

Nuclear Energy

Note 1. Pending Actions on Nuclear Generating Units. Much of Table 9.1 is based on the U.S. Nuclear Regulatory Commission (NRC) regulation 10 CFR Part 50, which has in most instances been supplanted by 10 CFR Part 52 following the passage of the Energy Policy Act of 1992 and procedural reforms initiated in 1989 by the NRC. (This statement applies to permit and license procedures only.)

The NRC did not issue any Early Site Permits (ESP) during 2011. Two ESP applications are currently under review; one to Victoria County Station and the other to PSEG Site.

As of December 31, 2011, the NRC had received 18 Combined License (COL) applications representing 28 nuclear generating units. The following 14 COL applications are under review: Bell Bend (Pennsylvania); Bellefonte Units 3 and 4 (Alabama); Calvert Cliffs Unit 3 (Maryland); Comanche Peak Units 3 and 4 (Texas); Fermi Unit 3 (Michigan); Levy County Units 1 and 2 (Florida); Nine Mile Point Unit 3 (New York); North Anna Unit 3 (Virginia); Shearon Harris Units 2 and 3 (North Carolina); South Texas Units 3 and 4 (Texas); Turkey Point Units 6 and 7 (Florida); Virgil C. Summer Units 2 and 3 (South Carolina); Vogtle Units 3 and 4 (Georgia); and William States Lee III Units 1 and 2 (South Carolina). At the request of the applicants, review has been suspended for three COL applications: Callaway Unit 2 (Missouri), Grand Gulf Unit 3 (Mississippi), and River Bend Unit 3 (Louisiana). The Victoria County Units 1 and 2 COL application was withdrawn in 2010 following the announcement that the applicant intends to apply instead for an ESP with the reactor choice unspecified. In addition to the COL applications currently under review, Watts Bar Unit 2 is currently under construction. Watts Bar Unit 2 was issued a construction permit in 1973, and the U.S. Energy Information Administration projects that it will be brought on line in 2013. This is the only reactor that is anticipated to apply for the license separate of construction permit. TVA has also requested that Bellefonte Units 1 and 2, two partially completed units, be moved to 'deferred plan' status as the Agency considers completing one or both.

As of December 31, 2011, 11 applications for license extensions were under review by the NRC. The NRC granted 20-year license extensions in 2011 to: Kewaunee Power Station on February 24, Vermont Yankee Nuclear Power Station on March 21, Palo Verde Units 1, 2, and 3 on April 21, Prairie Island Units 1 and 2 on June 27, Salem Units 1 and 2 on June 30, and Hope Creek on July 20.

For more information on nuclear reactors, see <http://www.nrc.gov/reactors.html>.

Note 2. Coverage of Nuclear Energy Statistics. In 1997, the U.S. Energy Information Administration undertook a major revision of Table 9.1 to more fully describe the history of the U.S. commercial nuclear power industry. The time frame was extended back to the birth of the industry in 1953 and the data categories were revised for greater relevance to current industry conditions and trends. To acquire the data for the revised categories, it was necessary to develop a reactor unit database employing different sources than those used previously for Table 9.1 and still used for Table 9.2.

The data in Table 9.1 apply to commercial nuclear power units, meaning that the units contributed power to the commercial electricity grid. A total of 259 units have been ordered over the lifetime of the nuclear industry. Although most orders were placed by electric utilities, several units were ordered, owned, and operated wholly or in part by the Federal Government, including BONUS (Boiling Nuclear Superheater Power Station), Elk River, Experimental Breeder Reactor 2, Hallam, Hanford N, Piqua, and Shippingport.

A reactor is generally defined as operable in Table 9.1 if it possesses a full-power license, or an equivalent, from the NRC or its predecessor, the Atomic Energy Commission, at the end of the year. The definition is liberal in that it does not exclude units retaining full-power licenses during long, non-routine shutdowns.

For example:

- In 1985, the five Tennessee Valley Authority units (Browns Ferry 1, 2, and 3 and Sequoyah 1 and 2) were shut down under a regulatory forced outage. Browns Ferry 1 was authorized by the NRC to restart in 2007, while the other units restarted in 1991, 1995, 1988, and 1988, respectively. All five units were counted as operable during the shutdowns.
- Shippingport was shut down from 1974 through 1976 for conversion to a lightwater breeder reactor, but is counted as operable until its retirement in 1982.
- 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 rule 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 treated as operable during 1989 and shut down in 1990, because counting it as operable and shut down in the same year would introduce a statistical discrepancy in the tallies. 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.

Table 9.1 Sources: Operable Units: • 1955-1982—Compiled from various sources, primarily U.S. Department of Energy (DOE), 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," and predecessor forms. **All Other Data:** • 1955-1997—U.S. Atomic Energy Commission, *1973 Annual Report to Congress, Volume 2, Regulatory Activities*; Nuclear Energy Institute, *Historical Profile of U.S. Nuclear Power Development* (1988); EIA, *Commercial Nuclear Power 1991* (September 1991); DOE, *Nuclear Reactors Built, Being Built, and Planned: 1995*; U.S. Nuclear Regulatory Commission (NRC), *Information Digest* (1997 and 1998) and "Plant Status Report"; and various utility, Federal, and contractor officials. • 1998 forward—NRC, *Information Digest*, annual reports.