

America Doesn't Run on Batteries

and America will not run on windmills and solar power any time soon!

Why responsible use of all domestic energy sources is important.

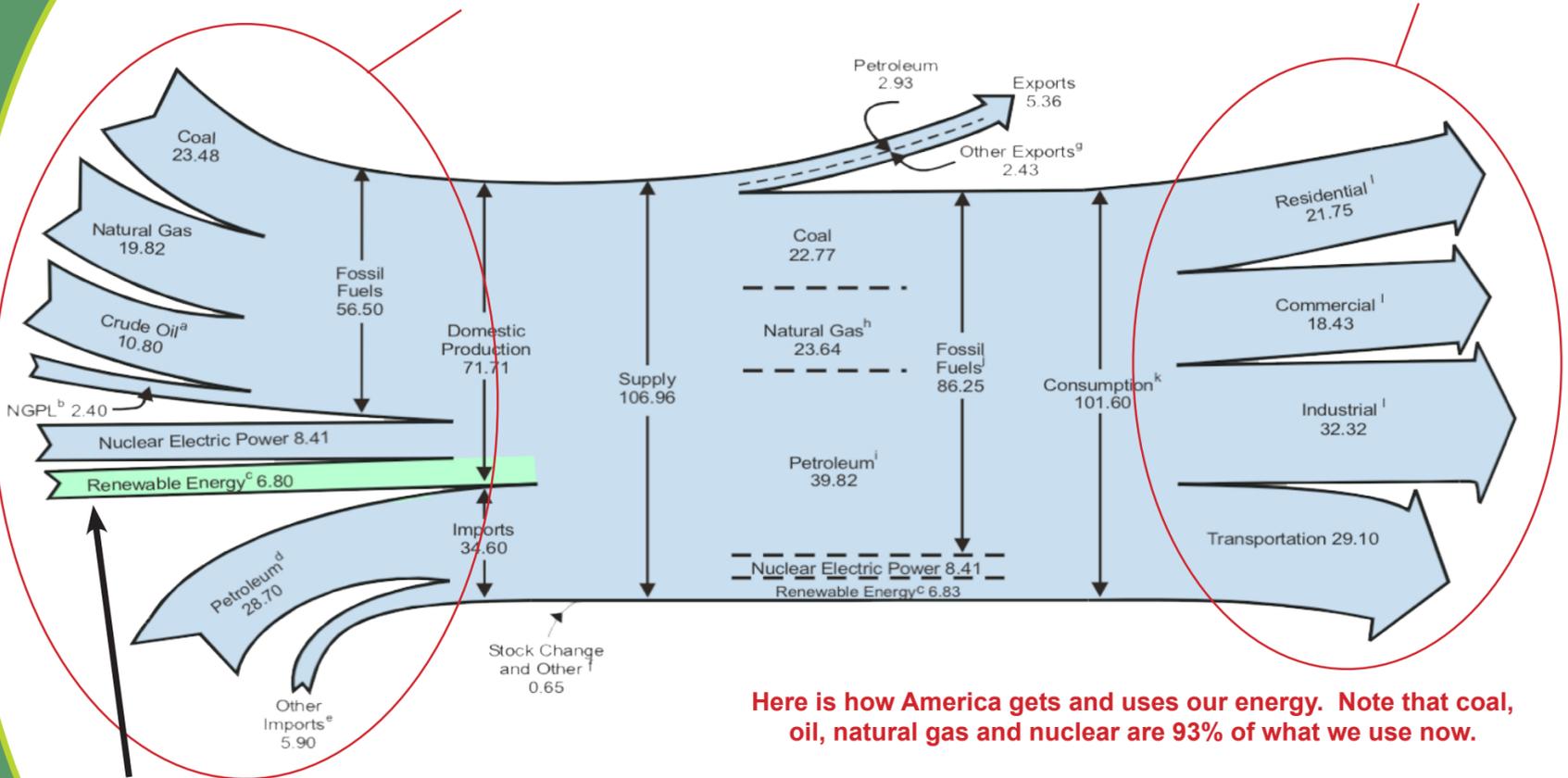
Do you like your quality of life? Have you ever thought about the relationship of energy and your quality of life?

When you get in your car to drive to the store or to the beach or turn down the thermostat on your air conditioner to cool your home, or fly away on vacation, do you consider the part that energy plays in our quality of life? Americans require vast amounts of energy for many things from transportation to manufacturing.

America is 93% powered by energy that creates power through heat engines. I know; I am an engineer and the conversion of energy from chemical energy of fuels to shaft horsepower and then to electric power is my business. My point is to show you how much carbon based fuels we depend on every day to power our standard of living. I don't know about you, but I like the American standard of living and would like to see my grandchildren also enjoy the same or better in the future. So, let's take each form of energy and put it into perspective. Just to put this into manageable quantities for you to imagine, the oil and coal used by America to power our way of life is about 10,000 gallons of oil per second and about 70,000 lbs. of coal per second.

This is where energy comes from:

This is how we use energy:



Here is how America gets and uses our energy. Note that coal, oil, natural gas and nuclear are 93% of what we use now.

See this? This is green power and most of it is old hydro power dams. An example of "old hydro" is the Alcoa and Progress Energy dams on the Yadkin River

Why do we need all sources of energy?

America uses about 101.6 quadrillion Btu's per year of energy. Yeah, I know that is a big number, but it takes a big number to put this into perspective. One Btu is enough heat to raise one pound of water, one degree Fahrenheit. So, heating of one pint of water (about one pound) from 32 degrees to boiling temperature (212 degrees) will require 180 Btu's. A Btu converted into pure energy at 100% efficiency is enough energy to lift 778 pounds of dead weight, one foot. That is what heat engines like your car or truck do with gasoline. It converts the chemical energy into heat energy and converts that heat energy into motive force to turn the drive wheels. Remember, 93% of your high quality of life is driven by heat engines, so the chart in the upper right corner shows the equivalent heat energy that each American uses on average:

Seven Myths of Green Energy

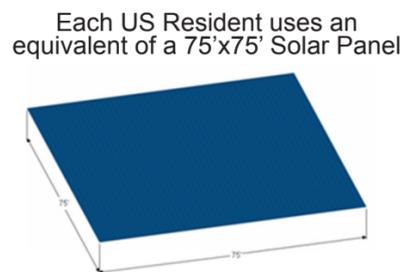
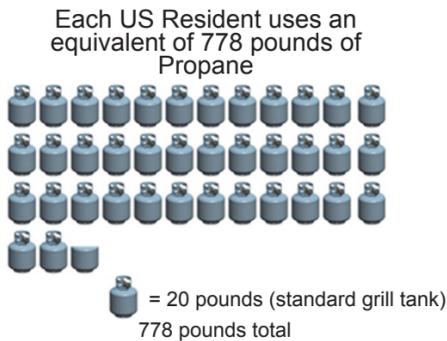
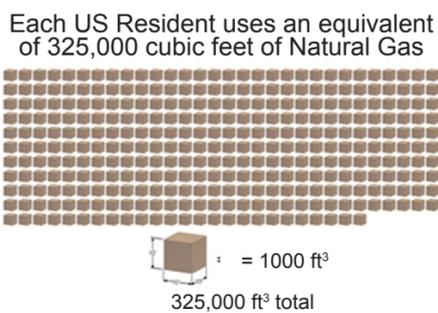
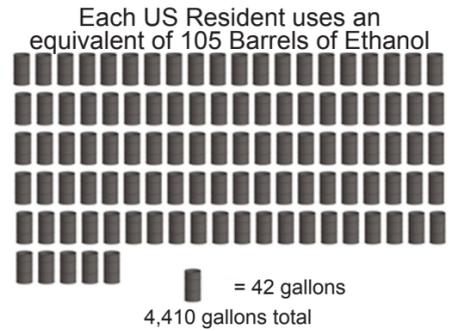
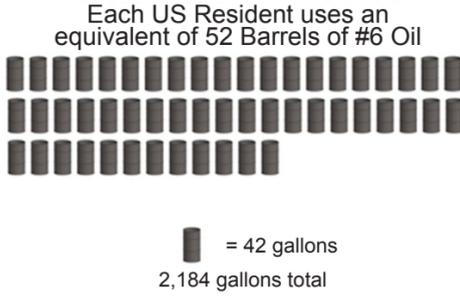
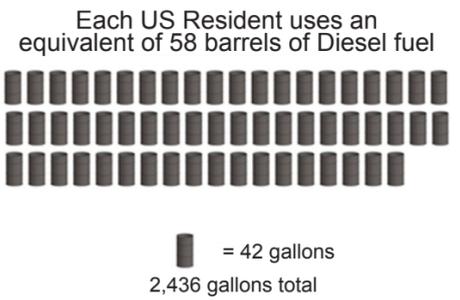
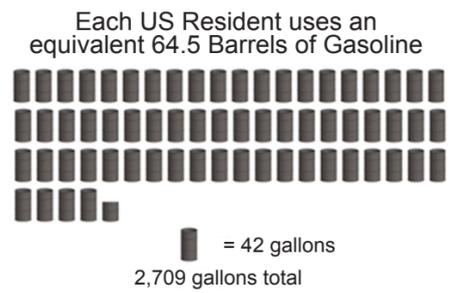
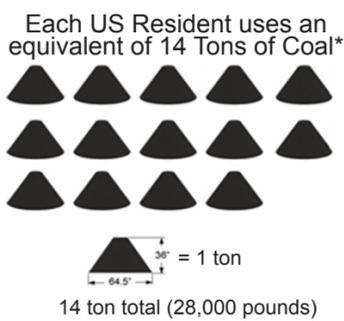
- Widespread use of compact fluorescent lamps will have a dramatic impact on America's electricity demand
- Wind will replace coal
- Solar will replace coal
- Biomass will replace coal
- Electric cars will be charged by wind or solar
- America's military might will be powered by green power
- America can stay strong and create more jobs on higher cost green power electricity

Storm Technologies, Inc.

The average American uses 334 Million BTUs per year. Here is what that is equivalent to. This is what really powers your lifestyle and America's Economy

* 14 tons @ 12,000 Btu/lb
16 tons @ 10,450 Btu/lb

- There are over 300 million residents in the United States
- In 2007, the U.S. consumed 101.605 quadrillion Btu's
- That is an average use of 334.4 MMBtu/yr per person
- The equivalent of this amount of energy from each resource is shown



1. Gasoline, Jet Fuel and Diesel Fuel: Let me place America's fuel consumption into simple terms. Your car or pickup truck is one of about 250 million in the USA. When you pull up to a gasoline filling station and pump 12 or 14 gallons into your vehicle, imagine what is happening across America to the other 250 million or so vehicles. What does this amount to? This may startle you: the flow of oil to keep America on the road and in the air amounts to about 10,000 gallons per second. That's right, 10,000 gallons per second. This includes the fuel to provide the motive force to power diesel oil for tractors, large over the road trucks and commercial jet airplanes. Friends, this carbon based fuel is going to be needed for decades and there is no exchanging fossil fuels for renewable fuels any time soon. One more thing on gasoline: have you heard about plug-in electric cars? Well, if transportation gasoline and diesel fuels are substituted by electricity, my guess is that most of that substitutional energy will come from coal and nuclear power plants. These two fuels combined, generate about 70% of America's electricity. So, before you resist new coal and nuclear power plants, think.



This is the 48" Alaska Pipeline. About one million barrels of oil flow through this daily. America uses about 21 million barrels of oil per day, so imagine 21 of these 48" pipes lined up side by side. This is what powers American transportation on the roads, in the air and over the rails.

2. Natural Gas: Natural gas provides about 23% of America's energy. It is an important fuel and a clean burning fuel. It is also a carbon based fuel. Natural gas is principally methane gas (CH₄). Most of the weight of natural gas is from the heavy carbon molecule and yes, carbon dioxide is created when natural gas burns. How much do we use? Well in terms of electric power generation let me explain it this way: on a cold winter day one large coal fueled power plant in North Carolina, if switched to natural gas, would use about as much natural gas as the rest of North Carolina uses for home heating. In other words, we need natural gas, but if it was to replace the billion tons per year of coal used to generate electricity, the cost would escalate for both natural gas and for electricity. If enough natural gas could be produced continuously to replace coal (I said IF and that is a big IF) it would be about double the present production of natural gas. Once the demand and supply got out of balance, then energy prices would skyrocket. When energy prices skyrocket, so does the cost of electricity and everything else. Please note the Sankey Diagram (top left), which shows how and where our energy is used. By the way, America did partially switch from coal and oil to natural gas a few times before. Back in the 1980s and again in the 1990s natural gas prices skyrocketed up to over twice the normal price and had to be brought back by increased production and increased use of coal and nuclear power to replace the natural gas energy. America hasn't replaced the need for coal since The Industrial Revolution. We needed it in the 19th century and we continue to need it now. It is likely we will continue to need it through 2050 as a major fuel source for the generation of electricity. This is the essence of why we need balanced energy choices.

3. Coal: Coal is important to our company, because that is what we do. We help to use coal in a clean and efficient manner to power industry and to do our part in keeping the lights on. As we move into an ever more technology driven world with I-Pads, cell phones, computers, important and complicated hospital equipment, comfortable heated and cooled spaces in buildings, etc., we must realize that these all depend on electricity. We have become accustomed to thinking electric power is an entitlement and it just comes to the power outlets by magic. Well, our young employees who work in power plants will not say it is not magic at all. It is hard work and a lot of complicated and huge equipment that converts a billion + tons of coal a year in America into electric power. How much is 1.1 billion tons of coal anyway? Well, take 300 million people and divide into 1.1 Billion tons and the answer is about 3.6 tons per year per person. Expressed as pounds per month, this would be about 611 pounds per month, per average person in America. Yes, 1.1 billion tons is a lot of coal. Yes, America depends on it. You and I depend on it; our quality of life depends on it and 174,000 Americans are directly employed in coal related jobs. So, when the media talk about mining accidents or mountaintop mining or coal ash spills, etc. Just remember, yes, the mining and utilization of America's treasure of coal must be done cleanly, safely and in a manner that will not ruin our grandchildren's future, but America needs to use energy from within our borders including lots of coal.

Yours very truly,

Richard Storm, P.E.

STORM® strongly supports the education of wise and proper use of energy. STORM® supports the protection of our natural resources while providing reasonable cost energy for our economy. The following links provide information that will help educate the general public on the importance of energy.

Storm Technologies, Inc. - <http://www.stormeng.com>

1010 WSPC - <http://1010wspc.com>

NEI - <http://www.nei.org/>

Americas Power (ABEC)- <http://www.americaspower.org>

DOE - <http://www.doe.gov>

Power Magazine - www.powermag.platts.com and www.powermag.com

Coal Age - http://www.mining-media.com/publications/coal_age/

World Coal - http://www.hydrocarbonengineering.com/Coal/CL_home.htm

American Coal Council - <http://www.clean-coal.info>

Americas Petroleum Institute- <http://www.api.org>