malls, cheap travel, and any other automobile dependent activities.

During the decline in oil production, which will take some 30 to 50 years, oil prices will fluctuate as higher and higher prices lead to recessions that will lead to lower demand and lower prices. These lower prices will continue as the ever-falling supply drops below the new lower demand and the cycle will repeat.

America's basic tenets — life, liberty, and the pursuit of happiness — will be on the table in the coming decades.

As fertilizer usage declines and the cost of mechanized farming and transport grows many fold, our agriculture and food-processing industry will not be able provide the

variety and distribution of foods to which we have become accustomed. On average the food currently on an American table has been transported some 1,500 miles. On a world scale, with heavy constraints on fertilization and irrigation, there simply will not be enough food to support the 6.4 billion people currently on earth.

Heating and cooling of our homes will become an increasing problem. Given a bad winter or two and some of us are not going to make it. The rest will be far less comfortable. Universal air conditioning will surely become prohibitively expensive in the near future.

In the midst of 50 years of economic turmoil, our civil liberties are sure to be sorely tried as gap between the energy haves and the energy have nots grows. Civil unrest reminiscent of our urban riots of a generation ago or perhaps the civil war draft riots and the accompanying reaction are all likely to occur.

The happiness achieved by owning a McMansion in the suburbs and a pair of BMWs will have to fade from the American dream. Any kind of food, a job, and a warm place for your family to sleep will become the new pursuit. Life will ultimately become much slower and by definition sustainable.

Other likely developments include a decline of the global economy. It will simply cost too much to make stuff in China and haul it 6,000 miles to a Walmart.

An increasing proportion of the remaining oil in the world will have to be devoted to food production, which in turn will be local farming as it will simply cost too much to haul food for any distances. Lower food production and transport will be a disaster for third world counties dependent on high US food production.

U.S. global influence will shrink, as there will not be sufficient energy to support military forces around the world. The role of the dollar in the world's economy will decline, as will be ability of the US to export food.

Houston, we are entering a gigantic paradigm shift!

To be continued.

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May 19-25, 2005
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The Peak Oil Crisis: Part 4, A Sudden Shortage

Tom Whipple

The US currently imports some 1.3 million barrels of oil or nearly seven percent of our daily consumption from Venezuela. You may not have noticed this, but the Venezuelan President is currently having a row with the US over a number of issues ranging from our alleged attempts to overthrow him to his claims against the oil companies for back taxes. From time to time he threatens to stop selling his 1.3 million barrels to the US each day.

There are of course many other events out there which could impede our 14 million barrel per day of oil imports. With the world's oil supply/demand equation in more delicate balance than most realize, our relationship with Venezuela is only one of a number of situations that could bring an interruption in US oil imports.

Now a reduction in supply of six or seven percent of our daily oil consumption may not sound like much, but remember, your neighborhood gas station is at the very end of the supply line. Numerous other organizations such as the Defense Department, public safety folks, transit companies, truckers, and chemical manufacturers, or nearly anybody with a long-term contract will have a better claim to their full share than the guy driving up to a gas pump.

At the first sign of trouble, people naturally will start to horde gasoline in anticipation of still further shortages. Every available container will contain a stash and car tanks will be kept full as time in the gas lines permits. There will be misallocations with large gas stations on the interstate having plenty of gas for the dwindling number of interstate travelers while the neighborhood commuter stations will be completely out.

As in the 1970's, government intervention will have to take place to mitigate the situation, otherwise there will be anarchy at the pumps or at least massive wastes of time and idling engines. Government intervention can range from the simple imposition of odd and even days to reduce the gas lines to the more drastic plans which could be some version of the World War II gas rationing system. The big difference is that this time the shortage would not clear up in a few weeks or years, but will continue for as long as demand exceeds supply or the oil age ends.

A few weeks ago, the International Energy Agency (IEA) in Paris released a study called "Saving Oil in a Hurry" in which they examined what the oil importing countries could do should there be an interruption in supply. This 165-page document looks at previous oil shortages — the two in the 1970's and some recent ones in Europe — to develop recommendations as to what governments should do when there is more demand at the pumps than there is gasoline available.

They conclude that the overriding concern during a government intervention is to hurt the economy as little as possible. The study emphasizes that there are important differences

between measures simply restricting travel, such as a Sunday driving ban, and those that assist or encourage motorists to cut fuel use such as car-pooling or the concept, unknown here in America, of “ecodriving” (light foot on gas).

The major cost associated with fuel storage is lost mobility and the reduced economic activity that results.

After much thought, the IEA came up with seven general approaches that would produce savings of energy(in a hurry):

Increases in public transit useage.

- Increases in car-pooling
- Telecommuting (working from home)
- Changes in work schedules
- Driving bans and restrictions
- Speed limit reductions.
- “Ecodriving” —

There can, of course, be endless details to these general approaches to saving transportation energy and the savings garnered by each of these approaches will depend on how they are implemented. There is a big difference between a car-pool publicity campaign and expansion of strictly enforced HOV to all lanes of all major arteries and the denial of parking to single occupant vehicles.

The publication of internationally agreed set of approaches to saving transportation energy at least gives us a basis for discussion on the day when the real shortage arrives.

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ONLINE
ISSUE

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June 2-June 8, 2005

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The Peak Oil Crisis, Part 5: Energy in 2050

By Tom Whipple

By mid-century it will be over. The world will be at, or very close to, the bottom of Hubbert’s Peak so that energy derived from petroleum will be too scarce, too expensive, or too rationed to be a significant factor in our lives or economy.

That the next 45 years will be stressful is probably the understatement of this young century, for the transition from a world economy that floats almost completely on cheap oil-based energy to one that must do without, is bound to be difficult. For the United States, which with some five percent of the world's population, currently consumes some 25 percent of the world's daily oil production and has thus far not taken any important steps to prepare for the coming shortages, it will be even more difficult.

The likelihood of a "Deus Ex Machina," some source of energy that is as cheap and easy to obtain as petroleum has been, does not seem very good. It will not be the much-touted hydrogen, which is a sort-of-convenient mechanism for storing energy until we need it and not a fuel. Think of hydrogen as a big flashlight battery, which is expensive to produce and, as it is a very light gas, is a pain to carry around in any quantity.

The only big source of really cheap energy anywhere on the horizon is nuclear fusion. Most commentators who understand the field say we are currently nowhere near developing nuclear fusion into a useful source of energy, and the odds of having it working in time for the pending energy crisis rank somewhere near those of winning the lottery. Beyond fusion, there are only sources we know little or nothing about, such as gas hydrates.

It looks as if we are going to have to descend the peak using whatever sources of energy we have working today. These include our old friend, coal, and a mixture of nuclear fission, solar power, wind power, wave/tidal power, geothermal, hydro, and biomass (plants that can be processed into fuel). The mix of these sources of energy we will be using 50 years from now is impossible to predict. Technology is changing, as is the relative cost of producing energy from these "alternative sources."

Aside from the obvious, such as windy places having wind generators and sunny places having solar panels, the only thing certain is that here in America our profligate use of cheap energy for almost everything will be long gone. Conservation, conservation, conservation will be the order of the day.

Life with very limited quantities of petroleum and natural gas does not mean a complete return to the 19th century. But, at least in the short term, say for 20 or 30 years, after oil production starts to slide, there will be major, some say traumatic, changes in our lifestyles. As our transportation currently is almost completely based on petroleum, converting our 210 million cars and light trucks to much more efficient models and reconstituting neglected rail systems will occupy much of the next 50 years.

Vehicles powered by internal combustion engines will undergo the biggest change or will simply stop being used. Cars and light trucks can be built or converted with some difficulty to electric power and long haul shipping can with some effort be moved to electrified railroads.

Aircraft are more of a problem so we should probably keep whatever oil is left for crossing the oceans -- unless the sailing ship makes a comeback. While hydrogen

powered airplanes are possible, there is quite a development cycle ahead so that our currently ubiquitous air travel is highly likely to be much more expensive and restricted in coming years.

The world, particularly the U.S. , has very large coal reserves -- some say as much as 200 years worth at present rates of consumption. A dramatic increase in the use of coal -- probably in some liquefied form that would make it cleaner and suitable for use in transportation -- however, would reduce the 200 years considerably.

There are many aspects of 20th century technology that will still be around and will have grown in importance. Digital communications takes relatively little energy and can substitute for much travel, learning, and entertainment. I would expect telecommuting will become nearly universal by mid-century and will substitute for much of the travel we now enjoy or the commutes we endure.

It will not be too long before we discover educating our children can be done through distance learning rather than concentrating them at the end of a bus ride or on some distant campus.

Finally, the biological revolution of recent decades will be of increased importance in coming decades as we learn to manipulate DNA to replace oil-based pesticides and fertilizers to maintain adequate levels of food production.

Somewhere along the line, governments at every level will figure out rationing of energy by price will lead to so much social unrest between the “haves” and the “have-nots” that fairer allocation schemes will have to be devised either by taxes or direct allocations. It will be a much more government-regulated world 50 years hence -- society will become much too complicated to have it any other way.

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The Peak Oil Crisis, Part 6: Will 2005 Be the Peak Year?

By Tom Whipple

As we approach the second half of 2005, the concept of peak oil and all it implies is bubbling just below the threshold of public perception. Out in “cyberland,” some 30 web sites are following developments related to the coming of peak oil on a minute-to-minute

basis. Every scrap of new information or official utterance is flashed around the world and hashed and rehashed.

Recently there has been a spate of magazine articles and newspaper stories all warning that a century of cheap oil is very nearly over. The response from the US Government and Congress, however, is very close to zero.

A lone congressman, Roscoe Bartlett(R-MD), gives an occasional speech warning of the consequences, but these occur late at night when few are listening. The US Department of Energy did commission a study, released February, outlining what we could do to make living with very expensive and scarce oil less painful. The study approaches the “when” issue gingerly, noting that opinions range from 2005 to never, but assumes that peak oil will come sometime in the next 20 years. The authors conclude however, it will take some 20 years of and trillions of dollars in crash programs to have any significant effect in mitigating the damages caused by the advent of peak oil.

Anyone with an appreciation of the devastation that will be wrought by steady reduction in worldwide oil production, will recognize that the energy bill currently making its way through Congress is an absurdity.

Instead of mandating massive energy conservation measures and DoD-sized funding of an as-quickly-as-possible shift to renewable sources of energy, the bill offers tax breaks to search for more oil when there is little more to be found. Other provisions to increase energy supplies are orders of magnitude too small to have any mitigating impact.

The leaders of many other countries, however, seem to have gotten the message. While not trumpeting, “doomsday is nigh,” they are quietly realigning their economies to at least partially cope with the consequences of peak oil. Many industrialized countries got the message from the embargoes and shortages of the 1970’s. They imposed heavy taxes on gasoline and other fuels so they now run modern economies with about half the per capita energy consumption of the U.S.

Only in America , did we toss out the leader who understood that the end of the good times were in sight and embark on a 30-year binge of unchecked energy consumption. The letdown will be very painful.

The timeless moral of all this seems to be that no matter how strong the arguments, you just can’t warn a critical mass of people that something bad is about to happen — they have to experience it for themselves.

Long lines at the local pump or perhaps a multi-thousand point drop in the Dow-Jones is a no-brainer -- everybody gets the message, just like on 9/11. Fluctuating gas prices that trend upward will take longer to make an appropriate impression on the White House and Congress.

For, as soon as prices go up 50 cents or a \$1 per gallon, demand from those who simply can't afford the higher prices slips away and prices slide back for a while. In this situation, it may take many months or even years for the oil optimists to capitulate to the reality of peak oil. It is certain the growing demand for oil is steadily moving closer to readily available supply. Except for the occasional aberration, for over a century there has always been an ample supply to meet demand. In recent months "spare" oil production capacity, however, seems to be disappearing.

Production in non-OPEC countries is universally acknowledged to be on the decline. Moreover, new stories or analysis pointing to the conclusion that OPEC, particularly Saudi Arabia, is currently running "flat out" appear every few days.

The official OPEC and Saudi claims that large production increases in the next few years are possible, sound increasingly dubious to many competent observers who simply can't make the numbers add up.

Demand in the face of sharply rising prices is a factor with which we have little experience. There are currently some 6.3 billion people on earth of which some 1.5 billion are serious consumers of oil (ride in cars and planes, heat homes etc). All of these people have an input into the demand side of the equation, and, at some point increasing prices will reach the point where many will no longer be able to pay.

While Chinese imports increased by 25 percent last year, the increase has been at a slower pace this year. The Chinese, however, recently established a strategic reserve and plan to start filling it shortly. When this program starts up, they may begin importing an additional 650,000 barrels per day.

Thus, the mosaic achieved by putting together those pieces of a very complicated puzzle that we can observe suggests significantly higher oil prices by year's end.

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The Peak Oil Crisis: Part 7

The Government Intervenes

By the time gasoline passes \$5 per gallon, or, there are shortages causing lines at the pumps, nearly everyone will have realized it is time for government intervention at all levels in the looming oil crisis.

On the way to \$5 gasoline of course, there will be much demagoguery with politicians calling for tax cuts accompanied by denunciations of oil companies, regulators, speculators, Arabs, Chinese and anybody else who has a finger in the oil market. But, gradually all this will subside and there will be a general reconciliation to the notion that oil from beneath the ground will become increasingly expensive and scarcer for all time.

While state and local governments will be fully occupied in helping people cope with reduced energy, it is the federal government that will be critical in setting nationwide policies and establishing new relations with the outside world.

One major issue as the world enters an era of scarcity will be who gets how much of remaining OPEC exports. When there was a nearly unlimited supply, nations could buy as much as they could store, use, and pay for. This resulted in a situation where the US, as the richest country, ended up building an infrastructure consuming some 25 percent of world oil production despite currently having some 4.6 percent of the world's population.

Now that China and India are taking an increasing share of a depleting resource, there are bound to be troubles ahead unless the major oil consuming nations can get together and agree on a "depletion protocol" specifying shares of a fast-shrinking resource. Such a protocol is already being discussed by European thinkers who are several years ahead of America in coming to grips with this problem.

The alternative, for those who have the military power, is to occupy and control uncooperative oil producing states in order to "protect" oil supplies. Indeed, many believe this may be happening already.

Another major role for the federal government is to establish the policies that will govern the transition from a petroleum-based economy to one based on other forms of energy. This will not be easy in the current Washington environment for, whatever way the government moves, some industry's bottom line will be hurt -- at least temporarily. However, as gasoline moves above \$5 per gallon, the mood of the voters will become more akin to 1932 than 2004 and Congress will come to see the wisdom in attempting to mitigate the situation despite the protests of lobbyists.

Federal intervention can take many forms ranging from tax incentives through heavy taxes on "undesirable consumption" to outright rationing in which individuals or organizations are allocated a fixed amount of energy for use on a project or during a period of time.

The long-term goal of any federal intervention, of course, is to get the country through the period of transition from fossil fuels to renewable forms of energy. As we have taken few steps toward this goal, there are clearly some 20 or more years ahead during which our real incomes drop significantly and our lifestyles will change radically.

Some steps for the government to take are so obvious they scream for implementation as soon as possible. As the world's most massive waster of energy, major conservation

programs can be implemented with little or no harm to anyone except those that make money selling energy to the rest of us.

Electricity is the obvious place to start. Our homes, offices, businesses, streets, highways, and skies are lit to the heavens. Our temperatures are too warm in the winter and too cool in the summer. I would suspect a serious conservation effort involving heavy monetary penalties for overuse of electricity could result in savings of 50 percent or more after several years of education and conversion.

Initially, rationing of gasoline will, to some extent, take care of itself through higher and higher prices. At a certain price point, each of us will cut back sharply on our discretionary travel in traditional cars and will either stay at home, or seek other more cost-effective forms of transportation -- hybrids, electric cars, public transit.

While this rationing by price is bound to happen anyway, it will not solve the whole energy problem, for life threatening situations due to lack of gasoline or fuel oil will quickly arise so that governments will be impelled to intervene and begin allocating fuel or other assistance to those who simply cannot survive without help.

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June 23-June 29, 2005

The Peak Oil Crisis, Part 8: Has It Started?

By Tom Whipple

Earlier this week oil prices surged to an all time high thus raising the question: "Has the crisis begun?"

Before examining the current situation, it might be useful to define what constitutes the "peak oil crisis." The quick answer is, the crisis begins when worldwide demand for oil outstrips supply on a more or less permanent basis. This will lead to significantly higher gasoline prices (many dollars per gallon) and all sorts of very bad things happening to the U.S. and other economies.

We will only know peak oil has been reached some years after it happens by noting that worldwide oil production is indeed on the decline, and, shows no prospects of ever reversing the situation. As the world will only achieve peak oil once, nobody really knows what the actual peak will look like: gradual, flat, bumpy, or steep.

The key issue is the supply-demand balance, which, from all available evidence, is becoming very tight as we approach the half way point of 2005. It doesn't matter exactly which year the statisticians someday proclaim the actual all-time peak oil production. If gasoline costs more than you can afford, or, is simply not available in the quantity you would like, then you have a crisis.

A fundamental principle of recent oil consumption is that demand is always much heavier in the second half of the year when the demands of the U.S. summer driving season and the buildup of heating oil stocks in the northern latitudes take place. Thus, even given no interruption of oil supplies, run-away price increases are more likely to develop in the last two quarters any year.

As we approach the second half of 2005, we should remind ourselves that several of the world's major oil suppliers are far from bastions of political stability.

Iraq , Iran , Nigeria , Venezuela , Saudi Arabia , the former Soviet Union and even Norway (oil workers strike in the offing) are all involved in situations that could easily result in reductions of their oil exports during the next six months. Given the current supply-demand balance, an incident in any of these countries will almost certainly send prices up. Way up.

Even if nothing untoward happens, recent news affecting the supply-demand balance has been mostly bad. In the past month, no serious observer, without a political agenda, seems to believe the OPEC control mechanism that has regulated supply for the last 30 years is still working. Many observers believe OPEC currently is pumping flat out. Given most OPEC countries are now in the stage of declining production, the chances any significant new quantities of oil will appear on the world market in the next year are very low.

During the first quarter of this year, worldwide production was reported to average 83.8 million barrels a day. The International Energy Agency is now saying global demand is projected to reach 86.4 million barrels per day by the fourth quarter of this year— a 2.2 percent growth over last year. Given that reports from most producing countries talk of slowing or declining production, it seems almost certain a significant supply-demand gap will open later this year.

When this happens, we enter a period of “demand destruction”, when oil and gas prices rise and rise until they are high enough to bring demand back into line with available supplies.

Even though the world is not the same as it was during the 1970's, our experience with the 1974 oil embargo and the Iranian revolution gives a rough guide to what might happen during a supply-demand imbalance later this year. In 1980, oil peaked at the inflation-adjusted equivalent of \$95 a barrel or some \$4.50 per gallon. Demand for gasoline in North America is notoriously inelastic and given the state of alternative forms of transportation, \$4-5 per gallon (roughly \$5,000 per year in gasoline costs for the

average vehicle) may not dampen demand that much. Europeans have been paying a heavily taxed \$5-6 per gallon for years.

The next number people are mentioning in the context of “demand destruction” is \$7.50 per gallon. This is a number that will not bring transport to a total halt, but will make most of us think twice before turning on the motor. “Is this trip necessary?” Somewhere around \$3-4 the bottom really falls out of the SUV market along with business that is dependant on discretionary/recreational travel. Needless to say, increases of this scale will set in motion significant economic turmoil that will lead to major economic restructuring.

The forces leading to much higher energy costs and eventually serious shortages are moving into place and should be apparent to all within the next six months.

Has the crisis begun? The answer to the question is increasingly looking like a solid “Yes!”

Pasted from <<http://www.fcnp.com/516/peakoil.htm>>

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The Peak Oil Crisis: Mid-Year 2005

As we enter the second half of the year, there is still no general recognition that a world-class crisis is about to take place.

Optimism abounds.

In June General Motors, by offering “employee discounts,” managed to increase sales to the highest level in 19 years. A senior official of the Saudi Oil Company has been running around Washington with the message – “All is well.” Saudi Arabia will increase its production from the current 10 million barrels a day to 12 or 15 million or perhaps down the road, 25 million. Allegations that Saudi production is about to enter a steep decline are said to be simply not true.

The U.S. economy is still doing well with only the first glimmer that much higher energy prices will soon devastate the bottom line of many corporations. Over the 4th of July weekend, Americans took to the highways in record numbers undeterred by \$2.25 gasoline. Congress, feeling impelled to do something about rising gas prices, has passed a pair of dissimilar energy bills which, even though they will have little immediate impact, make it look as if our elected representatives are doing something.

However, despite the apparent lack of concern, the evidence continues to accumulate that we are rapidly approaching a sizeable mismatch between available supply and demand. Last week, oil climbed to over \$60 a barrel, settled back several dollars, and climbed

again. These fluctuations are attributable to concerns about supplies and to producer secrecy that leaves oil traders with imperfect knowledge as to the true world oil situation. This in turn leads to price gyrations based on political developments having the potential of leading to restrictions on oil supplies.

To remedy the information situation, the Group of 8 has established the Joint Oil Database Initiative with the task of providing accurate monthly data on oil inventories, supply, and demand of 93 countries. Last week, however, the International Energy Forum announced first issuance of the new database has been delayed until November due to difficulties in obtaining accurate information.

Reports from the more transparent countries continue to speak of production declines. Last year, British and U.S. production declined by 230,000 and 160,000 barrels a day respectively. The Mexicans are reporting that production from their giant Cantarell field has peaked and a decline in production on the order of some 15% per annum is to be expected. With the exception of the Saudi claims they will be able to increase production over the next few years, there appears to be little but wishful thinking to offset reports of worldwide declines in production from aging oilfields.

One development of note last week was Congressman Roscoe Bartlett (R Md.) finally got in to tell President Bush about Peak Oil. According to Bartlett 's press release, he met with the President on June 29 at the White House for "an extensive discussion about peak oil—the end of cheap oil." Bartlett declined to discuss or characterize any of his conversation with the President, but said he was happy about the meeting. Bartlett is the only member of Congress who has been speaking out regularly on the dangers the country is about to face from oil shortages. The White House does not appear to have taken official note of the meeting.

In another interesting development, Fidel Castro became the first head of state to speak out bluntly on the impending energy crisis. Speaking at the first PetroCaribe Energy Summit, Castro noted that within the decade oil would cost \$100 per barrel, an amount no Caribbean country can afford. At the end of the summit, Venezuelan President Chavez announced a plan to sell oil at a 40 percent discount to Caribbean countries.

These developments again raise the question of what it will take to trigger public recognition by the major industrial powers that a disaster of monumental proportions is near. Obviously, no responsible leader wants to trigger a panic by openly announcing oil will soon become very expensive, and then very scarce, and finally unavailable. But, there are many subterfuges that could be used as a pretext for taking drastic action without even mentioning the concept of peak oil.

The Europeans and the Japanese seem to be on the verge of doing something under the banner of slowing global warming which is quite acceptable to talk about and may someday prove to be more serious than peak oil. Policies which mitigate global warming by lowering consumption of fossil fuels, are the same ones that would be used to mitigate

the initial stages of an energy crisis. Last weekend, the British announced the cabinet would soon consider a form of energy rationing called a “personal carbon allowance.”

Another great pretext for decisive action is the war on terrorism, which is turning out to be useful for justifying almost anything. The government, or maybe several governments, could simply announce the threat of terrorists disrupting world oil shipments is so great that we must immediately take many painful steps to prepare for the eventuality. However, for the time being, muddling through seems to be the word of the day, and at present, the U.S. appears unlikely to take any politically unpopular actions — such as reinstating the 55 mph speed limit — until the price at the pumps is considerably higher or the gas lines begin to form.

Thus, as we move into the Summer of 2005, it would appear that the United States , the most oil dependent country on earth, is in near total denial about the twin specters of global warming and peak oil.

Pasted from <<http://www.fcnp.com/518/peakoil.htm>>

The Peak Oil Crisis: Rationing

By *Tom Whipple*

It has to come sooner or later. As oil becomes scarcer and scarcer and price rises higher and higher, pressures will grow for a formal allocation system. Rationing will come, if only to calm the havoc at the gas lines and the social upheavals that are bound to occur as long as rationing is only by price.

America ’s most recent experience with rationing goes back to World War II. You have to be nearly 70 to remember the little square “A”, “B”, and “C” stickers affixed to the windshields of ever car. These stickers, when accompanied by a sheet of rationing stamps, allowed one to buy gas. Everybody got an “A” sticker (a whole 4 gallons a month just for the asking). To get a “B” or “C” sticker, one had to appear before a rationing board and make the case their mobility was vital to the war effort or at least the well-being of their fellow citizens.

If one ponders for a few minutes on how a modern rationing system might be structured, it is soon apparent nearly any scheme is full of inequities and would be subject to massive and, no doubt, ingenious fraud— especially when an American’s ability to drive his beloved car is at stake. Do you allocate fuel by vehicle? Buy a yard full of clunkers and drive to your heart’s content or until you run out of money. Or allocate gasoline by person, by licensed driver, by commute distance, by adjusted gross income? Problems abound everywhere.

Once again our friends in Europe , this time in Britain , appear to be out in front in thinking about this problem. The ostensible British concern, of course, is global warming

and the contribution made to this phenomenon by the combustion of fossil fuels. While we Americans, and particularly our government, seem little bothered by the idea that Florida might one day be under water, the British seem much more upset by the notion the melting arctic ice cap will set the Gulf Stream to warming someplace other than Northern Europe.

A couple of weeks ago, the British press reported that Her Majesty's cabinet is considering a plan to ration energy consumption. The immediate reason for implementing such a system is to reduce the UK's emission of greenhouse gases as required by the Kyoto Treaty. The plan's authors, however, claim that if the proposal works, it will deal equally well with equitably allocating dwindling energy supplies caused by peak oil.

Given the seriousness with which the British are taking global warming, it is natural that they should put their finest minds to work on the problem. In this case, the Environmental Change Institute at Oxford and the Tyndall Centre for Climate Change Research, a consortium of ten other British Universities. The current proposal has been in development for ten years and, given the organizations involved in its preparation, has obviously been subject to much intellectual rigor. While the details, pros, and cons of the plan fill many pages, the general concept is simple enough to outline here.

The major feature of the allocation system is that it covers all fossil fuels, not just gasoline; and it makes a real effort to be fair to all, by giving consideration to the needs of the poorer folks.

Under the plan, every adult in the country would be given (for free) an annual "Personal Carbon Allowance" (PCA). This allowance would be measured in "carbon units." One carbon unit would be equal to one kilogram of carbon dioxide emitted into the atmosphere when the fuel is burned. Carbon units can be equated easily to gallons of gasoline, heating oil, diesel, or jet fuel, or to pounds of coal, BTUs of natural gas, or KWh of electricity. For example, one gallon of gas would be the equivalent of about nine carbon units. Thus, for every gallon of gas purchased, nine carbon units would be subtracted from your account.

The annual allowance would be the same for all adults, with possibly a smaller allowance for dependent children, and would be tracked on a central electronic system similar to a credit card account. The size of the annual individual allowance would be based on what a government panel believed would be the total amount of fuel available for consumption in a country during the coming year, divided by the number of energy consumers. Whenever one purchased or consumed fuel, such as on an airplane trip, an appropriate deduction would be made from one's PCA account. With oil depletion, of course, the annual carbon allowance would shrink with each successive year.

The next most interesting feature of the plan is the government would also establish an electronic free market to buy and sell carbon units. Thus, those who have no need for their complete annual carbon allowance would be free to sell their excess units for cash at the market price. Those individuals who want and can afford more than their allocated

share can buy as much as they want at the going price. Note that above-allocation consumers would not only have to pay for the energy, they would also have to pay for the right to buy the above-allocation energy. Non-residents visiting a country would not be given an annual allowance, but would have to buy the carbon units they use on the open market as they consume energy. Businesses that consume energy would buy their carbon units on the open market and would pass the cost on to the final consumer either money or in cases such as airplane rides as a PCA debit.

The object of all this, of course, is to force people to cut back on their energy use in a systematic way. With full knowledge of the projected costs and allocations of energy, people could make choices between SUVs or bicycles, McMansions or efficiencies, and train or plane rides.

Way below average energy users could make some money under the plan. While the very rich would not be bothered in the slightest, most people would start making energy saving choices in their lifestyles -- smaller cars, better-insulated homes, less air travel. As demand for energy drops in response to conservation measures, then the costs of energy would drop even in an era of oil depletion.

The plan's developers claim that declining amounts of energy will be allocated equitably and with minimum government interference. For, aside from setting up the system and determining the annual carbon ration, the free market would be left to work out the details of oil depletion.

Pasted from <<http://www.fcnp.com/519/peakoil.htm>>

The Peak Oil Crisis: A Bible for Oil Deception

By Tom Whipple

Some 30 years ago, amidst the oil crises of the 1970's, the United States Government began compiling information related to US oil consumption and published it annually in the "Transportation Energy Data Book." It is now being prepared by the Center for Transportation Analysis at the Oak Ridge National Laboratory and is available on line at www.cta.ornl.gov/data.

Until recently, the publication of 200+ charts and tables, which contain thousands of snippets of information relating to how America manages to consume 20 million barrels of oil each day, was only of interest to policy wonks into transportation. For the rest of us, so long as cheap gas was available at every station, hardly anybody cared where it came from and where it was going. This lack of interest is about to change. In the years following peak oil production, availability of gasoline and other fuels will shrink rapidly.

It is conventional peak oil wisdom that the decline in oil production after the world peak will be some 3-5 percent a year. However, recent data suggests oil fields that have been heavily flooded or gassed to force more oil to the surface may decline even more rapidly than expected. In addition, some of the world's oil exporters may not want to sell so much to the people of the United States during an era of oil depletion, and we could see annual declines in the availability of oil on the order of ten percent or more a year. If this were to occur, we would have a big, big problem.

Cutting electricity consumption would not have to be a major hardship— shut off outdoor lighting, impose steep taxes on excessive consumption to force conservation, disconnect some lights or replace with fluorescents, set the air conditioning higher, and we are on our way to conserving large amounts of electricity. Transportation is another matter and this is where our energy book comes in, for it describes in much detail how we consume our oil.

Some 96 percent of the US vehicle inventory is powered by petroleum products. These include the obvious such as cars, truck, buses, trains, and airplanes, through the frivolous, such as ATVs, ski boats, sky diving planes, and snowmobiles, to the less apparent but vital, such as the barges which move our grain and the pumps bringing natural gas to our homes.

When oil depletion sets in, we are all going to have to make many new kinds of decisions, such as “Is this trip necessary?” or “How fast should I be driving to save the last drop of my gasoline ration?”

At present, about the only thing preventing many of us from driving as fast as our car will go is the “point system” which suspends our driver's license after too many speeding tickets. (If you doubt this, take a ride on the German autobahn before peak oil sets in). In the future, when your gas tank contains your weekly or even your monthly allocation of gasoline, the only question will be is “At what speed do I get the most miles per gallon?” Table 4,25 will answer this for you.

Let's take another case. Some foreign country has stopped sending us its oil. The lines at the pumps stretch for miles, and the people are screaming for buses to get to work, or to the mall for food. A quick look at Chapter 5 will tell you that while America currently has 77,000 transit buses, it also has 620,000 school buses. Thus, the immediate answer becomes simple, let a lot of the kids walk to school like their great-grandfathers did — it's good for them and there's no longer much traffic on the streets anyway. Use the school buses to get more of us to work.

Buried in the many tables, however, is much serious data such as the energy consumed per passenger or ton or mile by cars and trucks versus buses and trains. It is information such as this that can help congressional and legislative committees develop programs and policies to get us through the impending crisis.

When it comes, peak oil will be one of the most memorable events of our lifetime. It behooves us all, from voter to President, to understand as much about the phenomenon as possible. Happy reading!

Pasted from <<http://www.fcnp.com/520/peakoil.htm>>

The Peak Oil Crisis: A Mid-Summer Review

By Tom Whipple

The world has never been to peak oil before so we may not immediately recognize what we are seeing. A few months back, most knowledgeable people would have said oil at \$60 a barrel would have triggered an economic tsunami by now. But surprise! Here we are and it seems to be business as usual in America with company earnings doing well, the stock market setting some new highs, and thanks to great prices, SUVs and pickups are leaping off dealers' floors and onto America 's highways.

So far this summer oil prices have been jumping up and down depending on which hurricane is or isn't threatening which offshore oilfield, the weekly US oil stocks report, and a little "what is happening in China?" thrown in. The International Energy Agency (keeper of the books on the world's oil supplies and who incidentally haven't had much of a track record recently) says demand — especially from China — is not what it was supposed to be this year, so we can all relax for a while and enjoy the rest of the summer. It may not be 1914 redux after all.

Below the radar of even the most attentive newspaper readers, however, the first stirrings of peak oil reality are starting to trickle in. Not surprisingly, most of these reports come from the poorer parts of the world where \$60 oil is simply too much for fragile economies.

Here are a few of the items:

- Last week the BBC reported that dozens were killed in fuel riots across Yemen when the government withdrew subsidies resulting in dramatic price increases.
- All across Indonesia people were lining up at gas stations in response to developing fuel shortages. In one city, half the public transport was inoperable due to a lack of fuel.
- In Zimbabwe , the government has moved to deregulate fuel procurement in the face of severe shortages: waits of hours for buses, gas lines that are blocks long, and a bread shortage. The black market price for gasoline is now ten times the official rate.

- Nearly all the poorer countries make their electricity using diesel generators. Nicaragua , one of the poorest countries in Central America , recently started blacking out the poorer districts between 7 and 10 p.m. , the hours of peak usage.
- Tanzania , with the highest gasoline taxes in East Africa and a chaotic oil marketing system, is seeing its plans for economic growth "suffocated" by high-priced oil. Tanzania also handles fuel for the landlocked states of Malawi , Rwanda , the Eastern Congo , Burundi and Uganda .
- And closer to home, Maxjet put off plans to offer cheap flights from Baltimore to London until spring when the company hopes fuel prices will be cheaper.

At mid-summer, the supply-demand situation remains about the same. OPEC is supposed to be increasing its daily output by some 500K barrels a day and there is evidence from increased tanker charters that this indeed may be happening. In the meantime, production in the non-OPEC countries seems to have dropped by a collective 1.2 million barrels a day below the IEA forecasts for the first half.

Thus, we have learned that \$60 oil and the ensuing \$2.30 gasoline is not much of a deterrent to American driving habits. It is not doing much to the economy, and certainly isn't stirring up any serious action in the Congress which continues to fuss around with a largely meaningless energy bill. With good economic growth, the US demand for oil continues to increase.

The Chinese continue to claim their economy is growing nicely, suggesting increased demand for oil in the near future.

OPEC and the Russians — the folks with some spare capacity left — seem to have at least squeezed out one last round of production increases in response to calls to stem growth-endangering higher prices. At the same time, many of the world's older non-OPEC oil fields are talking of dramatic drops in production.

If one puts all this together, it is hard to escape the conclusion we just may be very close to Hubbert's peak right now and, some day, 2005 will be declared the year of peak oil.

Pasted from <<http://www.fcnp.com/521/peakoil.htm>>

The Peak Oil Crisis: The Real Energy Bill

Congress has now passed the Energy Bill of 2005 and, as nearly every commentator has observed, it will do next to nothing with "high" gasoline prices, reducing US dependence on foreign oil, or to help cope with the impending peak oil crisis. In short, this bill was mostly a sop, creating the illusion that the Bush administration and Congress are doing something about gas prices and a growing unease about dependence on foreign oil.

It calls for no sacrifices from the American people. Thus, within a few years – or perhaps months — we will need another energy bill to deal with the real crisis that has arisen from peak oil.

What sort of provisions should a real energy bill contain?

By the time Congress gets around to the next energy bill of course, it will be apparent to nearly everyone a world-class crisis is upon us. The poor countries will be in anarchy due to their inability to afford or purchase sufficient oil. In the developed countries, the price of gasoline will be so high, there will be no question the current price is not just a temporary “spike” caused by speculators. If long lines at the gas pumps accompany very high prices, then the message to pass real legislation will come even sooner.

The required congressional actions are obvious and simple: mandatory conservation and the halting of wasteful practices, a shift to renewable energy, and the development of sustainable lifestyles. While this is easy to say, it will require decades and much hardship to accomplish fully.

We will need a strong central energy authority make the many decisions and issue the orders to hold us together through the coming decades. As the legislative history of the 2005 energy bill shows, recent Congresses simply have not had the chemistry to make the kind of tough decisions that will be needed to deal with peak oil. Some type of “Energy Crisis Board” with extraordinary powers (like the War Production Board of World War II) will have to be set up. Congress will have to delegate to this Board, control over many aspects of our economy as they relate to the production, distribution, and consumption of energy.

In its simplest form, the new bill would give the new Energy Crisis Board the mandate and authority to do what it takes to solve the peak oil crisis, much the same way the Federal Reserve Board manages the money supply.

The goal of the conservation program would be to cut energy consumption in an orderly manner, in line with oil and gas depletion rates, so as to have the least possible impact on economy. The underlying premise would be to insure vital uses for oil such as food production, are adequately supplied, while “wasteful” use is heavily curtailed. This does not mean all will be well for many industries. Tourism, recreation, automobiles, and transportation, for example, are bound to be seriously disrupted, if not completely devastated, by the arrival of peak oil.

One of the assets the United States has as we enter an era of oil depletion, is a significant portion of our 20 million barrel per day consumption is pure waste which can be eliminated with relatively minor changes to our lifestyles and appliances.

Take electricity as an example. Our non-industrial consumption can most likely be reduced on the order of 50 percent or more by simply turning really unnecessary things

off. Outdoor lighting? Off! Incandescent bulbs? Into the attic for another era!
Commercial and office lighting? Disconnect until you can barely see what you are doing!
Air conditioning? Very high! Heating? Very low!

Incentives to conserve will be relatively easy to create. As we all get an electricity bill (either directly or indirectly), our new “Energy Crisis Board” would simply be given the authority to impose and change, as needed, a hair-raising tax on “excessive” consumption of electricity, fuel oil, and natural gas.

“Excessive” would be deemed as consumption greater than some percentage of your previous monthly utility consumption (80%, 60%, 40%). Other ways of allocating electricity could be by carbon allocation, square foot, climate, and latitude, but all this can come later. In the short run, a very high utility tax (natural gas, heating oil, and electricity) on “excessive” consumption is simple, easy to implement, and seems relatively fair to start with.

Before we go further, you may ask: “If all our electricity here in Virginia comes from coal and nuclear reactors, why on earth do we need to cut back on electricity consumption?” The answer is: 1. Because there is a huge amount of energy wasted in frivolous electricity consumption (we will soon need the coal to convert to motor fuel); and 2. We will need the energy for transportation, which will take the biggest hit as oil production depletes.

Some 16 percent of US electric power is currently produced by oil (3%) and natural gas (13%). We are going to need this fuel for producing and distributing food and other essential uses, so the sooner we stop pumping it into large light bulbs and outdoor lighting, the better off we will be. Besides, turning out the lights is one of the few conservation measures that cost few jobs.

Seriously reducing the 13 million barrels of oil per day which runs US transportation, will be far more complicated and costly than mandating electricity conservation. This is where our “Energy Crisis Board” will come into its own, for no member of Congress wants to own the responsibility for the myriad of highly unpopular job and income eliminating decisions that will have to be made.

We can start with the assumption that higher prices or lines at the gas pumps leading to a new energy bill will have already killed considerable discretionary travel. Re-imposing, and draconian enforcement, of the 55 mph speed limit is one of the few cheap and quick measures saving significant transportation fuel.

As many commentators have noted, the heart of our fuel problem is the 210 million cars and light trucks currently averaging 20 miles per gallon. If we going to cut 75% of the fuel going into our cars and trucks, there will have to be some radical changes in their size, shape, fuel consumption, passenger load and use.

Currently, the most promising off-the-shelf technology is the electric vehicle. These can be made relatively cheaply in many flavors, ranging from electric bicycles and Segways, through neighborhood electric vehicles, to plug-in hybrids. All of these offer fuel economies on a scale (from 100 mpg to several hundred mpg equivalents) necessary for our mobility on only a fraction of our current 13 million barrels per day.

An Energy Crisis Board would have other important issues, of course, such as food production, raw materials for industry and long distance air and surface transport. Cutting down on individual consumer consumption is a good place to start.

Pasted from <<http://www.fcnp.com/522/peakoil.htm>>

The Peak-Oil Crisis: A Role for the Post Office

As gasoline becomes less available to the average motorist, either because it costs too much or sitting in gas lines takes too many hours, the first sacrifice will be discretionary use of the car. If your livelihood depends on people coming by car so you can provide discretionary goods or services to them, your business will hurt. There will, however, be no serious harm to society as a whole if you don't make it to the movies on Saturday night. In fact, life will be more pleasant for those still driving, as traffic will be markedly reduced.

However, as depletion continues, the unavailability of gasoline will start to threaten the two things most can't do without: commuting to work and getting the stream of life-sustaining "stuff" (food, clothes, medicine) to our homes.

In the not too distant future, there will come a time when any retail establishment depending on a parking lot for its customers will be in trouble. There simply won't be enough gas available for all our current vehicles. Universal ownership of electric vehicles will still be many years away. Americans are currently running around in some 210 million cars and light trucks, so the line to buy replacements, if we can still afford to make and buy them, will be decades long.

Over the last 75 years, the US has developed a retail distribution system that involves getting into a car and driving down to the store, mall, shipping center, supermarket, dealer, etc. for anything from a pack of cigarettes to a new car. While some objects are too big for delivery by car and FedEx and UPS are starting to deliver more and more things purchased over the Internet, it is still a miniscule share of the daily flow of stuff to our homes.

It will be possible to extend our current distribution system for a few months (or years) after oil depletion sets in through better planning of trips, shopping pools, and increased use of UPS and FedEx. However, by the time the amount of gasoline available for sale to

retail customers is down to some 25 or 50 percent of current levels, we had better come up with a new way of buying stuff and getting it home, especially foods and medicines, or we'll really be in trouble.

The current delivery companies can take up a little of the slack but they will have a lot to cope with. As oil goes up and up, companies such as FedEx are going to have to rethink their core business of flying stuff to Memphis at night for redistribution.

The most fuel-efficient way to get merchandise to our homes is to have a fleet of trucks – preferably electric-powered – deliver whatever we and our neighbors need with one trip. Does this model sound familiar? It happens on my street every afternoon when the little red, white, and blue US Postal Service electric van toddles up my street and brings us all the mail and some packages I want.

A moment's reflection will bring one to the notion that the Postal Service is the one institution that already has infrastructure in place to deliver things to every home in the country. It has buildings and deliverers nearly everywhere, plus the organization, the management, and electric delivery vans. It has the management experience of massively expanding its operations during the Christmas rush.

Could it replace a significant portion of the last fuel-intensive miles of our current retail distribution system? Given the incredible electronic communications and computation systems we have acquired in recent years, and the ability of the post office to expand to a five shift 24/7 delivery operation, I don't see why not.

It will take some time to organize the relationships between the Post Office and the current retail system, but this should not be impossible. We already have the FedEx/UPS model in place and small internet/food delivery services such as Giant's Peapod service in the Washington area seem to be making a go of it.

The Postal Service has recently fallen on hard times with the rise of email and the competition that has skimmed the cream of the delivery business. With a little imagination, the peak oil crisis could give the service a new lease on life and old Ben Franklin could perform yet one more service for his country.

Pasted from <<http://www.fcnp.com/523/peakoil.htm>>

Peak Oil Crisis: Peak Oil & Car Pools

If we had to rank essential uses for oil, transporting a single person to work would have to fall somewhere near the bottom. At the top would be fueling the tractors that plant and harvest our food. Food transport trucks, and a long list of other kinds of trucks and buses, would be listed before we get to the family car.

When oil depletion comes, getting people out of their single person car will have to be one of our top priorities to mitigate even the early stages of the crisis.

According to the 2000 Census, some 76% of Americans drive alone to work, while 11% are in a car pool. Five percent take public transport and the rest walk, bike, or work at home. Current use of the family car is roughly one-third for getting to work or around while at work, one-third for shopping and personal business, and one-third for recreation.

It is clear an effective system for sharing automobile trips would quickly result in very significant savings of gasoline, extend the life of our current cars, and lead to marked reductions in traffic congestion and air pollution.

What might a modern car pooling system look like?

One of the few things about the coming peak oil crisis we should all be thankful for is that the Internet was invented and has become nearly universal. As the crisis deepens, we shall find many new uses for the Internet as a substitute for personal travel.

A modern ride-sharing system would be Internet based. Government authority would set it up and the force of law would support some aspects of the system.

Car-pooling would start with those needing to avail themselves of its services registering on a web site. One registration session should be enough to get all of one's basic information into the system: name, address, the place one needs to go, phone numbers, email addresses, time you would like to leave, credit card numbers etc. The information could be edited to account for the needs of people such as construction workers who frequently switch work locations. One's ability to drive a car pool and type of vehicle would also be registered.

After an individual's information had been verified—credit card seems good, has a valid driver's license, liability insurance, OK, not currently wanted by the police, etc.—one would be issued a car pool ID number.

Every day one wanted to car pool on the following day, they would have to do is call up his password protected car pool account and check tomorrow.

Overnight, the computers would run and generate a car pool for the next day. By dawn, the car pool members would be sent emails listing who would be in that day's car pool, who would be the designated driver, times and place of pickup and drop off, etc.

Money to pay for the trip would be automatically transferred from the accounts of the passengers to that of the driver. The driver would also receive an authorization to park for the day at or near the place of work and perhaps an authorization to buy gasoline for the trip if fuel gets very tight.

Control of parking, or gasoline purchase authorizations, would be the major lever to induce people into car pools whether they wanted to or not. The government could simply phase in a system under which no one without a car pool parking permit would be allowed to park in public or private lots.

The myriad of details involved in a car pool system is too much to discuss here. The basic point, however, is that a substantial portion of the nation's consumption of gasoline could be eliminated by ending one-person car trips.

A role for the government would be to guarantee the integrity of the system as well as providing whatever coercion is necessary to force people into it.

The concept that the driver of the day would receive some compensation for his services beyond direct costs also seems valid. If a carpool driver received extra fuel allocations or learned to save gas through careful driving, there would be long lines of people volunteering to be drivers.

There is no reason why an Internet based car pool system would have to be limited to commuting. Joint trips could be set up to malls, entertainment, the beach, and intercity trips. The possibilities are endless. The point is to reduce the consumption of shrinking supplies of gasoline.

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