

## Energy Overview

**Note. Merchandise Trade Value.** Imports data presented are based on the customs values. Those values do not include insurance and freight and are consequently lower than the cost, insurance, and freight (CIF) values, which are also reported by the Bureau of the Census. All exports data, and imports data prior to 1981, are on a free alongside ship (f.a.s.) basis.

“Balance” is exports minus imports; a positive balance indicates a surplus trade value and a negative balance indicates a deficit trade value. “Energy” includes mineral fuels, lubricants, and related material. “Non-Energy Balance” and “Total Merchandise” include foreign exports (i.e., re-exports) and nonmonetary gold and Department of Defense Grant-Aid shipments. The “Non-Energy Balance” is calculated by subtracting the “Energy” from the “Total Merchandise Balance.”

“Imports” consist of government and nongovernment shipments of merchandise into the 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and the U.S. Foreign Trade Zones. They reflect the total arrival from foreign countries of merchandise that immediately entered consumption channels, warehouses, the Foreign Trade Zones, or the Strategic Petroleum Reserve. They exclude shipments between the United States, Puerto Rico, and U.S. possessions, shipments to U.S. Armed Forces and diplomatic missions abroad for their own use, U.S. goods returned to the United States by its Armed Forces, and in-transit shipments.

### Table 1.5 Sources

U.S. Department of Commerce, Bureau of the Census, Foreign Trade Division:

#### Petroleum Exports

1974-1987: “U.S. Exports,” FT410, December issues.  
1988 and 1989: “Report on U.S. Merchandise Trade,” Final Revisions.  
1990-1992: “U.S. Merchandise Trade,” Final Report.  
1993-2007: “U.S. International Trade in Goods and Services,” Annual Revision.  
2008 and 2009: “U.S. International Trade in Goods and Services,” FT-900, monthly.

#### Petroleum Imports

1974-1987: “U.S. Merchandise Trade,” FT900, December issues, 1975-1988.  
1988 and 1989: “Report on U.S. Merchandise Trade,” Final Revisions.  
1990-1993: “U.S. Merchandise Trade,” Final Report.  
1994-2007: “U.S. International Trade in Goods and Services,” Annual Revision.  
2008 and 2009: “U.S. International Trade in Goods and Services,” FT-900, monthly.

#### Energy Exports and Imports

1974-1987: U.S. merchandise trade press releases and database printouts for adjustments.  
1988: January-July, monthly FT-900 supplement, 1989 issues. August-December, monthly FT-900, 1989 issues.  
1989: Monthly FT-900, 1990 issues.  
1990-1992: “U.S. Merchandise Trade,” Final Report.  
1993-2007: “U.S. International Trade in Goods and Services,” Annual Revision.  
2008 and 2009: “U.S. International Trade in Goods and Services,” FT-900, monthly.

#### Petroleum, Energy, and Non-Energy Balances

Calculated by the Energy Information Administration.

#### Total Merchandise

1974-1987: U.S. merchandise trade press releases and database printouts for adjustments.  
1988: “Report on U.S. Merchandise Trade, 1988 Final Revisions,” August 18, 1989.  
1989: “Report on U.S. Merchandise Trade, 1989 Revisions,” July 10, 1990. 1990: “U.S. Merchandise Trade, 1990 Final Report,” May 10, 1991, and “U.S. Merchandise Trade, December 1992,” February 18, 1993, page 3.  
1991: “U.S. Merchandise Trade, 1992 Final Report,” May 12, 1993.  
1992-2007: “U.S. International Trade in Goods and Services,” Annual Revision.  
2008 and 2009: “U.S. International Trade in Goods and Services,” FT-900, monthly.

### Table 1.11 Methodology and Sources

To estimate carbon dioxide emissions from fossil fuel consumption for the *Monthly Energy Review (MER)*, Table 1.11, the Energy Information Administration (EIA) uses the following methodology and sources:

#### Step 1. Determine Consumption by Fuel Type

Coal (including coal coke net imports)—Coal consumption data in thousand short tons by sector (residential, commercial, coke plants, other industrial, electric power) are from *MER* Table 6.2. Coal consumption data by sector are converted to trillion Btu by multiplying by the coal heat content factors in *MER* Table A5. Coal coke net imports data in trillion Btu are derived from coal coke imports and exports data in *MER* Tables 1.4a and 1.4b.

Natural Gas (excluding supplemental gaseous fuels)—Natural gas consumption data in trillion Btu are from *MER* Table 1.3.

Petroleum—Consumption (product supplied) data in thousand barrels per day for asphalt and road oil, aviation gasoline, distillate fuel oil, jet fuel, kerosene, lubricants, motor gasoline, petroleum coke, and residual fuel oil are from *MER* Table 3.5. For the component products of liquefied petroleum gases (ethane/ethylene, propane/propylene,

normal butane/butylene, and isobutane/isobutylene) and “other petroleum” (aviation gasoline blending components, crude oil, motor gasoline blending components, naphthas for petrochemical feedstock use, other oils for petrochemical feedstock use, pentanes plus, special naphthas, still gas, unfinished oils, waxes, and miscellaneous petroleum products), consumption (product supplied) data in thousand barrels per day are from EIA’s *Petroleum Supply Annual (PSA)*, *Petroleum Supply Monthly (PSM)*, and earlier publications (see sources for *MER* Table 3.5). Petroleum consumption data by product are converted to trillion Btu by multiplying by the petroleum heat content factors in *MER* Table A1 (Table A3 for motor gasoline).

### Step 2. Remove Biofuels From Petroleum

**Distillate Fuel Oil**—Beginning in 2009, the distillate fuel oil data in Step 1 include biodiesel, a non-fossil renewable fuel. To remove the biodiesel portion from distillate fuel oil, data in thousand barrels per day for refinery and blender net inputs of renewable diesel fuel (from the *PSM*) are converted to trillion Btu by multiplying by the biodiesel heat content factor in *MER* Table A3, and then subtracted from the distillate fuel oil consumption values.

**Motor Gasoline**—Beginning in 1993, the motor gasoline data in Step 1 include fuel ethanol, a non-fossil renewable fuel. To remove the fuel ethanol portion from motor gasoline, data in trillion Btu for fuel ethanol consumption (from *MER* Table 10.3) are subtracted from the motor gasoline consumption values. (Note that about 2 percent of fuel ethanol is fossil-based petroleum denaturant, to make the fuel ethanol undrinkable. For 1993-2008, petroleum denaturant is double counted in the *PSA* product supplied statistics, in both the original product category—e.g., pentanes plus—and also in the finished motor gasoline category; for this time period for *MER* Table 1.11, petroleum denaturant is removed along with the fuel ethanol from motor gasoline, but left in the original product. Beginning in 2009, petroleum denaturant is counted only in the *PSM* product supplied statistics for motor gasoline; for this time period for *MER* Table 1.11, petroleum denaturant is left in motor gasoline.)

### Step 3. Remove Carbon Sequestered by Nonfuel Use

The following fuels have industrial nonfuel uses as chemical feedstocks and other products: coal, natural gas, asphalt and road oil, distillate fuel oil, liquefied petroleum gases (ethane/ethylene, propane/propylene, normal butane/butylene, and isobutane/isobutylene), lubricants, naphthas for petrochemical feedstock use, other oils for petrochemical feedstock use, pentanes plus, petroleum coke, residual fuel oil, special naphthas, still gas, waxes, and miscellaneous petroleum products. In the nonfuel use of

these fuels, some of the carbon is sequestered, and is thus subtracted from the fuel consumption values in Steps 1 and 2. Estimates of annual nonfuel use and associated carbon sequestration are from EIA’s Office of Integrated Forecasting and Analysis (for details, see “Documentation for *Emissions of Greenhouse Gases in the United States 2006*” at [http://www.eia.doe.gov/oiaf/1605/ggrrpt/documentation/pdf/0638\(2006\).pdf](http://www.eia.doe.gov/oiaf/1605/ggrrpt/documentation/pdf/0638(2006).pdf)).

To obtain monthly estimates of nonfuel use and associated carbon sequestration, monthly patterns for industrial consumption and product supplied data series are used. For coal nonfuel use, the monthly pattern for coke plants coal consumption from *MER* Table 6.2 is used. For natural gas, the monthly pattern for other industrial non-CHP natural gas consumption from *MER* Table 4.3 is used. For distillate fuel oil, petroleum coke, and residual fuel oil, the monthly patterns for industrial consumption from *MER* Table 3.7b are used. For the other petroleum products, the monthly patterns for product supplied from the *PSA* and *PSM* are used.

### Step 4. Determine Carbon Dioxide Emissions From Fossil Fuel Consumption

Carbon dioxide emissions data in million metric tons for fossil fuels are calculated by multiplying consumption values in trillion Btu from Steps 1 and 2 (minus the carbon sequestered in nonfuel use in Step 3) by the carbon dioxide emissions factors at [http://www.eia.doe.gov/oiaf/1605/ggrrpt/excel/CO2\\_coeff.xls](http://www.eia.doe.gov/oiaf/1605/ggrrpt/excel/CO2_coeff.xls). For 2007-2009, the 2006 factors are used. Coal emissions are calculated for each sector (residential, commercial, coke plants, other industrial, electric power); total coal emissions are the sum of the sectoral coal emissions. Coal coke net imports emissions are calculated using a coal coke factor of 114.14 million metric tons CO<sub>2</sub> per quadrillion Btu. Petroleum emissions are calculated for each product; total petroleum emissions are the sum of the product emissions. Residual fuel oil emissions are calculated using the “Residual Fuel” (not the “Residual Fuel-Electric Utility”) factor.

### Step 5. Benchmark to Published Values

Through 2007, the carbon dioxide emissions data for coal, natural gas, and petroleum in Step 4 are benchmarked to the annual values in EIA’s *Emissions of Greenhouse Gases in the United States 2007* (December 2008). For 2008, the carbon dioxide emissions data for coal, natural gas, and petroleum in Step 4 are benchmarked to the annual values in EIA’s *U.S. Carbon Dioxide Emissions from Energy Sources 2008 Flash Estimate* (May 2009). For 2009, the 2008 benchmarked/non-benchmarked ratios for coal, natural gas, and petroleum are applied.