

Global Supply of Energy: How does it Affect Manufacturing Costs?

Before discussing how the global supply of energy affects manufacturing costs, we must first determine what is the global supply of energy? Global energy consists of all the energy produced from around the world and from both **renewable** and **non-renewable** (or exhaustible) resources.

Renewable resources generate only a small portion of the global energy supply in comparison to non-renewable resources that have historically fueled our energy needs. During 2008, over 90% of global energy consumption was derived by burning fossil fuels. This causes concern because global energy demands continually climb about 2% each year.

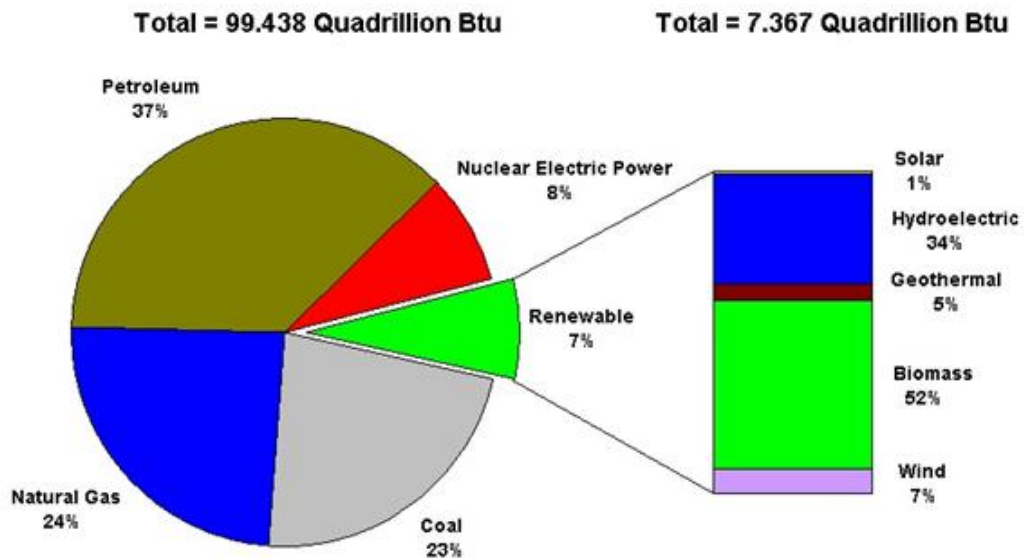
Non-Renewable Resources

- Coal
- Natural Gas
- Nuclear
- Oil

Renewable Resources

- Biomass
- Geothermal
- Hydro-electric
- Solar
- Wind
- Wood

Below are the most current numbers showing Renewable Energy Consumption in the Nation's Energy Supply (2008).



Resource: U.S. Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.
<http://www.eia.doe.gov/cneaf/solar.renewables/page/trends/rentrends.html>

How will this Affect Manufacturing Costs?

Deductive reasoning would say that more renewable resources would decrease manufacturing costs and more non-renewable resources would increase manufacturing costs. Unfortunately, it's not this simple. Non-renewable resources are currently a more abundant supply and more economically advantageous to produce. Non-renewable resources have also been used much longer and therefore have been mastered to obtain the largest amount of energy. Renewable resources are still being researched to produce the most cost-effective energy and distribution.

How are United States Manufacturers Dealing with Energy Costs?

Like any other business, energy is an expense that affects the bottom line. However, compared to other industries, energy is an extremely large expenditure for manufacturing services. Whether a new or existing facility, manufacturers are continually reviewing ways to cut energy costs. There are numerous factors that can influence energy costs and consumption, including:

- **Business location**
 - **State and municipal taxes and mandates**
 - **Business development incentive programs**
 - **Federal production tax credits**
- **Economic conditions**
- **Process efficiencies (to save time, services or costs)**

Location-based factors help define where a plant will stay or relocate their business, and can even determine if they will stay in business. United States manufacturers also deal with energy costs by relocating to a state with less energy usage taxes or a state government program to assist them in energy costs. As an example, Hartford Business News shared that when Inline Plastics Corporation (a Shelton, Connecticut packaging manufacturer) explored a location for its 2011 expansion, the company found a Georgia facility with a 50 percent energy cost-savings."¹ In this situation, their location cost comparison was heavily influenced by government laws, taxes and programs.

The global supply of energy, once separated in America, turns to the state laws, taxes and programs. Each state then has the constitutional right to make laws, change taxes and/or use programs to deter or entice manufacturing in their state.

Reducing Costs through Improved Efficiencies

Another way manufacturers deal with the cost of global energy is to become more efficient. If their energy costs rise, they offset the cost by either raising prices or decreasing costs. Since most manufacturers would rather raise their prices as a last resort, many explore ways to decrease costs, such as becoming more efficient in their manufacturing processes. Fusion Coolant Systems Inc., a machining manufacturer, wanted to refine their old-school manufacturing tasks by making them cleaner and using less energy. They presented this challenge to [Steven Skerlos](#), Associate Professor of Mechanical

Engineering at the University of Michigan, who specializes in sustainable engineering and environmentally conscious manufacturing. His research found a new, more efficient system that achieved Fusion Coolant's quest by lowering their production costs, reducing coolant intake and lowering costs to get rid of byproducts."²

The World Energy Council (WEC) also spoke about reducing industry energy consumption in their 2010 final year report: "The continued push for innovation in energy-saving technologies has become increasingly important in manufacturing industries."³ The WEC strengthened their argument with efficient examples from multiple manufacturing industries.

As energy supplies evolve towards more renewable resources, manufacturers will be faced with adapting their processes and consumption. Many experts believe that the long-term goal in using renewable energy resources is to sustain a low-cost, efficient manufacturing schedule. The top three efforts that will help U.S. manufacturers prepare for fluctuations in global energy challenges are to:

1. Become more efficient,
2. Engage U.S. state and local laws and programs, and
3. Discover more cost-effective energy options.

RESOURCES

¹ CT Manufacturing: Fighting uphill battle - <http://www.hartfordbusiness.com/news16699.html>

² Meeting a little friction: Accuri founder's new lubrication technology removes water from mix - <http://business.highbeam.com/3732/article-1G1-247648048/meeting-little-friction-accuri-founder-new-lubrication>

³ Pursuing sustainability: 2010 assessment of country energy and climate policies: The World Energy Council - http://www.worldenergy.org/documents/assessment_2010_full_report_1.pdf