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| **Glossary** |  |
| **Chapter 15** |  |
| **bitumen** | Gooey, black, high-sulfur, heavy oil extracted from tar sand and then upgraded to synthetic fuel oil. See oil sand. |
| **coal** | Solid, combustible mixture of organic compounds with 30?98% carbon by weight, mixed with various amounts of water and small amounts of sulfur and nitrogen compounds. It forms in several stages as the remains of plants are subjected to heat and pressure over millions of years. |
| **coal gasification** | Conversion of solid coal to synthetic natural gas (SNG). |
| **coal liquefaction** | Conversion of solid coal to a liquid hydrocarbon fuel such as synthetic gasoline or methanol. |
| **crude oil** | Gooey liquid consisting mostly of hydrocarbon compounds and small amounts of compounds containing oxygen, sulfur, and nitrogen. Extracted from underground accumulations, it is sent to oil refineries, where it is converted to heating oil, diesel fuel, gasoline, tar, and other materials. |
| **fracking** | Freeing oil or natural gas that is tightly held in rock deposits by using perforated drilling well tubes with explosive charges to create fissures in rock and then using high pressure pumps to shoot a mixture of water, sand, and chemicals into the well to hold the rock fractures open and release the oil or natural gas, which flows back to the surface along with a mixture of water, sand, fracking chemicals, and other chemicals (some of them hazardous) that are released from the rock. See horizontal drilling. |
| **horizontal drilling** | Method for extracting oil or natural gas from underground deposits by first drilling down and then using a flexible drilling bore to drill horizontally to gain greater access to oil and gas deposits. See fracking. |
| **hydraulic fracturing** | Freeing oil or natural gas that is tightly held in rock deposits by using perforated drilling well tubes with explosive charges to create fissures in rock and then using high pressure pumps to shoot a mixture of water, sand, and chemicals into the well to hold the rock fractures open and release the oil or natural gas, which flows back to the surface along with a mixture of water, sand, fracking chemicals, and other chemicals (some of them hazardous) that are released from the rock. See horizontal drilling. See fracking. |
| **liquefied natural gas (LNG)** | Natural gas converted to liquid form by cooling it to a very low temperature. |
| **liquefied petroleum gas (LPG)** | Mixture of liquefied propane (C3H8) and butane (C4H10) gas removed from natural gas and used as a fuel. |
| **natural gas** | Underground deposits of gases consisting of 50?90% by weight methane gas (CH4) and small amounts of heavier gaseous hydrocarbon compounds such as propane (C3H8) and butane (C4H10). |
| **net energy yield** | Total amount of useful energy available from an energy resource or energy system over its lifetime, minus the amount of energy used (the first energy law), automatically wasted (the second energy law), and unnecessarily wasted in finding, processing, concentrating, and transporting it to users. |
| **nuclear fuel cycle** | Includes the mining of uranium, processing and enriching the uranium to make nuclear fuel, using it in the reactor, safely storing the resulting highly radioactive wastes for thousands of years until their radioactivity falls to safe levels, and retiring the highly radioactive nuclear plant by taking it apart and storing its high- and moderate-level radioactive material safely for thousands of years. |
| **oil sand** | Deposit of a mixture of clay, sand, water, and varying amounts of a tarlike heavy oil known as bitumen. Bitumen can be extracted from tar sand by heating. It is then purified and upgraded to synthetic crude oil. See bitumen. See tar sand. |
| **peak production** | Point in time when the pressure in an oil well drops and its rate of conventional crude oil production starts declining, usually a decade or so; for a group of wells or for a nation, the point at which all wells on average have passed peak production. |
| **petrochemicals** | Chemicals obtained by refining (distilling) crude oil. They are used as raw materials in manufacturing most industrial chemicals, fertilizers, pesticides, plastics, synthetic fibers, paints, medicines, and many other products. |
| **petroleum** | Gooey liquid consisting mostly of hydrocarbon compounds and small amounts of compounds containing oxygen, sulfur, and nitrogen. Extracted from underground accumulations, it is sent to oil refineries, where it is converted to heating oil, diesel fuel, gasoline, tar, and other materials. See crude oil. |
| **proton (p)** | Positively charged particle in the nuclei of all atoms. Each proton has a relative mass of 1 and a single positive charge. Compare electron, neutron. |
| **proven oil reserves** | Identified deposits from which conventional crude oil can be extracted profitably at current prices with current technology. |
| **refining** | Complex process in which crude oil is heated and vaporized in giant columns and separated, by use of varying boiling points, into various products such as gasoline, heating oil, and asphalt. See petrochemicals. |
| **shale oil** | Slow-flowing, dark brown, heavy oil obtained when kerogen in oil shale is vaporized at high temperatures and then condensed. Shale oil can be refined to yield gasoline, heating oil, and other petroleum products. See kerogen, oil shale. |
| **synfuels** | Synthetic gaseous and liquid fuels produced from solid coal or sources other than natural gas or crude oil. |
| **synthetic natural gas (SNG)** | Gaseous fuel containing mostly methane produced from solid coal. |
| **tar sand** | Deposit of a mixture of clay, sand, water, and varying amounts of a tarlike heavy oil known as bitumen. Bitumen can be extracted from tar sand by heating. It is then purified and upgraded to synthetic crude oil. See bitumen. |

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