

Create Announcement

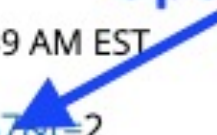
New announcements appear below this line

Link for today's lab 

Posted on: Wednesday, November 4, 2020 8:12:59 AM EST

<https://www.eia.gov/tools/faqs/faq.php?id=667&t=2>

Open this link



- Amount of fuel used per kWh = Heat rate (in [British Thermal Units \(Btu\)](#) per kWh) divided by Fuel heat content (in Btu per physical unit)
- Kilowatthour generated per unit of fuel used = Fuel heat content (in Btu per physical unit) divided by Heat rate (in Btu per kWh)

Data sources for the calculations:

[Electric Power Annual](#)

- [Table 7.3. Average Quality of Fossil Fuel Receipts for the Electric Power Industry \(xls \)](#)
- [Table 8.1. Average Operating Heat Rate for Selected Energy Sources \(xls \)](#)
- [Table 8.2 Average Tested Heat Rates by Prime Mover and Energy Source \(xls \)](#)

[Monthly Energy Review](#), Appendices with fuel heat contents, electricity heat rates, and conversion factors

You can calculate the average amounts of fuels used to generate electricity in the United States, in each state, and at individual power plants using

- [Data on total U.S. electricity generation \(Table\(s\) 7.2 \) and fuel consumption for electricity generation \(Table\(s\) 7.3\)](#)
- [State-level historical electricity data files with annual and monthly electricity generation and fuel consumption](#)
- [Data on fuel consumption and electricity generation by fuel/energy source at U.S. power plants](#)

Last updated: February 27, 2020

[Natural Gas](#)
[Nuclear](#)
[Oil/Petroleum](#)
[Prices](#)
[Renewables](#)

[Full list of upcoming reports](#)

[Sign up for email notifications](#)

[Get the What's New RSS feed](#)

**Didn't find the answer
to your question?**

[Ask an energy expert](#)

Open this link



- Electricity

Topic

Available formats: [PDF \(entire section\)](#)

7.1 Overview
 Available formats: [PDF](#) [XLS](#) [CSV](#) [PDF \(graph\)](#) | [Interactive](#)

7.2 Electricity net generation:
Open this link for data on kilowatts generated from coal, oil, and gas

7.2a Total (all sectors)
 Available formats: [PDF](#) [XLS](#) [CSV](#) [PDF \(graph\)](#) | [Interactive](#)

7.2b Electric power sector
 Available formats: [PDF](#) [XLS](#) [CSV](#) [PDF \(graph\)](#) | [Interactive](#)

7.2c Commercial and industrial sectors
 Available formats: [PDF](#) [XLS](#) [CSV](#) [PDF \(graph\)](#) | [Interactive](#)

7.3 Consumption of combustible fuels for electricity generation:
Open this link for data tons, barrels, and cubic feet of coal, oil, and gas consumed

7.3a Total (all sectors)
 Available formats: [PDF](#) [XLS](#) [CSV](#) [PDF \(graph\)](#) | [Interactive](#)

- Data updates
- [See list of previous changes](#)

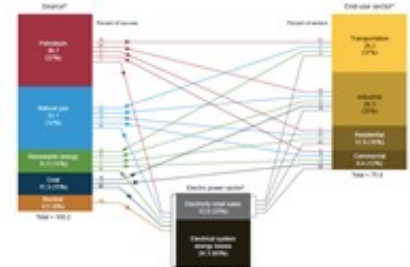
Diagrams

Energy flows 2019



- Total energy
- Petroleum
- Natural gas
- Coal
- Electricity

Energy consumption by source and sector 2019



- [Total energy](#)
- [Renewable energy](#)

| | Fossil Fuels | | | | | | Renewable Energy | | | | | | Total |
|-------------------------|-------------------|------------------------|--------------------------|--------------------------|------------------------|--|--|-------------------|--------------------|-------------|--------------------|---------|-----------|
| | Coal ^a | Petroleum ^b | Natural Gas ^c | Other Gases ^d | Nuclear Electric Power | Hydro-electric Pumped Storage ^e | Conventional Hydro-electric Power ^f | Biomass | | Geo-thermal | Solar ⁱ | Wind | |
| | | | | | | | | Wood ^g | Waste ^h | | | | |
| 1950 Total | 154,520 | 33,734 | 44,559 | NA | 0 | () | 100,885 | 390 | NA | NA | NA | NA | 334,088 |
| 1955 Total | 301,363 | 37,138 | 95,285 | NA | 0 | () | 116,236 | 276 | NA | NA | NA | NA | 550,299 |
| 1960 Total | 403,067 | 47,987 | 157,970 | NA | 518 | () | 149,440 | 140 | NA | 33 | NA | NA | 759,156 |
| 1965 Total | 570,926 | 64,801 | 221,559 | NA | 3,657 | () | 196,984 | 269 | NA | 189 | NA | NA | 1,058,386 |
| 1970 Total | 704,394 | 184,183 | 372,890 | NA | 21,804 | () | 250,957 | 136 | 220 | 525 | NA | NA | 1,535,111 |
| 1975 Total | 852,786 | 289,095 | 299,778 | NA | 172,505 | () | 303,153 | 18 | 174 | 3,246 | NA | NA | 1,920,755 |
| 1980 Total | 1,161,562 | 245,994 | 346,240 | NA | 251,116 | () | 279,182 | 275 | 158 | 5,073 | NA | NA | 2,289,600 |
| 1985 Total | 1,402,128 | 100,202 | 291,946 | NA | 383,691 | () | 284,311 | 743 | 640 | 9,325 | 11 | 6 | 2,473,002 |
| 1990 Total ^k | 1,594,011 | 126,460 | 372,765 | 10,383 | 576,862 | -3,508 | 292,866 | 32,522 | 13,260 | 15,434 | 367 | 2,789 | 3,037,827 |
| 1995 Total | 1,709,426 | 74,554 | 496,058 | 13,870 | 673,402 | -2,725 | 310,833 | 36,521 | 20,405 | 13,378 | 497 | 3,164 | 3,353,487 |
| 2000 Total | 1,966,265 | 111,221 | 601,038 | 13,955 | 753,893 | -5,539 | 275,573 | 37,595 | 23,131 | 14,093 | 493 | 5,593 | 3,802,105 |
| 2001 Total | 1,903,956 | 124,880 | 639,129 | 9,039 | 768,826 | -8,823 | 216,961 | 35,200 | 14,548 | 13,741 | 543 | 6,737 | 3,736,644 |
| 2002 Total | 1,933,130 | 94,567 | 691,006 | 11,463 | 780,064 | -8,743 | 264,329 | 38,665 | 15,044 | 14,491 | 555 | 10,354 | 3,858,452 |
| 2003 Total | 1,973,737 | 119,406 | 649,908 | 15,600 | 763,733 | -8,535 | 275,806 | 37,529 | 15,812 | 14,424 | 534 | 11,187 | 3,883,185 |
| 2004 Total | 1,978,301 | 121,145 | 710,100 | 15,252 | 788,528 | -8,488 | 268,417 | 38,117 | 15,421 | 14,811 | 575 | 14,144 | 3,970,555 |
| 2005 Total | 2,012,873 | 122,225 | 760,960 | 13,464 | 781,986 | -6,558 | 270,321 | 38,856 | 15,420 | 14,692 | 550 | 17,811 | 4,055,423 |
| 2006 Total | 1,990,511 | 64,166 | 816,441 | 14,177 | 787,219 | -6,558 | 289,246 | 38,762 | 16,099 | 14,568 | 508 | 26,589 | 4,064,702 |
| 2007 Total | 2,016,456 | 65,739 | 896,590 | 13,453 | 806,425 | -6,896 | 247,510 | 39,014 | 16,525 | 14,637 | 612 | 34,450 | 4,156,745 |
| 2008 Total | 1,985,801 | 46,243 | 882,981 | 11,707 | 806,208 | -6,288 | 254,831 | 37,300 | 17,734 | 14,840 | 864 | 55,363 | 4,119,388 |
| 2009 Total | 1,755,904 | 38,937 | 920,979 | 10,632 | 798,855 | -4,627 | 273,445 | 36,050 | 18,443 | 15,009 | 891 | 73,886 | 3,950,331 |
| 2010 Total | 1,847,290 | 37,061 | 987,697 | 11,313 | 806,968 | -5,501 | 260,203 | 37,172 | 18,917 | 15,219 | 1,212 | 94,652 | 4,125,060 |
| 2011 Total | 1,733,430 | 30,182 | 1,013,689 | 11,566 | 790,204 | -6,421 | 319,355 | 37,449 | 19,222 | 15,316 | 1,818 | 120,177 | 4,100,141 |
| 2012 Total | 1,514,043 | 23,190 | 1,225,894 | 11,898 | 769,331 | -4,950 | 276,240 | 37,799 | 19,823 | 15,562 | 4,327 | 140,822 | 4,047,765 |
| 2013 Total | | | | | | | | | | | | | 964 |
| 2014 Total | | | | | | | | | | | | | 606 |
| 2015 Total | | | | | | | | | | | | | 601 |
| 2016 Total | | | | | | | | | | | | | 675 |
| 2017 Total | | | | | | | | | | | | | 271 |
| 2018 January | | | | | | | | | | | | | 230 |
| February | | | | | | | | | | | | | 394 |
| March | | | | | | | | | | | | | 547 |
| April | | | | | | | | | | | | | 756 |
| May | | | | | | | | | | | | | 948 |
| June | | | | | | | | | | | | | 886 |
| July | | | | | | | | | | | | | 290 |
| August | | | | | | | | | | | | | 328 |
| September | | | | | | | | | | | | | 258 |
| October | | | | | | | | | | | | | 932 |
| November | | | | | | | | | | | | | 369 |
| December | | | | | | | | | | | | | 139 |
| Total | | | | | | | | | | | | | 277 |
| 2019 January | | | | | | | | | | | | | 754 |
| February | | | | | | | | | | | | | 580 |
| March | 78,516 | 1,462 | 112,945 | 1,251 | 65,080 | -409 | 25,546 | 3,257 | 1,590 | 1,437 | 5,910 | 26,116 | 323,782 |
| April | 60,008 | 1,234 | 103,006 | 1,071 | 60,581 | -103 | 25,483 | 3,027 | 1,464 | 1,239 | 6,835 | 29,711 | 294,577 |
| May | 71,883 | 1,690 | 116,236 | 1,101 | 67,124 | -368 | 30,061 | 3,365 | 1,542 | 1,347 | 7,191 | 25,973 | 328,269 |
| June | 78,610 | 1,531 | 136,999 | 1,025 | 68,805 | -385 | 26,469 | 3,339 | 1,554 | 1,362 | 8,006 | 22,947 | 351,363 |
| July | 100,981 | 1,775 | 174,348 | 1,290 | 72,199 | -622 | 23,730 | 3,569 | 1,587 | 1,412 | 8,169 | 22,024 | 411,616 |
| August | 94,177 | 1,777 | 176,478 | 1,202 | 71,911 | -579 | 21,041 | 3,717 | 1,602 | 1,409 | 7,888 | 19,869 | 401,665 |
| September | 85,913 | 1,589 | 150,753 | 1,139 | 66,064 | -671 | 16,324 | 3,282 | 1,506 | 1,384 | 6,752 | 24,385 | 359,545 |
| October | 66,929 | 1,413 | 117,567 | 997 | 62,033 | -373 | 16,292 | 3,081 | 1,565 | 1,277 | 6,131 | 28,136 | 321,875 |
| November | 75,979 | 1,472 | 117,072 | 1,196 | 64,125 | -509 | 20,520 | 3,107 | 1,497 | 1,112 | 4,377 | 25,603 | 316,672 |
| December | 72,564 | 1,170 | 117,342 | 1,136 | 73,074 | -529 | 22,206 | 3,407 | 1,588 | 1,301 | 3,494 | 27,183 | 337,253 |
| Total | 866,148 | 18,567 | 1,581,815 | 13,634 | 809,409 | -5,261 | 273,707 | 39,851 | 18,561 | 16,011 | 72,234 | 300,071 | 4,118,051 |

These values represent millions of kWh of electricity generated from coal, petroleum, and natural gas. Copy these numbers down.

Table 7.3a Consumption of Combustible Fuels for Electricity Generation: Total (All Sectors) (Sum of Tables 7.3b and 7.3c)

| | Coal ^a Thousand Short Tons | Petroleum | | | | | Natural Gas ^f Billion Cubic Feet | Other Gases ^g | Biomass | | Other ⁱ |
|-------------------------|--|--|--|--|--|--|--|--------------------------|-----------------------------------|------------------------------------|--------------------|
| | | Distillate Fuel Oil ^b Thousand Barrels | Residual Fuel Oil ^c Thousand Barrels | Other Liquids ^d Thousand Barrels | Petroleum Coke ^e Thousand Short Tons | Total ^h Thousand Barrels | | | Wood ^h Trillion Btu | Waste ⁱ Trillion Btu | |
| | | | | | | | | | | | |
| 1950 Total | 91,871 | 5,423 | 69,998 | NA | NA | 75,421 | 629 | NA | 5 | NA | NA |
| 1955 Total | 143,759 | 5,412 | 69,862 | NA | NA | 75,274 | 1,153 | NA | 3 | NA | NA |
| 1960 Total | 176,685 | 3,824 | 84,371 | NA | NA | 88,195 | 1,725 | NA | 2 | NA | NA |
| 1965 Total | 244,788 | 4,928 | 110,274 | NA | NA | 115,203 | 2,321 | NA | 3 | NA | NA |
| 1970 Total | 320,182 | 24,123 | 311,381 | NA | 636 | 338,686 | 3,932 | NA | 1 | 2 | NA |
| 1975 Total | 405,962 | 38,907 | 467,221 | NA | 70 | 506,479 | 3,158 | NA | (s) | 2 | NA |
| 1980 Total | 569,274 | 29,051 | 391,163 | NA | 179 | 421,110 | 3,682 | NA | 3 | 2 | NA |
| 1985 Total | 693,841 | 14,635 | 158,779 | NA | 231 | 174,571 | 3,044 | NA | 8 | 7 | NA |
| 1990 Total ^k | 792,457 | 18,143 | 190,652 | 437 | 1,914 | 218,800 | 3,692 | 112 | 442 | 211 | 36 |
| 1995 Total | 860,594 | 19,615 | 95,507 | 680 | 3,355 | 132,578 | 4,738 | 133 | 480 | 316 | 42 |
| 2000 Total | 994,933 | 31,675 | 143,381 | 1,450 | 3,744 | 195,228 | 5,691 | 126 | 496 | 330 | 46 |
| 2001 Total | 972,691 | 31,150 | 165,312 | 855 | 3,871 | 216,672 | 5,832 | 97 | 486 | 228 | 160 |
| 2002 Total | 987,583 | 23,286 | 109,235 | 1,894 | 6,836 | 168,597 | 6,126 | 131 | 605 | 257 | 191 |
| 2003 Total | 1,014,058 | 29,672 | 142,518 | 2,947 | 6,303 | 206,653 | 5,616 | 156 | 519 | 249 | 193 |
| 2004 Total | 1,020,523 | 20,163 | 142,088 | 2,856 | 7,677 | 203,494 | 5,675 | 135 | 344 | 230 | 183 |
| 2005 Total | 1,041,448 | 20,651 | 141,518 | 2,968 | 8,330 | 206,785 | 6,036 | 110 | 355 | 230 | 173 |
| 2006 Total | 1,030,556 | 13,174 | 58,473 | 2,174 | 7,363 | 110,634 | 6,462 | 115 | 350 | 241 | 172 |
| 2007 Total | 1,046,795 | 15,683 | 63,833 | 2,917 | 6,036 | 112,615 | 7,089 | 115 | 353 | 245 | 168 |
| 2008 Total | 1,042,335 | 12,832 | 38,191 | 2,822 | 5,417 | 80,932 | 6,896 | 97 | 339 | 267 | 172 |
| 2009 Total | 934,683 | 12,658 | 28,576 | 2,328 | 4,821 | 67,668 | 7,121 | 84 | 320 | 272 | 170 |
| 2010 Total | 979,684 | 14,050 | 23,997 | 2,056 | 4,994 | 65,071 | 7,680 | 90 | 350 | 281 | 184 |
| 2011 Total | 934,938 | 11,231 | 14,251 | 1,844 | 5,012 | 52,387 | 7,884 | 91 | 348 | 279 | 205 |
| 2012 Total | 825,734 | 9,285 | 11,755 | 1,565 | 3,675 | 40,977 | 9,485 | 103 | 390 | 290 | 204 |
| 2013 Total | 860,729 | 9,784 | 11,766 | 1,681 | 4,852 | 47,492 | 8,596 | 115 | 398 | 298 | 200 |
| 2014 Total | 853,634 | 14,465 | 14,704 | 2,363 | 4,412 | 53,593 | 8,544 | 110 | 431 | 314 | 200 |
| 2015 Total | 739,594 | 12,438 | 14,124 | 2,363 | 4,044 | 49,145 | 10,017 | 106 | 407 | 313 | 204 |
| 2016 Total | 677,371 | 9,662 | 11,195 | 1,548 | 4,253 | 43,671 | 10,170 | 74 | 360 | 305 | 199 |
| 2017 Total | 663,911 | 9,707 | 10,442 | 1,547 | 3,490 | 39,144 | 9,508 | 71 | 364 | 304 | 190 |
| 2018 January | | | | | | | | | | 6 | 16 |
| February | | | | | | | | | | 4 | 15 |
| March | | | | | | | | | | 6 | 16 |
| April | | | | | | | | | | 5 | 15 |
| May | | | | | | | | | | 5 | 16 |
| June | | | | | | | | | | 5 | 16 |
| July | | | | | | | | | | 5 | 16 |
| August | | | | | | | | | | 5 | 17 |
| September | | | | | | | | | | 3 | 15 |
| October | | | | | | | | | | 4 | 16 |
| November | | | | | | | | | | 4 | 16 |
| December | | | | | | | | | | 5 | 16 |
| Total | | | | | | | | | | 8 | 190 |
| 2019 January | | | | | | | | | | 2 | 17 |
| February | | | | | | | | | | 9 | 14 |
| March | | | | | | | | | | 2 | 16 |
| April | 33,432 | 618 | 618 | 161 | 182 | 2,308 | 755 | 6 | 26 | 20 | 15 |
| May | 40,061 | 771 | 744 | 138 | 298 | 3,140 | 852 | 6 | 30 | 21 | 16 |
| June | 44,274 | 775 | 808 | 148 | 218 | 2,822 | 1,013 | 6 | 28 | 21 | 16 |
| July | 56,067 | 767 | 900 | 152 | 314 | 3,390 | 1,295 | 7 | 31 | 22 | 17 |
| August | 52,522 | 763 | 967 | 163 | 278 | 3,281 | 1,300 | 7 | 33 | 22 | 17 |
| September | 47,478 | 702 | 800 | 159 | 259 | 2,950 | 1,115 | 7 | 29 | 21 | 16 |
| October | 37,435 | 728 | 795 | 174 | 82 | 2,107 | 1,114 | 6 | 26 | 21 | 16 |
| November | 47,418 | 760 | 714 | 133 | 130 | 2,450 | 1,114 | 7 | 26 | 21 | 16 |
| December | 47,229 | 754 | 774 | 162 | 167 | 2,450 | 1,119 | 6 | 30 | 22 | 16 |
| Total | 663,911 | 9,707 | 10,442 | 1,547 | 3,490 | 39,144 | 9,508 | 71 | 364 | 304 | 190 |



















These values amounts of coal, petroleum, and gas consumed. Copy these numbers down.

Plugging Values into the spreadsheet

- Values for electricity generated from each fuel are in millions of kWh per fuel. **Multiply each by 1,000,000** for plugging them into the spreadsheet template.
- Values for coal consumed are in thousands of tons. **Multiply each by 1,000** for plugging into the spreadsheet.
- Values for petroleum consumed are in thousands of barrels. **Multiply each by 1,000** for plugging into the spreadsheet.
- Values for natural gas consumed are in billions of cubic feet. **Multiply each by 1,000,000,000** for plugging into the spreadsheet.

Plugging Values into the spreadsheet

- Plug in your values in these blanks
- The spreadsheet will automatically calculate everything related to electricity generation from these different fuels.

| PART A | | | | | | | |
|-----------|---|---|---|--------------------|---|---|---------------|
| Fuel used | Total kWh per fuel | Total fuel consumed | kWh per unit fuel | Original fuel unit | Unit conversion | kWh per new fuel unit | New fuel unit |
| coal |  |  |  #DIV/0! | per ton | 2000 lbs / ton |  #DIV/0! | per lb |
| oil |  |  |  #DIV/0! | per barrel | 42 gal. / bbl |  #DIV/0! | per gallon |
| gas |  |  |  #DIV/0! | per cubic ft. | N/A |  #DIV/0! | per cubic ft. |
| Fuel used | kWh per new fuel unit | Transmission efficiency | Charging efficiency | Miles per kWh | Miles per unit fuel | Fuel unit | |
| coal |  #DIV/0! | 0.94 | 0.81 | 3.1 |  #DIV/0! | per lb | |
| oil |  #DIV/0! | 0.94 | 0.81 | 3.1 |  #DIV/0! | per gallon | |
| gas |  #DIV/0! | 0.94 | 0.81 | 3.1 |  #DIV/0! | per cubic ft. | |