

Definitions of Energy

1. The Strength and vitality required for sustained physical or mental activity.
2. Power derived from the utilization of physical or chemical resources, especially to provide light and heat or to work machines.

There are a lot of various kinds of energy in the world, and that energy can do many things. Energy can be found in many things, and takes many forms. The most important property of energy is that it is conserved_ that is, the total energy of an isolated system does not change with time. This is known as the law of conservation of energy. Energy can, however, change form; for example, it can be turned into mass and back again into energy.

Sources and Resources of Energy

There are 10 main sources of energy that are used in the universe to generate power. While there are other sources being discovered all the time, none of them has reached the stage where they can be used to provide the energy to help modern life go.

All of these different sources of energy are used primarily to produce electricity. The world runs on a series of electrical reactions – whether you are talking about the car you are driving or the light you are turning on. All of these various sources of energy add to the store of electrical power that is then sent out to different locations via high powered lines.

Here is an overview of each of the different sources of energy that are in use, and what's the power issue for each of them.

1. Solar Energy

Solar power harvests the energy of the sun through using collector panels to generate conditions that can then be turned into a kind of power. Large solar panel fields are often used in desert to gain enough power to charge small substations, and many houses use solar system to supply for hot water, cooling and supplement their electricity. The issue with solar is that while there is plentiful amounts of sun available, only certain geographical enclosure of the universe get enough of the direct power of the sun for long enough to get usable power from this source.

2. Wind Energy

Wind energy is becoming more and more common in the world. The new innovations that are allowing wind farms to appear are making them a more common sight. By using large turbines to take available wind as the power to turn, the turbine can then turn a generator to make electricity. While this seemed like an ideal solution to many, the reality of the wind farms is starting to reveal an unforeseen ecological impact that may not make it an ideal choice.

3. Geothermal Energy

Geothermal energy is the power that is produced from underneath the earth. It is neat, sustainable and environment friendly. High temperatures are produced continuously inside the earth's crust by the slow decay of radioactive particles. Hot rocks present beneath the earth heats up the water that produces steam. The steam is then captured that helps to move turbines. The rotating turbines then power the generators.

Geothermal energy can be used by a residential unit or on a large scale by an industrial application. It was used during ancient times for bathing and space heating. The biggest disadvantage with geothermal energy is that it can only be produced at selected places throughout the world. The largest group of geothermal power plants in the universe is located at The Geysers, a geothermal field in California, United States.

4. Hydrogen Energy

Hydrogen is produce with water (H₂O) and is most general element available on earth. Water consist two-thirds of hydrogen and can be found in combination with other elements. Once it is separated, it can be used as a fuel for producing electricity. Hydrogen is a great source of power and can be used as a source of fuel to power ships, vehicles, houses, industries and rockets. It is completely renewable, can be produced on demand and does not leave any toxic emissions in the atmosphere.

5. Tidal Energy

Tidal energy uses rise and fall of tides to convert kinetic energy of incoming and outgoing tides into electrical energy. The generation of power through tidal power is mostly prevalent in coastal regions. Huge investment and limited availability of places are few of the drawbacks of tidal energy. When there is increased height of water levels in the ocean, tides are produced which rush

back and forth in the ocean. Tidal energy is one of the renewable source of energy and produce large energy even when the tides are at low speed.

6. Wave Energy

Wave energy is produced from the waves that are produced in the oceans. Wave energy is renewable, environment friendly and causes no harm to atmosphere. It can be harnessed along coastal areas of many countries and can help a country to deduct its dependence on foreign countries for fuel. Producing wave energy can damage marine ecosystem and can also be a source of disturbance to private and commercial vessels. It is highly dependent on wavelength and can also be a source of visual and noise pollution.

7. Hydroelectric Energy

What many people are not aware of it that most of the cities and towns in the universe rely on hydropower, and have for the past century Every time you see a major dam, it is providing hydropower to an electrical station somewhere. The power of the water is used to turn generators to produce the electricity that is then used. The problems faced with hydropower right now have to do with the aging of the dams. Many of them need major reconstruction work to remain functional and safe, and that costs biggest sums of money. The drain on the world's drinkable water supply is also causing issues as townships may wind up needing to consume the water that provides them power too.

8. Biomass Energy

Biomass power is gets from organic material and is mostly used throughout the universe. Chlorophyll present in plants captures the suns energy by converting carbon dioxide from the air and water from the ground into carbohydrates through the process of photosynthesis. When the plants are burned, the water and carbon dioxide is again released back into the atmosphere. Biomass generally include crops, plants, trees, yard clippings, wood chips and animal waters. Biomass power is commonly used for heating and cooking in houses and as a fuel in industrial production. This type of power produces large amount of carbon dioxide into the atmosphere.

9. Nuclear power

While nuclear power remains a great subject of debate as to how safe it is to use, and whether or not it is really energy efficient when you take into account the waste it produces – the fact is it remains one of the major renewable sources of energy available to the universe. The power is produced through a specific nuclear reaction, which is then collected and used to power generators. While almost every country has nuclear generators, there are moratoriums on their use or construction as scientists try to resolve safety and disposal.

10. Fossil Fuels (Coal, Oil, and Natural Gas)

When most people talk about the various sources of energy they list natural gas, coal and oil as the options – these are all considered to be just one source of power from fossil fuels. Fossil fuels provide the energy for most of the world, primarily using coal and oil. Oil is converted into many products, the most used of which is gasoline. Natural gas is starting to become more common, but is used mostly for heating applications although there are more and more natural gas powered vehicles appearing on the streets. The issue with fossil fuels is twofold. To get to the fossil fuel and convert it to use there has to be a heavy destruction and pollution of the environment. The fossil fuel reserves are also limited, expected to last only another 100 years given the basic rate of consumption.

Energy Conservation

These are the ways to conserve energy.

1. Adjust your day-to-day behaviors

To deduct energy in your home, you do not necessarily need to go out and buy energy efficient products. Energy conservation can be as simple as turning off lights or apparatus when you do not need them. You can also use energy-intensive apparatus less by performing household tasks manually, such as hand-drying your clothes instead of putting them in the dryer, or washing dishes by hand.

The deal-making adjustments that have the highest strength for profit savings are turning down the heat on your thermostat in the winter and using your air conditioner less in the summer. Heating and cooling charges constitute almost half of an average home's utility bills, so these increments in the intensity and frequency of heating and cooling offer the greatest protection.

There are instruments you can use to figure out where most of your electricity is going in your home. A new power monitor can help you understand which apparatus are using the most electricity on a day-to-day basis.

2. Replace your light bulbs

Traditional incandescent light bulbs using an excessive amount of power and must be modify more often than their power efficient alternatives. Halogen incandescent bulbs, compact fluorescent lights, and light-emitting diode bulbs use wherever from 25-80 less electricity and last three to 25 times longer than traditional lights.

Although power efficient bulbs are more costing a lot of money off the shelf, their efficient power use and longer service lives mean that they charge less in the long run. Power efficient bulbs are the clear winners in terms of their environmental and relating to finance advantages.

3. Use Smart Power Strips

Phantom loads or the electricity used by electronics when they are turned off or in standby mode, are one of major source of power waste. In fact, it is estimated that 75% of the power used to energy household electronics is used when they are switched off. Which can charge you up to \$200 in a year. Smart energy strips, also known as advanced energy strips, eliminate the issues of phantom loads by switching off the energy to electronics when they are not in use. Smart energy strips can be set to switch off at an assigned time, during a time of inactivity, through remote switches, or based on the status of a master device.

4. Install a programmable or smart thermostat

A programmable or smart thermostat can be used to automatically switch off or deduct heating and cooling during the period when you are asleep or away. When you install a device or programmable thermostat, you eliminate wasteful power, use from heating and cooling without upgrading your HVAC system.

On average, a programmable thermostat can save you \$180 in a year. Programmable thermostat come in various models that can be set to fit you weekly schedule. Additional qualities of programmable thermostats can include indicators for when to exchange air filters or HVAC system issues, which also extend the efficiency of your heating and cooling system.

5. Purchase Power efficient Appliances

On average, apparatus are accountable for roughly 13% of your total household power use. When buying an apparatus, you should pay attention to two numbers: the initial purchase price and annual operating cost. Although power efficient apparatus usually have higher buying costs, their operating prices are 9-25% lower than conventional models.

When purchasing a power efficient apparatus, you should see for apparatus with the Energy Star label, which is a federal guarantee that the apparatus will use less power during consume and when on standby than standard non-energy efficient models. Energy savings differ based on the specific apparatus.

6. Reduce your water heating expenses

Water heating is a main part of your total power consumption. Other than buying an energy efficient buying an energy efficient water heater, there are three methods of subtract your water heating expenses, you can simply use less hot water, turn down the thermostat on your water heater, or disconnect your water heater and the first six feet of hot and cold water pipes.

If you are considering exchanging your water heater with an efficient model, you should keep in mind two factors, the type of water heater that gets your necessity and the type of fuel it will use. For Example, tankless water heaters are energy efficient, but they are also a poor choice for big families as they cannot control multiple and simultaneous uses of hot water.

7. Install energy efficient windows

Windows are significant source of power waste, which can amount to 10-25% of your total heating cost. To prevent heat loss through your windows, you can change single-pane windows with double-pane windows.

For homes in cold areas, gas-filled windows with low e coatings can significantly deduct your heating costs. In addition, interior or exterior storm windows can subtract unnecessary heat loss by ten to 20%. In warmer climates, heat acquire through windows may be an issue. In addition to minimizing heat loss, Low e coatings on windows can deduct heat obtain by reflecting more light and lowering the amount of thermal energy diffused into your house. Energy star windows can

save you \$20 to 95 in a year on your utility bills. Window shades, shutters, screens, and awnings can also provide an extra layer of disconnected between your house and external temperatures.

8. Upgrade Your HVAC system

An HVAC system is consist of heating, ventilation, and air conditioning equipment. Heating alone is accountable for more than 40% of house energy use. Because houses in Northern regions are exposed to much colder temperatures during the year, Energy Star gas furnaces have various specifications in the northern and south halves of the United States. Energy Star endorsement can save you up to 12% on your heating bill, or an average of \$36 in a year. And Energy Star are up to 16% more power efficient than baseline models. Air conditioning, by comparison, is not a significant contributor to power bills, on average, it only makes up 6% of the total energy use of your houses. Energy Star central air conditioning units are 8% more efficient than conventional models. Air Conditioning systems are usually integrated with heating systems, which means that you should buy your new furnace and air conditioner at a time in order to ensure that the air conditioner performs at its most rated energy efficiency.

Upgrade to the third part of the HVAC system – ventilation – can also make better your power efficiency. A ventilation system is consists of a network of tubes for conveying something in particular, which distributes hot and cold air throughout your house. If these tubes are not completely sealed or insulated, the resulting energy waste can add hundreds of dollars to your annual heating and cooling costs. Valid insulation and service on your ventilation system can deduct your heating and cooling expenses by up to 20%.

9. Weatherize your home

Weatherizing, or sealing air leaks around your house, is a great thing to subtract your heating and cooling expenses. The most common resources of air leaks into your house are vents, windows, and doors. To prevent these leaks, you should confirm that there are no cracks or opening between the wall and vent, window, or doorframe. To seal air leaks between stationary things, such as the wall and window frame, you can apply caulk. For cracks between moving things such as famous window and doors, you can apply weather stripping. Weather stripping and caulking are simple air sealing art that usually offer a return on investment in less than a year. Air leaking out of your house is most often from the house interior into your attic through small openings. Whether it is

through small tubes, light fixtures, or the small doors, hot air will rise and escape through small openings. As the natural flow of heat is from warmer to cooler areas, these small openings can make your heating bill even higher if your attic is not sufficiently insulated. To cut the full amount of savings from weatherization, you should consider completely insulating your house.

10. Insulate your home

Insulation plays an important role in reducing your utility bills through retaining heat during the winter and keeping heat out of your house during the summer. The recommended level of heat resistance, or R value for your insulation depends on where you live. In warmer climates, the recommended R-value is much lower than for buildings located in colder areas like the Northeast. The level of insulation you should inflict depends on the region of your home. Your attic, walls, floors, basements, and crawlspace are the five important areas where you should consider adding insulation. Use the Home Energy Saver tool for recommendations based on the specifications of your house, or find general areas recommendations on the Department of energy's webpage on insulation.

Conclusion

Ongoing concerns about climate change have made renewable energy sources an important fragment of the world energy consumption portfolio. Renewable energy technologies could deduct CO₂ emissions by exchanging fossil fuels in the power generation industry and the transportation sector. Because of some negative and irreversible externalities in conventional energy production, it is necessary to develop and promote renewable energy providing technologies and demand for renewable energy. Power generation using renewable energy sources should be extended in order to decrease the unit cost of generation. Power consumption depends on several factors including economic progress, population, energy prices, weather, and technology.