

REFERENCE DATA SERIES No. 2
2017 Edition

Nuclear Power Reactors in the World



IAEA

International Atomic Energy Agency

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NUCLEAR POWER REACTORS IN THE WORLD

2017 Edition

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INTRODUCTION

Nuclear Power Reactors in the World is an annual publication that presents the most recent data pertaining to reactor units in IAEA Member States.

This thirty-seventh edition of Reference Data Series No. 2 provides a detailed comparison of various statistics up to and including 31 December 2016. The tables and figures contain the following information:

- General statistics on nuclear reactors in IAEA Member States;
- Technical data on specific reactors that are either planned, under construction or operational, or that have been shut down or decommissioned;
- Performance data on reactors operating in IAEA Member States, as reported to the IAEA.

The data compiled in this publication is a product of the IAEA's Power Reactor Information System (PRIS). The PRIS database is a comprehensive source of data on all nuclear power reactors in the world. It includes specification and performance history data on operational reactors as well as on reactors under construction or in the decommissioning process. Data is collected by the IAEA via designated national correspondents in Member States.

PRIS outputs are available in the IAEA's annual publications and on the PRIS web page (www.iaea.org/pris). Detailed outputs are accessible to registered users through on-line applications. Enquiries should be addressed to:

Director
Division of Nuclear Power
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 Vienna, Austria
Email: PrisAdmin@iaea.org

DEFINITIONS

Performance factors

$$\text{EAF (\%)} = \frac{(\text{REG} - \text{PEL} - \text{UEL} - \text{XEL})}{\text{REG}} \times 100$$

$$\text{UCF (\%)} = \frac{(\text{REG} - \text{PEL} - \text{UEL})}{\text{REG}} \times 100$$

$$\text{UCL (\%)} = \frac{\text{UEL}}{\text{REG}} \times 100$$

$$\text{PCL (\%)} = \frac{\text{PEL}}{\text{REG}} \times 100$$

$$\text{LF (\%)} = \frac{\text{EG}}{\text{REG}} \times 100$$

$$\text{OF (\%)} = \frac{\text{On-line hours}}{\text{Total hours}} \times 100$$

where

EAF is the energy availability factor, expressed in per cent.

UCF is the unit capability factor, expressed in per cent.

UCL is the unplanned capability loss factor, expressed in per cent.

PCL is the planned capability loss factor, expressed in per cent.

LF is the load factor, expressed in per cent.

OF is the operating factor, expressed in per cent.

REG Reference energy generation: The net electrical energy (MW·h), supplied by a unit continuously operated at the reference unit power for the duration of the entire reference period.

- PEL Planned energy loss: The energy (MW·h) that was not supplied during the period because of planned shutdowns or load reductions due to causes under plant management control. Energy losses are considered to be planned if they are scheduled at least four weeks in advance.
- UEL Unplanned energy loss: The energy (MW·h) that was not supplied during the period because of unplanned shutdowns, outage extensions, or load reductions due to causes under plant management control. Energy losses are considered to be unplanned if they are not scheduled at least four weeks in advance.
- XEL External energy loss: The energy (MW·h) that was not supplied owing to constraints beyond plant management control that reduced plant availability.
- EG The net electrical energy supplied during the reference period as measured at the unit outlet terminals after deducting the electrical energy taken by unit auxiliaries and the losses in transformers that are considered to be integral parts of the unit.

Planned reactors

The IAEA considers a reactor as planned from the date when a construction licence application has been submitted to the relevant national regulatory authorities to the construction start date.

Construction start

The date when the first major placing of concrete, usually for the base mat of the reactor building, is carried out.

First criticality

The date when the reactor is made critical for the first time.

Grid connection

The date when the plant is first connected to the electrical grid for the supply of power. After this date, the plant is considered as operational.

Commercial operation

The date when the plant is handed over by the contractors to the owner and declared officially in commercial operation.

Long term shutdown (suspended operation)

A unit is considered to be in long term shutdown if it has been shut down for an extended period (usually several years) initially without any firm recovery schedule, but with the intention to restart the unit eventually. Suspended operation is a new term for this status.

Permanent shutdown

The date when the plant is officially declared to be shut down by the owner and taken out of operation permanently.

NSSS supplier

The supplier of a power reactor unit's nuclear steam supply system.

Units and energy conversion

1 terawatt-hour (TW·h) = 10^6 megawatt-hours (MW·h)

For an average power plant,

1 TW·h = 0.39 megatonnes of coal equivalent (input),
= 0.23 megatonnes of oil equivalent (input)

TABLE 1. OVERVIEW OF POWER REACTORS AND NUCLEAR SHARE, 31 DEC. 2016

Country	Operational reactors		Reactors in long term shutdown		Reactors under construction		Nuclear electricity supplied in 2016	
	No. of units	Net capacity MW(e)	No. of units	Net capacity MW(e)	No. of units	Net capacity MW(e)	TW(e)-h	% of total
ARGENTINA	3	1632			1	25	7.7	5.6
ARMENIA	1	375					2.2	31.4
BELARUS					2	2218	NA	NA
BELGIUM	7	5913					41.4	51.7
BRAZIL	2	1884			1	1245	15.0	2.9
BULGARIA	2	1926					15.1	35.0
CANADA	19	13554					95.7	15.6
CHINA	36	31384			21	21622	197.8	3.6
CZECH REP.	6	3930					22.7	29.4
FINLAND	4	2764			1	1600	22.3	33.7
FRANCE	58	63130			1	1630	386.5	72.3
GERMANY	8	10799					80.1	13.1
HUNGARY	4	1889					15.2	51.3
INDIA	22	6240			5	2990	35.0	3.4
IRAN, ISL. REP	1	915					5.9	2.1
JAPAN	42	39752			2	2653	17.5	2.2
KOREA, REP. OF	25	23077	1	246	3	4020	154.3	30.3
MEXICO	2	1552					10.3	6.2
NETHERLANDS	1	482					3.7	3.4
PAKISTAN	4	1005			3	2343	5.4	4.4
ROMANIA	2	1300					10.4	17.1
RUSSIA	35	26111			7	5520	184.1	17.1
SLOVAKIA	4	1814			2	880	13.7	54.1
SLOVENIA	1	688					5.4	35.2
SOUTH AFRICA	2	1860					15.2	6.6
SPAIN	7	7121	1	446			56.1	21.4
SWEDEN	10	9740					60.6	40.0
SWITZERLAND	5	3333					20.3	34.4

TABLE 1. OVERVIEW OF POWER REACTORS AND NUCLEAR SHARE, 31 DEC. 2016 — continued

Country	Operational reactors		Reactors in long term shutdown		Reactors under construction		Nuclear electricity supplied in 2016	
	No. of units	Net capacity MW(e)	No. of units	Net capacity MW(e)	No. of units	Net capacity MW(e)	TW(e)·h	% of total
UAE					4	5380	NA	NA
UK	15	8918					65.1	20.4
UKRAINE	15	13107			2	2070	76.1	52.3
USA	99	99869			4	4468	804.9	19.7
Total	448	391116	2	692	61	61264	2476.2	NA

Note:

The total includes the following data from Taiwan, China:

— 6 units, 5052 MW in operation; 2 units, 2600 MW under construction;

— 30.5 TW(e)·h of nuclear electricity generation, representing 13.7% of the total electricity generated there;

TABLE 2. TYPE AND NET ELECTRICAL POWER OF OPERATIONAL REACTORS, 31 DEC. 2016

Country	PWR		BWR		GCR		PHWR		LWGR		FBR		Total	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA														
ARMENIA	1	375					3	1632					3	1632
BELGIUM	7	5913											7	5913
BRAZIL	2	1884											2	1884
BULGARIA	2	1926											2	1926
CANADA							19	13554					19	13554
CHINA	33	30010					2	1354			1	20	36	31384
CZECH REP.	6	3930											6	3930
FINLAND	2	1004	2	1760									4	2764
FRANCE	58	63130											58	63130
GERMANY	6	8227	2	2572									8	10799
HUNGARY	4	1889											4	1889
INDIA	2	1849	2	300			18	4091					22	6240
IRAN, ISL. REP.	1	915											1	915
JAPAN	20	17427	22	22325			4	2608					42	39752
KOREA, REP. OF	21	20469											25	23077
MEXICO			2	1552									2	1552
NETHERLANDS	1	482											1	482
PAKISTAN	3	915					1	90					4	1005
ROMANIA							2	1300					2	1300
RUSSIA	18	14543											15	10219
SLOVAKIA	4	1814											2	1349
SLOVENIA	1	688											4	1814
SOUTH AFRICA	2	1860											1	688
SPAIN	6	6057	1	1064									2	1860
SWEDEN	3	3075	7	6665									7	7121
SWITZERLAND	3	1740	2	1593									10	9740
UK	1	1198			14	7720							5	3333
UKRAINE	15	13107											15	8918
USA	65	65555	34	34314									99	13107
TOTAL	289	271856	78	75323	14	7720	49	24629	15	10219	3	1369	448	391116

Notes:

1. The totals include 6 units, 5052 MW in Taiwan, China.

2. During 2016, 11 reactors, 9545 MW were newly connected to the grid.

TABLE 3. TYPE AND NET ELECTRICAL POWER OF REACTORS UNDER CONSTRUCTION, 31 DEC. 2016

Country	PWR		BWR		PHWR		LWGR		FBR		HTGR		Total	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA	1	25											1	25
BELARUS	2	2218											2	2218
BRAZIL	1	1245											1	1245
CHINA	20	21422									1	200	21	21622
FINLAND	1	1600											1	1600
FRANCE	1	1630											1	1630
INDIA					4	2520			1	470			5	2990
JAPAN			2	2653									2	2653
KOREA, REP. OF	3	4020											3	4020
PAKISTAN	3	2343											3	2343
RUSSIA	7	5520											7	5520
SLOVAKIA	2	880											2	880
UAE	4	5380											4	5380
UKRAINE	2	2070											2	2070
USA	4	4468											4	4468
TOTAL	51	52821	(*) 4	5253	4	2520			1	470	1	200	61	61264

Notes:

1. The total for BWR (*) includes 2 units (2xBWR), 2600 MW in Taiwan, China.

2. During 2016, construction started on 3 reactors, 3014 MW.

TABLE 4. REACTOR YEARS OF EXPERIENCE, UP TO 31 DEC. 2016

Country	Operational reactors		Reactors in long term shutdown		Permanently shutdown reactors		Total, operating and shutdown			
	No.	Net capacity MW(e)	No.	Net capacity MW(e)	No.	Net capacity MW(e)	No.	Net capacity MW(e)	Operating experience Years	Months
ARGENTINA	3	1632					3	1632	79	2
ARMENIA	1	375			1	376		751	42	8
BELGIUM	7	5913			1	10		5923	282	7
BRAZIL	2	1884						1884	51	3
BULGARIA	2	1926			4	1632		3558	161	3
CANADA	19	13554			6	2143		15697	712	6
CHINA	36	31384						31384	243	2
CZECH REP.	6	3930						3930	152	10
FINLAND	4	2764						2764	151	4
FRANCE	58	63130			12	3789		68919	2106	4
GERMANY	8	10799			28	15576		26375	624	7
HUNGARY	4	1889						1889	126	2
INDIA	22	6240						6240	460	11
IRAN, ISL. REP	1	915						915	5	4
ITALY					4	1423		1423	80	8
JAPAN	42	39752	1	246	17	8600		48798	1781	5
KAZAKHSTAN									52	10
KOREA, REP. OF	25	23077			1	52		23077	498	11
LITHUANIA					2	2370		2370	43	6
MEXICO	2	1552						1552	49	11
NETHERLANDS	1	482			1	55		537	72	2
PAKISTAN	4	1005						1005	67	11
ROMANIA	2	1300						1300	29	11
RUSSIA	35	26111			6	1171		27282	1226	9
SLOVAKIA	4	1814			3	909		2723	160	7
SLOVENIA	1	688						688	35	3
SOUTH AFRICA	2	1860						1860	64	3
SPAIN	7	7121	1	446	2	621		8188	322	1

TABLE 4. REACTOR YEARS OF EXPERIENCE, UP TO 31 DEC. 2016 — continued

Country	Operational reactors		Reactors in long term shutdown		Permanently shutdown reactors		Total, operating and shutdown			
	No.	Net capacity MW(e)	No.	Net capacity MW(e)	No.	Net capacity MW(e)	No.	Net capacity MW(e)	Years	Months
SWEDEN	10	9740			3	1210	13	10950	442	6
SWITZERLAND	5	3333			1	6	6	3339	209	11
UK	15	8918			30	4715	45	13633	1574	7
UKRAINE	15	13107			4	3515	19	16622	473	6
USA	99	99869			34	14427	133	114296	4210	9
Total	448	391116	2	692	160	62800	610	454608	16982	5

Notes:

1. The total includes the following data from Taiwan, China:
— reactors connected to the grid: 6 units, 5052 MW; 212 years, 1 month.
2. Operating experience is counted from the grid connection excluding any long term shutdown period.

TABLE 5. OPERATIONAL REACTORS AND NET ELECTRICAL POWER, 1985 TO 2016

Country	Number of units and net capacity as of 31 Dec. of given year															
	1985		1990		1995		2000		2005		2010		2015		2016	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA	2	935	2	935	2	978	2	935	2	935	2	935	3	1632	3	1632
ARMENIA	2	816	2	376	1	376	1	376	1	376	1	376	1	375	1	375
BELGIUM	8	5404	7	5501	7	5631	7	5712	7	5801	7	5926	7	5913	7	5913
BRAZIL	1	626	1	626	1	1976	2	1976	2	1976	2	1884	2	1884	2	1884
BULGARIA	4	1632	5	2585	6	3538	6	3760	4	2722	2	1906	2	1926	2	1926
CANADA	16	9741	20	13993	21	14902	14	9998	18	12584	18	12604	19	13524	19	13554
CHINA	1	391	3	2188	3	2188	3	2188	9	6587	13	10065	31	26774	36	31384
CZECH REP.	1	391	4	1632	4	1782	5	2611	6	3373	6	3675	6	3930	6	3930
FINLAND	4	2300	4	2310	4	2310	4	2656	4	2676	4	2716	4	2752	4	2764
FRANCE	43	37478	56	55808	56	58573	59	63080	59	63260	58	63130	58	63130	58	63130
GERMANY	24	18110	21	21250	19	20972	19	21283	17	20339	17	20490	8	10799	8	10799
HUNGARY	2	825	4	1710	4	1729	4	1729	4	1755	4	1889	4	1889	4	1889
INDIA	6	1143	7	1324	10	1746	14	2508	15	2993	19	4189	21	5308	22	6240
IRAN, ISL. REP													1	915	1	915
ITALY	3	1273														
JAPAN	33	23612	41	30867	50	39625	52	43245	55	47593	54	46821	43	40290	42	39752
KAZAKHSTAN	1	135	1	135	1	50										
KOREA, REP. OF	5	3682	9	7220	11	9115	16	12990	20	16810	21	18698	24	21733	25	23077
LITHUANIA	1	1380	2	2760	2	2370	2	2370	1	1185	2	1300	2	1440	2	1552
MEXICO			1	640	2	1256	2	1290	2	1360	2	1482	1	482	1	482
NETHERLANDS	2	508	2	539	2	510	1	449	1	450	1	482	1	482	1	482
PAKISTAN	1	137	1	125	1	125	2	425	2	425	2	425	3	690	4	1005
ROMANIA									1	655	2	1300	2	1300	2	1300
RUSSIA	28	15841	29	18898	30	19848	30	19848	31	21743	32	22693	35	25382	35	26111
SLOVAKIA	4	1632	4	1632	4	1632	6	2440	6	2442	4	1816	4	1814	4	1814
SLOVENIA	1	632	1	620	1	620	1	676	1	656	1	666	1	688	1	688
SOUTH AFRICA	2	1840	2	1840	2	1840	2	1840	2	1800	2	1800	2	1860	2	1860
SPAIN	8	5608	9	7099	9	7097	9	7468	9	7591	8	7514	7	7121	7	7121
SWEDEN	12	9455	12	9826	12	10028	11	9397	10	8905	10	9303	10	9648	10	9740

TABLE 5. OPERATIONAL REACTORS AND NET ELECTRICAL POWER, 1985 TO 2016 — continued

Country	Number of units and net capacity as of 31 Dec. of given year																	
	1985		1990		1995		2000		2005		2010		2015		2016			
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)		
SWITZERLAND	5	2881	5	2942	5	3066	5	3170	5	3220	5	3238	5	3333	5	3333		
UK	38	10077	37	11360	35	12910	33	12490	23	11852	19	10137	15	8918	15	8918		
UKRAINE	10	8324	15	13020	15	13045	13	11195	15	13107	15	13107	15	13107	15	13107		
USA	90	74401	108	96228	108	98068	103	96297	103	98145	104	101211	99	99185	99	99869		
WORLD	363	245779	416	318253	434	341387	435	349984	441	368125	441	375277	441	382794	448	391116		

Note: The world total includes the following data in Taiwan, China:

- 1985: 6 units, 4890 MW; 1990: 6 units, 4828 MW; 1995: 6 units, 4884 MW; 2000: 6 units, 4884 MW; 2005: 6 units, 4982 MW; 2010: 6 units, 5052 MW; 2015: 6 units, 5052 MW; 2016: 6 units, 5052 MW.

TABLE 6. NUCLEAR ELECTRICITY PRODUCTION AND SHARE, FROM 1985 TO 2016

Country	Nuclear electricity supplied (TW-h) and percentage of nuclear share in given year															
	1985		1990		1995		2000		2005		2010		2015		2016	
	TW-h	% of total	TW-h	% of total	TW-h	% of total	TW-h	% of total	TW-h	% of total	TW-h	% of total	TW-h	% of total	TW-h	% of total
ARGENTINA	5.25	11.7	6.72	19.8	6.57	11.8	5.74	7.3	6.37	6.9	6.69	5.9	4.8	7.68	5.6	
ARMENIA							1.84	33.0	2.50	42.7	2.29	39.4	34.5	2.19	31.4	
BELGIUM	29.25	59.8	40.59	60.1	39.30	55.5	45.81	56.8	45.34	55.6	45.73	50.0	24.83	41.43	51.7	
BRAZIL	3.17	1.7	2.06	1.0	2.33	1.0	5.59	1.9	9.20	2.5	13.77	3.1	2.8	14.87	2.9	
BULGARIA	12.17	31.6	13.51	35.7	16.22	46.4	16.79	45.0	17.38	44.1	14.24	33.1	14.70	31.3	35.0	
CANADA	59.47	12.7	69.87	14.8	93.98	17.3	69.12	11.8	86.83	14.5	85.50	15.1	16.6	95.65	15.6	
CHINA					12.13	1.2	16.02	1.2	50.33	2.0	70.96	1.8	161.20	3.0	197.83	3.6
CZECH REP.	1.99	NA	11.77	NA	12.23	20.0	12.71	18.7	23.25	30.5	26.44	33.3	25.34	32.5	29.4	
FINLAND	17.98	38.2	18.13	35.1	18.13	29.9	21.58	32.2	22.36	32.9	21.89	28.4	22.33	22.28	33.7	
FRANCE	213.28	64.8	297.61	74.5	358.71	76.1	395.39	76.4	431.18	78.5	410.09	74.1	419.02	386.45	72.3	
GERMANY	119.59	31.2	139.37	33.1	146.13	29.6	160.66	30.6	133.01	26.6	133.01	22.6	86.81	80.07	13.1	
HUNGARY	6.10	23.6	12.89	51.4	13.20	42.3	13.35	40.6	13.02	37.2	14.66	42.1	14.96	15.18	51.3	
INDIA	3.87	2.2	5.29	2.2	6.99	1.9	14.23	3.1	15.73	2.8	20.48	2.9	34.64	35.01	3.4	
IRAN, ISL. REP																
ITALY	6.46	3.8														
JAPAN	145.37	22.7	187.19	27.1	275.51	33.4	306.24	33.8	280.50	29.3	280.25	29.2	4.35	17.54	2.2	
KAZAKHSTAN					0.08	0.1										
KOREA, REP. OF	12.28	23.2	50.26	49.1	60.21	36.1	103.84	40.7	137.59	44.7	141.89	32.2	157.20	154.31	30.3	
LITHUANIA	8.75	NA	15.70	NA	10.64	86.1	7.42	73.9	9.54	70.3						
MEXICO			2.78	2.6	7.53	6.0	7.92	3.9	10.32	5.0	5.59	3.6	11.18	10.27	6.2	
NETHERLANDS	3.69	6.1	3.29	4.9	3.78	4.9	3.70	4.3	3.77	3.9	3.75	3.4	3.86	3.75	3.4	
PAKISTAN	0.26	1.0	0.38	1.1	0.46	0.9	0.90	1.7	2.41	2.8	2.56	2.6	4.33	5.44	4.4	
ROMANIA							5.05	10.9	5.11	8.6	10.70	19.5	10.71	17.3	17.1	
RUSSIA	88.26	NA	109.62	NA	91.59	11.8	120.10	15.0	137.64	15.8	159.41	17.1	182.81	18.6	184.05	
SLOVAKIA	8.70	NA	11.16	NA	11.35	44.1	15.17	53.4	16.34	56.1	13.54	51.8	14.08	13.73	54.1	
SLOVENIA	3.85	NA	4.39	NA	4.57	39.5	4.55	37.4	5.61	42.4	5.38	37.3	5.37	5.43	35.2	
SOUTH AFRICA	5.39	4.2	8.47	5.6	11.29	6.5	13.00	6.6	12.24	5.5	12.90	5.2	10.97	4.7	6.6	
SPAIN	26.83	24.0	51.98	35.9	53.49	34.1	59.49	27.6	54.99	19.6	59.26	20.1	54.76	56.10	21.4	
SWEDEN	55.89	42.3	65.27	45.9	67.17	46.6	54.81	39.0	69.58	44.9	55.73	38.1	54.46	60.65	40.0	

TABLE 6. NUCLEAR ELECTRICITY PRODUCTION AND SHARE, FROM 1985 TO 2016 — continued

Country	Nuclear electricity supplied (TW·h) and percentage of nuclear share in given year															
	1985		1990		1995		2000		2005		2010		2015		2016	
	TW·h	% of total	TW·h	% of total	TW·h	% of total	TW·h	% of total	TW·h	% of total	TW·h	% of total	TW·h	% of total	TW·h	% of total
SWITZERLAND	21.28	39.8	22.40	42.6	23.58	39.9	25.05	38.2	22.11	38.0	25.34	38.0	22.16	33.5	20.30	34.4
UK	53.73	19.6	58.77	19.7	70.64	25.4	72.99	21.9	75.34	20.0	56.85	15.6	63.89	20.1	65.15	20.4
UKRAINE	35.81	NA	71.26	NA	65.78	37.8	72.56	47.3	83.40	48.5	83.95	48.1	82.41	56.5	76.08	52.3
USA	378.90	15.5	578.08	20.6	673.52	22.5	755.55	19.8	783.35	19.3	807.08	19.6	798.01	19.5	804.87	19.7
WORLD	1327.56		1890.35		2190.94		2443.85		2626.34		2629.82		2441.33		2476.22	

Note: The world total includes the following data from Taiwan, China:

- 1985: 0 TW(e)·h of nuclear electricity generation, representing 52.41% of the total electricity generated there;
- 1990: 31.54 TW(e)·h of nuclear electricity generation, representing 38.32% of the total electricity generated there;
- 1995: 33.8 TW(e)·h of nuclear electricity generation, representing 28.79% of the total electricity generated there;
- 2000: 37 TW(e)·h of nuclear electricity generation, representing 21.19% of the total electricity generated there;
- 2005: 38.4 TW(e)·h of nuclear electricity generation, representing 17.93% of the total electricity generated there;
- 2010: 39.89 TW(e)·h of nuclear electricity generation, representing 19.3% of the total electricity generated there;
- 2015: 35.14 TW(e)·h of nuclear electricity generation, representing 16.32% of the total electricity generated there;
- 2016: 30.46 TW(e)·h of nuclear electricity generation, representing 13.72% of the total electricity generated there.

TABLE 7. ANNUAL CONSTRUCTION STARTS AND CONNECTIONS TO THE GRID, 1954 TO 2016

Year	Construction starts		Connections to the grid		Operational reactors	
	Number of units	Design capacity (MW(e))	Number of units	Design capacity (MW(e))	Number of units	Updated capacity (MW(e))
1954	1	60	1	5	1	5
1955	8	260			1	5
1956	5	577	1	35	2	65
1957	13	1836	3	119	5	209
1958	6	476	1	35	6	269
1959	7	976	5	176	11	548
1960	11	1010	4	438	15	1087
1961	7	1529	1	15	16	1104
1962	8	1379	9	955	25	2223
1963	5	1722	9	500	33	2677
1964	9	2932	8	1022	40	3686
1965	9	3291	8	1879	48	5910
1966	15	7052	8	1528	55	7539
1967	25	16287	11	2165	64	9595
1968	37	26859	7	1086	69	10648
1969	13	9277	10	3670	78	14121
1970	37	25489	6	3410	84	17656
1971	18	12623	16	7711	99	24320
1972	28	21163	16	8880	113	32797
1973	30	24657	20	12727	132	43761
1974	38	35222	26	17149	154	61021
1975	38	36437	15	10236	169	70414
1976	43	41732	19	14232	186	83992
1977	23	21890	18	13199	199	96202
1978	23	21735	20	15782	218	111740
1979	27	23007	8	6909	225	117814
1980	20	19084	21	15088	245	133037
1981	17	16029	23	20355	267	153832
1982	19	19765	19	15357	284	168317
1983	14	11286	23	19266	306	187756
1984	13	11332	33	30980	336	218452
1985	19	15336	33	31061	363	245779
1986	8	7286	27	27134	389	272074
1987	13	11202	22	22191	407	295812
1988	7	7722	14	13574	416	305212
1989	6	4018	12	10536	420	311942
1990	5	3267	10	10543	416	318253
1991	2	2246	4	3668	415	321924
1992	3	3094	6	4809	418	325261
1993	4	3515	9	9012	427	333914
1994	2	1320	5	4302	429	336904
1995			5	3536	434	341387
1996	1	610	6	7080	438	347281
1997	5	4410	3	3557	434	347880
1998	3	2150	4	2959	430	344900
1999	4	4540	4	2729	432	347353
2000	7	5356	6	3063	435	349984
2001	1	1304	3	2696	438	352715
2002	6	3440	6	5049	439	357481
2003	1	202	2	1627	437	359827
2004	2	1336	5	4785	438	364673
2005	3	2907	4	3823	441	368125
2006	4	3444	2	1492	435	369581
2007	8	6644	3	1842	439	371707
2008	10	10633			438	371557
2009	12	13186	2	1068	437	370697
2010	16	15853	5	3776	441	375277
2011	4	1890	7	4013	435	368921
2012	7	6984	3	2963	437	373263
2013	10	11252	4	4060	434	371793
2014	3	2479	5	4660	438	376280
2015	8	8481	10	9450	441	382794
2016	3	3014	10	9531	448	391116

TABLE 8. NUMBER OF NEW REACTORS CONNECTED TO THE GRID AND MEDIAN CONSTRUCTION TIME IN MONTHS — continued

Country	1981 to 1985		1986 to 1990		1991 to 1995		1996 to 2000		2001 to 2005		2006 to 2010		2011 to 2015		2016	
	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months	No. Months
USA	25	126	22	146	1	221	1	272	20	59	12	77	29	68	1	250
TOTAL	131	84	85	93	29	82	23	121	20	59	12	77	29	68	10	76

Notes:

1. Construction time is measured from the first pouring of concrete to the connection of the unit to the grid.
2. The totals include the following data from Taiwan, China:
— 1981 to 1985: 4 units, 72 months.

TABLE 9. CONSTRUCTION STARTS DURING 2016

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation
	Code	Name			Thermal	Gross					
CHINA	CN -56	FANGCHENGANG-4	PWR	HPR1000	3150	1180	1000	GFNPC	2016-12	—	—
	CN -54	TIANWAN-6	PWR	CNP-1000	2905	1118	1000	JNPC	2016-9	—	—
PAKISTAN	PK-7	KANUPP-3	PWR	ACP-1000	3060	1100	1014	PAEC	2016-5	—	—

Note: During 2016, construction started on 3 reactors (3014 MW).

TABLE 10. CONNECTIONS TO THE GRID DURING 2016

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid connection
	Code	Name			Thermal	Gross	Net					
CHINA	CN-37	CHANGJIANG-2	PWR	CNP-600	1930	650	601	HNPC	DEC	2010-11	2016-6	2016-6
	CN-39	FANGCHENGANG-2	PWR	CPR-1000	2905	1086	1000	GFNPC	DEC	2010-12	2016-6	2016-7
	CN-42	FUJING-3	PWR	CNP-1000	2905	1089	1000	FGNP	NPIC	2010-12	2016-7	2016-9
	CN-27	HONGYANHE-4	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2009-8	2016-3	2016-4
	CN-35	NINGDE-4	PWR	CPR-1000	2905	1089	1018	NDNP	CFHI	2010-9	2016-3	2016-3
INDIA	IN-26	KUDANKULAM-2	PWR	VVER V-412	3000	1000	917	NPCIL	MAEP	2002-7	2016-7	2016-8
KOREA, REP. OF	KR-25	SHINKORI-3	PWR	APR-1400	3983	1455	1340	KHNP	DHICKOPC	2008-10	2015-12	2016-1
PAKISTAN	PK-4	CHASNUPP-3	PWR	CNP-300	999	340	315	PAEC	CNNC	2011-5	2016-8	2016-10
RUSSIA	RU-161	NOVOVORONEZH 2-1	PWR	VVER V-392M	3200	1199	1114	REA	ROSATOM	2008-6	2016-5	2016-8
USA	US-391	WATTS BAR-2	PWR	1WH4LP	3411	1218	1165	TVA	WH	1973-9	2016-5	2016-6

Note: During 2016, 10 reactors (9531 MW) were newly connected to the grid.

TABLE 11. SCHEDULED CONNECTIONS TO THE GRID DURING 2017

Country	Reactor		Type	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid date
	Code	Name		Thermal	Gross	Net					
CHINA	CN-41	YANGJIANG-4	PWR	2905	1086	1000	YJNPC	CFHI	2012-11	2016-12	2017-1
PAKISTAN	PK-5	CHASNUPP-4	PWR	999	340	315	PAEC	CNNC	2011-12	2017-3	2017-7
RUSSIA	RU-64	ROSTOV-4	PWR	3000	1070	1011	REA	ROSATOM	2010-6	—	2017-12

Note: During 2017, 3 reactors (2326 MW) are expected to achieve connection to grid.

TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2016

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Expected construction start
	Code	Name			Thermal	Gross	Net			
CHINA	CN -73	BAMAOSHAN	PWR	CPR-1000	2905	1080	900			
	CN -57	CHANGJIANG-3	PWR		1930	650	610			
	CN -58	CHANGJIANG-4	PWR		1930	650	610			
	CN -59	FANGCHENGANG-5	PWR				1000			
	CN -60	FANGCHENGANG-6	PWR				1000			
	CN -85	GUOHE-1	PWR	CAP-1400	4040	1534	1400	SNPDP		
	CN -86	GUOHE-2	PWR	CAP-1400	4040	1534	1400	SNPDP		
	CN -76	HAIYANG-3	PWR	AP-1000	3415	1253	1000	SDNPC	WH	
	CN -77	HAIYANG-4	PWR	AP-1000	3415	1253	1000	SDNPC	WH	
	CN -80	HONGSHIDING-1	PWR				0			
	CN -81	HONGSHIDING-2	PWR	ACPR1000			0	HSDNPC	DEC	
	CN -65	JIYANG-1	PWR				1000			
	CN -66	JIYANG-2	PWR				1000			
	CN -67	JIYANG-3	PWR				1000			
	CN -68	JIYANG-4	PWR				1000			
	CN -87	LUFENG-1	PWR	CPR-1000			1000	LFNPC		
	CN -88	LUFENG-2	PWR	CPR-1000			1000	LFNPC		
	CN -61	PENGZE-1	PWR				1250			
	CN -62	PENGZE-2	PWR				1250			
	CN -63	PENGZE-3	PWR				1250			
CN -64	PENGZE-4	PWR				1250				
CN -78	SANMEN-3	PWR	AP-1000		3400	1250	SMNPC	WH/MHI		
CN -79	SANMEN-4	PWR	AP-1000		3400	1250	SMNPC	WH/MHI		
CN -71	SANMING-1	FBR	BN-800		2100	860	FSNPC			
CN -72	SANMING-2	FBR	BN-800		2100	860	FSNPC			
CN -74	TAOHUAIJIANG-1	PWR				0				
CN -75	TAOHUAIJIANG-2	PWR				0				
CN -69	XIANNING-1	PWR				0				
CN -70	XIANNING-2	PWR				0				

TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Expected construction start
	Code	Name			Thermal	Gross	Net			
CHINA	CN -82	XUDABU-1	PWR	CPR-1000	2905	1080	1000	LNPC	DEC	—
	CN -83	XUDABU-2	PWR	CPR-1000	2905	1080	1000	LNPC	DEC	—
FINLAND	FI -6	HANHIKIVI-1	PWR	VVER V-511	3200		1200	FV	ROSATOM	—
INDIA	IN -33	GORAKHPUR-1	PHWR	PHWR-700		700	630	NPCIL		—
	IN -34	GORAKHPUR-2	PHWR	PHWR-700		700	630	NPCIL		—
	IN -35	KUDANKULAM-3	PWR	VVER V-412	3000	1000	917	NPCIL		—
	IN -36	KUDANKULAM-4	PWR	VVER V-412	3000	1000	917	NPCIL		—
IRAN, ISL. REP	IR -2	BUSHEHR-2	PWR	VVER V-446	3000	1000	915	NPPDCO	TBD	—
	IR -5	BUSHEHR-3	PWR	-	3000	1000	915	NPPDCO	SK	—
	IR -9	DARKHOVAIN	PWR	IR-360	1113	360	330	NPPDCO		—
JAPAN	JP -76	HAMAOKA-6	BWR	ABWR	3926	1400	1350	CHUBU		—
	JP -69	HIGASHI DORI-1 (TEPCO)	BWR	ABWR	3926	1385	1343	TEPCO	H/G	—
	JP -74	HIGASHI DORI-2 (TEPCO)	BWR	ABWR	3926	1385	1343	TEPCO		—
	JP -72	HIGASHI DORI-2 (TOHOKU)	BWR	ABWR			1067	TOHOKU		—
	JP -62	KAMINOSEKI-1	BWR	ABWR	3926	1373	1325	CHUGOKU		—
	JP -63	KAMINOSEKI-2	BWR	ABWR	3926	1373	1325	CHUGOKU		—
	JP -75	SENDAI-3	PWR	APWR	4466	1590	1590	KYUSHU		—
	JP -67	TSURUGA-3	PWR	APWR	4466	1538	1538	JAPCO	MHI	—
JP -68	TSURUGA-4	PWR	APWR	4466	1538	1538	JAPCO	MHI	—	
RUSSIA	RU -171	BALTIC-2	PWR	VVER V-491	3200	1194	1109	REA	ROSATOM	—
	RU -202	BASHKIR-1	PWR	VVER V-510	3300	1255	1115	REA	ROSATOM	—
	RU -203	BASHKIR-2	PWR	VVER V-510	3300	1255	1115	REA	ROSATOM	—
	RU -207	BELOYARSK-5	FBR	BN-1200	3000	1220	0	REA	ROSATOM	—
	RU -177	CENTRAL-1	PWR	VVER V-510	3300	1255	0	REA	ROSATOM	—
	RU -178	CENTRAL-2	PWR	VVER V-510	3300	1255	0	REA	ROSATOM	—

TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Expected construction start	
	Code	Name			Thermal	Gross	Net				
RUSSIA	RU-175	KOLA 2-1	PWR	-	3200	1200	0	REA	ROSATOM	—	
	RU-176	KOLA 2-2	PWR	-	3200	1200	1100	REA	ROSATOM	—	
	RU-166	KURSK 2-1	PWR	VVER V-510	3300	1255	1175	REA	ROSATOM	—	
	RU-189	KURSK 2-2	PWR	VVER V-510	3300	1255	1175	REA	ROSATOM	—	
	RU-190	KURSK 2-3	PWR	VVER V-510	3300	1255	1175	REA	ROSATOM	—	
	RU-191	KURSK 2-4	PWR	VVER V-510	3300	1255	1175	REA	ROSATOM	—	
	RU-165	LENINGRAD 2-3	PWR	VVER V-491	3200	1199	1111	REA	ROSATOM	—	
	RU-167	LENINGRAD 2-4	PWR	VVER V-491	3200	1199	1111	REA	ROSATOM	—	
	RU-181	NIZHEGORODSK-1	PWR	VVER V-491	3300	1255	1175	REA	ROSATOM	—	
	RU-182	NIZHEGORODSK-2	PWR	VVER V-491	3300	1255	1175	REA	ROSATOM	—	
	RU-187	SEVERSK-1	PWR	VVER V-510	3300	1255	0	REA	ROSATOM	—	
	RU-188	SEVERSK-2	PWR	VVER V-510	3300	1255	0	REA	ROSATOM	—	
	RU-198	SMOLENSK 2-1	PWR	VVER V-510	3300	1255	0	REA	ROSATOM	—	
	RU-199	SMOLENSK 2-2	PWR	VVER V-510	3300	1255	0	REA	ROSATOM	—	
	RU-204	SOUTH URALS-1	FBR	BN-1200	3000	1220	0	REA	ROSATOM	—	
	RU-205	SOUTH URALS-2	FBR	BN-1200	3000	1220	0	REA	ROSATOM	—	
	USA	US-5033	FERMI-3	BWR	ESBWR	4500	1600	1520	PROGRESS	WH	—
		US-5029	LEVY COUNTY-1	PWR	AP-1000	3750	1250	1117	WH	WH	—
		US-5030	LEVY COUNTY-2	PWR	AP-1000	3750	1250	1117			—
		US-5017	NORTH ANNA-3	PWR	US-APWR			1500			—
US-5012		SOUTH TEXAS-3	BWR	ABWR	3926	1400	1350			—	
US-5013		SOUTH TEXAS-4	BWR	ABWR	3926	1400	1350			—	
US-5040		TURKEY POINT-6	PWR	AP-1000	3750	1250	1117			—	
US-5041		TURKEY POINT-7	PWR	AP-1000	3750	1250	1117			—	
US-5018		WILLIAM STATES LEE III-1	PWR	AP-1000	3750	1250	1117			—	
US-5019		WILLIAM STATES LEE III-2	PWR	AP-1000	3750	1250	1117			—	

Note: Status as of 31 December 2016. 80 reactors (70526 MW) were known as planned.

TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2016

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid connection	Commercial operation
	Code	Name			Thermal	Gross	Net						
ARGENTINA	AR-4	CAREM25	PWR	CAREM Prototype	100	29	25	CNEA	CNEA	2014-2	—	—	—
BELARUS	BY-1	BELARUSIAN-1	PWR	VVER V-491	3200	1194	1109	BelNPP	SK	2013-11	—	—	—
	BY-2	BELARUSIAN-2	PWR	VVER V-491	3200	1194	1109	BelNPP	SK	2014-4	—	—	—
BRAZIL	BR-3	ANGRA-3	PWR	PRE KONVOI	3765	1350	1245	ELETRONU KWU	KWU	2010-6	—	2018-12	2019-5
CHINA	CN-55	FANGCHENGGANG-3	PWR	HPR1000	3150	1180	1000	GFNPC	CFHI	2015-12	—	—	—
	CN-56	FANGCHENGGANG-4	PWR	HPR1000	3150	1180	1000	GFNPC	CFHI	2016-12	—	—	—
	CN-43	FUQING-4	PWR	CNP-1000	2905	1089	1000	FGNP	NPIC	2012-11	—	—	—
	CN-51	FUQING-5	PWR	HPR1000	2905	1150	1000	FGNP	NPIC	2015-5	—	—	—
	CN-52	FUQING-6	PWR	HPR1000	2905	1150	1000	FGNP	NPIC	2015-12	—	—	—
	CN-30	HAIYANG-1	PWR	AP-1000	3415	1250	1000	SDNPC	WH	2009-9	—	—	—
	CN-31	HAIYANG-2	PWR	AP-1000	3415	1250	1000	SDNPC	WH	2010-6	—	—	—
	CN-49	HONGYANHE-5	PWR	ACPR-1000	2905	1119	1061	LHNPC	DEC	2015-3	—	—	—
	CN-50	HONGYANHE-6	PWR	ACPR-1000	2905	1119	1061	LHNPC	DEC	2015-7	—	—	—
	CN-28	SANMEN-1	PWR	AP-1000	3400	1250	1000	SMNPC	WH/MHI	2009-4	—	—	—
	CN-29	SANMEN-2	PWR	AP-1000	3400	1250	1000	SMNPC	WH/MHI	2009-12	—	—	—
	CN-44	SHIDAO BAY-1	HTGR	HTR-PM	500	211	200	HSNPC	Tsinghua	2012-12	—	—	—
	CN-32	TAISHAN-1	PWR	EPR-1750	4590	1750	1660	TNPC	AREVA	2009-11	—	—	—
	CN-33	TAISHAN-2	PWR	EPR-1750	4590	1750	1660	TNPC	AREVA	2010-4	—	—	—
	CN-45	TIANWAN-3	PWR	VVER V-428M	3000	1126	990	JNPC	IZ	2012-12	—	—	—
	CN-46	TIANWAN-4	PWR	VVER V-428M	3000	1126	990	JNPC	IZ	2013-9	—	—	—
	CN-53	TIANWAN-5	PWR	CNP-1000	2905	1118	1000	JNPC	SHE	2015-12	—	—	—
	CN-54	TIANWAN-6	PWR	CNP-1000	2905	1118	1000	JNPC	CFHI	2016-9	—	—	—
CN-41	YANGJIANG-4	PWR	CPR-1000	2905	1086	1000	YJNPC	CFHI	2012-11	2016-12	2017-1	2017-3	
CN-47	YANGJIANG-5	PWR	ACPR-1000	2905	1086	1000	YJNPC	CFHI	2013-9	—	—	—	
CN-48	YANGJIANG-6	PWR	ACPR-1000	2905	1086	1000	YJNPC	CFHI	2013-12	—	—	—	
FINLAND	FI-5	OLKILUOTO-3	PWR	EPR	4300	1720	1600	TVO	AREVA	2005-8	—	—	2018-12

TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	First criticality	Grid connection	Commercial operation
	Code	Name			Thermal	Gross						
FRANCE	FR -74	FLAMANVILLE-3	PWR	EPR	4300	1650	EDF	AREVA	2007-12	—	—	—
INDIA	IN -30	KAKRAPAR-3	PHWR	PHWR-700	2166	700	NPCIL	NPCIL	2010-11	—	—	—
	IN -31	KAKRAPAR-4	PHWR	PHWR-700	2166	700	NPCIL	NPCIL	2010-11	—	—	—
	IN -29	PFBR	FBR	Prototype	1253	500	BHAVINI	—	2004-10	—	—	—
	IN -21	RAJASTHAN-7	PHWR	Horizontal Pre	2177	700	NPCIL	NPCIL	2011-7	—	—	—
	IN -22	RAJASTHAN-8	PHWR	Horizontal Pre	2177	700	NPCIL	NPCIL	2011-9	—	—	—
JAPAN	JP -66	OHMA	BWR	ABWR	3926	1383	EPDC	H/G	2010-5	—	—	—
	JP -65	SHIMANE-3	BWR	ABWR	3926	1373	CHUGOKU	HITACHI	2007-10	—	—	—
KOREA, REP. OF	KR -27	SHIN-HANUL-1	PWR	APR-1400	3938	1400	KHNP	DHICKOPC	2012-7	—	—	—
	KR -28	SHIN-HANUL-2	PWR	APR-1400	3983	1400	KHNP	DHICKOPC	2013-6	—	—	—
	KR -26	SHIN-KORI-4	PWR	APR-1400	3938	1400	KHNP	DHICKOPC	2009-8	—	—	—
PAKISTAN	PK -5	CHASNUPP-4	PWR	CNP-300	999	340	PAEC	CNNC	2011-12	2017-3	2017-7	—
	PK -6	KANUPP-2	PWR	ACP-1000	3060	1100	PAEC	CZEC	2015-8	2020-6	2020-7	—
	PK -7	KANUPP-3	PWR	ACP-1000	3060	1100	PAEC	CZEC	2016-5	—	—	—
RUSSIA	RU -151	AKADEMIK LOMONOSOV-1	PWR	KLT-40S Float	150	38	REA	ROSATOM	2007-4	—	—	2019-12
	RU -152	AKADEMIK LOMONOSOV-2	PWR	KLT-40S Float	150	38	REA	ROSATOM	2007-4	—	—	2019-12
	RU -170	BALTIC-1	PWR	VVER V-491	3200	1194	1109	REA	ROSATOM	2012-2	—	2018-12
	RU -163	LENINGRAD 2-1	PWR	VVER V-491	3200	1199	1111	REA	ROSATOM	2008-10	—	2018-12
	RU -164	LENINGRAD 2-2	PWR	VVER V-491	3200	1199	1111	REA	ROSATOM	2010-4	—	2021-12
	RU -162	NOVOVORONEZH 2-2	PWR	VVER V-392M	3200	1199	1114	REA	ROSATOM	2009-7	2018-11	2021-12
	RU -64	ROSTOV-4	PWR	VVER V-320	3200	1070	1011	REA	ROSATOM	2010-6	—	2017-12
SLOVAKIA	SK -10	MOCHOVCE-3	PWR	VVER V-213	1375	471	SE,plc	SKODA	1987-1	2018-4	2018-4	2018-6
	SK -11	MOCHOVCE-4	PWR	VVER V-213	1375	471	SE,plc	SKODA	1987-1	2019-4	2019-4	2019-6
UAE	AE -01	BARAKAH-1	PWR	APR-1400	3983	1400	Nawah	KEPCO	2012-7	—	—	—

TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	First criticality	Grid connection	Commercial operation
	Code	Name			Thermal	Gross						
UAE	AE-02	BARAKAH-2	PWR	APR-1400	3983	1400	Nawah	KEPCO	2013-4	—	—	—
	AE-03	BARAKAH-3	PWR	APR-1400	3983	1400	Nawah	KEPCO	2014-9	—	—	—
	AE-04	BARAKAH-4	PWR	APR-1400	3983	1400	Nawah	KEPCO	2015-7	—	—	—
UKRAINE	UA-51	KHMELNITSKI-3	PWR	VVER	3132	1089	NNEGC	SKODA	1986-3	—	—	—
	UA-52	KHMELNITSKI-4	PWR	VVER	3132	1089	NNEGC	SKODA	1987-2	—	—	—
USA	US-5027	SUMMER-2	PWR	AP-1000	3400	1250	SCE&G	WH	2013-3	—	—	—
	US-5028	SUMMER-3	PWR	AP-1000	3400	1250	SCE&G	WH	2013-11	—	—	—
	US-5025	VOGTLE-3	PWR	AP-1000	3400	1250	SOUTHERN WH	WH	2013-3	—	—	—
	US-5026	VOGTLE-4	PWR	AP-1000	3400	1250	SOUTHERN WH	WH	2013-11	—	—	—

Note: Status as of 31 December 2016, 61 reactors (61264 MW) were under construction, including 2 units (2600 MW) in Taiwan, China.

TAIWAN, CN
 TW-7
 TW-8

LUNG MEN 1
 LUNG MEN 2

BWR
 BWR
 BWR

ABWR
 ABWR
 ABWR

TPC
 TPC
 TPC

1999-3
 1999-8

—
 —

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics	
	Code	Name			Thermal	Gross									Net
ARGENTINA	AR-1	ATUCHA-1	PHWR	PHWR KWU	1179	357	NASA	SIEMENS	1988-6	1974-3	1974-6	80.9	81.2	-	
	AR-3	ATUCHA-2	PHWR	PHWR KWU	2160	745	NASA	SIEMENS	1981-7	2014-6	-	66.8	66.8	-	
	AR-2	EMBALSE	PHWR	CANDU 6	2015	648	NASA	AECL	1974-4	1983-4	1984-1	66.8	66.8	-	
ARMENIA	AM-19	ARMENIAN-2	PWR	WVER V-270	1375	408	375	ANPPC-JSC	FAEA	1975-7	1980-1	1980-5	68.2	70.6	-
BELGIUM	BE-2	DOEL-1	PWR	WH 2LP	1311	454	433	ELECTRAB	ACECOWEN	1969-7	1974-8	1975-2	91.2	91.9	-
	BE-4	DOEL-2	PWR	WH 2LP	1311	454	433	ELECTRAB	ACECOWEN	1971-9	1975-8	1975-12	87.1	87.6	-
	BE-5	DOEL-3	PWR	WH 3LP	3054	1056	1006	ELECTRAB	FRAMACEC	1975-1	1982-6	1982-10	40.9	41.0	-
	BE-7	DOEL-4	PWR	WH 3LP	2988	1090	1033	ELECTRAB	ACECOWEN	1978-12	1985-4	1985-7	83.3	83.6	-
	BE-3	TIHANGE-1	PWR	Framatome 3 lo	2873	1009	962	ELECTRAB	ACLF	1970-6	1975-3	1975-10	69.5	70.5	-
	BE-6	TIHANGE-2	PWR	WH 3LP	3064	1055	1008	ELECTRAB	FRAMACEC	1976-4	1982-10	1983-6	48.2	48.3	-
	BE-8	TIHANGE-3	PWR	WH 3LP	3000	1089	1038	ELECTRAB	ACECOWEN	1978-11	1985-6	1985-9	87.8	89.0	-
	BRAZIL	BR-1	ANGRA-1	PWR	WH 2LP	1882	640	609	ELETRONU	WH	1971-5	1982-4	1985-1	83.9	84.1
	BR-2	ANGRA-2	PWR	PRE KONVOI	3764	1350	1275	ELETRONU	KWU	1976-1	2000-7	2001-2	89.1	89.7	-
BULGARIA	BG-5	KOZLODUY-5	PWR	WVER V-320	3000	1000	963	KOZNPP	AEE	1980-7	1987-11	1988-12	88.4	88.8	DH
	BG-6	KOZLODUY-6	PWR	WVER V-320	3000	1000	963	KOZNPP	AEE	1982-4	1991-8	1993-12	87.2	88.1	DH
CANADA	CA-8	BRUCE-1	PHWR	CANDU 791	2620	830	760	BRUCEPOW	OH/AECL	1971-6	1977-1	1977-9	84.5	84.6	-
	CA-9	BRUCE-2	PHWR	CANDU 791	2620	830	760	BRUCEPOW	OH/AECL	1970-12	1976-9	1977-9	85.4	85.4	-
	CA-10	BRUCE-3	PHWR	CANDU 750A	2550	830	750	BRUCEPOW	OH/AECL	1972-7	1977-12	1978-2	75.1	75.2	-
	CA-11	BRUCE-4	PHWR	CANDU 750A	2550	830	750	BRUCEPOW	OH/AECL	1972-9	1978-12	1979-1	74.9	75.0	-
	CA-18	BRUCE-5	PHWR	CANDU 750B	2832	872	817	BRUCEPOW	OH/AECL	1978-6	1984-12	1985-3	92.6	92.6	-
	CA-19	BRUCE-6	PHWR	CANDU 750B	2690	891	817	BRUCEPOW	OH/AECL	1978-1	1984-6	1984-9	90.3	90.5	-
	CA-20	BRUCE-7	PHWR	CANDU 750B	2832	872	817	BRUCEPOW	OH/AECL	1979-5	1986-2	1986-4	88.6	88.7	-
	CA-21	BRUCE-8	PHWR	CANDU 750B	2690	872	817	BRUCEPOW	OH/AECL	1979-8	1987-3	1987-5	85.6	85.6	-
	CA-22	DARLINGTON-1	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1982-4	1990-12	1992-11	87.5	88.5	-

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DH district heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applies	
	Code	Name			Thermal	Gross									Net
CANADA	CA-23	DARLINGTON-2	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1981-9	1990-10	82.8	83.6	-	
	CA-24	DARLINGTON-3	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1984-9	1993-2	85.7	86.5	-	
	CA-25	DARLINGTON-4	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1985-7	1993-6	84.2	84.9	-	
	CA-4	PICKERING-1	PHWR	CANDU 500A	1744	542	515	OPG	OH/AECL	1966-6	1971-7	69.6	70.2	-	
	CA-7	PICKERING-4	PHWR	CANDU 500A	1744	542	515	OPG	OH/AECL	1968-5	1973-6	74.4	74.8	-	
	CA-13	PICKERING-5	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1974-11	1983-5	82.2	83.4	-	
	CA-14	PICKERING-6	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1975-10	1983-11	81.2	82.4	-	
	CA-15	PICKERING-7	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1976-3	1984-11	75.1	75.7	-	
	CA-16	PICKERING-8	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1976-9	1986-2	69.5	69.8	-	
	CA-17	POINT LEPREAU	PHWR	CANDU 6	2180	705	660	NBEP	AECL	1975-5	1982-9	62.9	62.9	-	
	CHINA	CN-84	CEFR	FBR	BN-20	65	25	20	CIAE	IZ	2000-5	—	—	—	-
		CN-36	CHANGJIANG-1	PWR	CNP-600	1930	650	601	HNPC	DEC	2010-4	2015-12	94.0	94.0	-
		CN-37	CHANGJIANG-2	PWR	CNP-600	1930	650	601	HNPC	DEC	2010-11	2016-8	95.3	95.3	-
		CN-2	DAYA BAY-1	PWR	M310	2905	984	944	DNMC	FRAM	1987-8	1993-8	86.9	87.1	-
		CN-3	DAYA BAY-2	PWR	M310	2905	984	944	DNMC	FRAM	1988-4	1994-5	89.3	89.5	-
		CN-38	FANGCHENGANG-1	PWR	CPR-1000	2905	1086	1000	GFNPC	DEC	2010-7	2015-10	100.0	100.0	-
		CN-39	FANGCHENGANG-2	PWR	CPR-1000	2905	1086	1000	GFNPC	DEC	2010-12	2016-7	100.0	100.0	-
CN-24		FANGJIAZHAN-1	PWR	CPR-1000	2905	1089	1012	QNPC	NPIC	2008-12	2014-11	88.6	88.6	-	
CN-25		FANGJIAZHAN-2	PWR	CPR-1000	2905	1089	1012	QNPC	NPIC	2009-7	2015-2	90.1	90.1	-	
CN-20		FUQING-1	PWR	CNP-1000	2905	1089	1000	FQNP	NPIC	2008-11	2014-8	87.3	87.3	-	
CN-21		FUQING-2	PWR	CNP-1000	2905	1089	1000	FQNP	NPIC	2009-6	2015-10	84.1	84.1	-	
CN-42		FUQING-3	PWR	CNP-1000	2905	1089	1000	FQNP	NPIC	2010-12	2016-9	100.0	100.0	-	
CN-16		HONGYANHE-1	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2007-8	2013-2	83.8	84.2	-	
CN-17		HONGYANHE-2	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2008-3	2013-11	77.7	77.7	-	
CN-26		HONGYANHE-3	PWR	CPR-1000	2905	1119	1061	LHNPC	DEC	2009-3	2015-3	96.0	96.0	-	
CN-27		HONGYANHE-4	PWR	CPR-1000	2905	1119	1000	LHNPC	DEC	2009-8	2016-4	100.0	100.0	-	
CN-6		LING AO-1	PWR	M310	2905	990	950	DNMC	FRAM	1997-5	2002-2	90.3	90.7	-	
CN-7	LING AO-2	PWR	M310	2905	990	950	DNMC	FRAM	1997-11	2002-9	91.0	91.3	-		
CN-12	LING AO-3	PWR	CPR-1000	2905	1086	1007	DNMC	DEC	2005-12	2010-9	89.5	89.9	-		

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics	
	Code	Name			Thermal	Gross									Net
CHINA	CN-13	LING AO-4	PWR	CPR-1000	2905	1086	DNMC	DEC	2006-6	2011-5	2011-8	87.2	87.6	-	
	CN-18	NINGDE-1	PWR	CPR-1000	2905	1089	NDNP	DEC	2008-2	2012-12	2013-4	84.6	84.8	-	
	CN-19	NINGDE-2	PWR	CPR-1000	2905	1089	NDNP	SHE	2008-11	2014-1	2014-5	87.5	87.6	-	
	CN-34	NINGDE-3	PWR	CPR-1000	2905	1089	NDNP	CFHI	2010-1	2015-3	2015-6	85.0	85.0	-	
	CN-35	NINGDE-4	PWR	CPR-1000	2905	1089	NDNP	CFHI	2010-9	2016-3	2016-7	99.9	99.9	-	
	CN-4	QINSHAN 2-1	PWR	CNP-600	1930	650	NPQJVC	CNNC	1996-6	2002-2	2002-4	87.1	87.1	-	
	CN-5	QINSHAN 2-2	PWR	CNP-600	1930	650	NPQJVC	CNNC	1997-4	2004-3	2004-5	86.4	86.4	-	
	CN-14	QINSHAN 2-3	PWR	CNP-600	1930	660	NPQJVC	CNNC	2006-4	2010-8	2010-10	92.3	92.3	-	
	CN-15	QINSHAN 2-4	PWR	CNP-600	1930	660	NPQJVC	CNNC	2007-1	2011-11	2011-12	90.4	90.5	-	
	CN-8	QINSHAN 3-1	PHWR	CANDU 6	2064	728	TQNPC	AECL	1998-6	2002-11	2002-12	92.0	92.0	-	
	CN-9	QINSHAN 3-2	PHWR	CANDU 6	2064	728	TQNPC	AECL	1998-9	2003-6	2003-7	91.3	91.3	-	
	CN-1	QINSHAN-1	PWR	CNP-300	966	310	CNNO	CNNC	1985-3	1991-12	1994-4	91.3	91.4	-	
	CN-10	TIANWAN-1	PWR	VVER V-428	3000	1060	JNPC	IZ	1999-10	2006-5	2007-5	88.0	88.0	-	
	CN-11	TIANWAN-2	PWR	VVER V-428	3000	1060	JNPC	IZ	2000-9	2007-5	2007-8	88.7	88.7	-	
	CN-22	YANGJIANG-1	PWR	CPR-1000	2905	1086	YJNPC	CFHI	2008-12	2013-12	2014-3	85.9	85.9	-	
	CN-23	YANGJIANG-2	PWR	CPR-1000	2905	1086	YJNPC	CFHI	2009-6	2015-3	2015-6	85.8	85.8	-	
	CN-40	YANGJIANG-3	PWR	CPR-1000	2905	1086	YJNPC	CFHI	2010-11	2015-10	2016-1	91.1	91.2	-	
	CZECH REP.	CZ-4	DUKOVANY-1	PWR	VVER V-213	1444	500	CEZ	SKODA	1979-1	1985-2	1985-5	85.0	85.9	-
		CZ-5	DUKOVANY-2	PWR	VVER V-213	1444	500	CEZ	SKODA	1979-1	1986-1	1986-3	74.8	76.1	-
		CZ-8	DUKOVANY-3	PWR	VVER V-213	1444	500	CEZ	SKODA	1979-3	1986-11	1986-12	76.7	77.7	-
		CZ-9	DUKOVANY-4	PWR	VVER V-213	1444	500	CEZ	SKODA	1979-3	1987-6	1987-7	86.2	87.3	-
		CZ-23	TEMLIN-1	PWR	VVER V-320	3120	1080	CEZ	SKODA	1987-2	2000-12	2002-6	79.0	79.7	DH
		CZ-24	TEMLIN-2	PWR	VVER V-320	3120	1080	CEZ	SKODA	1987-2	2002-12	2003-4	75.7	75.8	DH
FINLAND	FI-1	LOVISA-1	PWR	VVER V-213	1500	526	FORTUMPH	AEE	1971-5	1977-2	1977-5	90.0	90.9	-	
	FI-2	LOVISA-2	PWR	VVER V-213	1500	526	FORTUMPH	AEE	1972-8	1980-11	1981-1	91.6	92.5	-	
	FI-3	OLKILUOTO-1	BWR	ABB-III, BWR-2	2500	910	TVO	ASEASTAL	1974-2	1978-9	1979-10	93.4	94.3	-	
	FI-4	OLKILUOTO-2	BWR	ABB-III, BWR-2	2500	910	TVO	ASEASTAL	1975-11	1980-2	1982-7	93.4	94.3	-	
FRANCE	FR-54	BELLEVILLE-1	PWR	P4-REP 1300	3817	1363	EDF	FRAM	1980-5	1987-10	1988-6	84.4	85.8	-	

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DH district heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applies
	Code	Name			Thermal	Gross								
FRANCE	FR-55	BELLEVILLE-2	PWR	P4 REP 1300	3817	1363	1310	EDF	1980-8	1988-7	1989-1	80.9	82.6	-
	FR-32	BLAYAIS-1	PWR	CP1	2785	951	910	EDF	1977-1	1981-6	1981-12	72.0	77.5	-
	FR-33	BLAYAIS-2	PWR	CP1	2785	951	910	EDF	1982-7	1983-2	1983-2	80.3	82.1	-
	FR-34	BLAYAIS-3	PWR	CP1	2785	951	910	EDF	1978-4	1983-8	1983-11	66.2	66.6	-
	FR-35	BLAYAIS-4	PWR	CP1	2785	951	910	EDF	1978-4	1983-5	1983-10	75.4	76.5	-
	FR-13	BUGEY-2	PWR	CP0	2785	945	910	EDF	1972-11	1978-5	1979-3	78.0	80.7	-
	FR-14	BUGEY-3	PWR	CP0	2785	945	910	EDF	1973-9	1978-9	1979-3	75.8	77.2	-
	FR-15	BUGEY-4	PWR	CP0	2785	917	880	EDF	1974-6	1979-3	1979-7	79.0	80.5	-
	FR-16	BUGEY-5	PWR	CP0	2785	917	880	EDF	1974-7	1979-7	1980-1	60.4	63.8	-
	FR-50	CATTENOM-1	PWR	P4 REP 1300	3817	1362	1300	EDF	1979-10	1986-11	1987-4	66.9	68.4	-
	FR-53	CATTENOM-2	PWR	P4 REP 1300	3817	1362	1300	EDF	1980-7	1987-9	1988-2	81.3	83.4	-
	FR-60	CATTENOM-3	PWR	P4 REP 1300	3817	1362	1300	EDF	1982-6	1990-7	1991-2	78.9	80.5	-
	FR-65	CATTENOM-4	PWR	P4 REP 1300	3817	1362	1300	EDF	1983-9	1991-5	1992-1	74.2	76.9	-
	FR-40	CHINON B-1	PWR	CP2	2785	954	905	EDF	1977-3	1982-11	1984-2	76.8	77.8	-
	FR-41	CHINON B-2	PWR	CP2	2785	954	905	EDF	1977-3	1983-11	1984-8	67.9	73.3	-
	FR-56	CHINON B-3	PWR	CP2	2785	954	905	EDF	1980-10	1986-10	1987-3	81.6	82.7	-
	FR-57	CHINON B-4	PWR	CP2	2785	954	905	EDF	1981-2	1987-11	1988-4	81.3	82.2	-
	FR-62	CHOOZ B-1	PWR	N4 REP 1450	4270	1560	1500	EDF	1984-1	1996-8	2000-5	85.9	87.4	-
	FR-70	CHOOZ B-2	PWR	N4 REP 1450	4270	1560	1500	EDF	1985-12	1997-4	2000-9	76.8	84.2	-
	FR-72	CIVAUX-1	PWR	N4 REP 1450	4270	1561	1495	EDF	1988-10	1997-12	2002-1	78.4	81.6	-
FR-73	CIVAUX-2	PWR	N4 REP 1450	4270	1561	1495	EDF	1991-4	1999-12	2002-4	69.3	78.0	-	
FR-42	CRUAS-1	PWR	CP2	2785	956	915	EDF	1978-8	1983-4	1984-4	73.1	75.5	-	
FR-43	CRUAS-2	PWR	CP2	2785	956	915	EDF	1978-11	1984-9	1985-4	79.4	81.7	-	
FR-44	CRUAS-3	PWR	CP2	2785	956	915	EDF	1979-4	1984-5	1984-9	69.9	74.4	-	
FR-45	CRUAS-4	PWR	CP2	2785	956	915	EDF	1979-10	1984-10	1985-2	67.3	69.9	-	
FR-22	DAMPIERRE-1	PWR	CP1	2785	937	890	EDF	1975-2	1980-3	1980-9	81.2	82.6	-	
FR-29	DAMPIERRE-2	PWR	CP1	2785	937	890	EDF	1975-4	1980-12	1981-2	75.4	77.8	-	
FR-30	DAMPIERRE-3	PWR	CP1	2785	937	890	EDF	1975-9	1981-1	1981-5	78.0	82.4	-	
FR-31	DAMPIERRE-4	PWR	CP1	2785	937	890	EDF	1975-12	1981-8	1981-11	74.5	79.5	-	
FR-11	FESSENHEIM-1	PWR	CP0	2785	920	880	EDF	1971-9	1977-4	1978-1	75.9	78.2	-	

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics
	Code	Name			Thermal	Gross								
FRANCE	FR-12	FESSENHEIM-2	PWR	CP0	2785	920	880	EDF	1972-2	1977-10	1978-4	69.9	73.4	-
	FR-46	FLAMANVILLE-1	PWR	P4 REP 1300	3817	1382	1330	EDF	1979-12	1985-12	1986-12	79.3	81.3	-
	FR-47	FLAMANVILLE-2	PWR	P4 REP 1300	3817	1382	1330	EDF	1980-5	1987-3	1987-3	81.4	82.8	-
	FR-61	GOLFECH-1	PWR	P4 REP 1300	3817	1363	1310	EDF	1982-11	1990-6	1991-2	83.0	84.4	-
	FR-68	GOLFECH-2	PWR	P4 REP 1300	3817	1363	1310	EDF	1984-10	1993-6	1994-3	84.6	85.3	-
	FR-20	GRAVELINES-1	PWR	CP1	2785	951	910	EDF	1975-2	1980-3	1980-11	68.8	73.3	-
	FR-21	GRAVELINES-2	PWR	CP1	2785	951	910	EDF	1975-3	1980-8	1980-12	68.1	72.4	-
	FR-27	GRAVELINES-3	PWR	CP1	2785	951	910	EDF	1975-12	1980-12	1981-6	72.7	73.7	-
	FR-28	GRAVELINES-4	PWR	CP1	2785	951	910	EDF	1976-4	1981-6	1981-10	76.7	79.1	-
	FR-51	GRAVELINES-5	PWR	CP1	2785	951	910	EDF	1979-10	1984-8	1985-1	67.8	68.5	-
	FR-52	GRAVELINES-6	PWR	CP1	2785	951	910	EDF	1979-10	1985-8	1985-10	80.7	83.7	-
	FR-58	NOGENT-1	PWR	P4 REP 1300	3817	1363	1310	EDF	1981-5	1987-10	1988-2	79.6	82.4	-
	FR-59	NOGENT-2	PWR	P4 REP 1300	3817	1363	1310	EDF	1982-1	1988-12	1989-5	84.3	85.3	-
	FR-36	PALUEL-1	PWR	P4 REP 1300	3817	1382	1330	EDF	1977-8	1984-6	1985-12	72.6	75.0	-
	FR-37	PALUEL-2	PWR	P4 REP 1300	3817	1382	1330	EDF	1978-1	1984-9	1985-12	57.0	57.9	-
	FR-38	PALUEL-3	PWR	P4 REP 1300	3817	1382	1330	EDF	1979-2	1985-9	1986-2	75.4	81.9	-
	FR-39	PALUEL-4	PWR	P4 REP 1300	3817	1382	1330	EDF	1980-2	1986-4	1986-6	80.2	83.3	-
	FR-63	PENLY-1	PWR	P4 REP 1300	3817	1382	1330	EDF	1982-9	1990-5	1990-12	87.8	88.8	-
	FR-64	PENLY-2	PWR	P4 REP 1300	3817	1382	1330	EDF	1984-8	1992-2	1992-11	76.8	78.8	-
	FR-48	ST. ALBAN-1	PWR	P4 REP 1300	3817	1381	1335	EDF	1979-1	1985-8	1986-5	84.0	88.2	-
	FR-49	ST. ALBAN-2	PWR	P4 REP 1300	3817	1381	1335	EDF	1979-7	1986-7	1987-3	80.3	81.8	-
	FR-17	ST. LAURENT B-1	PWR	CP2	2785	956	915	EDF	1976-5	1983-8	1983-8	72.2	76.4	-
	FR-23	ST. LAURENT B-2	PWR	CP2	2785	956	915	EDF	1976-7	1981-6	1983-8	70.5	73.5	-
	FR-18	TRICASTIN-1	PWR	CP1	2785	955	915	EDF	1974-11	1980-5	1980-12	74.6	76.0	-
	FR-19	TRICASTIN-2	PWR	CP1	2785	955	915	EDF	1974-12	1980-8	1980-12	81.1	83.5	-
	FR-25	TRICASTIN-3	PWR	CP1	2785	955	915	EDF	1975-4	1981-5	1981-5	69.0	77.8	-
FR-26	TRICASTIN-4	PWR	CP1	2785	955	915	EDF	1975-5	1981-6	1981-11	77.1	79.7	-	
GERMANY	DE-32	BROKDORF	PWR	PWR	3900	1480	1410	E.ON	1976-1	1986-10	1986-12	90.8	90.9	-
	DE-33	EMSLAND	PWR	Konvoi	3850	1406	1335	KLE	1982-8	1988-4	1988-6	93.1	93.9	-

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics
	Code	Name			Thermal	Gross								
GERMANY	DE -27	GROHNDE	PWR	PWR	3900	1430	1360	KWG	1976-6	1984-9	1985-2	85.1	85.9	-
	DE -26	GUNDEMMINGEN-B	BWR	BWR-72	3840	1344	1284	KGK	1976-7	1984-3	1984-7	87.4	88.1	-
	DE -28	GUNDEMMINGEN-C	BWR	BWR-72	3840	1344	1288	KGK	1976-7	1984-11	1985-1	87.8	88.9	-
	DE -31	ISAR-2	PWR	Konvoi	3950	1485	1410	E.ON	1982-9	1988-1	1988-4	92.3	92.7	-
	DE -44	NECKARWESTHEIM-2	PWR	Konvoi	3850	1400	1310	EnKK	1982-11	1989-1	1989-4	92.1	92.4	-
	DE -24	PHILIPPSBURG-2	PWR	PWR	3950	1468	1402	EnKK	1977-7	1984-12	1985-4	82.6	82.6	-
HUNGARY	HU -1	PAKS-1	PWR	VVER V-213	1485	500	470	PAKS Zrt	1974-8	1982-12	1983-8	88.7	88.9	-
	HU -2	PAKS-2	PWR	VVER V-213	1485	500	473	PAKS Zrt	1974-8	1984-9	1984-11	87.8	88.0	DH
	HU -3	PAKS-3	PWR	VVER V-213	1485	500	473	PAKS Zrt	1979-10	1986-9	1986-12	88.2	88.6	DH
	HU -4	PAKS-4	PWR	VVER V-213	1485	500	473	PAKS Zrt	1979-10	1987-8	1987-11	89.9	90.5	DH
INDIA	IN -13	KAIGA-1	PHWR	Horizontal Pre	801	220	202	NPCIL	1989-9	2000-10	2000-11	84.7	95.4	-
	IN -14	KAIGA-2	PHWR	Horizontal Pre	801	220	202	NPCIL	1989-12	1999-12	2000-3	82.6	93.2	-
	IN -15	KAIGA-3	PHWR	Horizontal Pre	800	220	202	NPCIL	2002-3	2007-4	2007-5	78.5	86.6	-
	IN -16	KAIGA-4	PHWR	Horizontal Pre	800	220	202	NPCIL	2002-5	2011-1	2011-1	81.1	89.3	-
	IN -9	KAKRAPAR-1	PHWR	Horizontal Pre	801	220	202	NPCIL	1984-12	1992-11	1993-5	78.8	78.8	-
	IN -10	KAKRAPAR-2	PHWR	Horizontal Pre	801	220	202	NPCIL	1985-4	1995-3	1995-9	62.9	63.4	-
	IN -25	KUDANKULAM-1	PWR	VVER V-412	3000	1000	932	MAEP	2002-3	2013-10	2014-12	55.6	55.6	-
	IN -26	KUDANKULAM-2	PWR	VVER V-412	3000	1000	917	MAEP	2002-7	2016-8	2017-3	-	-	-
	IN -5	MADRAS-1	PHWR	Horizontal Pre	801	220	205	NPCIL	1971-1	1983-7	1984-1	75.3	93.1	DS
	IN -6	MADRAS-2	PHWR	Horizontal Pre	801	220	205	NPCIL	1972-10	1985-9	1986-3	63.1	81.4	DS
	IN -7	NARORA-1	PHWR	Horizontal Pre	801	220	202	NPCIL	1976-12	1989-7	1991-1	74.1	90.4	-
	IN -8	NARORA-2	PHWR	Horizontal Pre	801	220	202	NPCIL	1977-11	1992-1	1992-7	74.6	92.1	-
	IN -3	RAJASTHAN-1	PHWR	Horizontal Pre	346	100	90	AECI	1965-8	1972-11	1973-12	0.0	0.0	PH
	IN -4	RAJASTHAN-2	PHWR	Horizontal Pre	693	200	187	AECI/DAE	1968-4	1980-11	1981-4	74.5	76.1	PH
	IN -11	RAJASTHAN-3	PHWR	Horizontal Pre	801	220	202	NPCIL	1990-2	2000-3	2000-6	90.6	90.7	PH
	IN -12	RAJASTHAN-4	PHWR	Horizontal Pre	801	220	202	NPCIL	1990-10	2000-11	2000-12	93.6	93.6	PH
	IN -19	RAJASTHAN-5	PHWR	Horizontal Pre	801	220	202	NPCIL	2002-9	2009-12	2010-2	90.9	90.9	-
	IN -20	RAJASTHAN-6	PHWR	Horizontal Pre	801	220	202	NPCIL	2003-1	2010-3	2010-3	78.5	78.7	-

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics
	Code	Name			Thermal	Gross								
INDIA	IN-1	TARAPUR-1	BWR	BWR-1 (Mark 2)	530	160	NPCIL	GE	1964-10	1969-4	1969-10	66.8	67.1	-
	IN-2	TARAPUR-2	BWR	BWR-1 (Mark 2)	530	160	NPCIL	GE	1964-10	1969-5	1969-10	64.5	65.1	-
	IN-23	TARAPUR-3	PHWR	Horizontal Pre	1730	540	NPCIL	NPCIL	2000-5	2006-6	2006-8	88.8	90.3	-
	IN-24	TARAPUR-4	PHWR	Horizontal Pre	1730	540	NPCIL	NPCIL	2000-3	2005-6	2005-9	85.9	92.3	-
IRAN, ISL. REP	IR-1	BUSHEHR-1	PWR	VVER V-446	3000	1000	NPPDCO	SK	1975-5	2011-9	2013-9	67.2	67.6	-
JAPAN	JP-25	FUKUSHIMA-DAINI-1	BWR	BWR-5	3293	1100	TEPCO	TOSHIBA	1976-3	1981-7	1982-4	0.0	0.0	-
	JP-26	FUKUSHIMA-DAINI-2	BWR	BWR-5	3293	1100	TEPCO	HITACHI	1979-5	1983-6	1984-2	0.0	0.0	-
	JP-35	FUKUSHIMA-DAINI-3	BWR	BWR-5	3293	1100	TEPCO	TOSHIBA	1981-3	1984-12	1985-6	0.0	0.0	-
	JP-38	FUKUSHIMA-DAINI-4	BWR	BWR-5	3293	1100	TEPCO	HITACHI	1981-5	1986-12	1987-8	0.0	0.0	-
	JP-27	GENKAI-2	PWR	M (2-loop)	1650	559	KYUSHU	MHI	1977-2	1980-6	1981-3	0.0	0.0	-
	JP-45	GENKAI-3	PWR	M (4-loop)	3423	1180	KYUSHU	MHI	1988-6	1993-6	1994-3	0.0	0.0	DS
	JP-46	GENKAI-4	PWR	M (4-loop)	3423	1180	KYUSHU	MHI	1992-7	1996-11	1997-7	0.0	0.0	DS
	JP-36	HAMAOKA-3	BWR	BWR-5	3293	1100	CHUBU	TOSHIBA	1983-4	1987-1	1987-8	0.0	0.0	-
	JP-49	HAMAOKA-4	BWR	BWR-5	3293	1137	CHUBU	TOSHIBA	1989-10	1993-1	1993-9	0.0	0.0	-
	JP-60	HAMAOKA-5	BWR	ABWR	3926	1380	CHUBU	TOSHIBA	2000-7	2004-4	2005-1	0.0	0.0	-
	JP-58	HIGASHI DORI-1 (TOHOKU)	PWR	BWR-5	3293	1100	TOHOKU	TOSHIBA	2000-11	2005-3	2005-12	0.0	0.0	-
	JP-32	IKATA-2	PWR	M (2-loop)	1650	566	SHIKOKU	MHI	1978-8	1981-8	1982-3	0.0	0.7	DS
	JP-47	IKATA-3	PWR	M (3-loop)	2660	890	SHIKOKU	MHI	1990-10	1994-3	1994-12	7.4	7.4	DS
	JP-33	KASHIWAZAKI KARIWA-1	BWR	BWR-5	3293	1100	TEPCO	TOSHIBA	1980-6	1985-2	1986-9	0.0	0.0	-
	JP-39	KASHIWAZAKI KARIWA-2	BWR	BWR-5	3293	1100	TEPCO	TOSHIBA	1985-11	1990-2	1990-9	0.0	0.0	-
	JP-53	KASHIWAZAKI KARIWA-3	BWR	BWR-5	3293	1100	TEPCO	TOSHIBA	1989-3	1992-12	1993-8	0.0	0.0	-
	JP-52	KASHIWAZAKI KARIWA-4	BWR	BWR-5	3293	1100	TEPCO	HITACHI	1990-3	1993-12	1994-8	0.0	0.0	-
	JP-40	KASHIWAZAKI KARIWA-5	BWR	BWR-5	3293	1100	TEPCO	HITACHI	1985-6	1989-9	1990-4	1.3	1.3	-
	JP-55	KASHIWAZAKI KARIWA-6	BWR	ABWR	3926	1356	1315	TEPCO	HITACHI	1992-11	1996-1	1996-11	4.6	4.6
JP-56	KASHIWAZAKI KARIWA-7	BWR	ABWR	3926	1356	1315	TEPCO	HITACHI	1993-7	1996-12	1997-7	0.0	0.0	-
JP-14	MIHAMA-3	PWR	M (3-loop)	2440	826	780	KEPCO	WH	1972-8	1976-2	1976-12	0.0	0.0	-
JP-15	OHI-1	PWR	WH 4LP	3423	1175	1120	KEPCO	WH	1972-10	1977-12	1979-3	0.0	0.0	DS
JP-19	OHI-2	PWR	WH 4LP	3423	1175	1120	KEPCO	WH	1972-12	1978-10	1979-12	0.0	0.0	DS

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DS desalination.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
JAPAN	JP-50	OHI-3	PWR	M(4-loop)	3423	1180	1127	KEPCO	MHI	1987-10	1991-6	1991-12	23.1	23.2	-
	JP-51	OHI-4	PWR	M(4-loop)	3423	1180	1127	KEPCO	MHI	1988-6	1992-6	1993-2	23.0	23.0	-
	JP-22	ONAGAWA-1	BWR	BWR-4	1593	524	498	TOHOKU	TOSHIBA	1980-7	1983-11	1984-6	0.0	0.0	-
	JP-54	ONAGAWA-2	BWR	BWR-5	2436	825	796	TOHOKU	TOSHIBA	1991-4	1994-12	1995-7	0.0	0.0	-
	JP-57	ONAGAWA-3	BWR	BWR-5	2436	825	796	TOHOKU	TOSHIBA	1998-1	2001-5	2002-1	0.0	0.0	-
	JP-28	SENDAI-1	PWR	M(3-loop)	2660	890	846	KYUSHU	MHI	1979-12	1983-9	1984-7	23.6	23.6	-
	JP-37	SENDAI-2	PWR	M(3-loop)	2660	890	846	KYUSHU	MHI	1981-10	1985-4	1985-11	22.9	22.9	-
	JP-48	SHIKA-1	BWR	BWR-5	1593	540	505	HOKURIKU	HITACHI	1989-7	1993-1	1993-7	0.0	0.0	-
	JP-59	SHIKA-2	BWR	ABWR	3926	1206	1108	HOKURIKU	HITACHI	2001-8	2005-7	2006-3	0.0	0.0	-
	JP-41	SHIMANE-2	BWR	BWR-5	2436	820	789	CHUGOKU	HITACHI	1985-2	1988-7	1989-2	1.4	1.4	-
	JP-8	TAKAHAMA-1	PWR	M(3-loop)	2440	826	780	KEPCO	W/H/MHI	1970-4	1974-11	1975-11	0.0	0.0	-
	JP-13	TAKAHAMA-2	PWR	M(3-loop)	2440	826	780	KEPCO	MHI	1971-3	1975-3	1975-11	0.0	0.0	-
	JP-29	TAKAHAMA-3	PWR	M(3-loop)	2660	870	830	KEPCO	MHI	1980-12	1984-5	1985-1	19.8	19.8	DS
	JP-30	TAKAHAMA-4	PWR	M(3-loop)	2660	870	830	KEPCO	MHI	1981-3	1984-11	1985-6	16.3	16.3	DS
KOREA, REP. OF	KR-21	TOKAI-2	BWR	BWR-5	3293	1100	1060	JAPCO	GE	1973-10	1978-3	1978-11	0.0	0.0	-
	JP-43	TOMARI-1	PWR	M(2-loop)	1650	579	550	HEPCO	MHI	1985-4	1988-12	1989-6	0.0	0.0	-
	JP-44	TOMARI-2	PWR	M(2-loop)	1650	579	550	HEPCO	MHI	1985-4	1988-12	1991-4	0.0	0.0	-
	JP-64	TOMARI-3	PWR	M(3-loop)	2660	912	866	HEPCO	MHI	2004-11	2009-3	2009-12	6.9	6.9	-
	JP-34	TSURUGA-2	PWR	M(4-loop)	3411	1160	1108	JAPCO	MHI	1982-11	1986-6	1987-2	0.0	0.0	-
	KR-7	HANBIT-1	PWR	WH F	2787	1035	996	KHNP	WH	1981-6	1986-3	1986-8	85.5	86.1	-
	KR-8	HANBIT-2	PWR	WH F	2787	1035	988	KHNP	WH	1981-12	1986-11	1987-6	75.3	75.5	-
	KR-11	HANBIT-3	PWR	OPR-1000	2825	1047	994	KHNP	DHICKAEC	1989-12	1994-10	1995-3	69.7	70.2	-
	KR-12	HANBIT-4	PWR	OPR-1000	2825	1022	970	KHNP	DHICKAEC	1990-5	1995-7	1996-1	82.8	83.4	-
	KR-17	HANBIT-5	PWR	OPR-1000	2825	1054	994	KHNP	DHICKOPC	1997-6	2001-12	2002-5	84.8	85.2	-
KR-18	HANBIT-6	PWR	OPR-1000	2825	1051	993	KHNP	DHICKOPC	1997-11	2002-9	2002-12	88.1	88.4	-	
KR-9	HANUL-1	PWR	France CPl	2785	1009	968	KHNP	FRAM	1983-1	1988-4	1988-9	85.0	85.1	-	
KR-10	HANUL-2	PWR	France CPl	2775	1013	969	KHNP	FRAM	1983-7	1989-4	1989-9	91.3	91.4	-	
KR-13	HANUL-3	PWR	OPR-1000	2825	1050	997	KHNP	DHICKOPC	1993-7	1998-8	1998-8	72.5	72.7	-	
KR-14	HANUL-4	PWR	OPR-1000	2825	1053	999	KHNP	DHICKOPC	1993-11	1998-12	1999-12	55.9	56.0	-	

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DS desalination.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics
	Code	Name			Thermal	Gross								
KOREA, REP. OF	KR-19	HANUL-5	PWR	OPR-1000	2815	1052	KHNP	DHICKOPC	1999-10	2003-12	2004-7	89.4	89.5	-
	KR-20	HANUL-6	PWR	OPR-1000	2825	1050	KHNP	DHICKOPC	2000-9	2005-1	2005-4	90.0	90.1	-
	KR-1	KORI-1	PWR	WH 60	1729	607	KHNP	WH	1977-6	1977-6	1978-4	71.4	71.6	-
	KR-2	KORI-2	PWR	WH F	1882	681	KHNP	WH	1977-12	1983-4	1983-7	80.2	82.1	-
	KR-5	KORI-3	PWR	WH F	2912	1043	KHNP	WH	1979-10	1985-1	1985-9	88.3	88.4	-
	KR-6	KORI-4	PWR	WH F	2912	1044	KHNP	WH	1980-4	1985-12	1986-4	89.1	89.2	-
	KR-21	SHIN-KORI-1	PWR	OPR-1000	2825	1047	KHNP	DHICKOPC	2006-6	2010-8	2011-2	78.4	78.6	-
	KR-22	SHIN-KORI-2	PWR	OPR-1000	2825	1046	KHNP	DHICKOPC	2007-6	2012-1	2012-7	76.7	76.9	-
	KR-25	SHIN-KORI-3	PWR	APR-1400	3983	1455	KHNP	DHICKOPC	2008-10	2016-1	2016-12	-	-	-
	KR-23	SHIN-WOLSONG-1	PWR	OPR-1000	2825	1045	KHNP	DHICKOPC	2007-11	2012-1	2012-7	75.1	75.4	-
	KR-24	SHIN-WOLSONG-2	PWR	OPR-1000	2825	1045	KHNP	DHICKOPC	2008-9	2015-2	2015-7	87.6	87.8	-
	KR-3	WOLSONG-1	PHWR	CANDU 6	2061	685	KHNP	AECL	1977-10	1982-12	1983-4	81.8	86.6	-
	KR-4	WOLSONG-2	PHWR	CANDU 6	2061	671	KHNP	AECL/DHI	1992-9	1997-4	1997-7	86.0	90.7	-
	KR-15	WOLSONG-3	PHWR	CANDU 6	2061	675	KHNP	AECL/DHI	1994-3	1998-3	1998-7	85.7	90.4	-
	KR-16	WOLSONG-4	PHWR	CANDU 6	2061	675	KHNP	AECL/DHI	1994-7	1999-5	1999-10	86.8	89.5	-
	MEXICO	MX-1	LAGUNA VERDE-1	BWR	BWR-5	2317	805	CFE	GE	1976-10	1989-4	1990-7	76.8	77.7
MX-2		LAGUNA VERDE-2	BWR	BWR-5	2317	810	CFE	GE	1977-6	1994-11	1995-4	83.3	84.6	-
NETHERLANDS	NL-2	BORSSELE	PWR	KWU 2LP	1366	515	EPZ	S/KWU	1969-7	1973-7	1973-10	84.0	84.9	-
	PK-2	CHASNUPP-1	PWR	CNP-300	999	325	PAEC	CNNC	1993-8	2006-6	2009-9	83.6	83.8	-
PAKISTAN	PK-3	CHASNUPP-2	PWR	CNP-300	999	325	PAEC	CNNC	2005-12	2011-3	2011-5	82.0	82.1	-
	PK-4	CHASNUPP-3	PWR	CNP-300	999	340	PAEC	CNNC	2011-5	2016-10	-	-	-	-
	PK-1	KANUPP-1	PHWR	CANDU-137	337	100	PAEC	CGE	1966-8	1971-10	1972-12	51.6	51.6	DS
ROMANIA	RO-1	CERNAVODA-1	PHWR	CANDU 6	2180	706	SNN	AECL	1982-7	1996-7	1996-12	91.2	91.7	DH
	RO-2	CERNAVODA-2	PHWR	CANDU 6	2180	705	SNN	AECL	1983-7	2007-8	2007-10	95.0	95.9	DH
RUSSIA	RU-96	BALAKOVO-1	PWR	VVER-V-320	3000	1000	REA	ROSATOM	1980-12	1985-12	1986-5	87.4	87.6	DH, PH

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applies
	Code	Name			Thermal	Gross								
RUSSIA	RU-97	BALAKOVO-2	PWR	VVER V-320	3000	1000	950	REA	1981-8	1987-10	1988-1	85.5	85.8	DH, PH
	RU-98	BALAKOVO-3	PWR	VVER V-320	3000	1000	950	REA	1982-11	1988-12	1989-4	88.2	88.4	DH, PH
	RU-99	BALAKOVO-4	PWR	VVER V-320	3200	1000	950	REA	1984-4	1993-4	1993-12	91.8	92.0	DH, PH
	RU-21	BELOYARSK-3	FBR	BN-600	1470	600	560	REA	1969-1	1980-4	1981-11	81.7	81.8	DH, PH
	RU-116	BELOYARSK-4	FBR	BN-800	2100	885	789	REA	2006-7	2015-12	2016-10	81.2	81.2	-
	RU-141	BILIBINO-1	LWGR	EGP-6	62	12	11	REA	1970-1	1974-1	1974-12	82.8	82.8	DH
	RU-142	BILIBINO-2	LWGR	EGP-6	62	12	11	REA	1970-1	1974-12	1975-2	78.6	78.6	DH
	RU-143	BILIBINO-3	LWGR	EGP-6	62	12	11	REA	1970-1	1975-12	1976-2	83.8	83.8	DH
	RU-144	BILIBINO-4	LWGR	EGP-6	62	12	11	REA	1970-1	1976-12	1977-1	83.7	83.7	DH
	RU-30	KALININ-1	PWR	VVER V-338	3000	1000	950	REA	1977-2	1984-5	1985-6	78.5	78.5	DH, PH
	RU-31	KALININ-2	PWR	VVER V-338	3000	1000	950	REA	1982-2	1986-12	1987-3	85.3	85.3	DH, PH
	RU-36	KALININ-3	PWR	VVER V-320	3200	1000	950	REA	1985-10	2004-12	2005-11	80.2	80.2	PH
	RU-37	KALININ-4	PWR	VVER V-320	3200	1000	950	REA	1986-8	2011-11	2012-12	84.5	84.5	-
	RU-12	KOLA-1	PWR	VVER V-230	1375	440	411	REA	1970-5	1973-6	1973-12	82.6	83.0	DH, PH
	RU-13	KOLA-2	PWR	VVER V-230	1375	440	411	REA	1970-5	1974-12	1975-2	83.7	84.0	DH, PH
	RU-32	KOLA-3	PWR	VVER V-213	1375	440	411	REA	1977-4	1981-3	1982-12	82.0	82.0	DH, PH
	RU-33	KOLA-4	PWR	VVER V-213	1375	440	411	REA	1976-8	1984-10	1984-12	81.9	81.9	DH, PH
	RU-17	KURSK-1	LWGR	RBMK-1000	3200	1000	925	REA	1972-6	1976-12	1977-10	75.1	76.1	DH, PH
	RU-22	KURSK-2	LWGR	RBMK-1000	3200	1000	925	REA	1973-1	1979-1	1979-8	66.4	67.0	DH, PH
	RU-38	KURSK-3	LWGR	RBMK-1000	3200	1000	925	REA	1978-4	1983-10	1984-3	83.9	84.4	DH, PH
	RU-39	KURSK-4	LWGR	RBMK-1000	3200	1000	925	REA	1981-5	1985-12	1986-2	84.6	85.4	DH, PH
	RU-15	LENINGRAD-1	LWGR	RBMK-1000	3200	1000	925	REA	1970-3	1973-12	1974-11	51.9	51.9	DH, PH
	RU-16	LENINGRAD-2	LWGR	RBMK-1000	3200	1000	925	REA	1970-6	1975-7	1976-2	59.5	59.7	DH, PH
	RU-34	LENINGRAD-3	LWGR	RBMK-1000	3200	1000	925	REA	1973-12	1979-12	1980-6	87.9	88.1	DH, PH
	RU-35	LENINGRAD-4	LWGR	RBMK-1000	3200	1000	925	REA	1975-2	1981-8	1981-8	87.0	87.1	DH, PH
	RU-161	NOVOVORONEZH 2-1	PWR	VVER V-392M	3200	1199	1114	REA	2008-6	2016-8	2017-2	86.5	87.5	-
	RU-11	NOVOVORONEZH-4	PWR	VVER V-179	1375	417	385	REA	1967-7	1972-12	1973-3	86.5	87.5	DH, PH
	RU-20	NOVOVORONEZH-5	PWR	VVER V-187	3000	1000	950	REA	1974-3	1980-5	1981-2	80.9	81.0	DH, PH
	RU-59	ROSTOV-1	PWR	VVER V-320	3200	1000	950	REA	1981-9	2001-3	2001-12	89.2	89.3	-
	RU-62	ROSTOV-2	PWR	VVER V-320	3200	1000	950	REA	1983-5	2010-3	2010-12	89.6	89.8	-

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DH district heating, PH process heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applies
	Code	Name			Thermal	Gross								
RUSSIA	RU-63	ROSTOV-3	PWR	VVER V-320	3000	1000	950	ROSTATOM	2009-9	2014-12	2015-9	77.5	78.7	-
	RU-23	SMOLENSK-1	LWGR	RBMK-1000	3200	1000	925	ROSTATOM	1975-10	1982-12	1983-9	83.8	84.0	DH, PH
	RU-24	SMOLENSK-2	LWGR	RBMK-1000	3200	1000	925	ROSTATOM	1976-6	1985-5	1985-7	76.5	76.7	DH, PH
SLOVAKIA	RU-67	SMOLENSK-3	LWGR	RBMK-1000	3200	1000	925	ROSTATOM	1984-5	1990-1	1990-10	85.2	85.2	DH, PH
	SK-13	BOHUNICE-3	PWR	VVER V-213	1471	505	471	SE,plc	1976-12	1984-8	1985-2	88.1	91.2	DH, PH
	SK-14	BOHUNICE-4	PWR	VVER V-213	1471	505	471	SE,plc	1976-12	1985-8	1985-12	88.5	91.4	DH, PH
	SK-6	MOCHOVCE-1	PWR	VVER V-213	1471	470	436	SE,plc	1983-10	1998-7	1998-10	91.9	92.6	-
	SK-7	MOCHOVCE-2	PWR	VVER V-213	1471	470	436	SE,plc	1983-10	1999-12	2000-4	91.6	92.7	-
SLOVENIA	SI-1	KRSKO	PWR	WH 2LP	1994	727	688	NEK	1975-3	1981-10	1983-1	89.4	89.8	-
SOUTH AFRICA	ZA-1	KOEBERG-1	PWR	CP1	2775	970	930	ESKOM	1976-7	1984-4	1984-7	79.7	79.8	-
	ZA-2	KOEBERG-2	PWR	CP1	2775	970	930	ESKOM	1976-7	1985-7	1985-11	85.5	86.4	-
SPAIN	ES-6	ALMARAZ-1	PWR	WH 3LP	2947	1049	1011	CNAT	1973-7	1981-5	1983-9	86.7	87.9	-
	ES-7	ALMARAZ-2	PWR	WH 3LP	2947	1044	1006	CNAT	1973-7	1983-10	1984-7	87.2	88.1	-
	ES-8	ASCO-1	PWR	WH 3LP	2954	1033	995	ANAV	1974-5	1983-8	1984-12	89.0	89.8	-
	ES-9	ASCO-2	PWR	WH 3LP	2941	1035	997	ANAV	1975-3	1985-10	1986-3	86.8	88.0	-
	ES-10	COFRENTES	BWR	BWR-6 (Mark 3)	3237	1102	1064	ID	1975-9	1984-10	1985-3	91.9	92.7	-
	ES-11	TRILLO-1	PWR	PWR 3 loops	3010	1066	1003	CNAT	1979-8	1988-5	1988-8	89.2	90.3	-
	ES-16	VANDELLOS-2	PWR	WH 3LP	2941	1087	1045	ANAV	1980-12	1987-12	1988-3	86.2	87.5	-
	SWEDEN	SE-9	FORSMARK-1	BWR	ABB-III, BWR-2	2928	1022	984	FKA	1973-6	1980-6	1980-12	88.4	89.1
SE-11		FORSMARK-2	BWR	ABB-III, BWR-2	3253	1158	1120	FKA	1975-1	1981-7	1981-7	86.2	86.9	-
SE-14		FORSMARK-3	BWR	ABB-III, BWR-3	3300	1203	1167	FKA	1979-1	1985-3	1985-8	80.3	81.1	-
SE-2		OSKARSHAMN-1	BWR	ABB-I	1375	492	473	OKG	1966-8	1971-8	1972-2	45.9	46.8	-
SE-3		OSKARSHAMN-2	BWR	ABB-II	1900	661	638	OKG	1969-9	1974-10	1975-1	20.7	21.1	-
SE-12		OSKARSHAMN-3	BWR	ABB-III, BWR-3	3900	1450	1400	OKG	1980-5	1985-3	1985-8	76.9	78.5	-
	SE-4	RINGHALS-1	BWR	ABB-I	2540	910	883	RAB	1969-2	1974-10	1976-1	76.1	77.6	-

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DH district heating, PH process heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics
	Code	Name			Thermal	Gross								
SWEDEN	SE-5	RINGHALS-2	PWR	WH 3LP	2652	963	904	RAB	1970-10	1974-8	1975-5	41.1	42.1	-
	SE-7	RINGHALS-3	PWR	WH 3LP	3135	1117	1065	RAB	1972-9	1980-9	1981-9	82.1	84.8	-
	SE-10	RINGHALS-4	PWR	WH 3LP	3300	1171	1106	RAB	1973-11	1982-6	1983-11	83.2	85.6	-
	CH-1	BEZNAU-1	PWR	WH 2LP	1130	380	365	Axpo AG	1965-9	1969-7	1969-12	58.6	58.6	DH
SWITZERLAND	CH-3	BEZNAU-2	PWR	WH 2LP	1130	380	365	Axpo AG	1968-1	1971-10	1972-3	86.4	86.9	DH
	CH-4	GOESGEN	PWR	PWR 3 Loop	3002	1060	1010	KKW	1973-12	1979-2	1979-11	88.1	88.4	PH
	CH-5	LEIBSTADT	BWR	BWR-6	3600	1275	1220	KKL	1974-1	1984-5	1984-12	78.3	79.8	-
	CH-2	MUEHLEBERG	BWR	BWR-4	1097	390	373	BKW	1967-3	1971-7	1972-11	90.6	91.0	-
	GB-18A	DUNGENESS B-1	GCR	AGR	1500	615	525	EDF UK	1965-10	1983-4	1985-4	64.0	64.0	-
GB-18B	DUNGENESS B-2	GCR	AGR	1500	615	525	EDF UK	1965-10	1985-12	1989-4	58.7	59.0	-	
GB-19A	HARTLEPOOL A-1	GCR	AGR	1500	655	595	EDF UK	1968-10	1983-8	1989-4	66.7	66.8	-	
GB-19B	HARTLEPOOL A-2	GCR	AGR	1500	655	585	EDF UK	1968-10	1984-10	1989-4	66.9	66.9	-	
GB-20A	HEYSHAM A-1	GCR	AGR	1500	625	580	EDF UK	1970-12	1983-7	1989-4	52.8	52.9	-	
GB-20B	HEYSHAM A-2	GCR	AGR	1500	625	575	EDF UK	1970-12	1984-10	1989-4	65.2	65.3	-	
GB-22A	HEYSHAM B-1	GCR	AGR	1550	680	615	EDF UK	1980-8	1988-7	1989-4	86.9	86.9	-	
GB-22B	HEYSHAM B-2	GCR	AGR	1550	680	615	EDF UK	1980-8	1988-11	1989-4	88.3	88.3	-	
GB-16A	HINKLEY POINT B-1	GCR	AGR	1494	655	480	EDF UK	1967-9	1976-10	1978-10	85.1	85.1	-	
GB-16B	HINKLEY POINT B-2	GCR	AGR	1494	655	475	EDF UK	1967-9	1976-2	1976-9	89.3	89.3	-	
GB-17A	HUNTERSTON B-1	GCR	AGR	1496	644	480	EDF UK	1967-11	1976-2	1976-2	86.4	86.8	-	
GB-17B	HUNTERSTON B-2	GCR	AGR	1496	644	485	EDF UK	1967-11	1977-3	1977-3	86.6	86.6	-	
GB-24	SIZEWELL B	PWR	SNUPPS	3425	1250	1198	EDF UK	1988-7	1995-2	1995-9	87.6	87.7	-	
GB-23A	TORNES-1	GCR	AGR	1623	682	590	EDF UK	1980-8	1988-5	1988-5	89.4	90.6	-	
GB-23B	TORNES-2	GCR	AGR	1623	682	595	EDF UK	1980-8	1989-2	1989-2	83.5	84.0	-	
UKRAINE	UA-40	KHMELNITSKI-1	PWR	VVER V-320	3000	1000	950	NNEGC	1981-11	1987-12	1988-8	77.5	78.3	DH
	UA-41	KHMELNITSKI-2	PWR	VVER V-320	3000	1000	950	NNEGC	1985-2	2004-8	2005-12	80.8	82.6	DH
	UA-27	ROVNO-1	PWR	VVER V-213	1375	420	381	NNEGC	1973-8	1980-12	1981-9	86.7	87.4	DH
	UA-28	ROVNO-2	PWR	VVER V-213	1375	415	376	NNEGC	1973-10	1981-12	1982-7	83.6	84.1	DH

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DH district heating, PH process heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics	
	Code	Name			Thermal	Gross									Net
UKRAINE	UA-29	ROVNO-3	PWR	VVER V-320	3000	1000	950	PAIP	1980-2	1986-12	1987-5	69.6	71.7	DH	
	UA-69	ROVNO-4	PWR	VVER V-320	3000	1000	950	NNEGC	1986-8	2004-10	2006-4	81.9	84.7	DH	
	UA-44	SOUTH UKRAINE-1	PWR	VVER V-302	3000	1000	950	NNEGC	1986-8	1982-12	1983-12	65.0	69.4	DH	
	UA-45	SOUTH UKRAINE-2	PWR	VVER V-338	3000	1000	950	NNEGC	1976-7	1981-12	1985-4	63.9	68.4	DH	
	UA-48	SOUTH UKRAINE-3	PWR	VVER V-320	3000	1000	950	PAA	1984-11	1989-9	1989-12	66.7	72.6	DH	
	UA-54	ZAPOROZHYE-1	PWR	VVER V-320	3000	1000	950	PAIP	1980-4	1984-12	1985-12	66.1	67.8	DH	
	UA-56	ZAPOROZHYE-2	PWR	VVER V-320	3000	1000	950	PAIP	1981-1	1985-7	1986-2	68.4	70.7	DH	
	UA-78	ZAPOROZHYE-3	PWR	VVER V-320	3000	1000	950	PAIP	1982-4	1986-12	1987-3	81.5	81.5	DH	
	UA-79	ZAPOROZHYE-4	PWR	VVER V-320	3000	1000	950	NNEGC	1983-4	1987-12	1988-4	77.2	79.4	DH	
	UA-126	ZAPOROZHYE-5	PWR	VVER V-320	3000	1000	950	NNEGC	1985-11	1989-8	1989-10	80.3	84.1	DH	
	UA-127	ZAPOROZHYE-6	PWR	VVER V-320	3000	1000	950	PAIP	1986-6	1995-10	1996-9	79.3	81.9	DH	
	USA	US-313	ANO-1	PWR	B&W LLP DRYAM	2568	903	836	ENTERGY	1968-10	1974-8	1974-12	85.8	85.8	-
		US-368	ANO-2	PWR	CE 2LP DRYAMB	3026	1065	993	ENTERGY	1968-12	1978-12	1980-3	88.2	88.2	-
		US-334	BEAVER VALLEY-1	PWR	WH 3LP DRYSUB	2900	959	921	FENOC	1970-6	1976-6	1976-10	91.1	91.1	-
US-412		BEAVER VALLEY-2	PWR	WH 3LP DRYSUB	2900	958	904	FENOC	1974-5	1987-8	1987-11	92.9	92.9	-	
US-456		BRAIDWOOD-1	PWR	WH 4LP DRYAMB	3645	1270	1194	EXELON	1975-8	1987-7	1988-7	94.3	94.3	-	
US-457		BRAIDWOOD-2	PWR	WH 4LP DRYAMB	3645	1230	1160	EXELON	1975-8	1988-5	1988-10	96.1	96.1	-	
US-259		BROWNS FERRY-1	BWR	BWR-4 (Mark 1)	3458	1155	1101	TVA	1967-5	1973-10	1974-8	92.6	92.6	-	
US-260		BROWNS FERRY-2	BWR	BWR-4 (Mark 1)	3458	1155	1104	TVA	1967-5	1974-8	1975-3	94.7	94.7	-	
US-296		BROWNS FERRY-3	BWR	BWR-4 (Mark 1)	3458	1155	1105	GE	1968-7	1976-9	1977-3	92.3	92.3	-	
US-325		BRUNSWICK-1	BWR	BWR-4 (Mark 1)	2923	990	938	PROGRESS	1970-2	1976-12	1977-2	90.4	90.4	-	
US-324		BRUNSWICK-2	BWR	BWR-4 (Mark 1)	2923	990	920	PROGRESS	1970-2	1975-4	1975-11	93.4	93.4	-	
US-454		BYRON-1	PWR	WH 4LP DRYAMB	3645	1242	1164	EXELON	1975-4	1985-3	1985-9	96.2	96.2	-	
US-455		BYRON-2	PWR	WH 4LP DRYAMB	3645	1210	1136	EXELON	1975-4	1987-2	1987-8	95.1	95.1	-	
US-483		CALLAWAY-1	PWR	WH 4LP DRYAMB	3565	1275	1215	AmerenUE	1975-9	1984-10	1984-12	91.1	91.1	-	
US-317	CALVERT CLIFFS-1	PWR	CE 2LP DRYAMB	2737	918	866	CCNPP	1968-6	1975-1	1975-5	92.2	92.3	-		
US-318	CALVERT CLIFFS-2	PWR	CE 2LP DRYAMB	2737	911	850	EXELON	1968-6	1976-12	1977-4	93.4	93.4	-		
US-413	CATAWBA-1	PWR	WH 4LP ICECND	3411	1188	1146	DUKEENER	1974-5	1985-1	1985-6	95.1	95.1	-		
US-414	CATAWBA-2	PWR	WH 4LP ICECND	3411	1188	1146	DUKEENER	1974-5	1986-5	1986-8	92.5	92.5	-		

Note: The column "Non-electrical applications" indicates the use of the facility to provide: DH district heating.

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics
	Code	Name			Thermal	Gross								
USA	US-481	CLINTON-1	BWR	BWR-6 (Mark 3)	3473	1098	1065	EXELON GE	1975-10	1987-4	1987-11	95.7	95.7	-
	US-397	COLUMBIA	BWR	BWR-5 (Mark 2)	3486	1190	1107	ENERGYNW GE	1972-8	1984-5	1984-12	93.7	94.1	-
	US-445	COMANCHE PEAK-1	PWR	WH 4LP DRYAMB	3612	1259	1218	LUMINANT WH	1974-12	1980-4	1990-8	93.4	93.4	-
	US-446	COMANCHE PEAK-2	PWR	WH 4LP DRYAMB	3612	1250	1207	LUMINANT WH	1974-12	1993-4	1993-8	94.4	94.4	-
	US-315	COOK-1	PWR	WH 4LP ICECDN	3304	1100	1045	AEP WH	1969-3	1978-3	1978-8	90.2	90.2	-
	US-316	COOK-2	PWR	WH 4LP ICECDN	3468	1151	1107	AEP WH	1969-3	1978-3	1978-7	87.8	87.8	-
	US-298	COOPER	BWR	BWR-4 (Mark 1)	2419	801	768	ENTERGY GE	1968-6	1974-5	1974-7	92.4	92.4	-
	US-346	DAVIS BESSE-1	PWR	B&W RLP DRYAMB	2817	925	894	FENOC B&W	1970-9	1977-8	1978-7	88.4	88.4	-
	US-275	DIABLO CANYON-1	PWR	WH 4LP DRYAMB	3411	1197	1138	PG&E WH	1968-4	1984-11	1985-5	92.0	92.0	-
	US-323	DIABLO CANYON-2	PWR	WH 4LP DRYAMB	3411	1197	1118	PG&E WH	1970-12	1985-10	1986-3	92.6	92.8	-
	US-237	DRESDEN-2	BWR	BWR-3 (Mark 1)	2957	950	894	EXELON GE	1966-1	1970-4	1970-6	96.0	96.0	-
	US-249	DRESDEN-3	BWR	BWR-3 (Mark 1)	2957	935	879	EXELON GE	1966-10	1971-1	1971-11	96.2	96.2	-
	US-331	DUANE ARNOLD-1	BWR	BWR-4 (Mark 1)	1912	624	601	NEXTERA GE	1970-6	1974-5	1975-2	92.3	92.3	-
	US-348	FARLEY-1	PWR	WH 3LP DRYAMB	2775	918	874	SOUTHERN WH	1970-10	1977-8	1977-12	91.3	91.3	-
	US-364	FARLEY-2	PWR	WH 3LP DRYAMB	2775	928	883	SOUTHERN WH	1970-10	1981-5	1981-7	94.0	94.0	-
	US-341	FERMI-2	BWR	BWR-4 (Mark 1)	3486	1198	1122	DTEDESIGN GE	1972-9	1986-9	1988-1	82.2	82.2	-
	US-333	FITZPATRICK	BWR	BWR-4 (Mark 1)	2536	849	813	ENTERGY GE	1968-9	1975-2	1975-7	93.0	93.4	-
	US-244	GINNA	PWR	WH 2LP DRYAMB	1775	608	580	EXELON WH	1966-4	1969-12	1970-7	95.7	95.7	-
	US-416	GRAND GULF-1	BWR	BWR-6 (Mark 3)	4408	1500	1419	ENTERGY GE	1974-5	1984-10	1985-7	79.1	79.1	-
	US-400	HARRIS-1	PWR	WH 3LP DRYAMB	2900	960	928	PROGRESS WH	1978-1	1987-5	1987-5	89.4	89.4	-
	US-321	HATCH-1	BWR	BWR-4 (Mark 1)	2804	911	876	SOUTHERN GE	1968-9	1974-11	1975-12	93.0	93.0	-
	US-366	HATCH-2	BWR	BWR-4 (Mark 1)	2804	921	883	SOUTHERN GE	1972-2	1978-9	1979-9	95.2	95.2	-
	US-354	HOPE CREEK-1	BWR	BWR-4 (Mark 1)	3840	1240	1172	PSEG GE	1976-3	1986-8	1986-12	92.4	92.4	-
	US-247	INDIAN POINT-2	PWR	WH 4LP DRYAMB	3216	1067	1020	ENTERGY WH	1966-10	1973-6	1974-8	90.4	90.4	-
	US-286	INDIAN POINT-3	PWR	WH 4LP DRYAMB	3216	1085	1040	ENTERGY WH	1968-11	1976-4	1976-8	94.8	95.0	-
	US-373	LASALLE-1	BWR	BWR-5 (Mark 2)	3546	1207	1137	EXELON GE	1973-9	1982-9	1984-1	95.5	95.5	-
	US-374	LASALLE-2	BWR	BWR-5 (Mark 2)	3546	1207	1140	EXELON GE	1973-9	1984-4	1984-10	95.5	95.5	-
	US-352	LIMERICK-1	BWR	BWR-4 (Mark 2)	3515	1194	1130	EXELON GE	1974-6	1985-4	1986-2	93.9	93.9	-
	US-353	LIMERICK-2	BWR	BWR-4 (Mark 2)	3515	1194	1134	EXELON GE	1974-6	1989-9	1990-1	95.5	95.5	-
	US-369	MCGUIRE-1	PWR	WH 4LP ICECDN	3411	1215	1160	DUKEENER WH	1971-4	1981-9	1981-12	92.1	92.1	-

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics	
	Code	Name			Thermal	Gross									Net
USA	US-370	MCGUIRE-2	PWR	WH 4LP ICE/CD	3411	1215	1158	DUKEENER	WH	1971-4	1983-5	1984-3	92.4	92.4	-
	US-336	MILLSTONE-2	PWR	CE 2LP DRYAMB	2700	918	869	DOMINION	CE	1969-11	1975-11	1975-12	91.8	91.8	-
	US-423	MILLSTONE-3	PWR	WH 4LP DRYSUB	3650	1280	1229	DOMINION	WH	1974-8	1986-2	1986-4	93.0	93.0	-
	US-263	MONTICELLO	BWR	BWR-3 (Mark 1)	2004	691	647	NSP	GE	1967-6	1971-6	1971-6	88.1	88.1	-
	US-220	NINE MILE POINT-1	BWR	BWR-2 (Mark 1)	1850	642	613	EXELON	GE	1965-4	1969-11	1969-12	94.4	94.4	-
	US-410	NINE MILE POINT-2	BWR	BWR-5 (Mark 2)	3988	1320	1277	EXELON	GE	1975-8	1987-8	1988-3	91.7	91.7	-
	US-338	NORTH ANNA-1	PWR	WH 3LP DRYSUB	2940	990	948	DOMINION	WH	1971-2	1978-4	1978-6	91.4	91.4	-
	US-339	NORTH ANNA-2	PWR	WH 3LP DRYSUB	2940	1011	943	DOMINION	WH	1971-2	1980-8	1980-12	92.6	92.6	-
	US-269	OCONEE-1	PWR	B&W LLP DRYAM	2568	891	846	DUKEENER	B&W	1967-11	1973-5	1973-7	92.3	92.3	-
	US-270	OCONEE-2	PWR	B&W LLP DRYAM	2568	891	848	DUKEENER	B&W	1967-11	1973-12	1974-9	95.3	95.3	-
	US-287	OCONEE-3	PWR	B&W LLP DRYAM	2568	900	859	DUKEENER	B&W	1967-11	1974-9	1974-12	93.8	93.8	-
	US-219	OYSTER CREEK	BWR	BWR-2 (Mark 1)	1930	652	619	EXELON	GE	1964-12	1969-9	1969-12	91.2	91.2	-
	US-255	PALISADES	PWR	CE 2LP DRYAMB	2565	850	805	ENTERGY	CE	1967-3	1971-12	1971-12	87.4	87.4	-
	US-528	PALO VERDE-1	PWR	CE80 2LP DRYA	3990	1414	1311	APS	CE	1976-5	1985-6	1986-1	94.2	94.2	-
	US-529	PALO VERDE-2	PWR	CE80 2LP DRYA	3990	1414	1314	APS	CE	1976-6	1986-5	1986-9	93.5	93.5	-
	US-530	PALO VERDE-3	PWR	CE80 2LP DRYA	3990	1414	1312	APS	CE	1976-6	1987-11	1988-1	91.5	91.5	-
	US-277	PEACH BOTTOM-2	BWR	BWR-4 (Mark 1)	3951	1412	1308	EXELON	GE	1968-1	1974-2	1974-7	94.3	94.3	-
	US-278	PEACH BOTTOM-3	BWR	BWR-4 (Mark 1)	3951	1412	1309	EXELON	GE	1968-1	1974-9	1974-12	95.9	95.9	-
	US-440	PERRY-1	BWR	BWR-6 (Mark 3)	3758	1303	1256	FENOC	GE	1964-10	1987-11	1987-11	91.6	91.6	-
	US-293	PILGRIM-1	BWR	BWR-3 (Mark 1)	2028	711	677	ENTERGY	GE	1968-8	1972-7	1972-12	91.7	92.7	-
	US-286	POINT BEACH-1	PWR	WH 2LP DRYAMB	1800	640	591	NEXTERA	WH	1967-7	1970-11	1970-12	94.7	94.7	-
	US-301	POINT BEACH-2	PWR	WH 2LP DRYAMB	1800	640	591	NEXTERA	WH	1968-7	1972-8	1972-10	94.7	94.7	-
	US-282	PRAIRIE ISLAND-1	PWR	WH 2LP DRYAMB	1677	566	522	NSP	WH	1968-6	1973-12	1973-12	87.6	87.6	-
	US-306	PRAIRIE ISLAND-2	PWR	WH 2LP DRYAMB	1677	560	518	NSP	WH	1969-6	1974-12	1974-12	80.6	80.6	-
	US-254	QUAD CITIES-1	BWR	BWR-3 (Mark 1)	2957	940	908	EXELON	GE	1967-2	1972-4	1973-2	97.1	97.1	-
	US-285	QUAD CITIES-2	BWR	BWR-3 (Mark 1)	2957	940	911	EXELON	GE	1967-2	1972-5	1973-3	95.1	95.1	-
	US-458	RIVER BEND-1	BWR	BWR-6 (Mark 3)	3091	1016	967	ENTERGY	GE	1977-3	1985-12	1986-6	90.4	90.4	-
	US-261	ROBINSON-2	PWR	WH 3LP DRYAMB	2339	780	741	PROGRESS	WH	1967-4	1970-9	1971-3	87.7	87.7	-
	US-272	SALEM-1	PWR	WH 4LP DRYAMB	3459	1254	1169	PSEG	WH	1968-9	1976-12	1977-6	88.1	88.1	-
	US-311	SALEM-2	PWR	WH 4LP DRYAMB	3459	1200	1158	PSEG	WH	1968-9	1981-6	1981-10	87.7	87.7	-

TABLE 14. OPERATIONAL REACTORS, 31 DEC. 2016 — continued

Country	Reactor		Type	Model	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2012-2016	UCF % 2012-2016	Non-electrical applics	
	Code	Name			Thermal	Gross									Net
USA	US-443	SEABROOK-1	PWR	WH 4LP DRYAMB	3648	1296	1246	NEXTERA	1976-7	1990-5	1990-8	93.5	93.5	-	
	US-327	SEQUOYAH-1	PWR	WH 4LP ICECND	3455	1221	1152	TVA	1970-5	1980-7	1981-7	87.8	87.8	-	
	US-328	SEQUOYAH-2	PWR	WH 4LP ICECND	3455	1200	1125	TVA	1970-5	1981-12	1982-6	90.4	90.4	-	
	US-498	SOUTH TEXAS-1	PWR	WH 4LP DRYAMB	3853	1354	1280	STP	1975-12	1988-3	1988-8	88.4	88.4	-	
	US-499	SOUTH TEXAS-2	PWR	WH 4LP DRYAMB	3853	1354	1280	STP	1975-12	1989-4	1989-6	82.0	82.0	-	
	US-335	ST. LUCIE-1	PWR	CE 2LP DRYAMB	3020	1045	982	FPL	1970-7	1976-5	1976-12	84.4	84.4	-	
	US-389	ST. LUCIE-2	PWR	CE 2LP DRYAMB	3020	1050	987	CE	1977-6	1983-6	1983-8	86.5	87.1	-	
	US-395	SUMMER-1	PWR	WH 3LP DRYAMB	2900	1006	971	SCE&G	1973-3	1982-11	1984-1	89.2	89.2	-	
	US-280	SURRY-1	PWR	WH 3LP DRYSUB	2587	890	838	DOMINION	1968-6	1972-7	1972-12	90.7	90.7	-	
	US-281	SURRY-2	PWR	WH 3LP DRYSUB	2587	890	838	DOMINION	1968-6	1973-3	1973-5	92.6	92.6	-	
	US-387	SUSQUEHANNA-1	BWR	BWR-4 (Mark 1)	3952	1330	1257	PPL SUSQ	1973-11	1982-11	1983-6	84.7	84.7	-	
	US-388	SUSQUEHANNA-2	BWR	BWR-4 (Mark 2)	3952	1330	1257	PPL SUSQ	1973-11	1984-7	1985-2	88.6	88.6	-	
	US-289	THREE MILE ISLAND-1	PWR	B&W LLP DRYAM	2568	880	819	B&W	1968-5	1974-6	1974-9	95.3	95.3	-	
	US-250	TURKEY POINT-3	PWR	WH 3LP DRYAMB	2644	829	802	FPL	1967-4	1972-11	1972-12	83.4	83.4	-	
	US-251	TURKEY POINT-4	PWR	WH 3LP DRYAMB	2644	829	802	FPL	1967-4	1973-6	1973-9	87.6	87.6	-	
	US-424	VOGTLE-1	PWR	WH 4LP DRYAMB	3626	1229	1150	SOUTHERN	1976-8	1987-6	1987-6	94.0	94.0	-	
	US-425	VOGTLE-2	PWR	WH 4LP DRYAMB	3626	1229	1152	SOUTHERN	1976-8	1989-4	1989-5	94.5	94.5	-	
	US-382	WATERFORD-3	PWR	CE 2LP DRYAMB	3716	1250	1168	ENERGY	1974-11	1985-3	1985-9	88.8	89.1	-	
	US-390	WATTS BAR-1	PWR	WH 4LP ICECND	3459	1210	1123	TVA	1973-7	1986-2	1986-5	92.0	92.0	-	
	US-391	WATTS BAR-2	PWR	WH 4LP ICECND	3411	1218	1165	TVA	1973-9	2016-6	2016-10	100.0	100.0	-	
	US-482	WOLF CREEK	PWR	WH 4LP DRYAMB	3565	1285	1200	WGNOC	1977-5	1985-6	1985-9	78.6	78.6	-	
	TAIWAN, CN	TW-1	CHINSHAN-1	BWR	BWR-4 (Mark 1)	1840	636	604	TPC	1972-6	1978-11	1978-12	86.0	86.1	-
	TAIWAN, CN	TW-2	CHINSHAN-2	BWR	BWR-4 (Mark 1)	1840	636	604	TPC	1973-12	1978-12	1979-7	92.1	92.4	-
	TAIWAN, CN	TW-3	KUOSHENG-1	BWR	BWR-6	2894	1020	985	TPC	1975-11	1981-5	1981-12	87.2	88.2	-
	TAIWAN, CN	TW-4	KUOSHENG-2	BWR	BWR-6	2894	1020	985	TPC	1976-3	1982-6	1982-6	91.4	91.9	-
	TAIWAN, CN	TW-5	MAANSHAN-1	PWR	WH 3LP WE 312	2822	951	936	TPC	1978-8	1984-5	1984-7	89.6	89.9	-
	TAIWAN, CN	TW-6	MAANSHAN-2	PWR	WH 3LP WE 312	2822	951	938	TPC	1979-2	1985-2	1985-5	89.1	89.4	-

Note: Status as of 31 December 2016. 448 reactors (391116 MW) were connected to the grid, including 6 units (5052 MW) in Taiwan, China.

TABLE 15. REACTORS IN LONG TERM SHUT DOWN , 31 DEC. 2016

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Long term shutdown date
	Code	Name			Thermal	Gross	Net						
JAPAN	JP-31	MONJU	FBR	-	714	280	246	JAEA	T/H/F/M	1986-5	1995-8	—	1995-12
SPAIN	ES-2	SANTA MARIA DE GARONA	BWR	BWR-3	1381	466	446	NUCLENOR	GE	1966-9	1971-3	1971-5	2013-7

Note: Status as of 31 December 2016, 2 reactors (692 MW) were in long term shutdown.

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2016

Country	Reactor		Type	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down
	Code	Name		Thermal	Gross	Net						
ARMENIA	AM-18	ARMENIAN-1	PWR	1375	408	376	ANPPC/JSC	FAEA	1969-7	1976-12	1977-10	1989-2
BELGIUM	BE-1	BR-3	PWR	41	12	10	CEN/SCK	WH	1957-11	1962-10	1962-10	1987-6
BULGARIA	BG-1	KOZLODUY-1	PWR	1375	440	408	KOZNP	AE	1970-4	1974-7	1974-10	2002-12
	BG-2	KOZLODUY-2	PWR	1375	440	408	KOZNP	AE	1970-4	1975-8	1975-11	2002-12
	BG-3	KOZLODUY-3	PWR	1375	440	408	KOZNP	AE	1973-10	1980-12	1981-1	2006-12
	BG-4	KOZLODUY-4	PWR	1375	440	408	KOZNP	AE	1973-10	1982-5	1982-6	2006-12
CANADA	CA-2	DOUGLAS POINT	PHWR	704	218	206	OH	AECL	1960-2	1967-1	1968-9	1984-5
	CA-3	GENTILLY-1	H2LWR	792	266	250	HQ	AECL	1966-9	1971-4	1972-5	1977-6
	CA-12	GENTILLY-2	PHWR	2156	675	635	HQ	AECL	1974-4	1982-12	1983-10	2012-12
	CA-5	PICKERING-2	PHWR	1744	542	515	OPG	OH/AECL	1966-9	1971-10	1971-12	2007-5
	CA-6	PICKERING-3	PHWR	1744	542	515	OPG	OH/AECL	1967-12	1972-5	1972-6	2008-10
	CA-1	ROLPHTON NPD	PHWR	92	25	22	OH	CGE	1958-1	1962-6	1962-10	1987-8
FRANCE	FR-9	BUGEY-1	GCR	1954	555	540	EDF	FRAM	1965-12	1972-4	1972-7	1994-5
	FR-2	CHINON A-1	GCR	300	80	70	EDF	LEVIVIER	1957-2	1963-6	1964-2	1973-4
	FR-3	CHINON A-2	GCR	800	230	180	EDF	LEVIVIER	1959-8	1965-2	1965-2	1985-6
	FR-4	CHINON A-3	GCR	1170	480	360	EDF	GTM	1961-3	1968-8	1968-8	1990-6
	FR-5	CHOOZA (ARDENNES)	PWR	1040	320	305	SENA	A/F/W	1967-4	1967-4	1967-4	1991-10
	FR-6	EL-4 (MONTS D'ARREE)	H2GCR	250	75	70	EDF	GAA	1962-7	1967-7	1968-6	1985-7
	FR-1B	G-2 (MARCOULE)	GCR	260	43	39	COGEMA	SACM	1955-3	1959-4	1959-4	1980-2
	FR-1	G-3 (MARCOULE)	GCR	260	43	40	COGEMA	SACM	1956-3	1960-4	1960-4	1984-6
	FR-10	PHENIX	FBR	345	142	130	CEA/EDF	CNCLNEY	1968-11	1973-12	1974-7	2010-2
	FR-7	ST. LAURENT A-1	GCR	1650	500	390	EDF	FRAM	1963-10	1969-3	1969-6	1990-4
	FR-8	ST. LAURENT A-2	GCR	1475	530	465	EDF	FRAM	1966-1	1971-8	1971-11	1992-5
	FR-24	SUPER-PHENIX	FBR	3000	1242	1200	EDF	ASPALDO	1976-12	1986-1	1986-12	1998-12
GERMANY	DE-4	AVR JUELICH	HTGR	46	15	13	AVR	BBK	1961-8	1967-12	1969-5	1988-12
	DE-12	BIBLIS-A	PWR	3517	1225	1167	RWE	KWU	1970-1	1974-8	1975-2	2011-8

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2016 — continued

Country	Reactor		Type	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down
	Code	Name		Thermal	Gross						
GERMANY	DE-18	BIBLIS-B	PWR	3733	1300	1240	RWE	1972-2	1976-4	1977-1	2011-8
	DE-13	BRUNSBUETTEL	BWR	2292	806	771	KKB	1970-4	1976-7	1977-2	2011-8
	DE-23	GRAFENRHEINFELD	PWR	3765	1345	1275	E.ON	1975-1	1981-12	1982-6	2015-6
	DE-502	GREIFSWALD-1	PWR	1375	440	408	EWN	1970-3	1973-12	1974-7	1990-2
	DE-503	GREIFSWALD-2	PWR	1375	440	408	EWN	1970-3	1974-12	1975-4	1990-2
	DE-504	GREIFSWALD-3	PWR	1375	440	408	AIEE	1972-4	1977-10	1978-5	1990-2
	DE-505	GREIFSWALD-4	PWR	1375	440	408	AIEE	1972-4	1979-9	1979-11	1990-2
	DE-506	GREIFSWALD-5	PWR	1375	440	408	EWN	1976-12	1989-4	1989-11	1989-11
	DE-3	GUNDREMMINGEN-A	BWR	801	250	237	KGB	1962-12	1966-12	1967-4	1977-1
	DE-7	HDR GROSSWELZHEIM	BWR	100	27	25	HDR	1965-1	1967-10	1970-8	1971-4
	DE-16	ISAR-1	BWR	2575	912	878	E.ON	1972-5	1977-12	1979-3	2011-8
	DE-8	KNK II	FBR	58	21	17	KBG	1974-9	1978-4	1979-3	1991-8
	DE-20	KRUEMMEL	BWR	3690	1402	1346	KKK	1974-4	1983-9	1984-3	2011-8
	DE-6	LINGEN	BWR	520	288	183	KWL	1964-10	1968-7	1968-10	1977-1
	DE-22	MUELHEIM-KAERLICH	PWR	3760	1302	1219	KBG	1975-1	1986-3	1987-8	1988-9
	DE-2	MZFR	PHWR	200	57	52	KBG	1961-12	1966-3	1966-12	1984-5
	DE-15	NECKARWESTHEIM-1	PWR	2497	840	785	ENKK	1972-2	1976-6	1976-12	2011-8
	DE-11	NIEDERAICHBACH	HWGCR	321	106	100	KKN	1966-6	1973-1	1973-1	1974-7
	DE-5	OBRIGHEIM	PWR	1050	357	340	EnBW	1965-3	1968-10	1969-3	2005-5
	DE-14	PHILIPPSBURG-1	BWR	2575	926	890	ENKK	1970-10	1979-5	1980-3	2011-8
	DE-501	RHEINBERG	PWR	265	70	62	EWN	1960-1	1966-5	1966-10	1990-6
	DE-10	STADE	PWR	1900	672	640	E.ON	1967-12	1972-1	1972-5	2003-11
	DE-19	THTR-300	HTGR	760	308	296	HKG	1971-5	1985-11	1987-6	1988-9
	DE-17	UNTERWESER	PWR	3900	1410	1345	E.ON	1972-7	1978-9	1979-9	2011-8
	DE-1	VAK KAHL	BWR	60	16	15	VAK	1958-7	1961-6	1962-2	1985-11
	DE-9	WUERGASSEN	BWR	1912	670	640	PE	1968-1	1971-12	1975-11	1994-8
ITALY	IT-4	CAORSO	BWR	2651	882	860	SOGIN	1970-1	1978-5	1981-12	1990-7
	IT-3	ENRICO FERMI	PWR	870	270	260	SOGIN	1961-7	1964-10	1965-1	1990-7
	IT-2	GARIGLIANO	BWR	506	160	150	SOGIN	1959-11	1964-1	1964-6	1982-3
	IT-1	LATINA	GCR	660	160	153	SOGIN	1958-11	1963-5	1964-1	1987-12
JAPAN	JP-20	FUGEN ATR	557	165	148	JAEA	1972-5	1978-7	1979-3	2003-3	

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2016 — continued

Country	Reactor		Type	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down	
	Code	Name		Thermal	Gross	Net							
JAPAN	JP -5	FUKUSHIMA-DAIICHI-1	BWR	1380	460	439	TEPCO	GE/GETSC	1967-7	1970-11	1971-3	2011-5	
	JP -9	FUKUSHIMA-DAIICHI-2	BWR	2381	784	760	TEPCO	GE	1969-6	1973-12	1974-7	2011-5	
	JP -10	FUKUSHIMA-DAIICHI-3	BWR	2381	784	760	TEPCO	TOSHIBA	1970-12	1974-10	1976-3	2011-5	
	JP -16	FUKUSHIMA-DAIICHI-4	BWR	2381	784	760	TEPCO	HITACHI	1973-2	1978-2	1978-10	2011-5	
	JP -17	FUKUSHIMA-DAIICHI-5	BWR	2381	784	760	TEPCO	TOSHIBA	1972-5	1977-9	1978-4	2013-12	
	JP -18	FUKUSHIMA-DAIICHI-6	BWR	3293	1100	1067	TEPCO	GE	1973-10	1979-5	1979-10	2013-12	
	JP -12	GENKAI-1	PWR	1650	559	529	KYUSHU	MHI	1971-9	1975-2	1975-10	2015-4	
	JP -11	HAMAOKA-1	BWR	1593	540	515	CHUBU	TOSHIBA	1971-6	1974-8	1976-3	2009-1	
	JP -24	HAMAOKA-2	BWR	2436	840	806	CHUBU	TOSHIBA	1974-6	1978-5	1978-11	2009-1	
	JP -23	IKATA-1	PWR	1650	566	538	SHIKOKU	MHI	1973-9	1977-2	1977-9	2016-5	
	JP -1	JPDR	BWR	90	13	12	JAEA	GE	1960-12	1963-10	1965-3	1976-3	
	JP -4	MIHAMA-1	PWR	1031	340	320	KEPCO	WH	1967-2	1970-8	1970-11	2015-4	
	JP -6	MIHAMA-2	PWR	1456	500	470	KEPCO	MHI	1968-5	1972-4	1972-7	2015-4	
	JP -7	SHIMANE-1	BWR	1380	460	439	CHUGOKU	HITACHI	1970-7	1973-12	1974-3	2015-4	
	JP -2	TOKAI-1	GCR	587	166	137	JAPCO	GEC	1961-3	1965-11	1966-7	1998-3	
	JP -3	TSURUGA-1	BWR	1070	357	340	JAPCO	GE	1966-11	1969-11	1970-3	2015-4	
	KAZAKHSTAN	KZ -10	AKTAU	FBR	1000	90	52	MAEC-KAZ	MAEC-KAZ	1964-10	1973-7	1973-7	1999-4
	LITHUANIA	LT -46	IGNALINA-1	LWGR	4800	1300	1185	INPP	MAEP	1977-5	1983-12	1985-5	2004-12
		LT -47	IGNALINA-2	LWGR	4800	1300	1185	INPP	MAEP	1978-1	1987-8	1987-12	2009-12
NETHERLANDS	NL -1	DODEWAARD	BWR	183	60	55	BV GKN	RDM	1965-5	1968-10	1969-3	1997-3	
RUSSIA	RU -1	APS-1 OBNINSK	LWGR	30	6	5	MSM	MSM	1951-1	1954-6	1954-12	2002-4	
	RU -3	BELOYARSK-1	LWGR	286	108	102	REA	MSM	1958-6	1964-4	1964-4	1983-1	
	RU -6	BELOYARSK-2	LWGR	530	160	146	REA	MSM	1962-1	1967-12	1969-12	1990-1	
	RU -4	NOVOVORONEZH-1	PWR	1320	210	197	REA	MSM	1957-7	1964-9	1964-12	1988-2	
	RU -8	NOVOVORONEZH-2	PWR	1320	365	336	REA	MSM	1964-6	1969-12	1970-4	1990-8	
	RU -9	NOVOVORONEZH-3	PWR	1375	417	385	REA	ROSATOM	1967-7	1971-12	1972-6	2016-12	
SLOVAKIA	SK -1	BOHUNICE A1	HWGCR	560	143	93	JAVYS	SKODA	1958-8	1972-12	1972-12	1977-2	

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2016 — continued

Country	Reactor		Type	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down
	Code	Name		Thermal	Gross						
SLOVAKIA	SK-2	BOHUNICE-1	PWR	1375	440	408	AEE	1972-4	1978-12	1980-4	2006-12
	SK-3	BOHUNICE-2	PWR	1375	440	408	AEE	1972-4	1980-3	1981-1	2008-12
	ES-1	JOSE CABRERA-1	PWR	510	150	141	WH	1964-6	1968-7	1969-8	2006-4
SPAIN	ES-3	VANDELLOS-1	GCR	1670	500	480	HIFRENSA CEA	1968-6	1972-5	1972-8	1990-7
	SE-1	AGESTA	PHWR	80	12	10	SVAFO ABBATOM	1957-12	1964-5	1964-5	1974-6
	SE-6	BARSEBACK-1	BWR	1800	615	600	BKAB ASEASTAL	1971-2	1975-5	1975-7	1999-11
SWEDEN	SE-8	BARSEBACK-2	BWR	1800	615	600	BKAB ABBATOM	1973-1	1977-3	1977-7	2005-5
	CH-8	LUCENS	HWGCR	28	7	6	EOS NGA	1962-4	1968-1	NA	1969-1
	GB-3A	BERKELEY-1	GCR	620	166	138	ML TNP	1957-1	1962-6	1962-6	1989-3
UK	GB-3B	BERKELEY-2	GCR	620	166	138	ML TNP	1957-1	1962-6	1962-6	1988-10
	GB-4A	BRADWELL-1	GCR	481	146	123	ML TNP	1957-1	1962-7	1962-7	2002-3
	GB-4B	BRADWELL-2	GCR	481	146	123	ML TNP	1957-1	1962-7	1962-7	2002-3
	GB-1A	CALDER HALL-1	GCR	268	60	49	SL UKAEA	1953-8	1956-8	1956-10	2003-3
	GB-1B	CALDER HALL-2	GCR	268	60	49	SL UKAEA	1953-8	1957-2	1957-2	2003-3
	GB-1C	CALDER HALL-3	GCR	268	60	49	SL UKAEA	1953-8	1958-3	1958-5	2003-3
	GB-1D	CALDER HALL-4	GCR	268	60	49	SL UKAEA	1953-8	1959-4	1959-4	2003-3
	GB-2A	CHAPELCROSS-1	GCR	260	60	48	ML UKAEA	1955-10	1959-2	1959-3	2004-6
	GB-2B	CHAPELCROSS-2	GCR	260	60	48	ML UKAEA	1955-10	1959-2	1959-8	2004-6
	GB-2C	CHAPELCROSS-3	GCR	260	60	48	ML UKAEA	1955-10	1959-11	1959-12	2004-6
	GB-2D	CHAPELCROSS-4	GCR	260	60	48	ML UKAEA	1955-10	1960-1	1960-3	2004-6
	GB-14	DOUNREAY DFR	FBR	60	15	11	UKAEA UKAEA	1955-3	1962-10	1962-10	1977-3
	GB-15	DOUNREAY PFR	FBR	600	250	234	TNP UKAEA	1966-1	1975-1	1976-7	1994-3
	GB-9A	DUNGENESS A-1	GCR	840	230	225	ML TNP	1960-7	1965-9	1965-10	2006-12
	GB-9B	DUNGENESS A-2	GCR	840	230	225	ML TNP	1960-7	1965-11	1965-12	2006-12
	GB-7A	HINKLEY POINT A-1	GCR	900	267	235	ML EE/B&W/T	1957-11	1965-2	1965-3	2000-5
	GB-7B	HINKLEY POINT A-2	GCR	900	267	235	ML EE/B&W/T	1957-11	1965-2	1965-5	2000-5
	GB-6A	HUNTERSTON A-1	GCR	595	173	150	ML GEC	1957-10	1964-2	1964-2	1990-3
	GB-6B	HUNTERSTON A-2	GCR	595	173	150	ML GEC	1957-10	1964-6	1964-7	1989-12

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2016 — continued

Country	Reactor		Type	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down	
	Code	Name		Thermal	Gross							Net
UK	GB-11A	OLDBURY A-1	GCR	730	230	217	TNPG	1962-5	1967-11	1968-12	2012-2	
	GB-11B	OLDBURY A-2	GCR	660	230	217	TNPG	1962-5	1968-4	1968-9	2011-6	
	GB-10A	SIZEWELL A-1	GCR	1010	245	210	EE/B&W/T	1961-4	1966-4	1966-3	2006-12	
	GB-10B	SIZEWELL A-2	GCR	1010	245	210	EE/B&W/T	1961-4	1966-4	1966-9	2006-12	
	GB-8A	TRAWSFYNYDD-1	GCR	850	235	195	APC	1959-7	1965-1	1965-3	1991-2	
	GB-8B	TRAWSFYNYDD-2	GCR	850	235	195	APC	1959-7	1965-2	1965-3	1991-2	
	GB-5	WINDSCALE AGR	GCR	318	36	24	UKAEA	1958-11	1963-2	1963-3	1981-4	
	GB-12	WINDFRITH SGHWR	SGHWR	120	100	92	UKAEA	1963-5	1967-12	1968-1	1990-9	
	GB-13A	WYLFA-1	GCR	1650	530	490	EE/B&W/T	1963-9	1971-1	1971-11	2015-12	
	GB-13B	WYLFA-2	GCR	1920	540	490	EE/B&W/T	1963-9	1971-7	1972-1	2012-4	
	UKRAINE	UA-25	CHERNOBYL-1	LWGR	3200	800	740	FAEA	1970-3	1977-9	1978-5	1996-11
		UA-26	CHERNOBYL-2	LWGR	3200	1000	925	FAEA	1973-2	1978-12	1979-5	1991-10
		UA-42	CHERNOBYL-3	LWGR	3200	1000	925	FAEA	1976-3	1981-12	1982-6	2000-12
UA-43		CHERNOBYL-4	LWGR	3200	1000	925	FAEA	1979-4	1983-12	1984-3	1986-4	
USA	US-155	BIG ROCK POINT	BWR	240	71	67	CPC	1960-5	1962-12	1963-3	1997-8	
	US-014	BONUS	BWR	50	18	17	DOE/PRWR	1960-1	1964-8	1965-9	1968-6	
	US-302	CRYSTAL RIVER-3	PWR	2568	890	860	PROGRESS B&W	1968-9	1977-1	1977-3	2013-2	
	US-144	CVTR	PHWR	65	19	17	CVPA	1960-1	1963-12	1963-12	1967-1	
	US-10	DRESDEN-1	BWR	700	207	197	EXELON GE	1956-5	1960-4	1960-7	1978-10	
	US-011	ELK RIVER	BWR	58	24	22	RCPA	1959-1	1963-8	1964-7	1968-2	
	US-16	FERMI-1	FBR	200	65	61	DTEDISON UEC	1956-8	1966-8	1966-8	1972-11	
	US-285	FORT CALHOUN-1	PWR	1500	512	482	EXELON CE	1968-6	1973-8	1973-9	2016-10	
	US-267	FORT ST. VRAIN	HTGR	842	342	330	PSCC	1968-9	1976-12	1979-7	1989-8	
	US-018	GE VALLECITOS	BWR	50	24	24	GE	1956-1	1957-10	1957-10	1963-12	
	US-213	HADDAM NECK	PWR	1825	603	560	CYAPC	1964-5	1967-8	1968-1	1996-12	
	US-077	HALLAM	X	256	84	75	AEC/NPPD	1959-1	1963-9	1963-11	1964-9	
	US-133	HUMBOLDT BAY	BWR	220	65	63	PG&E	1960-11	1963-4	1963-8	1976-7	
	US-013	INDIAN POINT-1	PWR	615	277	257	ENTERGY B&W	1956-5	1962-9	1962-10	1974-10	
	US-305	KEWAUNEE	PWR	1772	595	566	DOMINION WH	1968-8	1974-4	1974-6	2013-5	
	US-409	LACROSSE	BWR	165	55	48	DPC	1963-3	1968-4	1969-11	1987-4	

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2016 — continued

Country	Reactor		Type	Capacity (MW)		Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down	
	Code	Name		Thermal	Gross							Net
USA	US-309	MAINE YANKEE	PWR	2630	900	860	MYAPC	CE	1968-10	1972-11	1972-12	1997-8
	US-245	MILLSTONE-1	BWR	2011	684	641	DOMINION	GE	1966-5	1970-11	1971-3	1998-7
	US-130	PATHFINDER	BWR	220	63	59	NMC	AC	1959-1	1966-7	1966-8	1967-10
	US-171	PEACH BOTTOM-1	HTGR	115	42	40	EXELON	GA	1962-2	1967-1	1967-6	1974-11
	US-012	PIQUA	X	46	12	12	CoPiqua	GE	1960-1	1963-7	1963-11	1966-1
	US-312	RANCHO SECO-1	PWR	2772	917	873	SMUD	B&W	1969-4	1974-10	1975-4	1989-6
	US-206	SAN ONOFRE-1	PWR	1347	456	436	SCE	WH	1964-5	1967-7	1968-1	1992-11
	US-361	SAN ONOFRE-2	PWR	3438	1127	1070	SCE	CE	1974-3	1982-9	1983-8	2013-6
	US-362	SAN ONOFRE-3	PWR	3438	1127	1080	SCE	CE	1974-3	1983-9	1984-4	2013-6
	US-146	SAXTON	PWR	24	3	3	SNEC	GE	1960-1	1967-3	1967-3	1972-5
	US-001	SHIPPINGPORT	PWR	236	68	60	DOE DUQU	WH	1954-1	1957-12	1958-5	1982-10
	US-322	SHOREHAM	BWR	2436	849	820	LIPA	GE	1972-11	1986-8	1986-8	1989-5
	US-320	THREE MILE ISLAND-2	PWR	2772	959	880	GPU	B&W	1969-11	1978-4	1978-12	1979-3
	US-344	TROJAN	PWR	3411	1155	1095	PORTGE	WH	1970-2	1975-12	1976-5	1992-11
	US-271	VERMONT YANKEE	BWR	1912	635	605	ENTERGY	GE	1967-12	1972-9	1972-11	2014-12
	US-29	YANKEE NPS	PWR	600	180	167	YAEC	WH	1957-11	1960-11	1961-7	1991-10
	US-295	ZION-1	PWR	3250	1085	1040	EXELON	WH	1968-12	1973-6	1973-12	1998-2
	US-304	ZION-2	PWR	3250	1085	1040	EXELON	WH	1968-12	1973-12	1974-9	1998-2

Note: Status as of 31 December 2016, 160 reactors (62800 MW) have been permanently shut down.

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 Dec. 2016

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License terminated
	Code	Name							
ARMENIA	AM-18	ARMENIAN-1	1989-2	Others	Other			ANPPC/JSC	
BELGIUM	BE-1	BR-3	1987-6	2,5	ID	4,9	4	CEN/SCK	
BULGARIA	BG-1	KOZLODUY-1	2002-12	Others	Dd+PD+SE	6	3,6,7	E-03492	2031
	BG-2	KOZLODUY-2	2002-12	Others	Dd+PD+SE	6	3,6,7	E-03493	2031
	BG-3	KOZLODUY-3	2006-12	Others	Dd+PD+SE	1,6	3,7	E-00174	2031
	BG-4	KOZLODUY-4	2006-12	Others	Dd+PD+SE	1	3,6,7	E-0008	2031
CANADA	CA-1	ROLPHTON NPD	1987-8	2	Dd+PD+SE	8		AECL	
	CA-2	DOUGLAS POINT	1984-5	2	Dd+SE	8	7	AECL	
	CA-3	GENTILLY-1	1977-6	2	Dd+PD+SE	8	7	AECL/HQ	
FRANCE	FR-10	PHENIX	2010-2	Others	ID			-	
	FR-2	CHINON A-1	1973-4	1,2	ID			EDF	
	FR-24	SUPER-PHENIX	1988-12	Others	ID	9	3,6	NERSA	2025
	FR-3	CHINON A-2	1985-6	1,2	ID			EDF	
	FR-4	CHINON A-3	1990-6	1,2	ID			EDF	
	FR-5	CHOOZ-A (ARDENNES)	1991-10	Others	ID	4,9		SENA	2019
	FR-6	EL-4 (MONTS D'ARREE)	1985-7	1,2	ID	9		EDF	2015
	FR-7	ST. LAURENT A-1	1990-4	1,2	ID			EDF	2027
	FR-8	ST. LAURENT A-2	1992-5	1,2	ID			EDF	2025
	FR-9	BUGEY-1	1994-5	1,2	ID	9		EDF	2020
GERMANY	DE-1	VAK KAHL	1985-11	Others	Other			VAK	2010
	DE-10	STADE	2003-11	2	ID			E.ON	
	DE-11	NIEDERAICHBACH	1974-7	6	Other			KIT	1995
	DE-16	ISAR-1	2011-8	7	ID			E.ON	
	DE-17	UNTERWESER	2011-8	7	ID			E.ON	
	DE-19	THTR-300	1988-9	6,Others	Other			HKG	
	DE-2	MZFR	1984-5	Others	Other			KTE	
	DE-22	MUELHEIM-KAERLICH	1988-9	7	Other			RWE	
	DE-3	GUNDREMMINGEN-A	1977-1	6,8	ID			KGG	
	DE-4	AVR JUELICH	1988-12	7	ID		3,4,9	xxxx	
DE-501	RHEINBERG	1990-6	1,3,6,7	ID		9	G 01 KKR		
DE-502	GREIFSWALD-1	1990-2	1,3,6,7	ID		3,9	G 01 KGR		

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 Dec. 2016 — continued

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management	Decom. licensee	License terminated	
	Code	Name								
GERMANY	DE -503	GREIFSWALD-2	1990-2	1,3,6,7	ID	3,9	3,7	G 01 KGR		
	DE -504	GREIFSWALD-3	1990-2	1,3,6,7	ID	3,9	7	G 01 KGR		
	DE -505	GREIFSWALD-4	1990-7	1,3,6,7	ID	3	3,7	G 01 KGR		
	DE -506	GREIFSWALD-5	1989-11	1,2,3,6,7	ID	1,3,9	3,7	G 01 KGR		
	DE -6	LINGEN	1977-1	2,5,6	ID	1,3,4,9		RWE AG	1998	
	DE -7	HDR GROSSWELZHEIM	1971-4	5	Other			KIT		
	DE -8	KNK II	1991-8	5	Other			KTE		
	DE -9	WUERGASSEN	1994-8	2	ID			E.ON	2040	
	ITALY	IT -1	LATINA	1987-12	7,Others	ID	3,9		SOGIN	2043
		IT -2	GARIGLIANO	1982-3	3,4,Others	ID	3,6,9		SOGIN	2030
IT -3		ENRICO FERMI	1990-7	7,Others	ID	3,4,6,9,10		SOGIN	2034	
IT -4		CAORSO	1990-7	7,Others	ID	4,9		SOGIN	2002	
JAPAN	JP -1	JPDR	1976-3	Others	ID	3		JAERI	2037	
	JP -11	HAMAOKA-1	2009-1	6	Dd+SE	3,4,6,7		CHUBU DL		
	JP -17	FUKUSHIMA-DAIICHI-5	2013-12	Others	Other			TEPCO DL		
	JP -18	FUKUSHIMA-DAIICHI-6	2013-12	Others	Other			TEPCO DL		
	JP -2	TOKAI-1	1998-3	2	Dd+PD+SE	3,4,6,7,9		JAPCO	2025	
	JP -20	FUGEN ATR	2003-3	2	Dd+SE	1,3,5	2,5	JAEA	2034	
	JP -24	HAMAOKA-2	2009-1	6	Dd+SE	3,4,6,7		CHUBU DL	2037	
	JP -7	SHIMANE-1	2015-4	6	Other			CHUGOKU		
	KZ -10	AKTAU	1999-4	2,5	Dd+PD+SE	1,6	4,7	MAEC-KAZ		
	LITHUANIA	LT -46	IGNALINA-1	2004-12	7,Others	ID	3,10	3	INPP	2038
LT -47		IGNALINA-2	2009-12	7,Others	ID	2,3	1	INPP	2038	
NETHERLANDS	NL -1	DODEWAARD	1997-3	2,Others	Dd+SE	7		BV GKN	2055	
	RU -3	BELOYARSK-1	1983-1	Others	Other			EA		
	RU -4	NOVOVORONEZH-1	1988-2	Others	Other			EA		
	RU -6	BELOYARSK-2	1990-1	Others	Other			EA		
SLOVAKIA	RU -8	NOVOVORONEZH-2	1990-8	Others	Other			EA		
	SK -1	BOHUNICE A1	1977-2	4	Dd+PD+SE	3,6		JAVYS		
	SK -2	BOHUNICE-1	2008-12	7	ID	3,4,9		JAVYS		
	SK -3	BOHUNICE-2	2008-12	7	ID	3,4,9		JAVYS		
SPAIN	ES -1	JOSE CABRERA-1	2006-4	Others	ID		7	UFG	2015	

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 Dec. 2016 — continued

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management	Decom. licensee	License terminated
	Code	Name							
SPAIN	ES-3	VANDELLOS-1	1990-7	4	Dd+PD+SE	8		ENRESA	2032
	SE-1	AGESTA	1974-6	2,3	Dd+SE	7		BKAB	
SWEDEN	SE-6	BARSEBACK-1	1999-11	Others	Other		4	BKAB	2027
	SE-8	BARSEBACK-2	2005-5	Others	Other		4	BKAB	2027
SWITZERLAND	CH-8	LUCENS	1969-1	4	Dd+SE	1		EOS	2004
	GB-10A	SIZEWELL A-1	2006-12	2,8	Dd+SE	3,5,6		Magnox S	2110
UK	GB-10B	SIZEWELL A-2	2006-12	2,8	Dd+SE	3,5,6		Magnox S	2110
	GB-12	WINDFRITH SGHWR	1990-9	Others	ID	10		UKAEA	2019
	GB-14	DOUNREAY DFR	1977-3	Others	Dd+PD+SE	5		DSR	2333
	GB-15	DOUNREAY PFR	1994-3	Others	Dd+PD+SE	5		DSR	2333
	GB-1A	CALDER HALL-1	2003-3	2,8	Dd+PD+SE	8		SL	2117
	GB-1B	CALDER HALL-2	2003-3	2,8	Dd+PD+SE	8		SL	2117
	GB-1C	CALDER HALL-3	2003-3	2,8	Dd+PD+SE	8		SL	2117
	GB-1D	CALDER HALL-4	2003-3	2,8	Dd+PD+SE	8		SL	2117
	GB-2A	CHAPELCROSS-1	2004-6	2,8	Dd+PD+SE	3,5,6		Magnox N	2128
	GB-2B	CHAPELCROSS-2	2004-6	2,8	Dd+PD+SE	3,5,6		Magnox N	2128
	GB-2C	CHAPELCROSS-3	2004-6	2,8	Dd+PD+SE	3,5,6		Magnox N	2128
	GB-2D	CHAPELCROSS-4	2004-6	2,8	Dd+PD+SE	3,5,6		Magnox N	2128
	GB-3A	BERKELEY-1	1989-3	2,8	Dd+SE	8		Magnox S	2083
	GB-3B	BERKELEY-2	1988-10	2,8	Dd+SE	8		Magnox S	2083
	GB-4A	BRADWELL-1	2002-3	2,8	Dd+SE	8		Magnox S	2104
	GB-4B	BRADWELL-2	2002-3	2,8	Dd+SE	8		Magnox S	2104
	GB-5	WINDSCALE AGR	1981-4	Others	Dd+PD+SE	7		SL	2065
	GB-6A	HUNTERSTON A-1	1990-3	2,8	Dd+PD+SE	3,5,6		Magnox N	2090
	GB-6B	HUNTERSTON A-2	1989-12	2,8	Dd+PD+SE	3,5,6		Magnox N	2090
	GB-7A	HINKLEY POINT A-1	2000-5	2,8	Dd+PD+SE	8		Magnox S	2104
	GB-7B	HINKLEY POINT A-2	2000-5	2,8	Dd+PD+SE	8		Magnox S	2104
	GB-8A	TRAWSFYNDD-1	1991-2	2,8	Dd+PD+SE	8		Magnox S	2098
	GB-8B	TRAWSFYNDD-2	1991-2	2,8	Dd+PD+SE	8		Magnox N	2098
	GB-9A	DUNGENESS A-1	2006-12	2,8	Dd+PD+SE	3,5,6		Magnox S	2111
USA	GB-9B	DUNGENESS A-2	2006-12	2,8	Dd+PD+SE	3,5,6		Magnox S	2111
	US-001	SHIPPINGPORT	1962-10	3	ID			DOE DUQU	1989

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 Dec. 2016 — continued

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management	Decom. licensee	License terminated
	Code	Name							
USA	US-011	ELK RIVER	1968-2	1,Others	ID			RCPA	1974
	US-012	PIQUA	1966-1	4,5	ISD	11		CofPiqua	
	US-013	INDIAN POINT-1	1974-10	5	Dd+PD+SE			ENERGY	
	US-014	BONUS	1968-6	5,6	ISD			DOE/PRWR	1970
	US-018	GE VALLECITOS	1963-12	1	Dd+SE			GE&PGEC	
	US-077	HALLAM	1964-9	5	Dd+SE			AEC&NPPD	1971
	US-10	DRESDEN-1	1978-10	6	Dd+SE	11	7	EXELON	
	US-130	PATHFINDER	1967-10	5	Dd+SE	11		NMC	
	US-133	HUMBOLDT BAY	1976-7	5	Dd+PD+SE	3,4,6		PG&E	2013
	US-144	CVTR	1967-1	7,Others	Dd+SE			CVPA	2009
	US-146	SAXTON	1972-5	Others	ID			GPUNC	2005
	US-155	BIG ROCK POINT	1997-8	2,Others	ID		7	CPC	2007
	US-16	FERMI-1	1972-11	4,5	Dd+SE	9,11		DTEDISON	2025
	US-171	PEACH BOTTOM-1	1974-11	1	Dd+SE	1,9		EXELON	
	US-206	SAN ONOFRE-1	1992-11	Others	Dd+PD+SE	4		SCE	2008
	US-213	HADDAM NECK	1996-12	6	ID	4,6		CYAPC	2007
	US-245	MILLSTONE-1	1968-7	6	Dd+PD+SE			DOMINRES	
	US-267	FORT ST. VRAIN	1989-8	1,Others	ID			PSCC	1996
	US-29	YANKEE NPS	1991-10	5,7	ID	4,6		YAEC	2005
	US-295	ZION-1	1998-2	5,6	Dd+PD+SE	1,9		CommonEd	
	US-304	ZION-2	1998-2	5,6	Dd+PD+SE	1,9		COMMED	
	US-305	KEWAUNEE	2013-5	2,6	Dd+SE			DOMINRES	
	US-309	MAINE YANKEE	1997-8	6	ID	4	7	MYAPC	2005
	US-312	RANCHO SECO-1	1989-6	5,6	Dd+PD+SE			SMUD	2009
	US-320	THREE MILE ISLAND-2	1979-3	4,5	Other	9,11	4	GPU	1995
	US-322	SHOREHAM	1989-5	7,Others	ID			LIPA	2005
	US-344	TROJAN	1992-11	6	Dd+PD+SE			PORTGE	
	US-409	LACROSSE	1987-4	2	Dd+PD+SE		7	DPC	

TABLE 17. DEFINITIONS FOR REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED

Shutdown reason	Description	Decommissioning strategy	Description
1 2 3 4 5 6 7 8 Other	The technology or process being used became obsolete The process was no longer profitable Changes in licensing requirements After an operating incident Other technological reasons Other economical reasons Public acceptance or political reasons After major component failure or deterioration None of the above	ID Dd+SE Dd+PD+SE ISD Other	Immediate dismantling and removal of all radioactive materials <input type="checkbox"/> Deferred dismantling, placing all radiological areas into safe enclosure Deferred dismantling, including partial dismantling and placing remaining radiological areas into safe enclosure In situ disposal, involving encapsulation of radioactive materials and subsequent restriction of access None of the above
Fuel Management	Description	Current decommissioning phase	Description
1 2 3 4 5 6 7 8	Transfer to a reactor facility Transfer away from a reactor facility Storage in an on-site facility Storage in an off-site facility Shipment to a reprocessing plant Underwater storage period Dry storage period Encapsulation	1 2 3 4 5 6 7 8 9 10 11	Drawing up the Final Decommissioning Plan Reactor core defuelling Waste conditioning on-site - only for decommissioning waste Waste shipment off-site - only for decommissioning waste Safe enclosure preparation Partial dismantling Active safe enclosure period Passive safe enclosure period Final dismantling Final survey Licence terminated - legal act at the end of the decommissioning

TABLE 18. PERFORMANCE FACTORS BY REACTOR CATEGORY, 2014 to 2016

Reactor category	Reactors reporting to IAEA PRIS (see note)							
	Number of units	Availability factor (%)	Planned cap. loss factor (%)	Capacity factor (%)	Forced loss rate (%)	Operating factor (%)	Load factor (%)	
PWR	292	77.8	17.6	78.9	2.5	77.7	76.3	
PWR < 600 MWe	46	72.0	24.3	72.6	2.0	73.1	69.9	
PWR >= 600 MWe	246	78.3	17.0	79.4	2.5	78.5	76.8	
BWR	81	62.3	35.2	62.6	2.1	62.2	61.3	
BWR < 600 MWe	8	35.1	61.6	35.4	6.0	44.3	35.1	
BWR >= 600 MWe	73	63.2	34.3	63.5	2.0	63.9	62.2	
PHWR	48	82.2	11.6	84.0	4.2	80.0	79.2	
PHWR < 600 MWe	26	77.6	11.9	80.0	7.5	79.2	77.3	
PHWR >= 600 MWe	22	84.4	11.5	85.8	2.6	81.0	80.1	
LWGR	15	81.1	16.5	81.5	2.0	82.1	82.1	
LWGR < 600 MWe	4	81.2	18.4	81.2	0.5	78.6	45.3	
LWGR >= 600 MWe	11	81.1	16.5	81.5	2.0	83.4	82.3	
GCR	15	74.8	14.6	75.0	7.6	81.9	75.2	
FBR	2	83.9	14.4	83.9	2.0	85.7	86.5	
TOTAL	453	75.0	20.7	75.9	2.6	75.4	73.6	

Notes:

1. 2016 is the latest year for which operating experience data is currently available to the IAEA.
2. Reactors permanently shut down during 2014 to 2016 (19 units) are considered.

TABLE 19. FULL OUTAGE STATISTICS DURING 2016

Reactor type	Number of operating reactors	Full outage hours per operating reactor	Planned outages (%)	Unplanned outages (%)	External outages (%)
PWR	288	1945	72.3	18.2	9.5
PWR < 600 MWe	43	2132	79.8	17.2	3.0
PWR >= 600 MWe	245	1912	70.9	18.4	10.7
BWR	78	3370	86.3	8.5	5.2
BWR < 600 MWe	6	4183	98.2	1.8	0.0
BWR >= 600 MWe	72	3302	85.0	9.3	5.7
PHWR	48	2109	62.0	30.0	8.0
PHWR < 600 MWe	26	2279	55.1	43.9	1.0
PHWR >= 600 MWe	22	1908	71.7	10.4	17.9
LWGR	15	1636	92.4	6.3	1.3
LWGR < 600 MWe	4	1653	94.6	5.4	0.0
LWGR >= 600 MWe	11	1630	91.6	6.6	1.8
GCR	14	1040	62.4	36.2	1.4
FBR	2	660	96.0	4.0	0.0
ALL REACTORS	445	2168	75.4	16.8	7.8

Notes:

1. 2016 is the latest year for which outage information is currently available to the IAEA.
2. Only reactors in commercial operation are considered.
3. Reactors shut down during 2016 (7 units) are considered.

TABLE 20. DIRECT CAUSES OF FULL OUTAGES DURING 2016

Direct cause	Planned full outages				Unplanned full outages			
	Energy lost		Time lost		Energy lost		Time lost	
	GW-h	%	Hours	%	GW-h	%	Hours	%
Plant equipment problem/failure								
Refuelling without a maintenance	35762	4.78	35574	4.21	51175	95.19	69432	94.55
Inspection, maintenance or repair combined with refuelling	294688	39.36	328508	38.86				
Inspection, maintenance or repair without refuelling	27086	3.62	46611	5.51				
Testing of plant systems or components	8207	1.10	6123	0.72				
Major back-fitting, refurbishment or upgrading activities with refuelling	49660	6.63	68291	8.08				
Major back-fitting, refurbishment or upgrading activities without refuelling	322677	43.10	340565	40.29				
Nuclear regulatory requirements	8489	1.13	9795	1.16	83	0.15	81	0.11
Human factor related					1850	3.44	2644	3.60
Fire	1336	0.18	1102	0.13	506	0.94	586	0.80
Fuel management limitation (including high flux tilt, stretch out or coast-down operation)	791	0.11	8784	1.04	10	0.02	8	0.01
Other					135	0.25	680	0.93
TOTAL	748696	100.00	845353	100.00	53759	100.00	73432	100.00

Note: Only reactors which have achieved full commercial operation in or before 2016 are counted.

TABLE 21. DIRECT CAUSES OF FULL OUTAGES, 2012 TO 2016

Direct outage cause	Planned full outages				Unplanned full outages			
	Energy lost		Time lost		Energy lost		Time lost	
	GW(e).h	%	Hours	%	GW.h	%	Hours	%
Plant equipment problem/failure	149246	4.04	148266	3.48	274145	94.29	347547	93.59
Refuelling without a maintenance	1449004	39.21	1635069	38.36	487	0.17	483	0.13
Inspection, maintenance or repair combined with refuelling	153618	4.16	239855	5.63				
Inspection, maintenance or repair without refuelling	14013	0.38	13979	0.33	155	0.05	394	0.11
Testing of plant systems or components	214814	5.81	264118	6.20				
Major back-fitting, refurbishment or upgrading activities with refuelling	1696931	45.92	1897722	44.52				
Major back-fitting, refurbishment or upgrading activities without refuelling	10043	0.27	13463	0.32	3375	1.16	3701	1.00
Nuclear regulatory requirements					8881	3.05	13276	3.57
Human factor related					1779	0.61	2162	0.58
Fire	4099	0.11	6054	0.14	717	0.25	552	0.15
Fuel management limitation (including high flux tilt, stretch out or coast-down operation)	3980	0.11	43957	1.03	1218	0.42	3251	0.88
Other								
TOTAL	3695748	100.00	4262483	100.00	290757	100.00	371366	100.00

Note: Only reactors which have achieved full commercial operation in or before 2016 are counted.

TABLE 22. COUNTRIES: ABBREVIATIONS AND SUMMARY

Country code	Full name	Number of reactors, as of 31 Dec. 2016				
		Operational	Construction	LT shut down	Shut down	Planned
AR	ARGENTINA	3	1			
AM	ARMENIA	1	2		1	
BY	BELARUS	7			1	
BE	BELGIUM	2	1		4	
BR	BRAZIL	2			6	
BG	BULGARIA	19				
CA	CANADA	36	21			31
CN	CHINA	6				
CZ	CZECH REPUBLIC	4	1			
FI	FINLAND	4	1		12	1
FR	FRANCE	58	1		28	
DE	GERMANY	8				
HU	HUNGARY	4				
IN	INDIA	22	5		4	4
IR	IRAN, ISLAMIC REPUBLIC OF	1			17	3
IT	ITALY	42	2	1	4	9
JP	JAPAN	25	3		1	
KZ	KAZAKHSTAN					
KR	KOREA, REPUBLIC OF					
LT	LITHUANIA	2			2	
MX	MEXICO	1			1	
NL	NETHERLANDS	4	3			
PK	PAKISTAN	2				
RO	ROMANIA	35	7		6	
RU	RUSSIA	4	2		3	
SK	SLOVAKIA	1				
SI	SLOVENIA	2				
ZA	SOUTH AFRICA	7		1	2	
ES	SPAIN	10			3	
SE	SWEDEN					

TABLE 22. COUNTRIES: ABBREVIATIONS AND SUMMARY — continued

Country code	Full name	Number of reactors, as of 31 Dec. 2016				
		Operational	Construction	LT shut down	Shut down	Planned
CH	SWITZERLAND	5			1	
UA	UKRAINE	15	2		4	
AE	UNITED ARAB EMIRATES		4			
GB	UNITED KINGDOM	15			30	
US	UNITED STATES OF AMERICA	99	4		34	10
TOTAL		448	61	2	160	80

Note: The total includes the following data from Taiwan, China:
 — 6 units in operation; 2 units under construction.

TABLE 23. REACTOR TYPES: ABBREVIATIONS AND SUMMARY

Type code	Full name	Number of reactors, as of 31 Dec. 2016				
		Operational	Construction	LT shut down	Shut down	Planned
BWR	Boiling Light-Water-Cooled and Moderated Reactor	78	4	1	36	9
FBR	Fast Breeder Reactor	3	1	1	7	5
GCR	Gas-Cooled, Graphite-Moderated Reactor	14			38	
HTGR	High-Temperature Gas-Cooled Reactor		1		4	
HWGCR	Heavy-Water-Moderated, Gas-Cooled Reactor				4	
HWLWR	Heavy-Water-Moderated, Boiling Light-Water-Cooled Reactor				2	
LWGR	Light-Water-Cooled, Graphite-Moderated Reactor	15			9	
PWWR	Pressurized Heavy-Water-Moderated and Cooled Reactor	49	4		8	2
PWR	Pressurized Light-Water-Moderated and Cooled Reactor	289	51		49	64
SGHWR	Steam-Generating Heavy-Water Reactor				1	
X	Other				2	
TOTAL		448	61	2	160	80

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY

Operator code	Full name	Number of reactors, as of 31 Dec. 2016			
		Operational	Construction	LT shut down	Shut down
AEC/NPPD	ATOMIC ENERGY COMMISSION AND NEBRASKA PUBLIC POWER DISTRICT				
AEP	AMERICAN ELECTRIC POWER COMPANY, INC.	2			1
AmerenUE	AMEREN UE, UNION ELECTRIC COMPANY	1			
ANAV	ASOCIACION NUCLEAR ASCO-VANDELLOS A.I.E. (ENDESA/ID)	3			
ANPPC/JSC	CLOSED JOINT STOCK COMPANY ARMENIAN NPP	1			1
APS	ARIZONA PUBLIC SERVICE CO.	3			
AVR	ARBEITSGEMEINSCHAFT VERSUCHSREAKTOR GMBH				1
Axpo AG	KERNKRAFTWERK BEZNAUCH-5312 DÖTTINGEN	2			
BeINPP	REPUBLICAN UNITARY ENTERPRISE BELARUSIAN NUCLEAR POWER PLANT		2		
BHAVINI	BHARATIYA NABHIKIYA VIDYUT NIGAM LIMITED		1		
BKAB	BARSEBÄCK KRAFT AB				2
BKW	BKW ENERGIE AG	1			
BRUCEPOW	BRUCE POWER	8			
BY GKN	BY GEMEENSCHAPPELLIJKE KERNENERGIECENTRALE NEDERLAND (BY GKN)				1
CCNPP	CALVERT CLIFFS NUCLEAR POWER PLANT INC	1			
CEA/EDF	COMMISSARIAT A L'ENERGIE ATOMIQUE (80%)/ELECTRICITE DE FRANCE (20%)				1
CENSCK	CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE / STUDIECENTRUM VOOR KERNENERGIE				1
CEZ	CZECH POWER CO., CEZ A.S.	6			
CFE	COMISION FEDERAL DE ELECTRICIDAD	2			
CHUBU	CHUBU ELECTRIC POWER CO., INC.	3			2
CHUGOKU	THE CHUGOKU ELECTRIC POWER CO., INC.	1	1		1
CIAE	CHINA INSTITUTE OF ATOMIC ENERGY	1			2
CNAT	CENTRALES NUCLEARES ALMARAZ-TRILLO(ID)/FG/ENDESA/HC(NUCLEONOR)				
CNEA	COMISION NACIONAL DE ENERGIA ATOMICA	3			
CNNO	CNNC NUCLEAR OPERARION MANAGEMENT COMPANY LIMITED.		1		
CoP/iqua	CITY OF PIQUA GOVERNMENT	1			1
COGEMA	COMPAGNIE GENERALE DES MATIERES NUCLEAIRES				2
CPC	CONSUMERS POWER CO.				1
CVPA	CAROLINAS-VIRGINIA NUCLEAR POWER ASSOC.				1

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2016		
		Operational	Construction	L.T. shut down
CVAPC	CONNECTICUT YANKEE ATOMIC POWER CO.	6		1
DNMC	DAYA BAY NUCLEAR POWER OPERATIONS AND MANAGEMENT CO.,LTD.			1
DOE DUQU	DEPARTMENT OF ENERGY AND DUQUESNE LIGHT CO.			1
DOE/PRWR	DOE & PUERTO RICO WATER RESOURCES	6		2
DOMINION	DOMINION ENERGY			1
DPC	DAIRYLAND POWER COOPERATIVE	1		1
DTEVISION	DETROIT EDISON CO.	7		7
DUKEENER	DUKE ENERGY CORP.	2		4
E.ON	E.ON KERNKRAFT GMBH	58	1	8
EDF	ELECTRICITE DE FRANCE	15		
EDF UK	EDF ENERGY	7		
ELECTRAB	ELECTRABEL	2		
ELETRONU	ELETROBRAS ELETRONUCLEAR S.A.	2	1	
ERBW	ENBW KRAFTWERKE AG	1		1
ENERGYNW	ENERGY NORTHWEST	1		
ERKK	ENBW KERNKRAFT GMBH	2		2
ENTERGY	ENERGY NUCLEAR OPERATIONS, INC.	11		2
EOS	ENERGIE DE L'OUEST SUISSE			1
EPDC	ELECTRIC POWER DEVELOPMENT CO.,LTD.		1	
EPZ	N.V. ELEKTRICITEITS-PRODUKTIEMAATSCHAPPIJ ZUID-NEDERLAND	1		
ESKOM	ESKOM	2		
EWN	ENERGIEWERKE NORD GMBH			6
EXELON	EXELON GENERATION CO., LLC	21		
FENOC	FIRST ENERGY NUCLEAR OPERATING CO.	4		5
FKA	FORSMARK KRAFTGRUPP AB	3		
FORTUMPH	FORTUM POWER AND HEAT OY (FORMER IVO)	2		
FPL	FLORIDA POWER & LIGHT CO.	4		
FONP	GNNC FUJIAN FUJIANG NUCLEAR POWER CO.,LTD	3	3	
FSNPC	FUJIAN SANMING NUCLEAR POWER CO.,LTD.			2
FV	FENNOVOIMA OY			1
GE	GENERAL ELECTRIC			1

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2016			
		Operational	Construction	LT shut down	Shut down
GNPC	GUANGXI FANGCHENGANG NUCLEAR POWER COMPANY LTD	2	2		
GPU	GENERAL PUBLIC UTILITIES(OWNED BY FIRSTENERGY CORP.)				1
HDR	HEISSDAMPREAKTOR-BETRIEBSGESELLSCHAFT MBH.	3			1
HEPCO	HOKKAIDO ELECTRIC POWER CO.,INC.				1
HIFRENSA	HISPANO-FRANCAISA DE ENERGIA NUCLEAR, S.A.				1
HKG	HOCHTEMPERATUR-KERNKRAFTWERK GMBH	2			1
HNPC	HAINAN NUCLEAR POWER COMPANY	2			2
HOKURIKU	HOKURIKU ELECTRIC POWER CO.				
HQ	HYDRO QUEBEC				
HSDNPC	SHANDONG HONGSHIDING NUCLEAR POWER PLANT		1		1
HSNPC	HUANENG SHANDONG SHIDAO BAY NUCLEAR POWER COMPANY,LTD.				
ID	IBERDROLA, S.A.	1			
INPP	IGNALINA NUCLEAR POWER PLANT				2
JAEA	JAPAN ATOMIC ENERGY AGENCY				2
JAPCO	JAPAN ATOMIC POWER CO.	2		1	2
JAVYS	JADROVA A VYRADOVACIA SPOLOCNOST/NUCLEAR AND DECOMMISSIONING COMPANY, PLC./				2
JNPC	JIANGSU NUCLEAR POWER CORPORATION	2	4		3
KBG	KERNKRAFTWERK-BETRIEBSGESELLSCHAFT MBH				2
KEPCO	KANSAI ELECTRIC POWER CO.	9			2
KGB	KERNKRAFTWERKE GUNDRREMNINGEN				1
KGK	KERNKRAFTWERKE GUNDRREMNINGEN BETRIEBSGESELLSCHAFT MBH	2			1
KHNP	KOREA HYDRO AND NUCLEAR POWER CO.	25	3		1
KKB	KERNKRAFTWERK BRUNSBÜTTTEL GMBH&CO.OHG				1
KKG	KERNKRAFTWERK GOESGEN-DAENIKEN AG	1			1
KKK	KERNKRAFTWERK KRÜMMEL GMBH & CO. OHG				1
KKL	KERNKRAFTWERK LEIBSTADT	1			1
KKN	KERNKRAFTWERK NIEDERAICHBACH GMBH				1
KLE	KERNKRAFTWERKE LIPPE-EMS GMBH	1			4
KOZ/NPP	KOZLUDY NPP PLC	2			
KWG	GEMEINSCHAFTSKERNKRAFTWERK GROHNDE GMBH & CO. OHG	1			1
KWL	KERNKRAFTWERK LINGEN GMBH				

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2016		
		Operational	Construction	Shut down
KYUSHU	KYUSHU ELECTRIC POWER CO. INC.	5		1
LFNPC	CGN LUFENG NUCLEAR POWER CO.LTD	4	2	2
LHNPC	LIAONING HONGYANHE NUCLEAR POWER CO. LTD. (LHNPC)			
LIPA	LONG ISLAND POWER AUTHORITY			1
LNPC	LIAONIN NUCLEAR POWER COMPANY,LMT.			2
LUMINANT	LUMINANT GENERATION COMPANY LLC	2		
MAEC-KAZ	MANGISHLAK ATOMIC ENERGY COMPLEX-KAZATOMPROM,LIMITED LIABILITY COMPANY			1
ML	MAGNOX LIMITED			22
MSM	MINISTRY OF MEDIUM MACHINE BUILDING OF THE USSR (MINSREDMASH)			1
MTE	MINTOPENERGO OF UKRAINE - MINISTRY OF FUEL AND ENERGY OF UKRAINE			4
MYAPC	MAINE YANKEE ATOMIC POWER CO.			1
NASA	NUCLEOELECTRICA ARGENTINA S.A.	3		
Nawah	NAWAH ENERGY COMPANY		4	
NBEPIC	NEW BRUNSWICK ELECTRIC POWER COMMISSION	1		
NDNIP	FUJIAN NINGDE NUCLEAR POWER COMPANY LTD.	4		
NEK	NUKLERANA ELEKTRARNA KRŠKO	1		
NEXTERA	NEXTERA ENERGY RESOURCES, LLC	4		
NMC	NUCLEAR MANAGEMENT CO.			1
NNEGC	STATE ENTERPRISE "NATIONAL NUCLEAR ENERGY GENERATING COMPANY 'ENERGOATOM'"	15	2	
NPCIL	NUCLEAR POWER CORPORATION OF INDIA LTD.	22	4	
NPPDCO	NUCLEAR POWER PRODUCTION & DEVELOPMENT CO. OF IRAN	1		4
NPOJVC	NUCLEAR POWER PLANT QINSHAN JOINT VENTURE COMPANY LTD.	4		3
NSP	NORTHERN STATES POWER CO.(SUBSIDIARY OF XCEL ENERGY)	3		
NUCLENOR	NUCLENOR, S.A.		1	
OH	ONTARIO HYDRO			2
OKG	OKG AKTIEBOLAG	3		
OPG	ONTARIO POWER GENERATION	10		2
PAEC	PAKISTAN ATOMIC ENERGY COMMISSION	4	3	
PAKS Zrt	PAKS NUCLEAR POWER PLANT LTD	4		
PE	PREUSSENELEKTRA KERNKRAFT GMBH&CO KG			1
PG&E	PACIFIC GAS AND ELECTRIC COMPANY	2		1

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2016			
		Operational	Construction	LT shut down	Shut down
PORTGE	PORTLAND GENERAL ELECTRIC CO.				
PPL_SUSQ	PPL SUSQUEHANNA, LLC	2		1	
PROGRESS	PROGRESS ENERGY	4		1	1
PSCC	PUBLIC SERVICE CO. OF COLORADO	3		1	
PSEG	PSEG NUCLEAR LLC	2			
QINPC	QINSHAN NUCLEAR POWER COMPANY	4			
RAB	RINGHALS AB				
RCPA	RURAL COOPERATIVE POWER ASSOC.			1	
REA	JOINT STOCK COMPANY CONCERN ROSENERGOATOM*	35	7	5	22
RWE	RWE POWER AG			2	
SCE	SOUTHERN CALIFORNIA EDISON CO.			3	
SCE&G	SOUTH CAROLINA ELECTRIC & GAS CO.	1	2		
SDNPC	SHANDONG NUCLEAR POWER COMPANY LTD	2	2		2
SE.plc	SLOVENSKE ELEKTRARNE, A. S.	4	2		
SENA	SOCIETE D'ENERGIE NUCLEAIRE FRANCO-BELGE DES ARDENNES			1	
SHIKOKU	SHIKOKU ELECTRIC POWER CO., INC	2		1	
SL	SELLAFIELD LIMITED			4	
SNMPC	SANMEN NUCLEAR POWER CO.,LTD.		2		2
SMUD	SACRAMENTO MUNICIPAL UTILITY DISTRICT			1	
SNEC	SAXTON NUCLEAR EXPERIMENTAL REACTOR CORPORATION			1	
SNN	SOCIETATEA NATIONALA NUCLEARELECTRICA S.A.	2			
SNPDP	STATE NUCLEAR POWER DEMONSTRATION PLANT CO.,LTD				
SOGIN	SOCIETA GESTIONE IMPANTI NUCLEARI S.P.A.	6	2	4	2
SOUTHERN	SOUTHERN NUCLEAR OPERATING COMPANY, INC.	2			
STP	STP NUCLEAR OPERATING CO.				
SVAF0	AB SVAF0			1	
TEPCO	TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC.	11		6	2
TNPC	GUANGDONG TAISHAN NUCLEAR POWER JOINT VENTURE COMPANY LIMITED (TNPC)		2		
TOHOKU	TOHOKU ELECTRIC POWER CO., INC	4			1
TFC	TAIWAN POWER CO.	6	2		
TQNPC	THE THIRD QINSHAN JOINTED VENTURE COMPANY LTDA.	2			

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2016				
		Operational	Construction	LT shut down	Shut down	Planned
TVA	TENNESSEE VALLEY AUTHORITY	7				
TVO	TEOLLISUUDEN VOIMA OYJ	2	1			
UFG	UNION FENOSA GENERATION S.A.				1	
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY				4	
VAK	VERSUCHSATOMKRAFTWERK KAHLE GMBH				1	
WCNOC	WOLF CREEK NUCLEAR OPERATION CORP.	1				
YAEC	YANKEE ATOMIC ELECTRIC CO.				1	
YJNPC	YANGJIANG NUCLEAR POWER COMPANY	3	3			
not specified						27
TOTAL		448	61	2	160	80

TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY

NSSS supplier code	Full name of nuclear steam supply system supplier	Number of reactors, as of 31 Dec. 2016			
		Operational	Construction	LT shut down	Shut down
A/FW	ASSOCIATION ACEC-FRAMATOMIE ET WESTINGHOUSE.				
ABBATOM	ABBATOM (FORMERLY ASEA-ATOM)				
AC	ALLIS CHALMERS	7			1
ACECOWEN	ACECOWEN (ACEC-COCKERILL-WESTINGHOUSE)	4			2
ACLF	(ACECOWEN - CREUSOT LOIRE - FRAMATOME)	1			3
AECI	ATOMIC ENERGY OF CANADA LTD.	8			
AECU/DAE	ATOMIC ENERGY OF CANADA LTDA AND DEPARTMENT OF ATOMIC ENERGY(INDIA)	1			3
AECU/DHI	ATOMIC ENERGY OF CANADA LTD./DOOSAN HEAVY INDUSTRY & CONSTRUCTION	3			
AEE	ATOMENERGOEXPORT	8			6
AEG	ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT				1
AEG.GE	ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT, GENERAL ELECTRIC COMPANY (US)				1
AEG.KWU	ALLGEMEINE ELEKTRICITAETS GESELLSCHAFT, KRAFTWERK UNION AG				1
AMN/GETS	ANSALDO MECCANICO NUCLEARE SPA / GENERAL ELECTRIC TECHNICAL SERVICES CO				2
APC	ATOMIC POWER CONSTRUCTION LTD.	2			2
AREVA	AREVA, 27-29, RUE LE PELETIER, 75433 PARIS CEDEX 09URL: WWW.AREVA.COM		4		
ASEASTAL	ASEA-ATOM / STAL-LAVAL	2			1
ASPALDO	ASPALDO				1
AIEE	ATOMENERGOEXPORT				6
B&W	BABCOCK & WILCOX CO.	6			4
BBK	BROWN BOVERI-KRUPP REAKTORBAU GMBH				1
BBR	BROWN BOVERI REAKTOR GMBH				1
CE	COMBUSTION ENGINEERING CO.	11			4
CEA	COMMISSARIAT A L'ENERGIE ATOMIQUE				1
CFHI	CHINA FIRST HEAVY INDUSTRIES	5			
CGE	CANADIAN GENERAL ELECTRIC	1	6		1
CNCLNEY	CNIM-CONSTRUCTIONS NAVALES ET INDUSTRIELLES DE MEDITERRANEE CL - CREUSOT LOI				1
CNEA	COMISION NACIONAL DE ENERGIA ATOMICA				1
CNNC	CHINA NATIONAL NUCLEAR CORPORATION	8			1
CZEC	CHINA ZHONGYUAN ENGINEERING CORPORATION				2
DEC	DONGFANG ELECTRIC CORPORATIONDEC-NPIC-FANP	11			2
					3

TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY — continued

NSSS supplier code	Full name of nuclear steam supply system supplier	Number of reactors, as of 31 Dec. 2016		
		Operational	Construction	Shut down
DHICKAEC	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.LTD./KOREA ATOMICENERGY RESEARCH I	2		
DHICKOPC	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.LTD./KOREA POWER ENGINEERING COMPA	11	3	6
EE/B&W/T	THE ENGLISH ELECTRIC CO. LTD / BABCOCK & WILCOX CO. / TAYLOR WOODROW CONSTRU			1
EL/WEST	ELETTRONUCLEARE ITALIANA / WESTINGHOUSE ELECTRIC CORP.	1		5
FAEA	FEDERAL ATOMIC ENERGY AGENCY	66		3
FRAM	FRAMATOMIE	2		2
FRAMACEC	FRAMACECO (FRAMATOMIE-ACEC-COCKERILL)			1
GA	GENERAL ATOMIC CORP.			1
GAAA	GROUPEMENT ATOMIQUE ALSACIENNE ATLANTIQUE			2
GE	GENERAL ELECTRIC CO.	44	2	13
GE/AEG	GENERAL ELECTRIC COMPANY (US), ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT		1	1
GE/GETSC	GENERAL ELECTRIC CO. / GENERAL ELECTRIC TECHNICAL SERVICES CO.			1
GE/T	GENERAL ELECTRIC CO. / TOSHIBA CORPORATION			2
GEC	GENERAL ELECTRIC COMPANY (UK)			3
GETSCO	GENERAL ELECTRIC TECHNICAL SERVICES CO.	2		3
GNEPRWRA	GENERAL NUCLEAR ENGINEERING & PUERTO RICO WATER RESOURCES AUTHORITY (US)			1
GTM	GRANDS TRAVAUX DE MARSEILLE			1
H/G	HITACHI GE NUCLEAR ENERGY, LTD.		1	1
HITACHI	HITACHI LTD.	8	1	1
HRB	HOCHTEMPERATUR-REAKTORBAU GMBH			3
IA	INTERATOM INTERNATIONALE ATOMREAKTORBAU GMBH			1
ICL/FE	INTERNATIONAL COMBUSTION LTD. / FAIREY ENGINEERING LTD.			1
IZ	IZHORSKIYE ZAVODY	3	2	1
KEPCO	KOREA ELECTRIC POWER CORPORATION		4	
KWU	SIEMENS KRAFTWERK UNION AG	11	1	10
LEVIVIER	LEVIVIER			2
MAEC-KAZ	MAEC-KAZATOMPROMMANGISHLAK ATOMIC ENERGY COMPLEX-KAZATOMPROM, LIMITED			1
MAEP	MINATOMENERGOPROM, MINISTRY OF NUCLEAR POWER AND INDUSTRY	2		2
MHI	MITSUBISHI HEAVY INDUSTRIES LTD	17		3
MSM	MINISTRY OF MEDIUM MACHINE BUILDING OF THE USSR (MINSREDMASH)			5
NGA	NATIONALE GESELLSCHAFT ZUR FORDERUNG DER INDUSTRIELLEN ATOMTECHNIK			1

TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY — continued

NSSS supplier code	Full name of nuclear steam supply system supplier	Number of reactors, as of 31 Dec. 2016				
		Operational	Construction	LT shut down	Shut down	Planned
NNC	NATIONAL NUCLEAR CORPORATION	2				
NPC	NUCLEAR POWER CO. LTD.	6				
NPCIL	NUCLEAR POWER CORPORATION OF INDIA LTD. VIKRAM SARABHAI BHAVAN, ANUSHAKTI NAG	16	4			
NPIC	NUCLEAR POWER INSTITUTE OF CHINA	5	3			
OH/AECL	ONTARIO HYDRO / ATOMIC ENERGY OF CANADA LTD.	18			2	
PAA	PRODUCTION AMALGAMATION 'ATOMMASH', VOLGODONSK	4				
PAIP	PRODUCTION AMALGAMATION IZHORSKY PLANT 'ATOMMASH', VOLGODONSK, RUSSIA	11				
PPC	PWR POWER PROJECTS LTD	1			1	
RDM	ROTTERDAMSE DROOGDOK MAATSCHAPPIJ (RDM) IN ROTTERDAM (NL)	35	7		1	23
ROSATOM	STATE ATOMIC ENERGY CORPORATION ROSATOM	1			1	
S/KWU	SIEMENS/KRAFTWERK UNION AG	1			2	
SACM	SOCIETE ALSACIENNE DE CONSTRUCTIONS MECANIQUES	1	1			
SHE	SHANGHAI ELECTRIC	1				
SIEM, KWU	SIEMENS AG, KRAFTWERK UNION AG	2			2	
SIEMENS	SIEMENS AG, POWER GENERATION	1			1	1
SK	JOINT-STOCK SKODA	10	4		1	
SKODA	SKODA CONCERN NUCLEAR POWER PLANT WORKS					
T/H/F/M	TOSHIBA / HITACHI / FUJI ELECTRIC HOLDINGS / MITSUBISHI HEAVY INDUSTRIES			1		
TBD	TBD					
TNPG	THE NUCLEAR POWER GROUP LTD.	4			10	1
TOSHIBA	TOSHIBA CORPORATION	13			4	
Tsinghua	TSINGHUA UNIVERSITY		1			
UEC	UNITED ENGINEERS AND CONTRACTORS				1	
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY				10	
WH	WESTINGHOUSE ELECTRIC CORPORATION	70	6		12	4
WH/MI	WESTINGHOUSE ELECTRIC CORPORATION / MITSUBISHI HEAVY INDUSTRIES LTD.	1	2		2	2
not specified		1	1			43
TOTAL		448	61	2	160	80

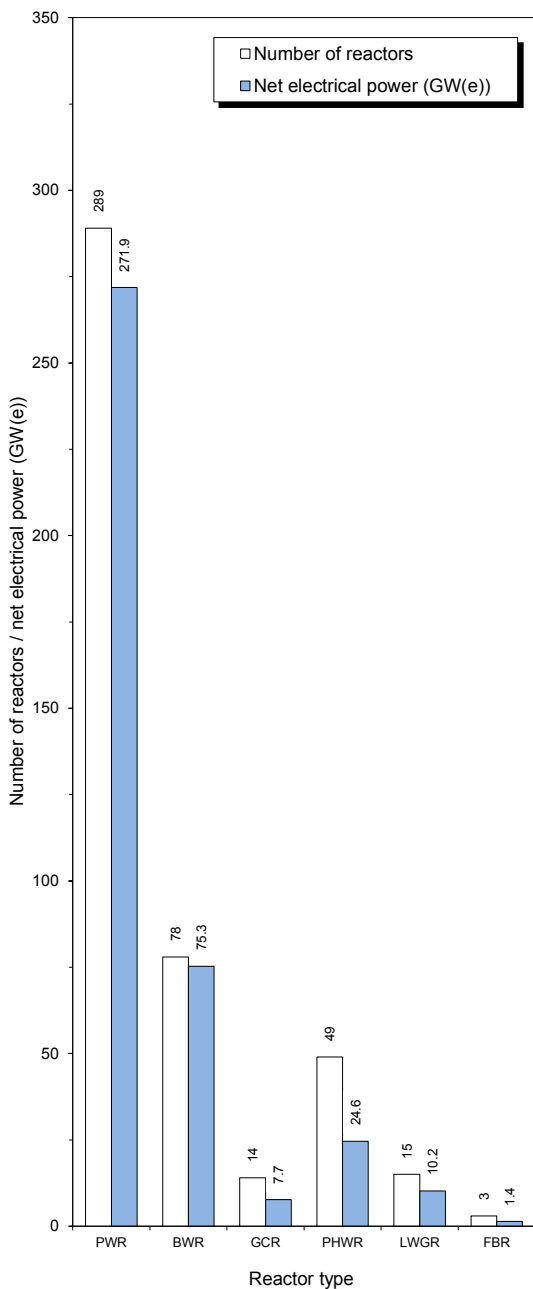


Figure 1. Number of operational reactors by type and net electrical power (as of 31 Dec. 2016).

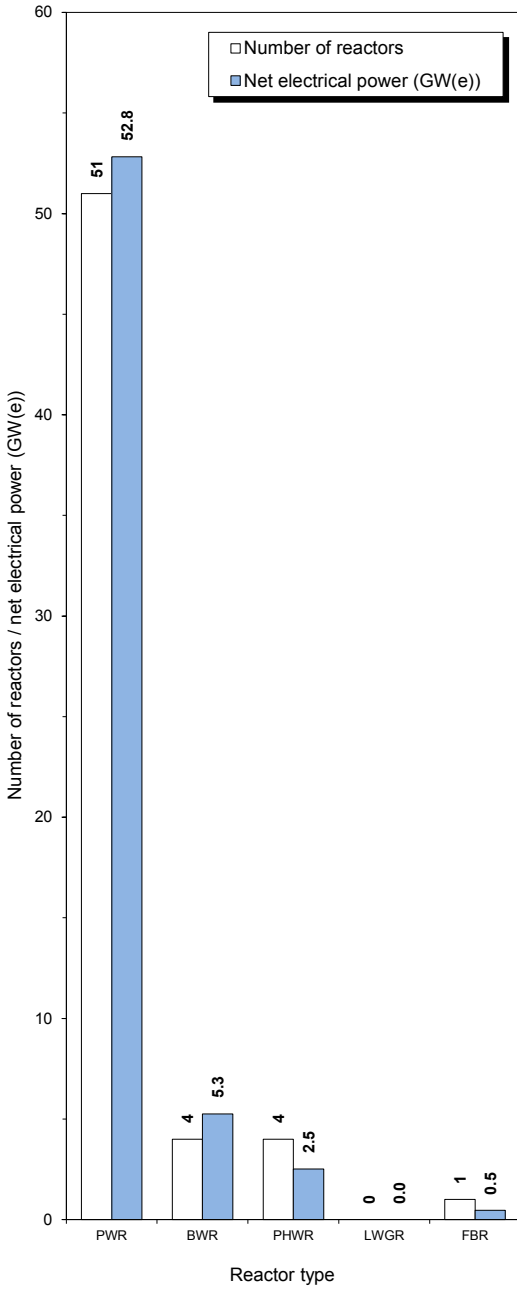


Figure 2. Reactors under construction by type and net electrical power (as of 31 Dec. 2016).

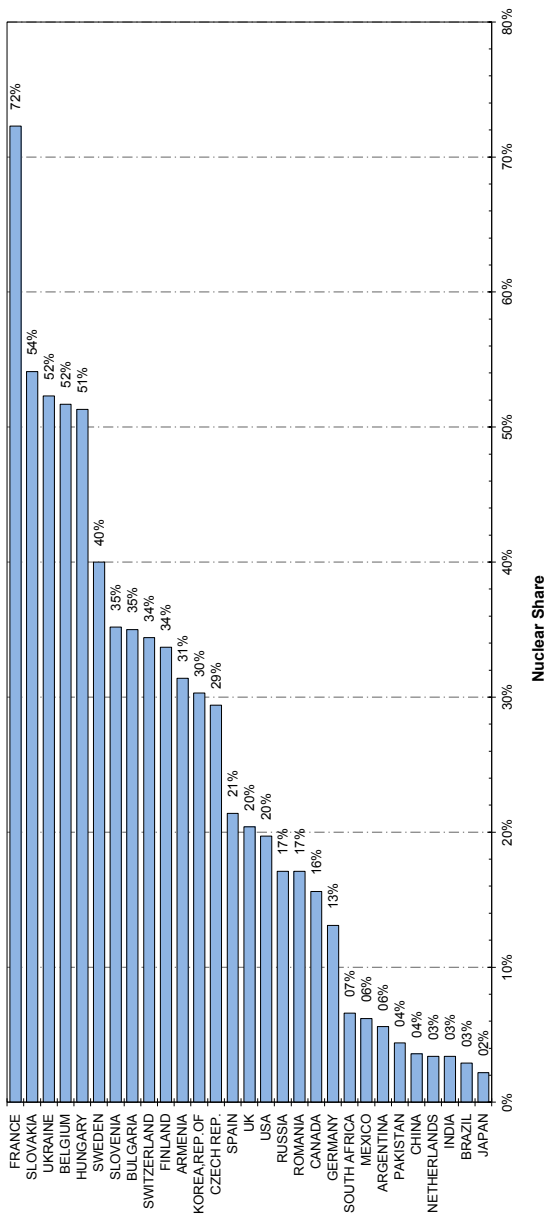


Figure 3. Nuclear share of electricity generation (as of 31 Dec. 2016).

Note: The nuclear share of electricity supplied in Taiwan, China was 13.7% of the total.

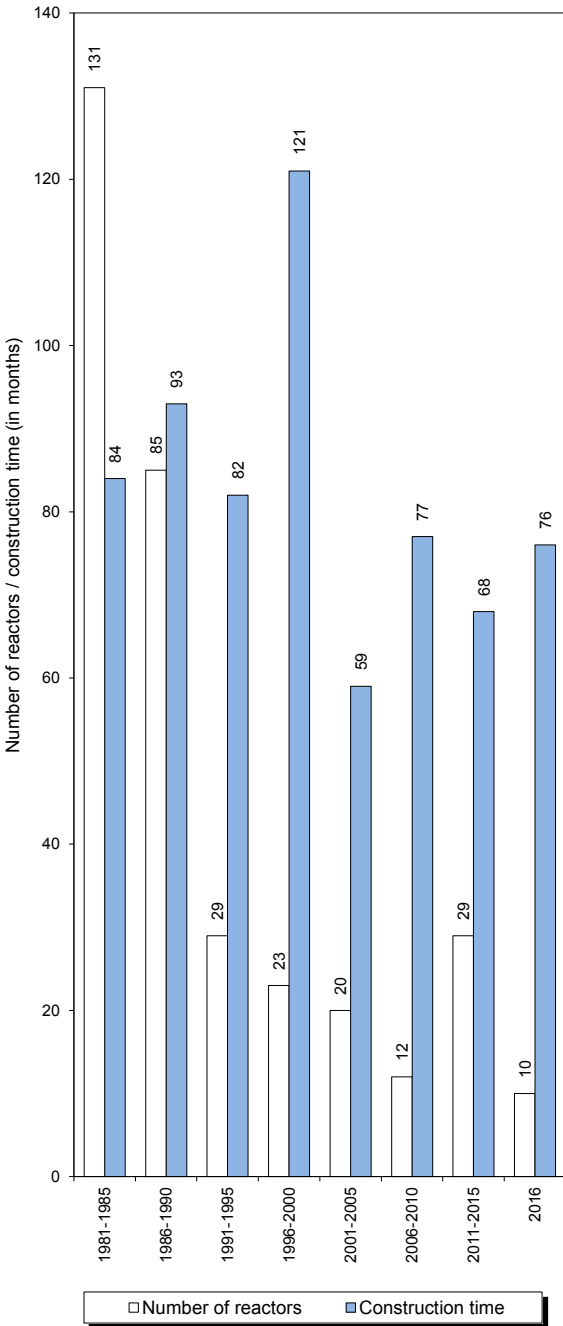


Figure 4. Worldwide median construction time in months (as of 31 Dec. 2016).

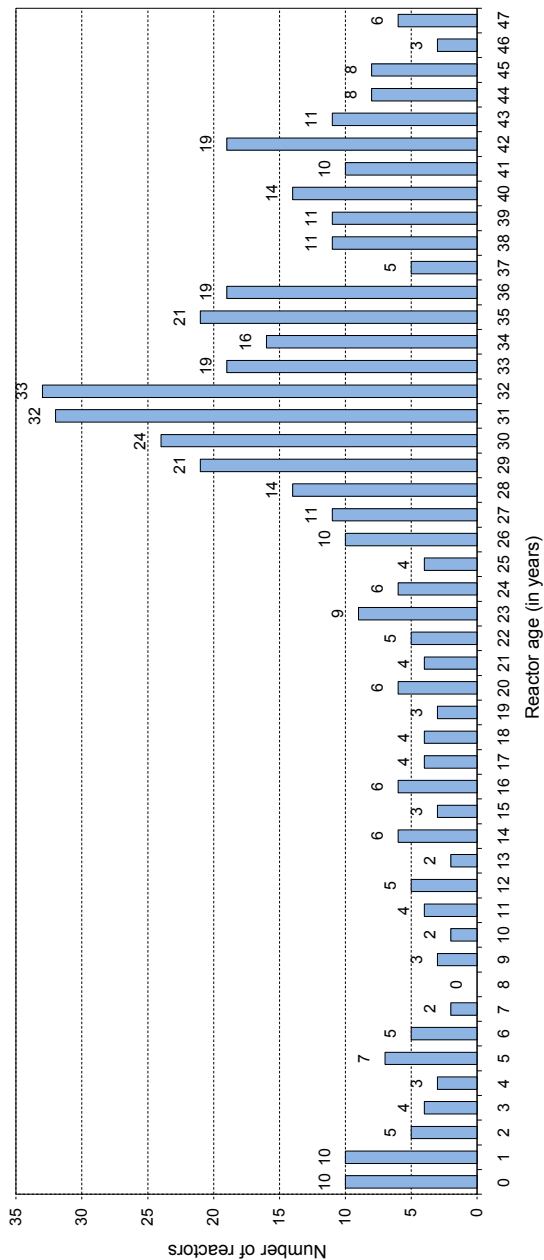


Figure 5. Number of operational reactors by age (as of 31 Dec. 2016).

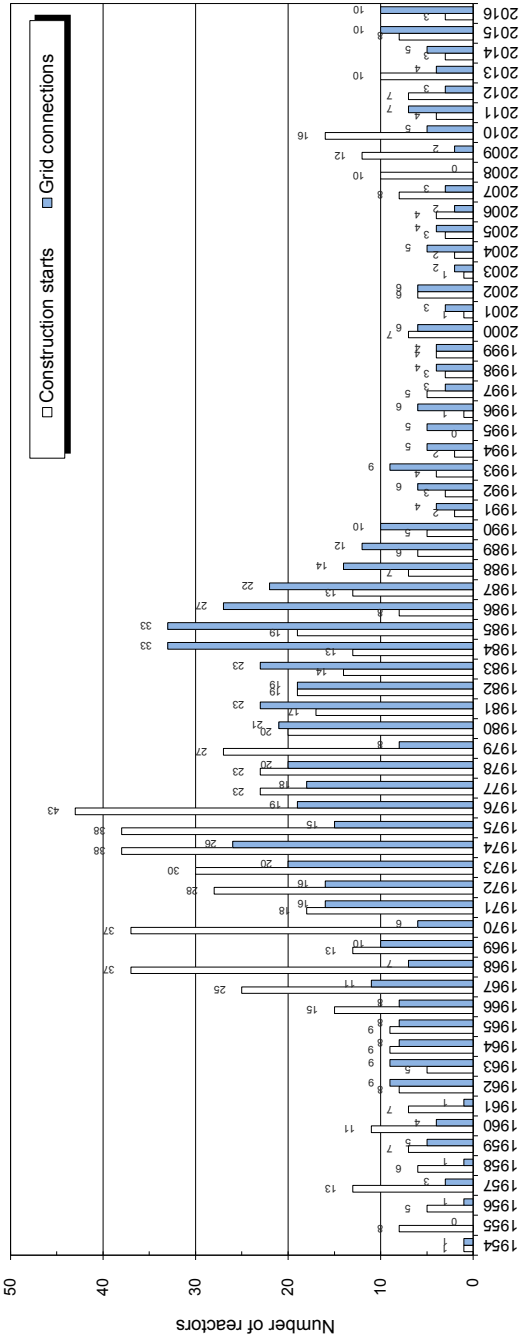


Figure 6. Annual construction starts and connections to the grid (1954 to 2016).



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