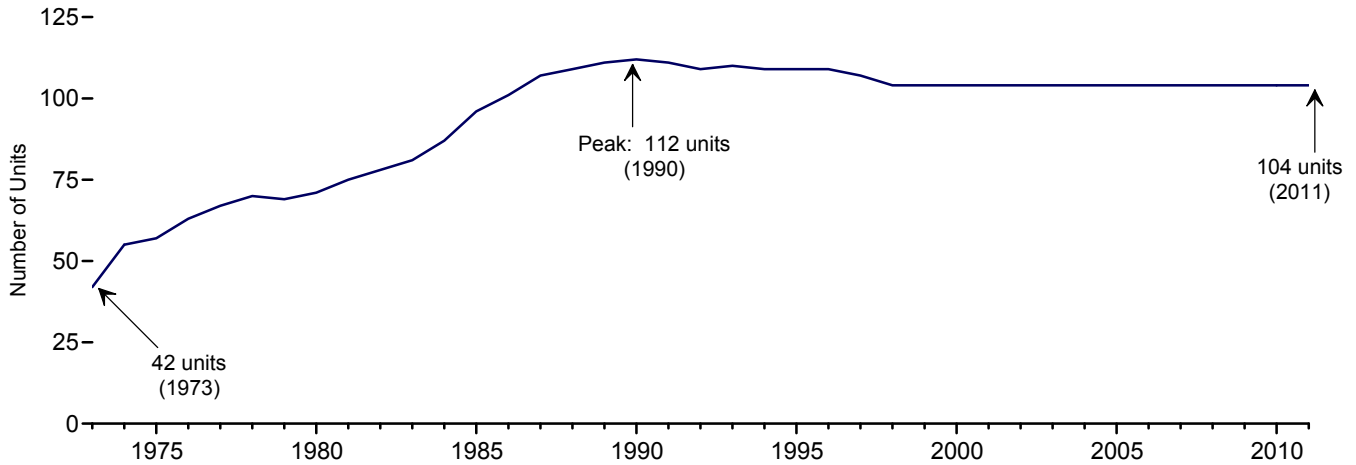


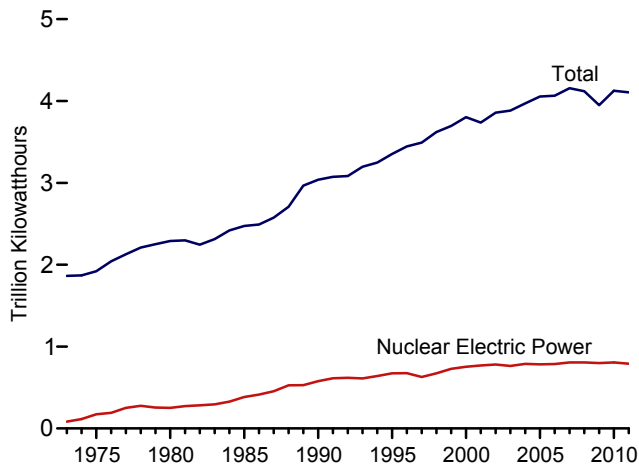
8. Nuclear Energy

Figure 8.1 Nuclear Energy Overview

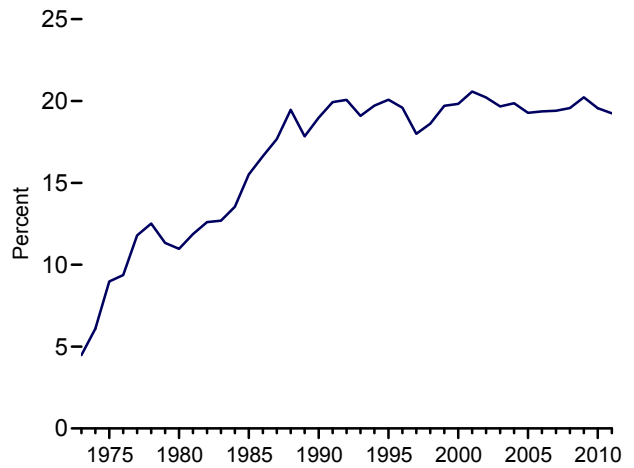
Operable Units, End of Year, 1973-2011



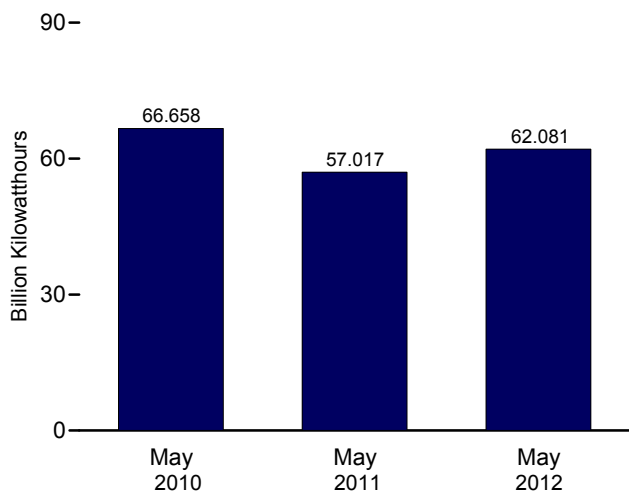
Electricity Net Generation, 1973-2011



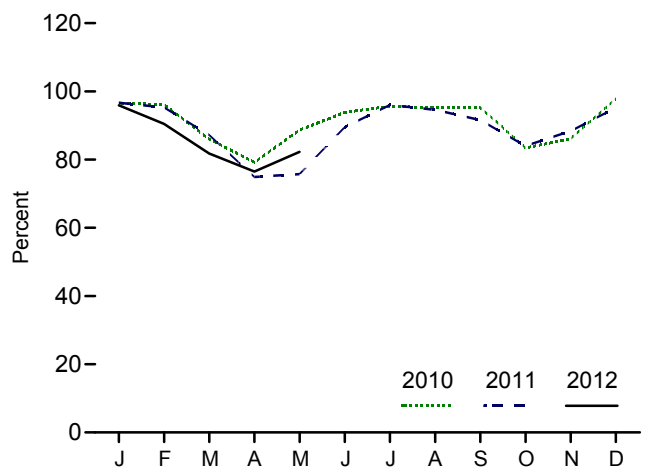
Nuclear Share of Electricity Net Generation, 1973-2011



Nuclear Electricity Net Generation



Capacity Factor, Monthly



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#nuclear>.
Sources: Tables 7.2a and 8.1.

Table 8.1 Nuclear Energy Overview

	Total Operable Units ^{a,b}	Net Summer Capacity of Operable Units ^{b,c}	Nuclear Electricity Net Generation	Nuclear Share of Electricity Net Generation	Capacity Factor ^d
	Number	Million Kilowatts	Million Kilowatthours	Percent	
1973 Total	42	22.683	83,479	4.5	53.5
1975 Total	57	37.267	172,505	9.0	55.9
1980 Total	71	51.810	251,116	11.0	56.3
1985 Total	96	79.397	383,691	15.5	58.0
1990 Total	112	99.624	576,862	19.0	66.0
1995 Total	109	99.515	673,402	20.1	77.4
1996 Total	109	100.784	674,729	19.6	76.2
1997 Total	107	99.716	628,644	18.0	71.1
1998 Total	104	97.070	673,702	18.6	78.2
1999 Total	104	97.411	728,254	19.7	85.3
2000 Total	104	97.860	753,893	19.8	88.1
2001 Total	104	98.159	768,826	20.6	89.4
2002 Total	104	98.657	780,064	20.2	90.3
2003 Total	104	99.209	763,733	19.7	87.9
2004 Total	104	99.628	788,528	19.9	90.1
2005 Total	104	99.988	781,986	19.3	89.3
2006 Total	104	100.334	787,219	19.4	89.6
2007 Total	104	100.266	806,425	19.4	91.8
2008 Total	104	100.755	806,208	19.6	91.1
2009 Total	104	101.004	798,855	20.2	90.3
2010 January	104	^e E 101.002	72,569	20.1	^E 96.6
February	104	^E 101.000	65,245	20.4	^E 96.1
March	104	^E 100.998	64,635	20.7	^E 86.0
April	104	^E 100.996	57,611	20.0	^E 79.2
May	104	^E 101.063	66,658	20.3	^E 88.7
June	104	^E 101.094	68,301	18.2	^E 93.8
July	104	^E 101.092	71,913	17.6	^E 95.6
August	104	^E 101.090	71,574	17.5	^E 95.2
September	104	^E 101.088	69,371	20.0	^E 95.3
October	104	^E 101.104	62,751	20.4	^E 83.4
November	104	^E 101.129	62,655	20.5	^E 86.0
December	104	101.167	73,683	20.3	97.9
Total	104	101.167	806,968	19.6	91.1
2011 January	104	^E 101.167	72,743	20.0	^E 96.6
February	104	^E 101.167	64,789	20.7	^E 95.3
March	104	^E 101.167	65,662	20.6	^E 87.2
April	104	^E 101.167	54,547	18.0	^E 74.9
May	104	^E 101.167	57,017	17.6	^E 75.8
June	104	^E 101.281	65,270	17.7	^E 89.5
July	104	^E 101.281	72,345	17.2	^E 96.0
August	104	^E 101.351	71,339	17.6	^E 94.6
September	104	^E 101.351	66,849	19.8	^E 91.6
October	104	^E 101.351	63,354	20.5	^E 84.0
November	104	^E 101.351	64,474	21.2	^E 88.4
December	104	^P 101.423	71,837	21.4	^P 95.2
Total	104	^P 101.423	790,225	19.2	^P 89.1
2012 January	104	^E 101.423	72,382	21.2	^E 95.9
February	104	^E 101.423	63,850	20.6	^E 90.5
March	104	^E 101.423	61,730	19.9	^E 81.8
April	104	^E 101.423	55,871	18.9	^E 76.5
May	104	^E 101.446	62,081	18.4	^E 82.3
5-Month Total	104	^E 101.446	315,914	19.8	^E 85.4
2011 5-Month Total	104	^E 101.167	314,758	19.4	^E 85.9
2010 5-Month Total	104	^E 101.063	326,719	20.3	^E 89.3

^a Total of nuclear generating units holding full-power licenses, or equivalent permission to operate, at end of period. See Note 1, "Operable Nuclear Reactors," at end of section. For additional information on nuclear generating units, see *Annual Energy Review 2010*, October 2011, Table 9.1, <http://www.eia.gov/totalenergy/data/annual/#nuclear>.

^b At end of period.

^c For the definition of "Net Summer Capacity," see Note 2, "Nuclear Capacity," at end of section.

^d For an explanation of the method of calculating the capacity factor, see Note 2, "Nuclear Capacity," at end of section.

^e Beginning in 2010, monthly capacity values are estimated in two steps: 1) updates reported on Form EIA-860M are added to specific months; and 2) the

difference between the resulting year-end capacity (from data reported on Form EIA-860M) and final capacity (reported on Form EIA-860) is distributed evenly across the 12 months.

P=Preliminary. E=Estimate.

Notes: • For a discussion of nuclear reactor unit coverage, see Note 1, "Operable Nuclear Reactors," at end of section. • Nuclear electricity net generation totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 States and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#nuclear> for all available data beginning in 1973.

Sources: See end of section.

Nuclear Energy

Note 1. Operable Nuclear Reactors. A reactor is generally defined as operable while it possessed a full-power license from the Nuclear Regulatory Commission or its predecessor the Atomic Energy Commission, or equivalent permission to operate, at the end of the year or month shown. The definition is liberal in that it does not exclude units retaining full-power licenses during long, non-routine shutdowns that for a time rendered them unable to generate electricity. Examples are:

- (a) In 1985 the five then-active Tennessee Valley Authority (TVA) units (Browns Ferry 1, 2, and 3, and Sequoyah 1 and 2) were shut down under a regulatory forced outage. All five units were idle for several years, restarting in 2007, 1991, 1995, 1988, and 1988, respectively and were counted as operable during the shutdowns.
- (b) Shippingport was shut down from 1974 through 1976 for conversion to a light-water breeder reactor, but is counted as operable from 1957 until its retirement in 1982.
- (c) Calvert Cliffs 2 was shut down in 1989 and 1990 for replacement of pressurizer heater sleeves but is counted as operable during those years.

Exceptions to the definition are Shoreham and Three Mile Island 2. Shoreham was granted a full-power license in April 1989, but was shut down two months later and never restarted. In 1991, the license was changed to Possession Only. Although not operable at the end of the year, Shoreham is counted as operable during 1989. A major accident closed Three Mile Island 2 in 1979, and although the unit retained its full-power license for several years, it is considered permanently shut down since that year.

Note 2. Nuclear Capacity. Nuclear generating units may have more than one type of net capacity rating, including the following:

- (a) Net Summer Capacity—The steady hourly output that generating equipment is expected to supply to system load, exclusive of auxiliary power, as demonstrated by test at the

time of summer peak demand. Auxiliary power of a typical nuclear power plant is about 5 percent of gross generation.

- (b) Net Design Capacity or Net Design Electrical Rating (DER)—The nominal net electrical output of a unit, specified by the utility and used for plant design.

The monthly capacity factors are calculated as the monthly nuclear electricity net generation divided by the maximum possible nuclear electricity net generation for that month. The maximum possible nuclear electricity net generation is the number of hours in the month (assuming 24-hour days, with no adjustment for changes to or from Daylight Savings Time) multiplied by the net summer capacity of operable nuclear generating units at the end of the month. That fraction is then multiplied by 100 to obtain a percentage. Annual capacity factors are calculated as the annual nuclear electricity net generation divided by the annual maximum possible nuclear electricity net generation (the sum of the monthly values for maximum possible nuclear electricity net generation).

Table 8.1 Sources

Total Operable Units and Net Summer Capacity of Operable Units

1973-1982: Compiled from various sources, primarily U.S. Department of Energy, Office of Nuclear Reactor Programs, "U.S. Central Station Nuclear Electric Generating Units: Significant Milestones."

1983 forward: U.S. Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report," Form EIA-860M, "Monthly Update to the Annual Electric Generator Report," and monthly updates as appropriate. For a list of currently operable units, see http://www.eia.gov/nuclear/reactors/stats_table1.html.

Nuclear Electricity Net Generation and Nuclear Share of Electricity Net Generation

See Table 7.2a.

Capacity Factor

Calculated by EIA using the method described above in Note 2.