

## What Do the President, Major Oil Companies, and You Have in Common?

Answer: The realization that alternative sources of fuel, conservation, and personal change are needed in the future if our standard of living, or anything like it, is to be maintained. While the President has other issues competing for his attention, and oil companies may prefer to simply find more oil in the short term—the consensus is that demand is higher than ever and not slowing down; new oil discoveries are fewer and less substantial now than in the past; and only the combination of numerous solutions will provide enough energy for the world's needs in the future. *(continued on page 3)*

## Have You Ever Heard of Eco-Driving?

By simply paying closer attention to how we drive, we can save 10% to 15% in fuel consumption. Some practices associated with eco-driving are well known, but many have been lazy about implementing them. Things like removing excess weight from the car (all that junk in the trunk), or keeping tires properly inflated requires time which is in short supply in many lives. Also in short supply these days is patience and attentiveness to doing one thing at a time. Rather than talking on the phone, eating, or going over mental lists while driving—actually paying attention to the task at hand—will result in savings of fuel and money, reduce exhaust emissions, and increase safety on the road.



The Ford Motor Company includes a page about eco-driving on its web site. They claim that average drivers can reduce the amount of fuel they use by as much as 25%, this is a bit ambitious but the practices they suggest include some good ones (An asterisk indicates those practices that Energy Shift™ thinks are particularly worthwhile):

\*Anticipate traffic conditions, and accelerate and decelerate smoothly—it's safer, uses less gas, reduces wear on brakes, and often gets you to your destination just as quickly.

Avoid excess idling: for example, consider parking your car and going inside instead of using "drive-up" lanes.

\*Today's engines don't need to be warmed up in the winter. Prolonged idling creates excess emissions and wastes fuel.

\*Observe the posted speed limits—it's safer and saves gas. The Environmental Protection Agency estimates a 10-15% improvement in miles per gallon by driving 55 instead of 65 mph.

Properly maintain your vehicle and replace your air filter as recommended.

Keep your tires properly inflated to the recommended pressure—this alone can reduce the average amount of fuel you use by 3-4%.

Maintain a steady speed. Using cruise control on the highway is ideal—except in hilly terrain.

\*Use your heater and air conditioning selectively to reduce the load on your engine.

Avoid "topping-off" the gas tank. Overfilling your gas tank can result in spilled gasoline that adds to air pollution when it evaporates.

Remove excess weight. Unnecessary weight makes the engine work harder and consumes more fuel.

\*Plan and consolidate your trips. This will enable you to bypass congested routes, lead to less idling, fewer start-ups and less stop and go traffic. Whenever feasible, share a ride and/or carpool.

The Wisconsin Partners for Clean Air (a group that includes businesses, community organizations, schools and government) also encourages eco-driving on their website. They cite all four of the reasons why eco-driving should become a familiar practice for all drivers:

"By driving in a more careful and environmentally responsible way, you can **be a safer driver** while you **cut exhaust emissions, save fuel**, and at the same time **save yourself some money at the gas pump**. Proper vehicle maintenance is another way you can help the environment."

They also provide a long list of eco-driving practices which you can take a look at for yourselves on their website. Among them, some noteworthy examples not already covered above include:

- When you first start a car after it has been sitting for more than an hour, it pollutes up to five times more than when the engine is warm.
- Several short trips taken from a cold start can use twice as much fuel as a longer multi-purpose trip covering the same distance when the engine is warm.
- By combining trips you will avoid retracing your route and reduce the distance you travel. You'll not only save fuel but also wear and tear on your car, reducing potential maintenance costs.
- It takes 20% less gas to accelerate from 5 mph than from a full stop.
- Aggressive driving (speeding, rapid acceleration and braking) wastes gas mileage by 33% at highway speeds and by 5% around town.
- In city driving, nearly 50% of the energy needed to power your car goes to acceleration. Unnecessary braking wastes that energy.
- Avoid extreme acceleration, except in emergency situations.
- If you anticipate traffic conditions ahead of you and don't tailgate, you can avoid unnecessary braking and acceleration and improve your fuel economy by 5-10%.
- It takes more energy to cool a hot car than it does to cool a medium-sized home in Atlanta, Georgia during the summer!



- The air conditioner consumes nearly a gallon of gas per tankful to keep you cool.
- When you're driving in summer, close the windows and turn on the fresh air vents. At speeds over 40 mph, the drag caused by open windows eats up more gas than a working air conditioner.
- You will save more gas by turning the engine off and restarting it again if you expect to idle for more than 30 seconds.
- By avoiding long idles you will prevent pollution.
- Excessive idling can actually damage your engine components, including cylinders, spark plugs, and exhaust systems.
- Refueling during cooler periods of the day or in the evening generates fewer polluting vapors.
- Up to 30 gallons of gas a year can be lost by not tightening the gas cap properly.
- Replace your gas cap if it is damaged to maintain a complete seal on the gas tank.
- If you have a choice between putting cargo on the top of your vehicles or inside, choose inside, carrying items on the roof increases aerodynamic drag.
- You get four percent less gas mileage for every 100 pounds of excess weight carried in your car.

### Making Friends with Compact Florescent Light Bulbs.

If every U.S. household replaced just one incandescent (standard household) bulb with an Energy Star qualified fluorescent bulb, it would save enough energy to light 7 million homes and save \$600 million in utility bills (Alliance to Save Energy, 2005).

That said, many people are not quite ready to switch over to compact florescent light bulbs (CFLs). Some of the reasons people give include:

- I don't like that buzzing sound that florescent lights make.
- The light they give off is too bright and harsh.
- The light they give off is too dull and the new bulb doesn't adequately light the room.
- I don't like the fact that there is mercury in CFLs, even if it will be a long time before I throw one away, I will have to dispose of them eventually.
- I know someone who had one catch on fire.
- It doesn't fit in my light fixture.
- They are too expensive.

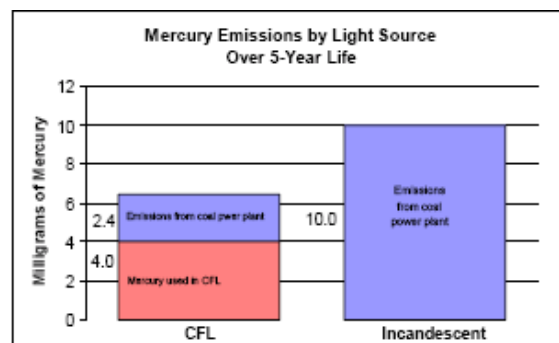
Each of these topics is discussed below:

*Buzzing sound:* The noise sometimes associated with florescent lighting is from the long tubes that are used in commercial and industrial settings. The newer technology used in the CFLs that are designed to replace standard light bulbs does not create the buzzing sound that sometimes occurred with the long tubes.

*Lighting is too bright and harsh or too dim/different from an incandescent bulb:* While the preference for lighting is subjective and what is just right for one person can be all wrong

for another, there are very specific tools to use in finding the right kind of lighting for you. In addition to selecting a CFL that is "equivalent" to the incandescent to be replaced (e.g., a 20 watt CFL to a 75 watt incandescent) one can use the **Color Temperature**. Four color temperatures are widely available, 2700K, 3000K, 3500K and 4100K. Lower temperatures give off a softer color that is often preferred in residential lighting environments. The color associated with incandescent bulbs is approximately 2700K. Some view the lower numbers (up to 3000K) as warm; 3000K to 5000K as neutral; and over 5000 as cool. Another tool is the **Color Rendering Index (CRI)** which is a measure of a light source's ability to illuminate true colors. The CRI ranges from 1 to 100. A CRI of 80 or above means the light source can reproduce colors accurately. The last tool to use in determining what type of CFL to use is the **Lumens** or the amount of light emitted by a light source. Using the same example, a 75 watt incandescent bulb has 1,180 lumens; a 20 watt CFL has 1,200 lumens. So, the CFL will give off slightly more light than its incandescent equivalent.

*I am concerned about the mercury in CFLs:* Within each CFL is a small amount of mercury needed to provide fluorescence. Some people are concerned about the possibility of leaking mercury into groundwater once a bulb is thrown in the trash and breaks sometime during transport and placement into a landfill. Some studies suggest the mercury is sputtered onto the glass throughout the lifetime of the CFL, binding it tightly with the interior surface of the bulb. Looking at it another way, CFLs actually present an opportunity to prevent mercury from entering the air, where it is most apt to have negative affects on our health. The highest source of mercury in the air comes from burning coal, the most common fuel used in the U.S. to produce electricity. A CFL uses 75% less energy than an incandescent light bulb and lasts at least 6 times longer. A power plant will emit 10mg of mercury to produce the electricity needed to light an incandescent bulb compared to only 2.4mg of mercury to light a CFL for the same duration. This is illustrated by a bar graph prepared by the United States Environmental Protection Agency:



Source: US EPA, June 2002

*Bulbs catch fire:* Technology has improved greatly from the early days of CFL development. These occasions were rare and were mostly associated with mismatched lighting fixtures and bulbs. For example, using a regular CFL in a 3-way lighting fixture or one fitted with a dimmer switch. Now, there are CFLs manufactured for use in 3-way lamps and with dimmer switches.



*The CFL doesn't fit in the light fixture:* This can be a problem. Lamps that have independently attached shades usually can accommodate a CFL. However, lamps that have a shade meant to fit directly onto a round incandescent bulb will not work. Take it slowly, replace incandescent bulbs as they burn out and have a CFL or two on hand to test different fixtures to see where they do fit.

*They are just too expensive:* CFLs are more expensive to buy than an incandescent light bulb. However, they are far less expensive to use. When the two are compared, it becomes clear that CFLs are not as costly as they appear to be at first glance. Compare the \$5.50 (\$.50 each for ten bulbs) purchase price of a sufficient number of incandescent bulbs to last as long as a single CFL. Already the cost is equivalent. Go on to compare operating costs: the national average cost per kilowatt hour is 8 cents (\$.08). Ten thousand hours of use of a 20 watt CFL at \$.08 equals \$16. As opposed to the 75 watt incandescent equivalent to a 20 watt CFL which will cost \$60.

### The President, Oil Companies and You (from page 1)

In his State of the Union President Bush said,

Keeping America competitive requires affordable energy. And here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world. The best way to break this addiction is through technology. Since 2001, we have spent nearly \$10 billion to develop cleaner, cheaper, and more reliable alternative energy sources—and we are on the threshold of incredible advances.

So tonight, I announce the Advanced Energy Initiative—a 22-percent increase in clean-energy research—at the Department of Energy, to push for breakthroughs in **two vital areas**. To change **how we power our homes and offices**, we will invest more in zero-emission coal-fired plants, revolutionary solar and wind technologies, and clean, safe nuclear energy.

We must also change **how we power our automobiles**. We will increase our research in better batteries for hybrid and electric cars, and in pollution-free cars that run on hydrogen. We'll also fund additional research in cutting-edge methods of producing ethanol, not just from corn, but from wood chips and stalks, or switch grass. Our goal is to make this new kind of ethanol practical and competitive within six years.

Breakthroughs on this and other new technologies will help us reach another great goal: to replace more than 75 percent of our oil imports from the Middle East by 2025. By applying the talent and technology of America, this country can dramatically improve our environment, **move beyond a petroleum-based economy**, and make our dependence on Middle Eastern oil a thing of the past. (Emphasis added)

Major oil companies have been aggressively vying for our attention with full page advertisements in major newspapers and impressive television commercials that offer a perceptive approach to reassuring us that they are “on the job” of finding

solutions for future sources of energy and coaxing us to make our own changes in consumption. A Chevron advertisement includes, “The world consumes two barrels of oil for every barrel discovered. .... Inaction is not an option. ... We're taking some of the steps needed to get started, but we need your help to get the rest of the way.” In another full page advertisement Chevron states in large bold letters, “Slow down. Save gas.” This is followed by a list of other steps one can take to save gas, and the last statement on the page reads, “Together, we'll make sure everyone gets the fuel they need.” Another reads, “It took us 125 years to use the first trillion barrels of oil. We'll use the next trillion in 30.” Followed by, “Energy will be one of the defining issues of this century. One thing is clear: the era of easy oil is over.”

What is really happening here? Is “big oil” really concerned about drivers saving gasoline? Is President Bush really pushing for the U.S. to evolve from a petroleum-based economy to one based on cleaner and more reliable sources? Yes and no. First and foremost, the traditional energy industry (oil, gas, coal) wants to make money. They would like to keep making money the way they always have, by selling lots and lots of cheap energy, but this is getting tougher to do. The costs are going up to find and access these resources. Whether the coal, gas or oil is beneath greater depths of bedrock, located out in rough ocean waters, bound up in sand or shale, or under protected lands due to their proximity to pristine areas – future mining and drilling of fossil fuels will yield usable energy but at what cost? Either the cost will be too great in dollars and cents (e.g., ocean drilling is far more expensive than onshore drilling; the energy used to remove the oil from oil sands greatly increases the cost per barrel produced), or the cost will be unacceptable in terms of damage to the environment. The result will be fossil fuels becoming a smaller portion of the energy mix and renewable sources of energy and conservation becoming a larger part. This will not happen suddenly, existing systems are too entrenched, technology is not yet available for many applications, and new technologies need to be refined and improved. That is why it is so important to start doing what we can now to begin the shift, to get the ball rolling, to work together—no matter what it is that motivates us.

**Anatomy of a Gallon of Gasoline.** As of April 1, 2006 the average price paid for a gallon of regular gasoline in the United States was:

Today	\$2.574
Yesterday	2.555
One Week ago	2.477
One Month ago	2.240
One Year ago	2.173

There are four components to the price of a gallon of gas. They are 1) the cost of crude oil; 2) the cost of refining; 3) the cost of distribution and marketing; and, 4) federal and state taxes. The cost of crude oil is the per barrel price reported as hovering in the \$60-\$65 range (the cost exceeded \$70 per barrel during the weeks following the 2005 hurricanes). As recently as 2003 the average per barrel price was \$28.50 and in 2004 the average was \$37. The Energy Information (continued on page 4)

**Interconnectedness** (in'ter ke nek'tid nis), n. the quality or condition of being interconnected; interrelatedness; the interconnectedness of all nations working toward world peace. [1920-25; INTERCONNECT + -ED + -NESS] From the Random House Dictionary of the English Language, Second Edition, Unabridged.

Spring brings longer days and milder temperatures. Skip some of the scheduled activities you would normally drive to and relax instead. Slow down in your own space or walk to a nearby park and read a good book, visit with a friend or family member. Congratulate yourself on the avoided traffic and miles driven. You can miss one trip to the grocery for two or three items, or one meeting, or one excursion to the mall. Life will continue but you will be a little bit more relaxed and able to plan for the next time you skip the routine, recharge yourself, and take responsibility for one less car on the road for a short time.

### Something to Think About: Why is Wal-Mart So Popular?

Saving at discount stores is a no-brainer, the meteoric success of companies such as Wal-Mart and Target are based on giving people what they need and want for less all in one place. The same is true for energy consumption. Rethinking how you get what you need and want (a hot shower, a warm home, a means to get to work, etc) for less (less money, less air pollution, less dependence on finite resources, less destruction of our environment) is what Energy Shift™ is all about. Change is not easy, take it slowly, but make it happen.

### Anatomy of a Gallon of Gasoline. (from page 4)

Administration (EIA) reports that in February 2006 a gallon of gasoline that sold for \$2.28 had a cost component structure that looked like this:

**Crude Oil** – 58.6% (or \$1.34)

**Refining** – 9.8% (or \$.22)

**Distribution and Marketing** – 11.4% (or \$.26)

**Taxes** – 20.1% (or \$.46)

There are two things that are striking about these numbers—first, the taxes account for a significant portion of the price (about the same level as refining, distribution and marketing costs combined). The other is that these percentages, which are provided for each month dating back to January of 2000, vary tremendously from month to month. We know the cost of crude oil has been rising but its percentage of the total price paid at the pump has ranged from only 35.0% in May of 2001 to a high of 60.1 % in January of 2006. Refining costs were only 7.8% in January 2000 but were a whopping 31.6% of the cost per gallon in April 2001. Similar wide ranges exist for distribution and marketing (4.6% to 24.1%) and taxes (15.2% to 38.7%) as a percentage of the costs that dictate the price per gallon of gasoline.

What this means to the consumer is that the constant juggling of the complex combination of factors impacting the four components of the price of gasoline will continue to create an upward push on prices. The relatively stable portion of the cost attributed to taxes may rise due to a growing emphasis on the need to fund research on alternative energy sources. The cost of crude oil is likely to continue to creep upward as world demand continues to outpace increased output from nations such as Saudi

Arabia. The cost of refining varies regionally and is the weak link in the United States' ability to keep up with gasoline demand. The need for increased refining capacity, as well as profit taking to fund future discovery of oil, will keep pressure on this cost component. Similarly, the marketing and distribution component is under pressure to rise. This is where the juggling really comes into the equation. The distribution of gasoline balances the inequities of where our ports and refineries are versus where we need gasoline. The cost of moving product to retail outlets (tanker trucks to service stations) is, ironically, directly impacted by the cost of the gasoline the tanker trucks themselves must use.

Understanding the forces pushing up the price of gasoline will not bring it down. However, realizing that an increased tax rate may have a silver lining; or that an expectation to see prices go down appreciably is unrealistic will help motivate all of us in our personal energy shift.



### A Good Book

Getting back to basics – Dr. Seuss' *The Lorax* is a wonderful book that should be revisited by all. Published in 1971, the lesson illustrated by *The Lorax* rings true today louder than ever. Intended to be a cautionary story about pollution, it can be applied just as well to our use of finite resources with little regard to what may happen when these resources become scarce. Who will be hurt? What will be done, or not done to avoid widespread suffering? What will the world look like once the resource is used up?

Read it for yourself, and then read it to a child, grandchild, niece or nephew. Give it as a gift the next time you are at a loss for what to give the child you know that "has everything". Then talk about what it means to you and listen to hear what it meant to them. Use it as an opportunity to talk about the huge amount of resources that it takes to maintain our very comfortable lifestyle.

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