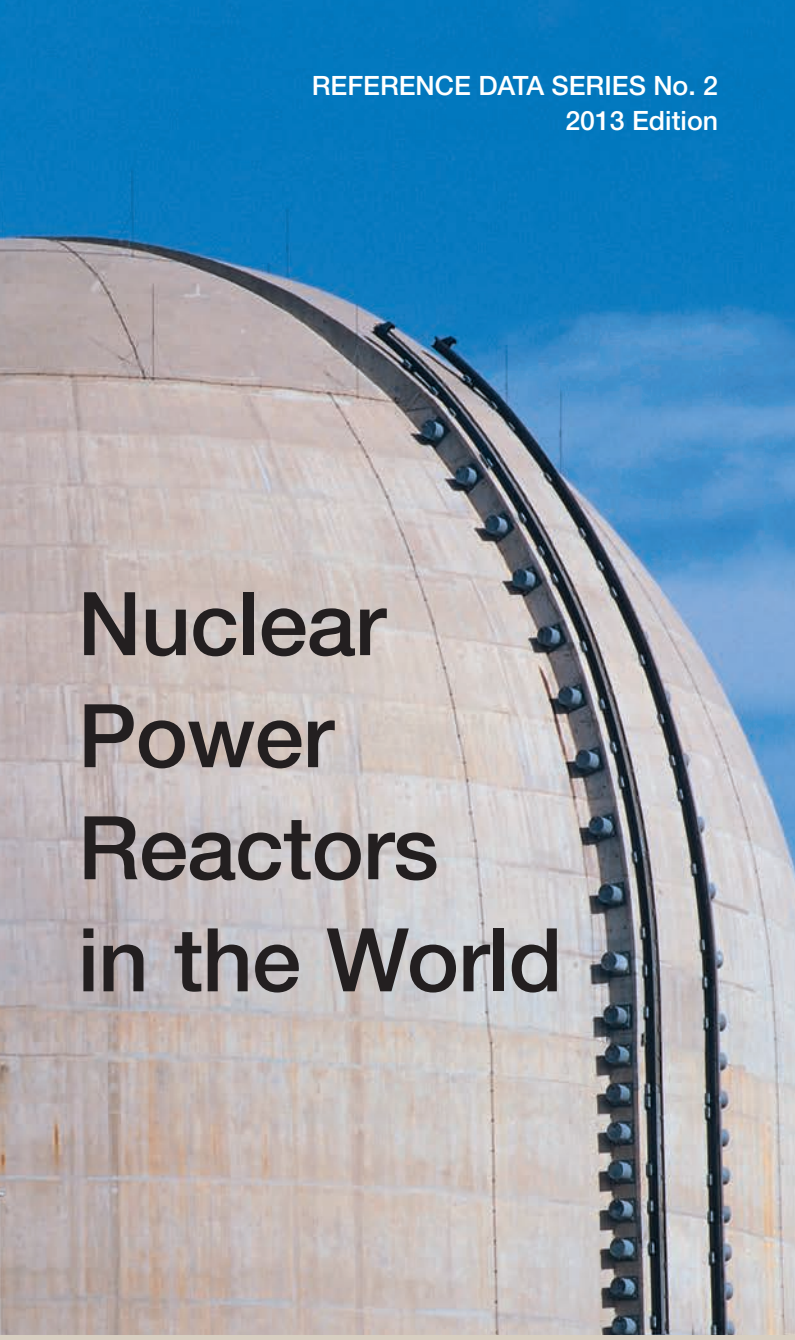
REFERENCE DATA SERIES No. 2
2013 Edition



Nuclear Power Reactors in the World

IAEA
International Atomic Energy Agency

REFERENCE DATA SERIES No. 2

NUCLEAR POWER REACTORS IN THE WORLD

2013 Edition

INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA, 2013

NUCLEAR POWER REACTORS IN THE WORLD
IAEA, VIENNA, 2013
IAEA-RDS-2/33
ISBN 978–92–0–144110–2
ISSN 1011–2642

Printed by the IAEA in Austria
June 2013

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INTRODUCTION

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

This thirty-third edition of Reference Data Series No. 2 provides a detailed comparison of various statistics through 31 December 2012. 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. The IAEA collects data through designated national correspondents in Member States.

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

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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 during 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 external 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.

Construction Start
Date when first major placing of concrete, usually for the base mat of the reactor building, is done.

First Criticality
Date when the reactor is made critical for the first time.

Grid Connection
Date when the plant is first connected to the electrical grid for the supply of power. After this date, the plant is considered to be in operation.

Commercial Operation
Date when the plant is handed over by the contractors to the owner and declared officially in commercial operation.

Permanent Shutdown
Date when the plant is officially declared to be shut down by the owner and taken out of operation permanently.

Long Term Shutdown
A unit is considered to be in long term shutdown if it has been shut down for an extended period (usually several years) without any firm recovery schedule at the beginning but with the intention to restart the unit eventually.

Units and Energy Conversion
1 terawatt-hour (TW·h) = 106 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. REACTORS IN OPERATION, IN LONG TERM SHUTDOWN AND UNDER CONSTRUCTION, 31 DEC. 2012

Country	Reactors in operation		Reactors in long term shutdown		Reactors under construction		Nuclear electricity supplied in 2012	
	No. of units	Total MW(e)	No. of units	Total MW(e)	No. of units	Total MW(e)	TW(e)·h	% of total
ARGENTINA	2	935			1	692	5.9	4.7
ARMENIA	1	375					2.1	26.6
BELGIUM	7	5927					38.5	51.0
BRAZIL	2	1884			1	1245	15.2	3.1
BULGARIA	2	1906					14.9	31.7
CANADA	19	13500					89.1	15.3
CHINA	17	12860			29	28844	92.7	2.0
CZECH REP.	6	3804					28.6	35.3
FINLAND	4	2752			1	1600	22.1	32.6
FRANCE	58	63130			1	1600	407.4	74.8
GERMANY	9	12068					94.1	16.1
HUNGARY	4	1889					14.8	45.9
INDIA	20	4391			7	4824	29.7	3.6
IRAN, ISL. REP.	1	915					1.3	0.6
JAPAN	50	44215	1	246	2	2650	17.2	2.1
KOREA, REP. OF	23	20739			4	4980	143.6	30.4
MEXICO	2	1530					8.4	4.7
NETHERLANDS	1	482					3.7	4.4
PAKISTAN	3	725			2	630	5.3	5.3
ROMANIA	2	1300					10.6	19.4
RUSSIA	33	23643			11	9297	166.3	17.8
SLOVAKIA	4	1816			2	880	14.4	53.8
SLOVENIA	1	688					5.2	36.0
SOUTH AFRICA	2	1860					12.4	5.1
SPAIN	8	7560					58.7	20.5
SWEDEN	10	9395					61.5	38.1
SWITZERLAND	5	3278					24.5	35.9
UAE					1	1345	NA	NA

TABLE 1. REACTORS IN OPERATION, IN LONG TERM SHUTDOWN AND UNDER CONSTRUCTION, 31 DEC. 2012 — continued

Country	Reactors in operation		Reactors in long term shutdown		Reactors under construction		Nuclear electricity supplied in 2012	
	No. of units	Total MW(e)	No. of units	Total MW(e)	No. of units	Total MW(e)	TW(e)·h	% of total
UK	16	9231					64.0	18.1
UKRAINE	15	13107			2	1900	84.9	46.2
USA	104	102136			1	1165	770.7	19.0
Total	437	373069	1	246	67	64252	2346.2	NA

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

— 6 units, 5028 MW in operation; 2 units, 2600 MW under construction;

— 38.73 TW(e)·h of nuclear electricity generation, representing 18.37% of the total electricity generated there.

TABLE 2. TYPE AND NET ELECTRICAL POWER OF REACTORS CONNECTED TO THE GRID, 31 DEC. 2012

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							2	935					2	935
ARMENIA	1	375											1	375
BELGIUM	7	5927											7	5927
BRAZIL	2	1884											2	1884
BULGARIA	2	1906											2	1906
CANADA							19	13500					19	13500
CHINA	14	11540					2	1300			1	20	17	12860
CZECH REP.	6	3804											6	3804
FINLAND	2	992	2	1760									4	2752
FRANCE	58	63130											58	63130
GERMANY	7	9496	2	2572									9	12068
HUNGARY	4	1889											4	1889
INDIA			2	300			18	4091					20	4391
IRAN, ISL. REP.	1	915											1	915
JAPAN	24	19284	26	24931									50	44215
KOREA, REP. OF	19	18029					4	2710					23	20739
MEXICO			2	1530									2	1530
NETHERLANDS	1	482											1	482
PAKISTAN	2	600					1	125					3	725
ROMANIA							2	1300					2	1300
RUSSIA	17	12864							15	10219	1	560	33	23643
SLOVAKIA	4	1816											4	1816
SLOVENIA	1	688											1	688
SOUTH AFRICA	2	1860											2	1860
SPAIN	6	6050	2	1510									8	7560
SWEDEN	3	2869	7	6526									10	9395
SWITZERLAND	3	1715	2	1563									5	3278
UK	1	1191			15	8040							16	9231
UKRAINE	15	13107											15	13107
USA	69	67927	35	34209									104	102136
TOTAL	273	252190	84	78079	15	8040	48	23961	15	10219	2	580	437	373069

Note: The totals include 6 units, 5028 MW in Taiwan, China.

During 2012, 3 reactors, 3012 MW were newly connected to the grid.

TABLE 3. TYPE AND NET ELECTRICAL POWER OF REACTORS UNDER CONSTRUCTION, 31 DEC. 2012

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	692							1	692
BRAZIL	1	1245											1	1245
CHINA	28	28644									1	200	29	28844
FINLAND	1	1600											1	1600
FRANCE	1	1600											1	1600
INDIA	2	1834			4	2520			1	470			7	4824
JAPAN			2	2650									2	2650
KOREA, REP. OF	4	4980											4	4980
PAKISTAN	2	630											2	630
RUSSIA	9	7593					1	915	1	789			11	9297
SLOVAKIA	2	880											2	880
UAE	1	1345											1	1345
UKRAINE	2	1900											2	1900
USA	1	1165											1	1165
TOTAL	54	53416	4	5250	5	3212	1	915	2	1259	1	200	67	64252

Note: The totals include 2 units (2 x BWR), 2600 MW in Taiwan, China.
During 2012, construction started on 7 reactors, 7044 MW.

TABLE 4. REACTOR YEARS OF EXPERIENCE, UP TO 31 DEC. 2012

Country	Operating reactors		Reactors in long term shutdown		Permanently shut down reactors		Total, operating and shut down			
	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	2	935					2	935	68	7
ARMENIA	1	375			1	376	2	751	38	4
BELGIUM	7	5927			1	10	8	5937	254	7
BRAZIL	2	1884					2	1884	43	3
BULGARIA	2	1906			4	1632	6	3538	153	3
CANADA	19	13500			6	2143	25	15643	634	5
CHINA	17	12860					17	12860	141	10
CZECH REP.	6	3804					6	3804	128	10
FINLAND	4	2752					4	2752	135	4
FRANCE	58	63130			12	3789	70	66919	1874	4
GERMANY	9	12068			27	14301	36	26369	790	2
HUNGARY	4	1889					4	1889	110	2
INDIA	20	4391					20	4391	377	3
IRAN, ISL. REP.	1	915					1	915	1	4
ITALY					4	1423	4	1423	81	
JAPAN	50	44215	1	246	9	4337	60	48798	1596	2
KAZAKHSTAN					1	52	1	52	25	10
KOREA, REP. OF	23	20739					23	20739	404	1
LITHUANIA					2	2370	2	2370	43	6
MEXICO	2	1530					2	1530	41	11
NETHERLANDS	1	482			1	55	2	537	68	
PAKISTAN	3	725					3	725	55	8
ROMANIA	2	1300					2	1300	21	11
RUSSIA	33	23643			5	786	38	24429	1091	4
SLOVAKIA	4	1816			3	909	7	2725	144	7
SLOVENIA	1	688					1	688	31	3
SOUTH AFRICA	2	1860					2	1860	56	3
SPAIN	8	7560			2	621	10	8181	293	6

TABLE 4. REACTOR YEARS OF EXPERIENCE, UP TO 31 DEC. 2012 — continued

Country	Operating reactors		Reactors in long term shutdown		Permanently shut down reactors		Total, operating and shut down			
	No.	Net capacity MW(e)	No.	Net capacity MW(e)	No.	Net capacity MW(e)	No.	Net capacity MW(e)	Operating experience Years	Months
SWEDEN	10	9395			3	1210	13	10605	402	6
SWITZERLAND	5	3278			1	6	6	3284	189	11
UK	16	9231			29	4225	45	13456	1511	8
UKRAINE	15	13107			4	3515	19	16622	413	6
USA	104	102136			28	9764	132	111900	3835	1
Total	437	373069	1	246	143	51524	581	424839	15247	5

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

— reactors connected to the grid: 6 units;

— experience: 188 years, 1 month.

Operating experience is counted from the grid connection excluding any long term shutdown period.

TABLE 5. OPERATING REACTORS AND NET ELECTRICAL POWER, 1985 TO 2012

Country	Number of units and net capacity (MW(e)) connected to the grid at 31 Dec. of given year															
	1985		1990		1995		2000		2005		2010		2011		2012	
	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	935	2	978	2	935	2	935	2	935	2	935
ARMENIA	2	816			1	376	1	376	1	376	1	375	1	375	1	375
BELGIUM	8	5464	7	5501	7	5631	7	5712	7	5801	7	5926	7	5927	7	5927
BRAZIL	1	626	1	626	1	626	2	1976	2	1901	2	1884	2	1884	2	1884
BULGARIA	4	1632	5	2585	6	3538	6	3760	4	2722	2	1906	2	1906	2	1906
CANADA	16	9741	20	13993	21	14902	14	9998	18	12584	18	12604	18	12604	19	13500
CHINA					3	2188	3	2188	9	6587	13	10065	16	11816	17	12860
CZECH REP.	1	391	4	1632	4	1782	5	2611	6	3373	6	3675	6	3760	6	3804
FINLAND	4	2300	4	2310	4	2310	4	2656	4	2676	4	2716	4	2736	4	2752
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	9	12068	9	12068
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	20	4391	20	4391
IRAN, ISL. REP.													1	915	1	915
ITALY	3	1273														
JAPAN	33	23612	41	30867	50	39625	52	43245	55	47593	54	46821	50	44215	50	44215
KAZAKHSTAN	1	135	1	135	1	50										
KOREA, REP. OF	5	3692	9	7220	11	9115	16	12990	20	16810	21	18698	21	18751	23	20739
LITHUANIA	1	1380	2	2760	2	2370	2	2370	1	1185						
MEXICO			1	640	2	1256	2	1290	2	1360	2	1300	2	1300	2	1530
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	725	3	725
ROMANIA							1	655	1	655	2	1300	2	1300	2	1300
RUSSIA	28	15841	29	18898	30	19848	30	19848	31	21743	32	22693	33	23643	33	23643
SLOVAKIA	4	1632	4	1632	4	1632	6	2440	6	2442	4	1816	4	1816	4	1816
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	1830	2	1860
SPAIN	8	5608	9	7099	9	7097	9	7468	9	7591	8	7514	8	7567	8	7560
SWEDEN	12	9455	12	9826	12	10043	11	9412	10	8905	10	9303	10	9326	10	9395

TABLE 5. OPERATING REACTORS AND NET ELECTRICAL POWER, 1985 TO 2012 — continued

Country	Number of units and net capacity (MW(e)) connected to the grid at 31 Dec. of given year															
	1985		1990		1995		2000		2005		2010		2011		2012	
	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	3056	5	3170	5	3220	5	3238	5	3263	5	3278
UK	38	10077	37	11360	35	12910	33	12490	23	11852	19	10137	18	9953	16	9231
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	104	101601	104	102136
WORLD	363	245779	416	318253	434	341402	435	349999	441	368125	441	375277	435	368921	437	373069

Note: The world total includes the following data from 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, 4884 MW; 2010: 6 units, 4982 MW; 2011: 6 units, 5018 MW; 2012: 6 units, 5028 MW.

TABLE 6. NUCLEAR ELECTRICITY PRODUCTION AND SHARE, 1985 TO 2012

Country	Nuclear capacity (TW(e)·h) of reactors connected to the grid at 31 Dec. of given year															
	1985		1990		1995		2000		2005		2010		2011		2012	
	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·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	5.89	5.0	5.90	4.7
ARMENIA							1.84	33.0	2.50	42.7	2.29	39.4	2.36	33.2	2.12	26.6
BELGIUM	29.25	59.8	40.59	60.1	39.30	55.5	45.81	56.8	45.34	55.6	45.73	51.2	45.94	54.0	38.46	51.0
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	14.79	3.2	15.17	3.1
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	15.26	32.6	14.86	31.7
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	88.32	15.3	89.06	15.3
CHINA					12.13	1.2	16.02	1.2	50.33	2.0	70.96	1.8	82.57	1.9	92.65	2.0
CZECH REP.	1.99	NA	11.77	NA	12.23	20.0	12.71	18.7	23.25	30.5	26.44	33.3	26.70	33.0	28.60	35.3
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	22.27	31.6	22.06	32.6
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	423.51	77.7	407.44	74.8
GERMANY	119.59	31.2	139.37	33.1	146.13	29.6	160.66	30.6	154.61	26.6	133.01	22.6	102.31	17.8	94.10	16.1
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	14.71	43.3	14.76	45.9
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	28.95	3.7	29.66	3.6
IRAN, ISL. REP.													0.10	0.0	1.33	0.6
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	156.18	18.1	17.23	2.1
KAZAKHSTAN					0.08	0.1										
KOREA, REP. OF	12.36	23.2	50.26	49.1	60.21	36.1	103.54	40.7	137.59	44.7	141.89	32.2	147.76	34.6	143.55	30.4
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	9.31	3.6	8.41	4.7
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	3.92	3.6	3.71	4.4
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	3.84	3.8	5.27	5.3
ROMANIA							5.05	10.9	5.11	8.6	10.70	19.5	10.81	19.0	10.56	19.4
RUSSIA	88.26	NA	109.62	NA	91.59	11.8	120.10	15.0	137.64	15.8	159.41	17.1	162.02	17.6	166.29	17.8
SLOVAKIA	8.70	NA	11.16	NA	11.35	44.1	15.17	53.4	16.34	56.1	13.54	51.8	14.34	54.0	14.41	53.8
SLOVENIA	3.85	NA	4.39	NA	4.57	39.5	4.55	37.4	5.61	42.4	5.38	37.3	5.90	41.7	5.24	36.0
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	12.94	5.2	12.40	5.1
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	55.12	19.5	58.70	20.5
SWEDEN	55.89	42.3	65.27	45.9	67.17	46.6	51.88	39.0	69.58	44.9	55.73	38.1	58.10	39.6	61.47	38.1

TABLE 6. NUCLEAR ELECTRICITY PRODUCTION AND SHARE, 1985 TO 2012 — continued

Country	Nuclear capacity (TW(e)·h) of reactors connected to the grid at 31 Dec. of given year															
	1985		1990		1995		2000		2005		2010		2011		2012	
	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·h	% of total	TW(e)·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	25.69	40.9	24.45	35.9
UK	53.73	19.6	58.77	19.7	70.64	25.4	72.99	21.9	75.34	20.0	56.85	15.5	62.66	17.7	63.96	18.1
UKRAINE	35.81	NA	71.26	NA	65.78	37.8	72.56	47.3	83.40	48.5	83.95	48.1	84.89	47.2	84.89	46.2
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	790.44	19.3	770.72	19.0
WORLD	1327.65		1890.35		2190.91		2440.94		2626.34		2629.82		2517.97		2346.16	NA

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

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;

2011: 40.37 TW(e)·h of nuclear electricity generation, representing 19.02% of the total electricity generated there;

2012: 38.73 TW(e)·h of nuclear electricity generation, representing 18.37% of the total electricity generated there.

TABLE 7. ANNUAL CONSTRUCTION STARTS AND CONNECTIONS TO THE GRID, 1954 TO 2012

Year	Construction starts		Connections to the grid		Reactors in operation	
	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	25453	6	3410	84	17656
1971	18	12623	16	7711	99	24320
1972	29	22335	16	8880	113	32797
1973	29	23492	20	12727	132	43761
1974	38	35222	26	17149	154	61021
1975	38	36471	15	10236	169	70414
1976	43	41618	19	14196	186	83992
1977	23	21710	18	13206	199	96202
1978	23	21735	20	15782	218	111740
1979	27	22959	8	6909	225	117814
1980	20	19134	21	15088	245	133037
1981	17	16099	23	20389	267	153832
1982	19	19765	19	15316	284	168317
1983	16	12218	23	19253	306	187756
1984	11	10478	33	30992	336	218452
1985	19	15346	33	31063	363	245779
1986	8	7201	27	27204	389	272074
1987	13	11117	22	22191	407	295812
1988	7	7722	14	13621	416	305212
1989	6	4018	12	10457	420	311942
1990	5	3366	10	10543	416	318253
1991	2	2246	4	3678	415	321924
1992	3	3105	6	4809	418	325261
1993	4	3715	9	9012	427	333914
1994	2	1330	5	4176	429	336934
1995			5	3635	434	341402
1996	1	610	6	7080	438	347296
1997	5	4386	3	3568	434	347895
1998	3	2096	4	3152	430	344915
1999	4	4640	4	2704	432	347368
2000	7	5456	6	3063	435	349999
2001	1	1304	3	2696	438	352730
2002	6	3440	6	4998	439	357296
2003	1	202	2	1700	437	359842
2004	2	1336	5	4785	438	364688
2005	3	2900	4	3923	441	368125
2006	4	3434	2	1492	435	369581
2007	8	6602	3	1842	439	371645
2008	10	10535			438	371495
2009	12	13125	2	1068	437	370702
2010	16	15842	5	3777	441	375277
2011	4	1890	7	4017	435	368921
2012	7	7044	3	3021	437	373069

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

Country	1981 to 1985		1986 to 1990		1991 to 1995		1996 to 2000		2001 to 2005		2006 to 2010		2011		2012	
	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months
ARGENTINA	1	109														
BELGIUM	4	80														
BRAZIL	1	132					1	176								
BULGARIA	1	104	1	89	1	113										
CANADA	7	98	5	101	2	97										
CHINA					3	73			6	59	4	68	3	60	1	59
CZECH REP.	1	74	3	93			1	167	1	191						
FRANCE	24	68	15	86	3	93	4	124								
GERMANY	7	100	6	103												
HUNGARY	2	112	2	90												
INDIA	2	154	1	152	3	120	4	122	1	64	4	81	1	105		
IRAN, ISL. REP.													1	222		
JAPAN	10	46	8	49	10	46	3	42	4	47	1	53				
KOREA, REP. OF	4	65	4	62	2	61	5	59	4	54	1	51			2	54
LITHUANIA	1	80	1	116												
MEXICO			1	151	1	210										
PAKISTAN							1	83					1	64		
ROMANIA							1	169			1	161				
RUSSIA	9	73	4	72	1	109			2	233	1	323	1	108		
SLOVAKIA	2	99					2	119								
SLOVENIA	1	80														
SOUTH AFRICA	2	102														
SPAIN	5	112	2	96												
SWEDEN	4	74														
SWITZERLAND	1	125														
UK	6	186	4	98	1	80										
UKRAINE	7	57	6	58	1	113			2	227						

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		2012	
	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months
USA	25	126	22	146	1	221	1	278								
TOTAL	131	99	85	95	29	103	23	123	20	64	12	75	7	105	3	57

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

TABLE 9. CONSTRUCTION STARTS DURING 2012

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation
	Code	Name			Thermal	Gross	Net					
CHINA	CN -41	YANGJIANG 4	PWR	CPR-1000	2905	1080	1000	YJNPC	CFHI	2012-11	—	—
	CN -43	FUQING 4	PWR	CNP-1000	2905	1080	1000	FQNP	NPIC	2012-11	—	—
	CN -44	SHIDAO BAY 1	HTGR	HTR-PM	500	211	200	HSNPC	Tsinghua	2012-12	—	—
	CN -45	TIANWAN 3	PWR	VVER V-428	3000	1126	1050	JNPC	IZ	2012-12	—	—
KOREA, REP. OF	KR -27	SHIN-HANUL-1	PWR	APR-1400	3938	1400	1340	KHNP	DHICKOPC	2012-7	—	2016-6
RUSSIA	RU -170	BALTIC-1	PWR	VVER V-491	3200	1194	1109	REA	ROSATOM	2012-2	2016-1	2016-12
UAE	AE -01	BARAKAH 1	PWR	APR-1400	3983	1400	1345	ENEC	KEPCO	2012-7	—	—

Note: During 2012, construction started on 7 reactors (7044 MW).

TABLE 10. CONNECTIONS TO THE GRID DURING 2012

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid connection
	Code	Name			Thermal	Gross	Net					
CHINA	CN -18	NINGDE 1	PWR	CPR-1000	2905	1089	1018	NDNP	DEC	2008-2	2012-11	2012-12
KOREA, REP. OF	KR -22	SHIN-KORI-2	PWR	OPR-1000	2825	1045	1006	KHNP	DHICKOPC	2007-6	2011-12	2012-1
	KR -23	SHIN-WOLSONG-1	PWR	OPR-1000	2825	1045	997	KHNP	DHICKOPC	2007-11	2012-1	2012-1

Note: During 2012, 3 reactors (3021 MW) were newly connected to the grid.

TABLE 11. SCHEDULED CONNECTIONS TO THE GRID DURING 2013

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid date
	Code	Name			Thermal	Gross	Net					
ARGENTINA	AR -3	ATUCHA-2	PHWR	PHWR KWU	2160	745	692	NASA	SIEMENS	1981-7	—	2013-7
CHINA	CN -16	HONGYANHE 1	PWR	CPR-1000	2905	1080	1000	LHNPC	DEC	2007-8	2013-1	2013-2

Note: During 2013, 2 reactors (1692 MW) are expected to achieve connection to grid.

TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2012

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Expected construction start
	Code	Name			Thermal	Gross	Net			
CHINA	CN -72	BAMAOSHAN	PWR	CPR-1000	2905	1080	900			—
	CN -53	CHANGJIANG 3	PWR		1930	650	610			—
	CN -54	CHANGJIANG 4	PWR		1930	650	610			—
	CN -57	FANGCHENGGANG 3	PWR				1000			—
	CN -58	FANGCHENGGANG 4	PWR				1000			—
	CN -59	FANGCHENGGANG 5	PWR				1000			—
	CN -60	FANGCHENGGANG 6	PWR				1000			—
	CN -49	FUQING 5	PWR	ACP-1000	2905	1087	1000	FQNP	NPIC	—
	CN -50	FUQING 6	PWR	ACP-1000	2905	1087	1000	FQNP	NPIC	2014-10
	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 -51	HONGSHIDING 1	PWR				0			—
	CN -52	HONGSHIDING 2	PWR				0	HONGYANH	DEC	—
	CN -80	HONGYANHE 5	PWR	CPR-1000	2905	1080	1000	LHNPC	DEC	—
	CN -81	HONGYANHE 6	PWR	CPR-1000	2905	1080	1000	LHNPC	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 -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	1000	SMNPC	WH/MHI	—
	CN -79	SANMEN 4	PWR	AP-1000	3400	1250	1000	SMNPC	WH/MHI	—
	CN -70	SANMING-1	FBR	BN-800	2100	860	800	FSNPC		—
	CN -71	SANMING-2	FBR	BN-800	2100	860	800	FSNPC		—
	CN -55	TAOHUAJIANG 1	PWR				0			—
	CN -56	TAOHUAJIANG 2	PWR				0			—

TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Expected construction start
	Code	Name			Thermal	Gross	Net			
	CN -73	TIANWAN 4	PWR	VVER V-428	3000	1126	1050	JNPC	IZ	—
	CN -74	TIANWAN 5	PWR	CNP-1000	2905	1080	1000	JNPC	DEC	—
	CN -75	TIANWAN 6	PWR	CNP-1000	2905	1080	1000	JNPC	DEC	—
	CN -47	XIANNING 1	PWR				0			—
	CN -48	XIANNING 2	PWR				0			—
	CN -82	XUDABU 1	PWR	CPR-1000	2905	1080	1000	LNPC	DEC	—
	CN -83	XUDABU 2	PWR	CPR-1000	2905	1080	1000	LNPC	DEC	—
	CN -46	YANGJIANG 5	PWR	CPR-1000	2905	1087	1000	YJNPC	CFHI	—
	CN -69	YANGJIANG 6	PWR	CPR-1000	2905	1087	1000	YJNPC	CFHI	—
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	ASE	—
	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 -73	NAMIE-ODAKA	BWR	BWR			825	TOHOKU		—
	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	—
KOREA, REP. OF	KR -28	SHIN-HANUL-2	PWR	APR-1400	3983	1400	1340	KHNP	DHICKOPC	—
RUSSIA	RU -171	BALTIC-2	PWR	VVER V-491	3200	1194	1109	REA	ROSATOM	—
	RU -202	BASHKIR-1	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -203	BASHKIR-2	PWR		3300	1255	1115	REA	ROSATOM	—

TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Expected construction start
	Code	Name			Thermal	Gross	Net			
	RU -86	BASHKIR-3	PWR	VVER	3300	1255	1115	REA		—
	RU -87	BASHKIR-4	PWR	VVER	3300	1255	1115	REA		—
	RU -207	BELOYARSK-5	FBR	BN-1200	3000	1220	0	REA	ROSATOM	—
	RU -177	CENTRAL-1	PWR	-	3300	1255	1115	REA	ROSATOM	—
	RU -178	CENTRAL-2	PWR	-	3300	1255	1115	REA	ROSATOM	—
	RU -175	KOLA 2-1	PWR	-	3200	1200	1100	REA	ROSATOM	—
	RU -176	KOLA 2-2	PWR	-	3200	1200	1100	REA	ROSATOM	—
	RU -166	KURSK 2-1	PWR	-	3300	1255	1115	REA	ROSATOM	—
	RU -189	KURSK 2-2	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -190	KURSK 2-3	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -191	KURSK 2-4	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -165	LENINGRAD 2-3	PWR	VVER V-491	3200	1170	1085	REA	ROSATOM	—
	RU -167	LENINGRAD 2-4	PWR	VVER V-491	3200	1170	1085	REA	ROSATOM	—
	RU -181	NIZHEGORODSK-1	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -182	NIZHEGORODSK-2	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -183	NIZHEGORODSK-3	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -184	NIZHEGORODSK-4	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -187	SEVERSK-1	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -188	SEVERSK-2	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -198	SMOLENSK 2-1	PWR		3300	1255	1115	REA	ROSATOM	—
	RU -199	SMOLENSK 2-2	PWR		3200	1255	1115	REA	ROSATOM	—
	RU -204	SOUTH URALS 1	FBR		3000	1200	1115	REA	ROSATOM	—
	RU -205	SOUTH URALS 2	FBR		3000	1200	1115	REA	ROSATOM	—
SWITZERLAND	CH -12	NIEDERAMT	PWR		0	0	1600	KKN AG		—
UAE	AE -02	BARAKAH 2	PWR	APR-1400	3983	1400	1345	ENEC	KEPCO	—
USA	US -5039	BELL BEND	PWR	EPR	4300	1720	1600		AREVA	—
	US -5016	CALVERT CLIFFS-3	PWR	US-EPR	4300	1720	1600			—

TABLE 12. REACTORS PLANNED FOR CONSTRUCTION AS KNOWN ON 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Expected construction start
	Code	Name			Thermal	Gross	Net			
	US -5034	COMANCHE PEAK-3	PWR	US-APWR			1700			—
	US -5035	COMANCHE PEAK-4	PWR	US-APWR			1700			—
	US -5033	FERMI-3	BWR	ESBWR	4500	1600	1520			—
	US -5029	LEVY COUNTY-1	PWR	AP-1000	3750	1250	1117	PROGRESS	WH	—
	US -5030	LEVY COUNTY-2	PWR	AP-1000	3750	1250	1117		WH	—
	US -5017	NORTH ANNA-3	PWR	US-APWR			1500			—
	US -5022	SHEARON HARRIS-2	PWR	AP-1000	3750	1250	1117			—
	US -5023	SHEARON HARRIS-3	PWR	AP-1000	3750	1250	1117			—
	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 -5027	VIRGIL C. SUMMER-2	PWR	AP-1000	3400	1250	1117	SCE&G	WH	2013-3
	US -5028	VIRGIL C. SUMMER-3	PWR	AP-1000	3400	1250	1117	SCE&G	WH	—
	US -5025	VOGTLE-3	PWR	AP-1000	3400	1250	1117	SOUTHERN	WH	2013-3
	US -5026	VOGTLE-4	PWR	AP-1000	3400	1250	1117	SOUTHERN	WH	—
	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			—
VIETNAM	VN -1	PHUOC DINH 1	PWR				1000	EVN	ROSATOM	—
	VN -2	PHUOC DINH 2	PWR				1000	EVN	ROSATOM	—

Note: Status as of 31 December 2012, 102 reactors (106962 MW) were known as being planned.

TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2012

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid connection	Commercial operation
	Code	Name			Thermal	Gross	Net						
ARGENTINA	AR -3	ATUCHA-2	PHWR	PHWR KWU	2160	745	692	NASA	SIEMENS	1981-7	—	2013-7	—
BRAZIL	BR -3	ANGRA-3	PWR	PRE KONVOI	3765	1350	1245	ELETRONU	KWU	2010-6	—	—	2016-1
CHINA	CN -36	CHANGJIANG 1	PWR	CNP-600	1930	650	610	HNPC	DEC	2010-4	—	—	—
	CN -37	CHANGJIANG 2	PWR	CNP-600	1930	650	610	HNPC	DEC	2010-11	—	—	2015-12
	CN -38	FANGCHENGGANG 1	PWR	CPR-1000	2905	1080	1000	GFNPC	DEC	2010-7	—	—	—
	CN -39	FANGCHENGGANG 2	PWR	CPR-1000	2905	1080	1000	GFNPC	DEC	2010-12	—	—	—
	CN -24	FANGJIASHAN 1	PWR	CNP-1000	2905	1080	1000	QNPC	NPIC	2008-12	—	—	—
	CN -25	FANGJIASHAN 2	PWR	CNP-1000	2905	1080	1000	QNPC	NPIC	2009-7	—	—	—
	CN -20	FUQING 1	PWR	CNP-1000	2905	1080	1000	FQNP	NPIC	2008-11	—	—	—
	CN -21	FUQING 2	PWR	CNP-1000	2905	1080	1000	FQNP	NPIC	2009-6	—	—	—
	CN -42	FUQING 3	PWR	CNP-1000	2905	1080	1000	FQNP	NPIC	2010-12	—	—	2015-7
	CN -43	FUQING 4	PWR	CNP-1000	2905	1080	1000	FQNP	NPIC	2012-11	—	—	—
	CN -30	HAIYANG 1	PWR	AP-1000	3451	1253	1000	SDNPC	WH	2009-9	—	—	—
	CN -31	HAIYANG 2	PWR	AP-1000	3415	1253	1000	SDNPC	WH	2010-6	—	—	—
	CN -16	HONGYANHE 1	PWR	CPR-1000	2905	1080	1000	LHNPC	DEC	2007-8	2013-1	2013-2	—
	CN -17	HONGYANHE 2	PWR	CPR-1000	2905	1080	1000	LHNPC	DEC	2008-3	—	—	—
	CN -26	HONGYANHE 3	PWR	CPR-1000	2905	1080	1000	LHNPC	DEC	2009-3	—	—	—
	CN -27	HONGYANHE 4	PWR	CPR-1000	2905	1080	1000	LHNPC	DEC	2009-8	—	—	—
	CN -19	NINGDE 2	PWR	CPR-1000	2905	1089	1018	NDNP	SHE	2008-11	—	—	—
	CN -34	NINGDE 3	PWR	CPR-1000	2905	1089	1018	NDNP	CFHI	2010-1	—	—	—
	CN -35	NINGDE 4	PWR	CPR-1000	2905	1089	1018	NDNP	CFHI	2010-9	—	—	—
	CN -28	SANMEN 1	PWR	AP-1000	3400	1250	1000	SMNPC	WH/MHI	2009-3	—	—	—
	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	—	—	—

TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid connection	Commercial operation
	Code	Name			Thermal	Gross	Net						
	CN -33	TAISHAN 2	PWR	EPR-1750	4590	1750	1660	TNPC	AREVA	2010-4	—	—	—
	CN -45	TIANWAN 3	PWR	VVER V-428	3000	1126	1050	JNPC	IZ	2012-12	—	—	—
	CN -22	YANGJIANG 1	PWR	CPR-1000	2905	1080	1000	YJNPC	CFHI	2008-12	—	—	—
	CN -23	YANGJIANG 2	PWR	CPR-1000	2905	1080	1000	YJNPC	CFHI	2009-6	—	—	—
	CN -40	YANGJIANG 3	PWR	CPR-1000	2905	1080	1000	YJNPC	CFHI	2010-11	—	—	—
	CN -41	YANGJIANG 4	PWR	CPR-1000	2905	1080	1000	YJNPC	CFHI	2012-11	—	—	—
FINLAND	FI -5	OLKILUOTO-3	PWR	EPR	4300	1720	1600	TVO	AREVA	2005-8	—	—	2016-1
FRANCE	FR -74	FLAMANVILLE-3	PWR	EPR	4300	1650	1600	EDF	AREVA	2007-12	2016-12	2016-12	—
INDIA	IN -30	KAKRAPAR-3	PHWR	PHWR-700	2166	700	630	NPCIL	NPCIL	2010-11	2014-12	2015-3	2015-6
	IN -31	KAKRAPAR-4	PHWR	PHWR-700	2166	700	630	NPCIL	NPCIL	2010-11	2015-6	2015-9	2015-12
	IN -25	KUDANKULAM-1	PWR	VVER V-412	3000	1000	917	NPCIL	MAEP	2002-3	—	—	—
	IN -26	KUDANKULAM-2	PWR	VVER V-412	3000	1000	917	NPCIL	MAEP	2002-7	—	—	—
	IN -29	PFBR	FBR		1253	500	470	BHAVINI		2004-10	—	—	—
	IN -21	RAJASTHAN-7	PHWR	Horizontal Pre	2177	700	630	NPCIL	NPCIL	2011-7	2015-12	2016-3	2016-6
	IN -22	RAJASTHAN-8	PHWR	Horizontal Pre	2177	700	630	NPCIL	NPCIL	2011-9	2016-6	2016-9	2016-12
JAPAN	JP -66	OHMA	BWR	ABWR	3926	1383	1325	EPDC	H/G	2010-5	—	—	—
	JP -65	SHIMANE-3	BWR	ABWR	3926	1373	1325	CHUGOKU	HITACHI	2007-10	—	—	—
KOREA, REP. OF	KR -27	SHIN-HANUL-1	PWR	APR-1400	3938	1400	1340	KHNP	DHICKOPC	2012-7	—	—	2016-6
	KR -25	SHIN-KORI-3	PWR	APR-1400	3983	1400	1340	KHNP	DHICKOPC	2008-10	—	—	—
	KR -26	SHIN-KORI-4	PWR	APR-1400	3938	1400	1340	KHNP	DHICKOPC	2009-8	—	—	—
	KR -24	SHIN-WOLSONG-2	PWR	OPR-1000	2825	1000	960	KHNP	DHICKOPC	2008-9	—	—	—
PAKISTAN	PK -4	CHASNUPP 3	PWR	CNP-300	999	340	315	PAEC	CZEC	2011-5	2016-8	2016-9	2016-12
	PK -5	CHASNUPP 4	PWR	CNP-300	999	340	315	PAEC	CZEC	2011-12	2017-6	2017-7	2017-10
RUSSIA	RU -151	AKADEMIK LOMONOSOV 1	PWR	KLT-40S 'Float	150	35	32	REA	ROSATOM	2007-4	—	—	2019-12

TABLE 13. REACTORS UNDER CONSTRUCTION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	First criticality	Grid connection	Commercial operation
	Code	Name			Thermal	Gross	Net						
	RU -152	AKADEMIK LOMONOSOV 2	PWR	KLT-40S 'Float	150	35	32	REA	ROSATOM	2007-4	—	—	2019-12
	RU -170	BALTIC-1	PWR	VVER V-491	3200	1194	1109	REA	ROSATOM	2012-2	—	2016-1	2016-12
	RU -116	BELOYARSK-4	FBR	BN-800	2100	864	789	REA	ROSATOM	2006-7	—	—	—
	RU -120	KURSK-5	LWGR	RBMK-1000	3200	1000	915	REA	ROSATOM	1985-12	—	—	—
	RU -163	LENINGRAD 2-1	PWR	VVER V-491	3200	1170	1085	REA	ROSATOM	2008-10	—	—	—
	RU -164	LENINGRAD 2-2	PWR	VVER V-491	3200	1170	1085	REA	ROSATOM	2010-4	—	—	—
	RU -161	NOVOVORONEZH 2-1	PWR	VVER V-392M	3200	1199	1114	REA	ROSATOM	2008-6	—	—	2014-12
	RU -162	NOVOVORONEZH 2-2	PWR	VVER V-392M	3200	1199	1114	REA	ROSATOM	2009-7	—	—	—
	RU -63	ROSTOV-3	PWR	VVER V-320	3000	1100	1011	REA	ROSATOM	2009-9	—	—	—
	RU -64	ROSTOV-4	PWR	VVER V-320	3000	1100	1011	REA	ROSATOM	2010-6	—	—	—
SLOVAKIA	SK -10	MOCHOVCE-3	PWR	VVER V-213	1375	471	440	SE,plc	SKODA	1987-1	2014-10	2014-10	2014-12
	SK -11	MOCHOVCE-4	PWR	VVER V-213	1375	471	440	SE,plc	SKODA	1987-1	2015-10	2015-10	2015-12
UAE	AE-01	BARAKAH 1	PWR	APR-1400	3983	1400	1345	ENEC	KEPCO	2012-7	—	—	—
UKRAINE	UA -51	KHMELNITSKI-3	PWR	VVER V-392B	3200	1000	950	NNEGC	ASE	1986-3	—	2015-1	—
	UA -52	KHMELNITSKI-4	PWR	VVER V-392B	3200	1000	950	NNEGC	ASE	1987-2	—	2016-1	—
USA	US -391	WATTS BAR-2	PWR	W (4-loop) (IC	3425	1218	1165	TVA	WH	1972-12	—	2015-8	—

Note: Status as of 31 December 2012, 67 reactors (64252 MW) were under construction, including 2 units (2600 MW) in Taiwan, China.

TAIWAN, CN	TW -7	LUNGMEN 1	BWR	ABWR	3926	1350	1300	TPC	GE	1999-3	—	—	—
TAIWAN, CN	TW -8	LUNGMEN 2	BWR	ABWR	3926	1350	1300	TPC	GE	1999-8	—	—	—

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
ARGENTINA	AR -1	ATUCHA-1	PHWR	PHWR KWU	1179	357	335	NASA	SIEMENS	1968-6	1974-3	1974-6	85.4	85.5	-
	AR -2	EMBALSE	PHWR	CANDU 6	2015	648	600	NASA	AECL	1974-4	1983-4	1984-1	77.8	77.9	-
ARMENIA	AM -19	ARMENIA-2	PWR	VVER V-270	1375	408	375	ANPPCJSC	FAEA	1975-7	1980-1	1980-5	69.7	71.2	-
BELGIUM	BE -2	DOEL-1	PWR	WE (2 loops)	1311	454	433	ELECTRAB	ACECOWEN	1969-7	1974-8	1975-2	85.6	85.7	-
	BE -4	DOEL-2	PWR	WE (2 loops)	1311	454	433	ELECTRAB	ACECOWEN	1971-9	1975-8	1975-12	89.8	89.8	-
	BE -5	DOEL-3	PWR	WE 3-loops	3054	1056	1006	ELECTRAB	FRAMACEC	1975-1	1982-6	1982-10	77.7	78.0	-
	BE -7	DOEL-4	PWR	WE 3-loops	2988	1090	1039	ELECTRAB	ACECOWEN	1978-12	1985-4	1985-7	84.1	84.1	-
	BE -3	TIHANGE-1	PWR	Framatome 3 lo	2873	1009	962	ELECTRAB	ACLF	1970-6	1975-3	1975-10	86.0	87.6	-
	BE -6	TIHANGE-2	PWR	WE 3-loops	3064	1055	1008	ELECTRAB	FRAMACEC	1976-4	1982-10	1983-6	82.2	82.5	-
	BE -8	TIHANGE-3	PWR	WE 3-loops	3000	1094	1046	ELECTRAB	ACECOWEN	1978-11	1985-6	1985-9	89.2	89.8	-
BRAZIL	BR -1	ANGRA-1	PWR	2-loop WE	1882	640	609	ELETRONU	WH	1971-5	1982-4	1985-1	79.9	80.0	-
	BR -2	ANGRA-2	PWR	PRE KONVOI	3764	1350	1275	ELETRONU	KWU	1976-1	2000-7	2001-2	91.3	91.8	-
BULGARIA	BG -5	KOZLODUY-5	PWR	VVER V-320	3000	1000	953	KOZNPP	AEE	1980-7	1987-11	1988-12	88.1	88.5	DH
	BG -6	KOZLODUY-6	PWR	VVER V-320	3000	1000	953	KOZNPP	AEE	1982-4	1991-8	1993-12	86.7	87.4	DH
CANADA	CA -8	BRUCE-1	PHWR	CANDU 791	2575	824	772	BRUCEPOW	OH/AECL	1971-6	1977-1	1977-9	42.9	42.9	-
	CA -9	BRUCE-2	PHWR	CANDU 791	2456	786	734	BRUCEPOW	OH/AECL	1970-12	1976-9	1977-9	85.7	85.7	-
	CA -10	BRUCE-3	PHWR	CANDU 750A	2832	805	730	BRUCEPOW	OH/AECL	1972-7	1977-12	1978-2	71.8	72.3	-
	CA -11	BRUCE-4	PHWR	CANDU 750A	2832	805	730	BRUCEPOW	OH/AECL	1972-9	1978-12	1979-1	82.6	83.0	-
	CA -18	BRUCE-5	PHWR	CANDU 750B	2832	872	817	BRUCEPOW	OH/AECL	1978-6	1984-12	1985-3	91.0	91.1	-
	CA -19	BRUCE-6	PHWR	CANDU 750B	2690	891	817	BRUCEPOW	OH/AECL	1978-1	1984-6	1984-9	91.4	91.5	-
	CA -20	BRUCE-7	PHWR	CANDU 750B	2832	872	817	BRUCEPOW	OH/AECL	1979-5	1986-2	1986-4	90.4	90.5	-
	CA -21	BRUCE-8	PHWR	CANDU 750B	2690	845	817	BRUCEPOW	OH/AECL	1979-8	1987-3	1987-5	90.1	90.2	-
	CA -22	DARLINGTON-1	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1982-4	1990-12	1992-11	88.0	89.1	-
	CA -23	DARLINGTON-2	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1981-9	1990-1	1990-10	91.5	92.5	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	CA -24	DARLINGTON-3	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1984-9	1992-12	1993-2	90.3	91.2	-
	CA -25	DARLINGTON-4	PHWR	CANDU 850	2776	934	878	OPG	OH/AECL	1985-7	1993-4	1993-6	91.2	92.1	-
	CA -4	PICKERING-1	PHWR	CANDU 500A	1744	542	515	OPG	OH/AECL	1966-6	1971-4	1971-7	70.3	70.6	-
	CA -7	PICKERING-4	PHWR	CANDU 500A	1744	542	515	OPG	OH/AECL	1968-5	1973-5	1973-6	62.9	63.2	-
	CA -13	PICKERING-5	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1974-11	1982-12	1983-5	76.5	77.4	-
	CA -14	PICKERING-6	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1975-10	1983-11	1984-2	85.1	85.6	-
	CA -15	PICKERING-7	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1976-3	1984-11	1985-1	70.8	71.3	-
	CA -16	PICKERING-8	PHWR	CANDU 500B	1744	540	516	OPG	OH/AECL	1976-9	1986-1	1986-2	75.6	76.1	-
	CA -17	POINT LEPREAU	PHWR	CANDU 6	2180	705	660	NBEPC	AECL	1975-5	1982-9	1983-2	6.3	6.3	-
CHINA	CN -84	CEFR	FBR	BN-20	65	25	20	CIAE	IZ	2000-5	2011-7	—			-
	CN -2	DAYA BAY 1	PWR	M310	2905	984	944	DNMC	FRAM	1987-8	1993-8	1994-2	92.6	92.7	-
	CN -3	DAYA BAY 2	PWR	M310	2905	984	944	DNMC	FRAM	1988-4	1994-2	1994-5	92.9	93.0	-
	CN -6	LING AO 1	PWR	M310	2905	990	938	DNMC	FRAM	1997-5	2002-2	2002-5	91.9	92.2	-
	CN -7	LING AO 2	PWR	M310	2905	990	938	DNMC	FRAM	1997-11	2002-9	2003-1	90.3	90.4	-
	CN -12	LING AO 3	PWR	CPR-1000	2905	1080	1020	DNMC	DEC	2005-12	2010-7	2010-9	79.8	79.9	-
	CN -13	LING AO 4	PWR	CPR-1000	2905	1080	1020	DNMC	DEC	2006-6	2011-5	2011-8	85.8	86.1	-
	CN -18	NINGDE 1	PWR	CPR-1000	2905	1089	1018	NDNP	DEC	2008-2	2012-12	—			-
	CN -1	QINSHAN 1	PWR	CNP-300	966	320	298	CNNO	CNNC	1985-3	1991-12	1994-4	90.7	90.9	-
	CN -4	QINSHAN 2-1	PWR	CNP-600	1930	650	610	NPQJVC	CNNC	1996-6	2002-2	2002-4	83.7	83.7	-
	CN -5	QINSHAN 2-2	PWR	CNP-600	1930	650	610	NPQJVC	CNNC	1997-4	2004-3	2004-5	86.1	86.1	-
	CN -14	QINSHAN 2-3	PWR	CNP-600	1930	650	610	NPQJVC	CNNC	2006-4	2010-8	2010-10	86.8	86.8	-
	CN -15	QINSHAN 2-4	PWR	CNP 600	1930	650	610	NPQJVC	CNNC	2007-1	2011-11	2011-12	95.8	95.8	-
	CN -8	QINSHAN 3-1	PHWR	CANDU 6	2064	700	650	TQNPC	AECL	1998-6	2002-11	2002-12	92.3	92.3	-
	CN -9	QINSHAN 3-2	PHWR	CANDU 6	2064	700	650	TQNPC	AECL	1998-9	2003-6	2003-7	91.1	91.2	-
	CN -10	TIANWAN 1	PWR	VVER V-428	3000	1060	990	JNPC	IZ	1999-10	2006-5	2007-5	81.2	81.2	-
	CN -11	TIANWAN 2	PWR	VVER V-428	3000	1060	990	JNPC	IZ	2000-9	2007-5	2007-8	83.9	83.9	-
CZECH REP.	CZ -4	DUKOVANY-1	PWR	VVER V-213	1444	500	468	CEZ	SKODA	1979-1	1985-2	1985-5	89.0	89.4	-
	CZ -5	DUKOVANY-2	PWR	VVER V-213	1444	500	471	CEZ	SKODA	1979-1	1986-1	1986-3	86.1	86.7	-

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	CZ -8	DUKOVANY-3	PWR	VVER V-213	1444	498	468	CEZ	SKODA	1979-3	1986-11	1986-12	85.1	86.0	-
	CZ -9	DUKOVANY-4	PWR	VVER V-213	1444	500	471	CEZ	SKODA	1979-3	1987-6	1987-7	85.2	85.9	-
	CZ -23	TEMELIN-1	PWR	VVER V-320	3000	1013	963	CEZ	SKODA	1987-2	2000-12	2002-6	73.7	73.8	DH
	CZ -24	TEMELIN-2	PWR	VVER V-320	3000	1013	963	CEZ	SKODA	1987-2	2002-12	2003-4	80.1	80.6	DH
FINLAND	FI -1	LOVIISA-1	PWR	VVER V-213	1500	520	496	FORTUMPH	AEE	1971-5	1977-2	1977-5	89.8	90.2	-
	FI -2	LOVIISA-2	PWR	VVER V-213	1500	520	496	FORTUMPH	AEE	1972-8	1980-11	1981-1	91.9	92.7	-
	FI -3	OLKILUOTO-1	BWR	BWR-2500	2500	910	880	TVO	ASEASTAL	1974-2	1978-9	1979-10	93.2	93.8	-
	FI -4	OLKILUOTO-2	BWR	BWR-2500	2500	910	880	TVO	ASEASTAL	1975-11	1980-2	1982-7	94.2	95.1	-
FRANCE	FR -54	BELLEVILLE-1	PWR	P4 REP 1300	3817	1363	1310	EDF	FRAM	1980-5	1987-10	1988-6	74.8	75.7	-
	FR -55	BELLEVILLE-2	PWR	P4 REP 1300	3817	1363	1310	EDF	FRAM	1980-8	1988-7	1989-1	79.2	82.4	-
	FR -32	BLAYAIS-1	PWR	CP1	2785	951	910	EDF	FRAM	1977-1	1981-6	1981-12	72.6	76.2	-
	FR -33	BLAYAIS-2	PWR	CP1	2785	951	910	EDF	FRAM	1977-1	1982-7	1983-2	81.1	83.9	-
	FR -34	BLAYAIS-3	PWR	CP1	2785	951	910	EDF	FRAM	1978-4	1983-8	1983-11	82.7	85.9	-
	FR -35	BLAYAIS-4	PWR	CP1	2785	951	910	EDF	FRAM	1978-4	1983-5	1983-10	78.7	82.1	-
	FR -13	BUGEY-2	PWR	CP0	2785	945	910	EDF	FRAM	1972-11	1978-5	1979-3	76.0	78.2	-
	FR -14	BUGEY-3	PWR	CP0	2785	945	910	EDF	FRAM	1973-9	1978-9	1979-3	52.3	57.6	-
	FR -15	BUGEY-4	PWR	CP0	2785	917	880	EDF	FRAM	1974-6	1979-3	1979-7	79.2	81.8	-
	FR -16	BUGEY-5	PWR	CP0	2785	917	880	EDF	FRAM	1974-7	1979-7	1980-1	78.6	82.1	-
	FR -50	CATTENOM-1	PWR	P4 REP 1300	3817	1362	1300	EDF	FRAM	1979-10	1986-11	1987-4	78.4	81.2	-
	FR -53	CATTENOM-2	PWR	P4 REP 1300	3817	1362	1300	EDF	FRAM	1980-7	1987-9	1988-2	74.7	78.0	-
	FR -60	CATTENOM-3	PWR	P4 REP 1300	3817	1362	1300	EDF	FRAM	1982-6	1990-7	1991-2	72.6	74.1	-
	FR -65	CATTENOM-4	PWR	P4 REP 1300	3817	1362	1300	EDF	FRAM	1983-9	1991-5	1992-1	83.3	85.3	-
	FR -40	CHINON-B-1	PWR	CP2	2785	954	905	EDF	FRAM	1977-3	1982-11	1984-2	71.2	76.2	-
	FR -41	CHINON-B-2	PWR	CP2	2785	954	905	EDF	FRAM	1977-3	1983-11	1984-8	77.9	80.0	-
	FR -56	CHINON-B-3	PWR	CP2	2785	954	905	EDF	FRAM	1980-10	1986-10	1987-3	74.3	76.9	-
	FR -57	CHINON-B-4	PWR	CP2	2785	954	905	EDF	FRAM	1981-2	1987-11	1988-4	72.3	76.5	-
	FR -62	CHOOZ-B-1	PWR	N4 REP 1450	4270	1560	1500	EDF	FRAM	1984-1	1996-8	2000-5	80.9	82.1	-
	FR -70	CHOOZ-B-2	PWR	N4 REP 1450	4270	1560	1500	EDF	FRAM	1985-12	1997-4	2000-9	73.1	81.4	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	FR -72	CIVAUX-1	PWR	N4 REP 1450	4270	1561	1495	EDF	FRAM	1988-10	1997-12	2002-1	78.9	80.1	-
	FR -73	CIVAUX-2	PWR	N4 REP 1450	4270	1561	1495	EDF	FRAM	1991-4	1999-12	2002-4	75.4	84.7	-
	FR -42	CRUAS-1	PWR	CP2	2785	956	915	EDF	FRAM	1978-8	1983-4	1984-4	74.2	79.3	-
	FR -43	CRUAS-2	PWR	CP2	2785	956	915	EDF	FRAM	1978-11	1984-9	1985-4	73.5	76.9	-
	FR -44	CRUAS-3	PWR	CP2	2785	956	915	EDF	FRAM	1979-4	1984-5	1984-9	73.7	78.7	-
	FR -45	CRUAS-4	PWR	CP2	2785	956	915	EDF	FRAM	1979-10	1984-10	1985-2	72.6	76.7	-
	FR -22	DAMPIERRE-1	PWR	CP1	2785	937	890	EDF	FRAM	1975-2	1980-3	1980-9	79.1	82.1	-
	FR -29	DAMPIERRE-2	PWR	CP1	2785	937	890	EDF	FRAM	1975-4	1980-12	1981-2	79.2	80.7	-
	FR -30	DAMPIERRE-3	PWR	CP1	2785	937	890	EDF	FRAM	1975-9	1981-1	1981-5	82.0	83.7	-
	FR -31	DAMPIERRE-4	PWR	CP1	2785	937	890	EDF	FRAM	1975-12	1981-8	1981-11	75.4	80.9	-
	FR -11	FESSENHEIM-1	PWR	CP0	2660	920	880	EDF	FRAM	1971-9	1977-4	1978-1	73.1	73.7	-
	FR -12	FESSENHEIM-2	PWR	CP0	2660	920	880	EDF	FRAM	1972-2	1977-10	1978-4	59.3	62.5	-
	FR -46	FLAMANVILLE-1	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1979-12	1985-12	1986-12	66.0	68.6	-
	FR -47	FLAMANVILLE-2	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1980-5	1986-7	1987-3	78.9	81.5	-
	FR -61	GOLFECH-1	PWR	P4 REP 1300	3817	1363	1310	EDF	FRAM	1982-11	1990-6	1991-2	81.9	83.6	-
	FR -68	GOLFECH-2	PWR	P4 REP 1300	3817	1363	1310	EDF	FRAM	1984-10	1993-6	1994-3	83.6	85.4	-
	FR -20	GRAVELINES-1	PWR	CP1	2785	951	910	EDF	FRAM	1975-2	1980-3	1980-11	71.3	72.8	-
	FR -21	GRAVELINES-2	PWR	CP1	2785	951	910	EDF	FRAM	1975-3	1980-8	1980-12	78.0	79.5	-
	FR -27	GRAVELINES-3	PWR	CP1	2785	951	910	EDF	FRAM	1975-12	1980-12	1981-6	67.3	69.1	-
	FR -28	GRAVELINES-4	PWR	CP1	2785	951	910	EDF	FRAM	1976-4	1981-6	1981-10	84.2	85.4	-
	FR -51	GRAVELINES-5	PWR	CP1	2785	951	910	EDF	FRAM	1979-10	1984-8	1985-1	79.5	80.9	-
	FR -52	GRAVELINES-6	PWR	CP1	2785	951	910	EDF	FRAM	1979-10	1985-8	1985-10	81.2	81.6	-
	FR -58	NOGENT-1	PWR	P4 REP 1300	3817	1363	1310	EDF	FRAM	1981-5	1987-10	1988-2	75.7	79.2	-
	FR -59	NOGENT-2	PWR	P4 REP 1300	3817	1363	1310	EDF	FRAM	1982-1	1988-12	1989-5	76.0	77.1	-
	FR -36	PALUEL-1	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1977-8	1984-6	1985-12	81.3	86.4	-
	FR -37	PALUEL-2	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1978-1	1984-9	1985-12	81.4	83.5	-
	FR -38	PALUEL-3	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1979-2	1985-9	1986-2	68.9	70.7	-
	FR -39	PALUEL-4	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1980-2	1986-4	1986-6	82.2	83.5	-
	FR -63	PENLY-1	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1982-9	1990-5	1990-12	80.4	81.0	-
	FR -64	PENLY-2	PWR	P4 REP 1300	3817	1382	1330	EDF	FRAM	1984-8	1992-2	1992-11	82.8	84.2	-

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	FR -48	ST. ALBAN-1	PWR	P4 REP 1300	3817	1381	1335	EDF	FRAM	1979-1	1985-8	1986-5	70.7	71.9	-
	FR -49	ST. ALBAN-2	PWR	P4 REP 1300	3817	1381	1335	EDF	FRAM	1979-7	1986-7	1987-3	75.5	78.0	-
	FR -17	ST. LAURENT-B-1	PWR	CP2	2785	956	915	EDF	FRAM	1976-5	1981-1	1983-8	82.0	86.4	-
	FR -23	ST. LAURENT-B-2	PWR	CP2	2785	956	915	EDF	FRAM	1976-7	1981-6	1983-8	78.9	82.2	-
	FR -18	TRICASTIN-1	PWR	CP1	2785	955	915	EDF	FRAM	1974-11	1980-5	1980-12	78.1	80.2	-
	FR -19	TRICASTIN-2	PWR	CP1	2785	955	915	EDF	FRAM	1974-12	1980-8	1980-12	74.3	76.5	-
	FR -25	TRICASTIN-3	PWR	CP1	2785	955	915	EDF	FRAM	1975-4	1981-2	1981-5	73.1	74.2	-
	FR -26	TRICASTIN-4	PWR	CP1	2785	955	915	EDF	FRAM	1975-5	1981-6	1981-11	80.7	82.9	-
GERMANY	DE -32	BROKDORF (KBR)	PWR	PWR	3900	1480	1410	E.ON	KWU	1976-1	1986-10	1986-12	88.9	89.0	-
	DE -33	EMSLAND (KKE)	PWR	Konvoi	3850	1400	1329	KLE	KWU	1982-8	1988-4	1988-6	94.1	94.1	-
	DE -23	GRAFENRHEINFELD (KKG)	PWR	PWR	3765	1345	1275	E.ON	KWU	1975-1	1981-12	1982-6	83.8	83.9	-
	DE -27	GROHNDE (KWG)	PWR	PWR	3900	1430	1360	KWG	KWU	1976-6	1984-9	1985-2	90.4	91.7	-
	DE -26	GUNDREMMINGEN-B (GUN-B)	BWR	BWR-72	3840	1344	1284	KGG	KWU	1976-7	1984-3	1984-7	87.8	87.8	-
	DE -28	GUNDREMMINGEN-C (GUN-C)	BWR	BWR-72	3840	1344	1288	KGG	KWU	1976-7	1984-11	1985-1	89.0	89.2	-
	DE -31	ISAR-2 (KKI 2)	PWR	Konvoi	3950	1485	1410	E.ON	KWU	1982-9	1988-1	1988-4	94.0	94.1	-
	DE -44	NECKARWESTHEIM-2 (GKN 2)	PWR	Konvoi	3850	1400	1310	EnKK	KWU	1982-11	1989-1	1989-4	92.6	92.9	-
	DE -24	PHILIPPSBURG-2 (KKP 2)	PWR	PWR	3950	1468	1402	EnKK	KWU	1977-7	1984-12	1985-4	89.4	90.2	-
HUNGARY	HU -1	PAKS-1	PWR	VVER V-213	1485	500	470	PAKS Zrt	AEE	1974-8	1982-12	1983-8	88.7	88.7	-
	HU -2	PAKS-2	PWR	VVER V-213	1485	500	473	PAKS Zrt	AEE	1974-8	1984-9	1984-11	86.7	86.7	DH
	HU -3	PAKS-3	PWR	VVER V-213	1485	500	473	PAKS Zrt	AEE	1979-10	1986-9	1986-12	89.0	89.0	DH
	HU -4	PAKS-4	PWR	VVER V-213	1485	500	473	PAKS Zrt	AEE	1979-10	1987-8	1987-11	87.9	87.9	DH
INDIA	IN -13	KAIGA-1	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1989-9	2000-10	2000-11	61.6	93.3	-
	IN -14	KAIGA-2	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1989-12	1999-12	2000-3	56.9	90.7	-
	IN -15	KAIGA-3	PHWR	Horizontal Pre	800	220	202	NPCIL	NPCIL	2002-3	2007-4	2007-5	52.6	82.4	-
	IN -16	KAIGA-4	PHWR	Horizontal Pre	800	220	202	NPCIL	NPCIL	2002-5	2011-1	2011-1	69.5	95.7	-
	IN -9	KAKRAPAR-1	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1984-12	1992-11	1993-5	44.0	48.0	-
	IN -10	KAKRAPAR-2	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1985-4	1995-3	1995-9	67.2	92.2	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	IN -5	MADRAS-1	PHWR	Horizontal Pre	801	220	205	NPCIL	NPCIL	1971-1	1983-7	1984-1	54.3	86.6	DS
	IN -6	MADRAS-2	PHWR	Horizontal Pre	801	220	205	NPCIL	NPCIL	1972-10	1985-9	1986-3	53.2	90.8	DS
	IN -7	NARORA-1	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1976-12	1989-7	1991-1	48.3	85.4	-
	IN -8	NARORA-2	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1977-11	1992-1	1992-7	25.7	43.2	-
	IN -3	RAJASTHAN-1	PHWR	Horizontal Pre	346	100	90	NPCIL	AECL	1965-8	1972-11	1973-12	0.0	0.0	PH
	IN -4	RAJASTHAN-2	PHWR	Horizontal Pre	693	200	187	NPCIL	AECL/DAE	1968-4	1980-11	1981-4	59.8	61.2	PH
	IN -11	RAJASTHAN-3	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1990-2	2000-3	2000-6	77.3	91.5	PH
	IN -12	RAJASTHAN-4	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	1990-10	2000-11	2000-12	78.6	92.7	PH
	IN -19	RAJASTHAN-5	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	2002-9	2009-12	2010-2	89.5	90.1	-
	IN -20	RAJASTHAN-6	PHWR	Horizontal Pre	801	220	202	NPCIL	NPCIL	2003-1	2010-3	2010-3	76.0	76.8	-
	IN -1	TARAPUR-1	BWR	BWR-1, Mark 2	530	160	150	NPCIL	GE	1964-10	1969-4	1969-10	77.7	78.4	-
	IN -2	TARAPUR-2	BWR	BWR-1, Mark 2	530	160	150	NPCIL	GE	1964-10	1969-5	1969-10	93.1	94.1	-
	IN -23	TARAPUR-3	PHWR	Horizontal Pre	1730	540	490	NPCIL	NPCIL	2000-5	2006-6	2006-8	70.6	91.7	-
	IN -24	TARAPUR-4	PHWR	Horizontal Pre	1730	540	490	NPCIL	NPCIL	2000-3	2005-6	2005-9	61.0	88.4	-
IRAN, ISL. REP.	IR -1	BUSHEHR 1	PWR	VVER V-446	3000	1000	915	NPPDCO	ASE	1975-5	2011-9	—			-
JAPAN	JP -17	FUKUSHIMA-DAIICHI-5	BWR	BWR-4	2381	784	760	TEPCO	TOSHIBA	1972-5	1977-9	1978-4	45.2	45.2	-
	JP -18	FUKUSHIMA-DAIICHI-6	BWR	BWR-5	3293	1100	1067	TEPCO	GE/T	1973-10	1979-5	1979-10	44.3	45.5	-
	JP -25	FUKUSHIMA-DAINI-1	BWR	BWR-5	3293	1100	1067	TEPCO	TOSHIBA	1976-3	1981-7	1982-4	54.2	55.3	-
	JP -26	FUKUSHIMA-DAINI-2	BWR	BWR-5	3293	1100	1067	TEPCO	HITACHI	1979-5	1983-6	1984-2	55.1	56.2	-
	JP -35	FUKUSHIMA-DAINI-3	BWR	BWR-5	3293	1100	1067	TEPCO	TOSHIBA	1981-3	1984-12	1985-6	54.6	55.7	-
	JP -38	FUKUSHIMA-DAINI-4	BWR	BWR-5	3293	1100	1067	TEPCO	HITACHI	1981-5	1986-12	1987-8	48.9	50.0	-
	JP -12	GENKAI-1	PWR	M (2-loop)	1650	559	529	KYUSHU	MHI	1971-9	1975-2	1975-10	67.0	67.0	-
	JP -27	GENKAI-2	PWR	M (2-loop)	1650	559	529	KYUSHU	MHI	1977-2	1980-6	1981-3	50.5	50.5	-
	JP -45	GENKAI-3	PWR	M (4-loop)	3423	1180	1127	KYUSHU	MHI	1988-6	1993-6	1994-3	51.1	51.1	DS
	JP -46	GENKAI-4	PWR	M (4-loop)	3423	1180	1127	KYUSHU	MHI	1992-7	1996-11	1997-7	66.6	66.6	DS
	JP -36	HAMAOKA-3	BWR	BWR-5	3293	1100	1056	CHUBU	TOSHIBA	1983-4	1987-1	1987-8	46.8	47.0	-
	JP -49	HAMAOKA-4	BWR	BWR-5	3293	1137	1092	CHUBU	TOSHIBA	1989-10	1993-1	1993-9	83.0	85.1	-
	JP -60	HAMAOKA-5	BWR	ABWR	3926	1380	1325	CHUBU	TOSHIBA	2000-7	2004-4	2005-1	56.2	67.7	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	JP -58	HIGASHI DORI 1 (TOHOKU)	BWR	BWR-5	3293	1100	1067	TOHOKU	TOSHIBA	2000-11	2005-3	2005-12	50.6	50.6	-
	JP -23	IKATA-1	PWR	M (2-loop)	1650	566	538	SHIKOKU	MHI	1973-9	1977-2	1977-9	59.9	60.0	DS
	JP -32	IKATA-2	PWR	M (2-loop)	1650	566	538	SHIKOKU	MHI	1978-8	1981-8	1982-3	65.9	65.9	DS
	JP -47	IKATA-3	PWR	M (3-loop)	2660	890	846	SHIKOKU	MHI	1990-10	1994-3	1994-12	59.9	59.9	DS
	JP -33	KASHIWAZAKI KARIWA-1	BWR	BWR-5	3293	1100	1067	TEPCO	TOSHIBA	1980-6	1985-2	1985-9	23.1	23.1	-
	JP -39	KASHIWAZAKI KARIWA-2	BWR	BWR-5	3293	1100	1067	TEPCO	TOSHIBA	1985-11	1990-2	1990-9	0.0	0.0	-
	JP -52	KASHIWAZAKI KARIWA-3	BWR	BWR-5	3293	1100	1067	TEPCO	TOSHIBA	1989-3	1992-12	1993-8	0.0	0.0	-
	JP -53	KASHIWAZAKI KARIWA-4	BWR	BWR-5	3293	1100	1067	TEPCO	HITACHI	1990-3	1993-12	1994-8	0.0	0.0	-
	JP -40	KASHIWAZAKI KARIWA-5	BWR	BWR-5	3293	1100	1067	TEPCO	HITACHI	1985-6	1989-9	1990-4	23.0	23.0	-
	JP -55	KASHIWAZAKI KARIWA-6	BWR	ABWR	3926	1356	1315	TEPCO	TOSHIBA	1992-11	1996-1	1996-11	45.4	45.4	-
	JP -56	KASHIWAZAKI KARIWA-7	BWR	ABWR	3926	1356	1315	TEPCO	HITACHI	1993-7	1996-12	1997-7	37.2	37.2	-
	JP -4	MIHAMA-1	PWR	W (2-loop)	1031	340	320	KEPCO	WH	1967-2	1970-8	1970-11	47.0	47.3	-
	JP -6	MIHAMA-2	PWR	M (2-loop)	1456	500	470	KEPCO	MHI	1968-5	1972-4	1972-7	53.3	53.5	-
	JP -14	MIHAMA-3	PWR	M (3-loop)	2440	826	780	KEPCO	MHI	1972-8	1976-2	1976-12	57.7	57.7	-
	JP -15	OHI-1	PWR	W (4-loop)	3423	1175	1120	KEPCO	WH	1972-10	1977-12	1979-3	50.4	50.4	DS
	JP -19	OHI-2	PWR	W (4-loop)	3423	1175	1120	KEPCO	WH	1972-12	1978-10	1979-12	61.6	61.6	DS
	JP -50	OHI-3	PWR	M (4-loop)	3423	1180	1127	KEPCO	MHI	1987-10	1991-6	1991-12	51.8	51.8	-
	JP -51	OHI-4	PWR	M (4-loop)	3423	1180	1127	KEPCO	MHI	1988-6	1992-6	1993-2	68.9	68.9	-
	JP -22	ONAGAWA-1	BWR	BWR-4	1593	524	498	TOHOKU	TOSHIBA	1980-7	1983-11	1984-6	32.5	42.5	-
	JP -54	ONAGAWA-2	BWR	BWR-5	2436	825	796	TOHOKU	TOSHIBA	1991-4	1994-12	1995-7	45.0	54.5	-
	JP -57	ONAGAWA-3	BWR	BWR-5	2436	825	796	TOHOKU	TOSHIBA	1998-1	2001-5	2002-1	46.0	56.0	-
	JP -28	SENDAI-1	PWR	M (3-loop)	2660	890	846	KYUSHU	MHI	1979-12	1983-9	1984-7	54.0	54.0	-
	JP -37	SENDAI-2	PWR	M (3-loop)	2660	890	846	KYUSHU	MHI	1981-10	1985-4	1985-11	62.9	62.9	-
	JP -48	SHIKA-1	BWR	BWR-5	1593	530	505	HOKURIKU	HITACHI	1989-7	1993-1	1993-7	31.9	31.9	-
	JP -59	SHIKA-2	BWR	ABWR	3926	1150	1108	HOKURIKU	HITACHI	2001-8	2005-7	2006-3	44.2	44.2	-
	JP -7	SHIMANE-1	BWR	BWR-3	1380	460	439	CHUGOKU	HITACHI	1970-7	1973-12	1974-3	31.7	31.7	-
	JP -41	SHIMANE-2	BWR	BWR-5	2436	820	789	CHUGOKU	HITACHI	1985-2	1988-7	1989-2	56.1	56.1	-
	JP -8	TAKAHAMA-1	PWR	M (3-loop)	2440	826	780	KEPCO	WH/MHI	1970-4	1974-3	1974-11	50.6	50.6	-
	JP -13	TAKAHAMA-2	PWR	M (3-loop)	2440	826	780	KEPCO	MHI	1971-3	1975-1	1975-11	58.7	58.7	-
	JP -29	TAKAHAMA-3	PWR	M (3-loop)	2660	870	830	KEPCO	MHI	1980-12	1984-5	1985-1	61.7	61.7	DS

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	JP -30	TAKAHAMA-4	PWR	M (3-loop)	2660	870	830	KEPCO	MHI	1981-3	1984-11	1985-6	58.0	58.0	DS
	JP -21	TOKAI-2	BWR	BWR-5	3293	1100	1060	JAPCO	GE	1973-10	1978-3	1978-11	40.1	43.9	-
	JP -43	TOMARI-1	PWR	M (2-loop)	1650	579	550	HEPCO	MHI	1985-4	1988-12	1989-6	54.9	54.9	-
	JP -44	TOMARI-2	PWR	M (2-loop)	1650	579	550	HEPCO	MHI	1985-6	1990-8	1991-4	55.6	55.6	-
	JP -64	TOMARI-3	PWR	M (3-loop)	2660	912	866	HEPCO	MHI	2004-11	2009-3	2009-12	72.4	72.4	-
	JP -3	TSURUGA-1	BWR	BWR-2	1070	357	340	JAPCO	GE	1966-11	1969-11	1970-3	34.3	34.4	-
	JP -34	TSURUGA-2	PWR	M (4-loop)	3411	1160	1108	JAPCO	MHI	1982-11	1986-6	1987-2	38.7	38.7	-
KOREA, REP. OF	KR -7	HANBIT-1	PWR	WH F	2787	995	959	KHNP	WH	1981-6	1986-3	1986-8	94.4	94.7	-
	KR -8	HANBIT-2	PWR	WH F	2787	995	958	KHNP	WH	1981-12	1986-11	1987-6	93.5	93.7	-
	KR -11	HANBIT-3	PWR	OPR-1000	2825	1039	1000	KHNP	DHICKAEC	1989-12	1994-10	1995-3	90.0	90.3	-
	KR -12	HANBIT-4	PWR	OPR-1000	2825	1039	996	KHNP	DHICKAEC	1990-5	1995-7	1996-1	91.5	91.7	-
	KR -17	HANBIT-5	PWR	OPR-1000	2825	1046	993	KHNP	DHICKOPC	1997-6	2001-12	2002-5	88.6	88.7	-
	KR -18	HANBIT-6	PWR	OPR-1000	2825	1050	993	KHNP	DHICKOPC	1997-11	2002-9	2002-12	91.0	91.3	-
	KR -9	HANUL-1	PWR	France CPI	2785	995	960	KHNP	FRAM	1983-1	1988-4	1988-9	91.6	91.7	-
	KR -10	HANUL-2	PWR	France CPI	2775	1006	961	KHNP	FRAM	1983-7	1989-4	1989-9	91.3	91.3	-
	KR -13	HANUL-3	PWR	OPR-1000	2825	1047	994	KHNP	DHICKOPC	1993-7	1998-1	1998-8	88.8	88.9	-
	KR -14	HANUL-4	PWR	OPR-1000	2825	1045	998	KHNP	DHICKOPC	1993-11	1998-12	1999-12	70.4	70.4	-
	KR -19	HANUL-5	PWR	OPR-1000	2815	1048	998	KHNP	DHICKOPC	1999-10	2003-12	2004-7	95.2	95.3	-
	KR -20	HANUL-6	PWR	OPR-1000	2825	1048	997	KHNP	DHICKOPC	2000-9	2005-1	2005-4	92.8	92.8	-
	KR -1	KORI-1	PWR	WH △60	1729	603	576	KHNP	WH	1972-4	1977-6	1978-4	84.8	85.1	-
	KR -2	KORI-2	PWR	WH F	1882	675	637	KHNP	WH	1977-12	1983-4	1983-7	90.3	90.3	-
	KR -5	KORI-3	PWR	WH F	2912	1042	1011	KHNP	WH	1979-10	1985-1	1985-9	89.2	89.2	-
	KR -6	KORI-4	PWR	WH F	2912	1042	1007	KHNP	WH	1980-4	1985-11	1986-4	94.6	94.8	-
	KR -21	SHIN-KORI-1	PWR	OPR-1000	2825	1045	997	KHNP	DHICKOPC	2006-6	2010-8	2011-2	89.5	89.8	-
	KR -22	SHIN-KORI-2	PWR	OPR-1000	2825	1045	997	KHNP	DHICKOPC	2007-6	2012-1	2012-7	99.8	99.9	-
	KR -23	SHIN-WOLSONG-1	PWR	OPR-1000	2825	1045	997	KHNP	DHICKOPC	2007-11	2012-1	2012-7	94.9	95.6	-
	KR -3	WOLSONG-1	PHWR	CANDU 6	2061	678	657	KHNP	AECL	1977-10	1982-12	1983-4	49.8	49.8	-
	KR -4	WOLSONG-2	PHWR	CANDU 6	2061	698	673	KHNP	AECL/DHI	1992-6	1997-4	1997-7	93.9	94.1	-
	KR -15	WOLSONG-3	PHWR	CANDU 6	2061	710	686	KHNP	AECL/DHI	1994-3	1998-3	1998-7	93.7	93.8	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	KR -16	WOLSONG-4	PHWR	CANDU 6	2061	718	694	KHNP	AECL/DHI	1994-7	1999-5	1999-10	94.5	94.6	-
MEXICO	MX -1	LAGUNA VERDE-1	BWR	BWR-5	2027	700	765	CFE	GE	1976-10	1989-4	1990-7	67.5	68.4	-
	MX -2	LAGUNA VERDE-2	BWR	BWR-5	2027	700	765	CFE	GE	1977-6	1994-11	1995-4	78.8	79.4	-
NETHERLANDS	NL -2	BORSSELE	PWR	LWR - PWR	1366	515	482	EPZ	S/KWU	1969-7	1973-7	1973-10	91.1	91.4	-
PAKISTAN	PK -2	CHASNUPP 1	PWR	CNP-300	999	325	300	PAEC	CNNC	1993-8	2000-6	2000-9	77.9	78.0	-
	PK -3	CHASNUPP 2	PWR	PWR	999	325	300	PAEC	CNNC	2005-12	2011-3	2011-5	85.4	85.4	-
	PK -1	KANUPP	PHWR	CANDU-137 MW	433	137	125	PAEC	CGE	1966-8	1971-10	1972-12	47.7	47.7	DS
ROMANIA	RO -1	CERNAVODA-1	PHWR	CANDU 6	2180	706	650	SNN	AECL	1982-7	1996-7	1996-12	91.7	92.1	DH
	RO -2	CERNAVODA-2	PHWR	CANDU 6	2180	705	650	SNN	AECL	1983-7	2007-8	2007-10	94.7	95.5	DH
RUSSIA	RU -96	BALAKOVO-1	PWR	VVER V-320	3000	1000	950	REA	ROSATOM	1980-12	1985-12	1986-5	84.1	84.4	DH, PH
	RU -97	BALAKOVO-2	PWR	VVER V-320	3000	1000	950	REA	ROSATOM	1981-8	1987-10	1988-1	90.0	90.3	DH, PH
	RU -98	BALAKOVO-3	PWR	VVER V-320	3000	1000	950	REA	ROSATOM	1982-11	1988-12	1989-4	88.9	89.0	DH, PH
	RU -99	BALAKOVO-4	PWR	VVER V-320	3200	1000	950	REA	ROSATOM	1984-4	1993-4	1993-12	90.6	90.6	DH, PH
	RU -21	BELOYARSK-3	FBR	BN-600	1470	600	560	REA	ROSATOM	1969-1	1980-4	1981-11	76.8	76.8	DH, PH
	RU -141	BILIBINO-1	LWGR	EGP-6	62	12	11	REA	ROSATOM	1970-1	1974-1	1974-4	53.5	53.5	DH
	RU -142	BILIBINO-2	LWGR	EGP-6	62	12	11	REA	ROSATOM	1970-1	1974-12	1975-2	82.0	82.0	DH
	RU -143	BILIBINO-3	LWGR	EGP-6	62	12	11	REA	ROSATOM	1970-1	1975-12	1976-2	85.9	85.9	DH
	RU -144	BILIBINO-4	LWGR	EGP-6	62	12	11	REA	ROSATOM	1970-1	1976-12	1977-1	85.4	85.4	DH
	RU -30	KALININ-1	PWR	VVER V-338	3000	1000	950	REA	ROSATOM	1977-2	1984-5	1985-6	83.4	83.4	DH, PH
	RU -31	KALININ-2	PWR	VVER V-338	3000	1000	950	REA	ROSATOM	1982-2	1986-12	1987-3	86.0	86.0	DH, PH
	RU -36	KALININ-3	PWR	VVER V-320	3200	1000	950	REA	ROSATOM	1985-10	2004-12	2005-11	86.5	86.6	PH
	RU -37	KALININ-4	PWR	VVER V-320	3200	1000	950	REA	ROSATOM	1986-8	2011-11	2012-12			-
	RU -12	KOLA-1	PWR	VVER V-230	1375	440	411	REA	ROSATOM	1970-5	1973-6	1973-12	83.9	84.0	DH, PH
	RU -13	KOLA-2	PWR	VVER V-230	1375	440	411	REA	ROSATOM	1970-5	1974-12	1975-2	84.7	85.2	DH, PH
	RU -32	KOLA-3	PWR	VVER V-213	1375	440	411	REA	ROSATOM	1977-4	1981-3	1982-12	77.6	77.8	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. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	RU -33	KOLA-4	PWR	VVER V-213	1375	440	411	REA	ROSATOM	1976-8	1984-10	1984-12	83.5	83.6	DH, PH
	RU -17	KURSK-1	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1972-6	1976-12	1977-10	80.5	81.4	DH, PH
	RU -22	KURSK-2	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1973-1	1979-1	1979-8	82.0	82.2	DH, PH
	RU -38	KURSK-3	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1978-4	1983-10	1984-3	71.5	71.7	DH, PH
	RU -39	KURSK-4	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1981-5	1985-12	1986-2	74.3	74.6	DH, PH
	RU -15	LENINGRAD-1	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1970-3	1973-12	1974-11	66.3	67.1	DH, PH
	RU -16	LENINGRAD-2	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1970-6	1975-7	1976-2	84.2	84.4	DH, PH
	RU -34	LENINGRAD-3	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1973-12	1979-12	1980-6	80.2	80.3	DH, PH
	RU -35	LENINGRAD-4	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1975-2	1981-2	1981-8	77.0	77.2	DH, PH
	RU -9	NOVOVORONEZH-3	PWR	VVER V-179	1375	417	385	REA	ROSATOM	1967-7	1971-12	1972-6	69.2	70.1	DH, PH
	RU -11	NOVOVORONEZH-4	PWR	VVER V-179	1375	417	385	REA	ROSATOM	1967-7	1972-12	1973-3	84.4	85.6	DH, PH
	RU -20	NOVOVORONEZH-5	PWR	VVER V-187	3000	1000	950	REA	ROSATOM	1974-3	1980-5	1981-2	68.1	68.6	DH, PH
	RU -59	ROSTOV-1	PWR	VVER V-320I	3200	1000	950	REA	ROSATOM	1981-9	2001-3	2001-12	88.4	88.5	-
	RU -62	ROSTOV-2	PWR	VVER V-320I	3200	1000	950	REA	ROSATOM	1983-5	2010-3	2010-12	89.0	89.5	-
	RU -23	SMOLENSK-1	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1975-10	1982-12	1983-9	75.1	75.4	DH, PH
	RU -24	SMOLENSK-2	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1976-6	1985-5	1985-7	86.9	87.3	DH, PH
	RU -67	SMOLENSK-3	LWGR	RBMK-1000	3200	1000	925	REA	ROSATOM	1984-5	1990-1	1990-10	74.7	74.8	DH, PH
SLOVAKIA	SK -13	BOHUNICE-3	PWR	VVER V-213	1471	505	472	SE,plc	SKODA	1976-12	1984-8	1985-2	87.3	89.7	DH, PH
	SK -14	BOHUNICE-4	PWR	VVER V-213	1471	505	472	SE,plc	SKODA	1976-12	1985-8	1985-12	86.6	88.7	DH, PH
	SK -6	MOCHOVCE-1	PWR	VVER V-213	1471	470	436	SE,plc	SKODA	1983-10	1998-7	1998-10	89.7	90.2	-
	SK -7	MOCHOVCE-2	PWR	VVER V-213	1471	470	436	SE,plc	SKODA	1983-10	1999-12	2000-4	89.0	89.9	-
SLOVENIA	SI -1	KRSKO	PWR	Westinghouse 2	1994	727	688	NEK	WH	1975-3	1981-10	1983-1	92.8	93.0	-
SOUTH AFRICA	ZA -1	KOEBERG-1	PWR	CP1	2775	970	930	ESKOM	FRAM	1976-7	1984-4	1984-7	81.9	82.2	-
	ZA -2	KOEBERG-2	PWR	CP1	2775	970	930	ESKOM	FRAM	1976-7	1985-7	1985-11	76.9	78.0	-
SPAIN	ES -6	ALMARAZ-1	PWR	WE 3-loops	2947	1049	1004	CNAT	WH	1973-7	1981-5	1983-9	85.8	86.8	-
	ES -7	ALMARAZ-2	PWR	WE 3-loops	2947	1044	1006	CNAT	WH	1973-7	1983-10	1984-7	88.1	89.0	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	ES -8	ASCO-1	PWR	WE 3-loops	2941	1033	995	ANAV	WH	1974-5	1983-8	1984-12	80.2	81.5	-
	ES -9	ASCO-2	PWR	WE 3-loops	2941	1035	997	ANAV	WH	1975-3	1985-10	1986-3	85.3	87.4	-
	ES -10	COFRENTES	BWR	BWR-6	3237	1102	1064	ID	GE	1975-9	1984-10	1985-3	88.9	90.1	-
	ES -2	SANTA MARIA DE GARONA	BWR	BWR-3	1381	466	446	NUCLENOR	GE	1966-9	1971-3	1971-5	93.1	93.4	-
	ES -11	TRILLO-1	PWR	PWR 3 loops	3010	1066	1003	CNAT	KWU	1979-8	1988-5	1988-8	87.6	88.3	-
	ES -16	VANDELLOS-2	PWR	WE 3-loops	2941	1087	1045	ANAV	WH	1980-12	1987-12	1988-3	77.2	78.3	-
SWEDEN	SE -9	FORSMARK-1	BWR	BWR-75	2928	1022	984	FKA	ABBATOM	1973-6	1980-6	1980-12	85.5	86.1	-
	SE -11	FORSMARK-2	BWR	BWR-75	2928	1034	996	FKA	ABBATOM	1975-1	1981-1	1981-7	71.9	72.4	-
	SE -14	FORSMARK-3	BWR	BWR-3000	3300	1212	1170	FKA	ABBATOM	1979-1	1985-3	1985-8	82.3	83.1	-
	SE -2	OSKARSHAMN-1	BWR	ABB BWR	1375	492	473	OKG	ABBATOM	1966-8	1971-8	1972-2	61.2	62.3	-
	SE -3	OSKARSHAMN-2	BWR	ABB BWR	1800	661	638	OKG	ABBATOM	1969-9	1974-10	1975-1	80.4	81.6	-
	SE -12	OSKARSHAMN-3	BWR	BWR-75	3900	1450	1400	OKG	ABBATOM	1980-5	1985-3	1985-8	52.0	52.8	-
	SE -4	RINGHALS-1	BWR	BWR	2540	910	865	RAB	ABBATOM	1969-2	1974-10	1976-1	55.6	56.5	-
	SE -5	RINGHALS-2	PWR	WE (3 loops)	2660	917	865	RAB	WH	1970-10	1974-8	1975-5	53.8	55.1	-
	SE -7	RINGHALS-3	PWR	WE (3 loops)	3135	1117	1064	RAB	WH	1972-9	1980-9	1981-9	85.1	87.1	-
	SE -10	RINGHALS-4	PWR	WE (3 loops)	2775	990	940	RAB	WH	1973-11	1982-6	1983-11	80.0	81.9	-
SWITZERLAND	CH -1	BEZNAU-1	PWR	WH - 2 loops	1130	380	365	Axpo AG	WH	1965-9	1969-7	1969-9	90.8	90.8	DH
	CH -3	BEZNAU-2	PWR	WH - 2 loops	1130	380	365	Axpo AG	WH	1968-1	1971-10	1971-12	89.2	89.3	DH
	CH -4	GOESGEN	PWR	PWR 3 Loop	3002	1035	985	KKG	KWU	1973-12	1979-2	1979-11	92.9	93.1	PH
	CH -5	LEIBSTADT	BWR	BWR-6	3600	1275	1190	KKL	GETSCO	1974-1	1984-5	1984-12	86.6	87.7	-
	CH -2	MUEHLEBERG	BWR	BWR-4	1097	390	373	BKW	GETSCO	1967-3	1971-7	1972-11	87.9	88.0	-
UK	GB -18A	DUNGENESS-B1	GCR	AGR	1500	615	520	EDF UK	APC	1965-10	1983-4	1985-4	32.2	32.2	-
	GB -18B	DUNGENESS-B2	GCR	AGR	1500	615	520	EDF UK	APC	1965-10	1985-12	1989-4	42.0	42.0	-
	GB -19A	HARTLEPOOL-A1	GCR	AGR	1500	655	595	EDF UK	NPC	1968-10	1983-8	1989-4	60.5	60.5	-
	GB -19B	HARTLEPOOL-A2	GCR	AGR	1500	655	585	EDF UK	NPC	1968-10	1984-10	1989-4	59.3	59.3	-
	GB -20A	HEYSHAM-A1	GCR	AGR	1500	625	585	EDF UK	NPC	1970-12	1983-7	1989-4	57.4	57.4	-
	GB -20B	HEYSHAM-A2	GCR	AGR	1500	625	575	EDF UK	NPC	1970-12	1984-10	1989-4	48.4	48.4	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	GB -22A	HEYSHAM-B1	GCR	AGR	1550	680	610	EDF UK	NPC	1980-8	1988-7	1989-4	80.6	81.0	-
	GB -22B	HEYSHAM-B2	GCR	AGR	1550	680	610	EDF UK	NPC	1980-8	1988-11	1989-4	73.7	74.2	-
	GB -16A	HINKLEY POINT-B1	GCR	AGR	1494	655	435	EDF UK	TNPG	1967-9	1976-10	1978-10	73.7	74.0	-
	GB -16B	HINKLEY POINT-B2	GCR	AGR	1494	655	435	EDF UK	TNPG	1967-9	1976-2	1976-9	80.2	80.2	-
	GB -17A	HUNTERSTON-B1	GCR	AGR	1496	644	460	EDF UK	TNPG	1967-11	1976-2	1976-2	77.9	77.9	-
	GB -17B	HUNTERSTON-B2	GCR	AGR	1496	644	430	EDF UK	TNPG	1967-11	1977-3	1977-3	81.4	81.6	-
	GB -24	SIZEWELL-B	PWR	SNUPPS	3425	1250	1191	EDF UK	PPC	1988-7	1995-2	1995-9	78.8	78.8	-
	GB -23A	TORNESS 1	GCR	AGR	1623	682	595	EDF UK	NNC	1980-8	1988-5	1988-5	81.4	81.7	-
	GB -23B	TORNESS 2	GCR	AGR	1623	682	595	EDF UK	NNC	1980-8	1989-2	1989-2	81.4	82.2	-
	GB -13A	WYLFA 1	GCR	MAGNOX	1920	540	490	MEL	EE/B&W/T	1963-9	1971-1	1971-11	68.0	68.4	-
UKRAINE	UA -40	KHMELNITSKI-1	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1981-11	1987-12	1988-8	81.0	82.1	DH
	UA -41	KHMELNITSKI-2	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1985-2	2004-8	2005-12	70.4	71.8	DH
	UA -27	ROVNO-1	PWR	VVER V-213	1375	420	381	NNEGC	PAIP	1973-8	1980-12	1981-9	61.8	62.2	DH
	UA -28	ROVNO-2	PWR	VVER V-213	1375	415	376	NNEGC	PAIP	1973-10	1981-12	1982-7	74.2	74.8	DH
	UA -29	ROVNO-3	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1980-2	1986-12	1987-5	68.0	69.8	DH
	UA -69	ROVNO-4	PWR	VVER V-320	3000	1000	950	NNEGC	PAA	1986-8	2004-10	2006-4	72.3	75.9	DH
	UA -44	SOUTH UKRAINE-1	PWR	VVER V-302	3000	1000	950	NNEGC	PAA	1976-8	1982-12	1983-12	75.7	80.8	DH
	UA -45	SOUTH UKRAINE-2	PWR	VVER V-338	3000	1000	950	NNEGC	PAA	1981-7	1985-1	1985-4	76.7	78.7	DH
	UA -48	SOUTH UKRAINE-3	PWR	VVER V-320	3000	1000	950	NNEGC	PAA	1984-11	1989-9	1989-12	61.9	67.9	DH
	UA -54	ZAPOROZHE-1	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1980-4	1984-12	1985-12	78.4	79.8	DH
	UA -56	ZAPOROZHE-2	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1981-1	1985-7	1986-2	79.6	81.1	DH
	UA -78	ZAPOROZHE-3	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1982-4	1986-12	1987-3	81.9	84.9	DH
	UA -79	ZAPOROZHE-4	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1983-4	1987-12	1988-4	80.3	81.7	DH
	UA -126	ZAPOROZHE-5	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1985-11	1989-8	1989-10	81.4	83.1	DH
	UA -127	ZAPOROZHE-6	PWR	VVER V-320	3000	1000	950	NNEGC	PAIP	1986-6	1995-10	1996-9	82.3	83.1	DH
USA	US -313	ARKANSAS ONE-1	PWR	B&W (L-loop) D	2568	903	842	ENTERGY	B&W	1968-10	1974-8	1974-12	92.8	92.8	-
	US -368	ARKANSAS ONE-2	PWR	CE (2-loop) DR	3026	1065	993	ENTERGY	CE	1968-12	1978-12	1980-3	92.7	92.7	-
	US -334	BEAVER VALLEY-1	PWR	W (3-loop)	2900	959	892	FENOC	WH	1970-6	1976-6	1976-10	94.6	94.6	-

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

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	US -412	BEAVER VALLEY-2	PWR	W (3-loop)	2900	958	885	FENOC	WH	1974-5	1987-8	1987-11	90.9	90.9	-
	US -456	BRAIDWOOD-1	PWR	W (4-loop)	3587	1242	1178	EXELON	WH	1975-8	1987-7	1988-7	94.8	94.8	-
	US -457	BRAIDWOOD-2	PWR	W (4-loop) DRY	3587	1210	1152	EXELON	WH	1975-8	1988-5	1988-10	94.0	94.0	-
	US -259	BROWNS FERRY-1	BWR	BWR-4 (Mark 1	3458	1155	1101	TVA	GE	1967-5	1973-10	1974-8	90.3	91.6	-
	US -260	BROWNS FERRY-2	BWR	BWR-4 (Mark 1	3458	1155	1104	TVA	GE	1967-5	1974-8	1975-3	91.3	92.8	-
	US -296	BROWNS FERRY-3	BWR	BWR-4 (Mark 1	3458	1155	1105	TVA	GE	1968-7	1976-9	1977-3	86.5	88.4	-
	US -325	BRUNSWICK-1	BWR	BWR-4 (Mark 1	2923	990	938	PROGRESS	GE	1970-2	1976-12	1977-3	88.2	88.2	-
	US -324	BRUNSWICK-2	BWR	BWR-4 (Mark 1	2923	960	920	PROGRESS	GE	1970-2	1975-4	1975-11	90.8	90.8	-
	US -454	BYRON-1	PWR	W (4-loop) (DR	3587	1242	1164	EXELON	WH	1975-4	1985-3	1985-9	93.4	93.4	-
	US -455	BYRON-2	PWR	W (4-Loop) (DR	3587	1210	1136	EXELON	WH	1975-4	1987-2	1987-8	95.9	95.9	-
	US -483	CALLAWAY-1	PWR	W (4-loop) DRY	3565	1275	1215	AmerenUE	WH	1975-9	1984-10	1984-12	91.8	91.8	-
	US -317	CALVERT CLIFFS-1	PWR	CE (2-loop) (D	2737	918	866	CONSTELL	CE	1968-6	1975-1	1975-5	92.1	92.2	-
	US -318	CALVERT CLIFFS-2	PWR	CE (2-loop) (D	2737	911	850	CONSTELL	CE	1968-6	1976-12	1977-4	96.5	96.5	-
	US -413	CATAWBA-1	PWR	W (4-loop) (IC	3411	1188	1146	DUKEENER	WH	1974-5	1985-1	1985-6	89.8	89.8	-
	US -414	CATAWBA-2	PWR	W (4-loop) (IC	3411	1188	1146	DUKEENER	WH	1974-5	1986-5	1986-8	93.5	93.5	-
	US -461	CLINTON-1	BWR	BWR-6 (Mark 3	3473	1098	1065	EXELON	GE	1975-10	1987-4	1987-11	94.9	94.9	-
	US -397	COLUMBIA	BWR	BWR-5 (Mark 2	3486	1173	1107	ENERGYNW	GE	1972-8	1984-5	1984-12	83.8	84.0	-
	US -445	COMANCHE PEAK-1	PWR	W (4-loop) DRY	3612	1259	1209	LUMINANT	WH	1974-12	1990-4	1990-8	95.1	95.1	-
	US -446	COMANCHE PEAK-2	PWR	W (4-loop) DRY	3458	1250	1197	LUMINANT	WH	1974-12	1993-4	1993-8	94.2	94.2	-
	US -298	COOPER	BWR	BWR-4 (Mark 1	2419	801	768	ENTERGY	GE	1968-6	1974-5	1974-7	89.2	89.2	-
	US -302	CRYSTAL RIVER-3	PWR	B&W (L-loop)	2568	890	860	PROGRESS	B&W	1968-9	1977-1	1977-3	32.9	32.9	-
	US -346	DAVIS BESSE-1	PWR	B&W (R-loop)	2817	925	894	FENOC	B&W	1970-9	1977-8	1978-7	83.8	83.8	-
	US -275	DIABLO CANYON-1	PWR	W (4-loop)	3411	1197	1122	PG&E	WH	1968-4	1984-11	1985-5	91.3	91.3	-
	US -323	DIABLO CANYON-2	PWR	W (4-loop)	3411	1197	1118	PG&E	WH	1970-12	1985-10	1986-3	89.7	90.0	-
	US -315	DONALD COOK-1	PWR	W (4-loop) ICE	3304	1100	1045	AEP	WH	1969-3	1975-2	1975-8	68.8	68.8	-
	US -316	DONALD COOK-2	PWR	W (4-loop) ICE	3468	1151	1077	AEP	WH	1969-3	1978-3	1978-7	91.2	91.2	-
	US -237	DRESDEN-2	BWR	BWR-3 (Mark 1	2957	926	883	EXELON	GE	1966-1	1970-4	1970-6	96.3	96.3	-
	US -249	DRESDEN-3	BWR	BWR-3 (Mark 1	2957	890	850	EXELON	GE	1966-10	1971-7	1971-11	95.2	95.2	-
	US -331	DUANE ARNOLD-1	BWR	BWR-4 (Mark 1	1912	624	601	NEXTERA	GE	1970-6	1974-5	1975-2	91.6	91.6	-
	US -348	FARLEY-1	PWR	W (3-loop)	2775	918	874	SOUTHERN	WH	1970-10	1977-8	1977-12	93.6	93.6	-

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	US-364	FARLEY-2	PWR	W (3-loop) DRY	2775	928	883	SOUTHERN	WH	1970-10	1981-5	1981-7	92.8	92.8	-
	US-341	FERMI-2	BWR	BWR-4 (Mark 1	3430	1100	1037	DTEDISON	GE	1972-9	1986-9	1988-1	84.8	84.8	-
	US-333	FITZPATRICK	BWR	BWR-4 (Mark 1	2536	849	813	ENTERGY	GE	1968-9	1975-2	1975-7	93.7	93.7	-
	US-285	FORT CALHOUN-1	PWR	CE (2-loop)	1500	512	482	OPPD	CE	1968-6	1973-8	1973-9	58.9	58.9	-
	US-416	GRAND GULF-1	BWR	BWR-6 (Mark 3	3898	1333	1266	ENTERGY	GE	1974-5	1984-10	1985-7	88.5	88.5	-
	US-261	H.B. ROBINSON-2	PWR	W (3-loop) DRY	2339	780	741	PROGRESS	WH	1967-4	1970-9	1971-3	84.1	84.1	-
	US-321	HATCH-1	BWR	BWR-4 (Mark 1	2804	911	876	SOUTHERN	GE	1968-9	1974-11	1975-12	91.6	91.6	-
	US-366	HATCH-2	BWR	BWR-4 (Mark 1	2804	921	883	SOUTHERN	GE	1972-2	1978-9	1979-9	89.3	89.3	-
	US-354	HOPE CREEK-1	BWR	BWR-4 (Mark 1	3840	1240	1172	PSEG	GE	1976-3	1986-8	1986-12	95.1	95.1	-
	US-247	INDIAN POINT-2	PWR	W (4-loop) DRY	3216	1067	1020	ENTERGY	WH	1966-10	1973-6	1974-8	92.5	92.5	-
	US-286	INDIAN POINT-3	PWR	W (4-loop) DRY	3216	1085	1040	ENTERGY	WH	1968-11	1976-4	1976-8	95.2	95.3	-
	US-305	KEWAUNEE	PWR	W (2-loop) DRY	1772	595	566	DOMINION	WH	1968-8	1974-4	1974-6	92.6	92.6	-
	US-373	LASALLE-1	BWR	BWR-5 (Mark 2	3546	1207	1137	EXELON	GE	1973-9	1982-9	1984-1	94.8	94.8	-
	US-374	LASALLE-2	BWR	BWR-5 (Mark 2	3546	1207	1140	EXELON	GE	1973-9	1984-4	1984-10	97.2	97.2	-
	US-352	LIMERICK-1	BWR	BWR-4 (Mark 2	3515	1194	1130	EXELON	GE	1974-6	1985-4	1986-2	94.0	94.0	-
	US-353	LIMERICK-2	BWR	BWR-4 (Mark 2	3515	1194	1134	EXELON	GE	1974-6	1989-9	1990-1	95.3	95.3	-
	US-369	MCGUIRE-1	PWR	W (4-loop) ICE	3411	1185	1129	DUKEENER	WH	1971-4	1981-9	1981-12	92.9	92.9	-
	US-370	MCGUIRE-2	PWR	W (4-loop) (IC	3411	1185	1129	DUKEENER	WH	1971-4	1983-5	1984-3	88.8	88.8	-
	US-336	MILLSTONE-2	PWR	COMB CE DRY	2700	918	869	DOMINION	CE	1969-11	1975-11	1975-12	87.4	87.9	-
	US-423	MILLSTONE-3	PWR	W (4-loop) DRY	3650	1280	1218	DOMINION	WH	1974-8	1986-2	1986-4	92.1	92.1	-
	US-263	MONTICELLO	BWR	BWR-3	1775	613	578	NSP	GE	1967-6	1971-3	1971-6	88.8	88.8	-
	US-220	NINE MILE POINT-1	BWR	BWR-2 (Mark 1	1850	642	621	CONSTELL	GE	1965-4	1969-11	1969-12	94.0	94.0	-
	US-410	NINE MILE POINT-2	BWR	BWR-5 (Mark 2	3988	1320	1276	CONSTELL	GE	1975-8	1987-8	1988-3	92.0	92.0	-
	US-338	NORTH ANNA-1	PWR	W (3-loop)	2940	990	943	DOMINION	WH	1971-2	1978-4	1978-6	88.1	92.6	-
	US-339	NORTH ANNA-2	PWR	W (3-loop)	2940	1011	943	DOMINION	WH	1971-2	1980-8	1980-12	86.6	91.7	-
	US-269	OCONEE-1	PWR	B&W (L-loop)	2568	891	846	DUKEENER	B&W	1967-11	1973-5	1973-7	87.8	87.8	-
	US-270	OCONEE-2	PWR	B&W (L-loop)	2568	891	846	DUKEENER	B&W	1967-11	1973-12	1974-9	93.3	93.3	-
	US-287	OCONEE-3	PWR	B&W (L-loop)	2568	891	846	DUKEENER	B&W	1967-11	1974-9	1974-12	93.2	93.2	-
	US-219	OYSTER CREEK	BWR	BWR-2 (Mark 1	1930	652	619	EXELON	GE	1964-12	1969-9	1969-12	91.7	91.9	-
	US-255	PALISADES	PWR	CE (2-loop) DR	2565	845	793	ENTERGY	CE	1967-3	1971-12	1971-12	89.7	89.7	-

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	US -528	PALO VERDE-1	PWR	CE (2-loop) DR	3990	1414	1311	APS	CE	1976-5	1985-6	1986-1	90.6	90.6	-
	US -529	PALO VERDE-2	PWR	COMB CE80 DR	3990	1414	1314	APS	CE	1976-6	1986-5	1986-9	87.7	87.7	-
	US -530	PALO VERDE-3	PWR	COMB CE80 DR	3990	1414	1312	APS	CE	1976-6	1987-11	1988-1	90.7	90.7	-
	US -277	PEACH BOTTOM-2	BWR	BWR-4 (Mark 1	3514	1182	1125	EXELON	GE	1968-1	1974-2	1974-7	94.4	94.4	-
	US -278	PEACH BOTTOM-3	BWR	BWR-4 (Mark 1	3514	1182	1138	EXELON	GE	1968-1	1974-9	1974-12	95.8	95.8	-
	US -440	PERRY-1	BWR	BWR-6 (Mark 3	3758	1303	1240	FENOC	GE	1974-10	1986-12	1987-11	89.4	89.4	-
	US -293	PILGRIM-1	BWR	BWR-3 (Mark 1	2028	711	677	ENTERGY	GE	1968-8	1972-7	1972-12	95.4	95.6	-
	US -266	POINT BEACH-1	PWR	W (2-loop) DRY	1800	640	591	NEXTERA	WH	1967-7	1970-11	1970-12	90.8	90.8	-
	US -301	POINT BEACH-2	PWR	W (2-loop) DRY	1800	640	591	NEXTERA	WH	1968-7	1972-8	1972-10	86.9	86.9	-
	US -282	PRAIRIE ISLAND-1	PWR	W (2-loop) DRY	1677	566	522	NSP	WH	1968-6	1973-12	1973-12	87.0	87.0	-
	US -306	PRAIRIE ISLAND-2	PWR	W (2-loop) DRY	1677	560	518	NSP	WH	1969-6	1974-12	1974-12	89.4	89.4	-
	US -254	QUAD CITIES-1	BWR	BWR-3 (Mark 1	2957	940	908	EXELON	GE	1967-2	1972-4	1973-2	95.9	95.9	-
	US -265	QUAD CITIES-2	BWR	BWR-3 (Mark 1	2957	940	911	EXELON	GE	1967-2	1972-5	1973-3	94.0	94.0	-
	US -244	R.E. GINNA	PWR	W (2-loop)	1775	608	580	CONSTELL	WH	1966-4	1969-12	1970-7	93.1	93.1	-
	US -458	RIVER BEND-1	BWR	BWR-6 (Mark 3	3091	1016	967	ENTERGY	GE	1977-3	1985-12	1986-6	90.5	91.7	-
	US -272	SALEM-1	PWR	W (4-loop) DRY	3459	1254	1168	PSEG	WH	1968-9	1976-12	1977-6	93.0	93.3	-
	US -311	SALEM-2	PWR	W (4-loop) DRY	3459	1200	1134	PSEG	WH	1968-9	1981-6	1981-10	90.4	90.4	-
	US -361	SAN ONOFRE-2	PWR	CE (2-loop) DR	3438	1127	1070	SCE	CE	1974-3	1982-9	1983-8	65.1	65.3	-
	US -362	SAN ONOFRE-3	PWR	CE (2-loop) DR	3438	1127	1080	SCE	CE	1974-3	1983-9	1984-4	68.6	68.8	-
	US -443	SEABROOK-1	PWR	W (4-loop) DRY	3648	1296	1246	NEXTERA	WH	1976-7	1990-5	1990-8	87.4	87.4	-
	US -327	SEQUOYAH-1	PWR	W (4-loop) ICE	3455	1221	1152	TVA	WH	1970-5	1980-7	1981-7	92.7	92.7	-
	US -328	SEQUOYAH-2	PWR	W (4-loop) (IC	3455	1200	1125	TVA	WH	1970-5	1981-12	1982-6	89.1	89.1	-
	US -400	SHEARON HARRIS-1	PWR	W (3-loop) DRY	2900	960	928	PROGRESS	WH	1978-1	1987-1	1987-5	93.0	93.0	-
	US -498	SOUTH TEXAS-1	PWR	W (4-loop)	3853	1354	1280	STP	WH	1975-12	1988-3	1988-8	91.5	91.5	-
	US -499	SOUTH TEXAS-2	PWR	W (4-loop) DRY	3853	1354	1280	STP	WH	1975-12	1989-4	1989-6	85.3	85.3	-
	US -335	ST. LUCIE-1	PWR	COMB CE DRY	3000	1050	982	FPL	CE	1970-7	1976-5	1976-12	84.7	84.7	-
	US -389	ST. LUCIE-2	PWR	COMB CE DRY	2700	882	839	FPL	CE	1977-6	1983-6	1983-8	80.9	80.9	-
	US -280	SURRY-1	PWR	W (3-loop) DRY	2857	890	838	DOMINION	WH	1968-6	1972-7	1972-12	93.8	94.2	-
	US -281	SURRY-2	PWR	W (3-loop) DRY	2857	890	838	DOMINION	WH	1968-6	1973-3	1973-5	90.5	90.5	-
	US -387	SUSQUEHANNA-1	BWR	BWR-4 (Mark 2	3952	1330	1257	PPL_SUSQ	GE	1973-11	1982-11	1983-6	85.3	85.3	-

TABLE 14. REACTORS IN OPERATION, 31 DEC. 2012 — continued

Country	Reactor		Type	Model	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	EAF % 2008–2012	UCF % 2008–2012	Non-electrical applics
	Code	Name			Thermal	Gross	Net								
	US -388	SUSQUEHANNA-2	BWR	BWR-4 (Mark 2	3952	1330	1257	PPL_SUSQ	GE	1973-11	1984-7	1985-2	89.9	89.9	-
	US -289	THREE MILE ISLAND-1	PWR	B&W (L-loop)	2568	880	819	EXELON	B&W	1968-5	1974-6	1974-9	92.3	92.3	-
	US -250	TURKEY POINT-3	PWR	W (3-loop) DRY	2300	829	802	FPL	WH	1967-4	1972-11	1972-12	82.5	82.8	-
	US -251	TURKEY POINT-4	PWR	W (3-loop) DRY	2300	729	693	FPL	WH	1967-4	1973-6	1973-9	87.2	87.4	-
	US -271	VERMONT YANKEE	BWR	BWR-4 (Mark 1	1912	635	605	ENTERGY	GE	1967-12	1972-9	1972-11	95.5	95.5	-
	US -395	VIRGIL C. SUMMER-1	PWR	W (3-loop) DRY	2900	1006	971	SCE&G	WH	1973-3	1982-11	1984-1	87.4	87.4	-
	US -424	VOGTLE-1	PWR	W (4-loop) DRY	3626	1229	1150	SOUTHERN	WH	1976-8	1987-3	1987-6	92.2	92.2	-
	US -425	VOGTLE-2	PWR	W (4-loop) DRY	3626	1229	1152	SOUTHERN	WH	1976-8	1989-4	1989-5	94.5	94.5	-
	US -382	WATERFORD-3	PWR	CE (2-loop)	3716	1250	1168	ENTERGY	CE	1974-11	1985-3	1985-9	88.6	89.4	-
	US -390	WATTS BAR-1	PWR	W (4-loop) (IC	3459	1210	1123	TVA	WH	1973-1	1996-2	1996-5	88.5	88.5	-
	US -482	WOLF CREEK	PWR	W (4-loop)	3565	1280	1195	WCNOC	WH	1977-5	1985-6	1985-9	82.9	82.9	-
Note: Status as of 31 December 2012, 437 reactors (373069 MW) were connected to the grid, including 6 units (5028 MW) in Taiwan, China.															
TAIWAN, CN	TW -1	CHIN SHAN-1	BWR	BWR-4	1840	636	604	TPC	GE	1972-6	1977-11	1978-12	88.7	88.8	-
TAIWAN, CN	TW -2	CHIN SHAN-2	BWR	BWR-4	1840	636	604	TPC	GE	1973-12	1978-12	1979-7	88.7	88.8	-
TAIWAN, CN	TW -3	KUOSHENG-1	BWR	BWR-6	2943	1019	985	TPC	GE	1975-11	1981-5	1981-12	89.3	90.0	-
TAIWAN, CN	TW -4	KUOSHENG-2	BWR	BWR-6	2943	1020	985	TPC	GE	1976-3	1982-6	1983-3	91.3	92.8	-
TAIWAN, CN	TW -5	MAANSHAN-1	PWR	WE 312 (3 loop	2822	951	928	TPC	WH	1978-8	1984-5	1984-7	93.4	93.4	-
TAIWAN, CN	TW -6	MAANSHAN-2	PWR	WE 312 (3 loop	2822	951	922	TPC	WH	1979-2	1985-2	1985-5	91.4	91.5	-

TABLE 15. REACTORS IN LONG TERM SHUTDOWN, 31 DEC. 2012

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

Note: Status as of 31 December 2012, 1 reactor (246 MW) was in long term shutdown.

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2012

Country	Reactor		Type	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down
	Code	Name		Thermal	Gross	Net						
ARMENIA	AM -18	ARMENIA-1	PWR	1375	408	376	ANPPCJSC	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	KOZNPP	AEE	1970-4	1974-7	1974-10	2002-12
	BG -2	KOZLODUY-2	PWR	1375	440	408	KOZNPP	AEE	1970-4	1975-8	1975-11	2002-12
	BG -3	KOZLODUY-3	PWR	1375	440	408	KOZNPP	AEE	1973-10	1980-12	1981-1	2006-12
	BG -4	KOZLODUY-4	PWR	1375	440	408	KOZNPP	AEE	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	HWLWR	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-A1	GCR	300	80	70	EDF	LEVIVIER	1957-2	1963-6	1964-2	1973-4
	FR -3	CHINON-A2	GCR	800	230	180	EDF	LEVIVIER	1959-8	1965-2	1965-2	1985-6
	FR -4	CHINON-A3	GCR	1170	480	360	EDF	GTM	1961-3	1966-8	1966-8	1990-6
	FR -5	CHOOZ-A (ARDENNES)	PWR	1040	320	305	SENA	A/F/W	1962-1	1967-4	1967-4	1991-10
	FR -6	EL-4 (MONTS D'ARREE)	HWGCR	250	75	70	EDF	GAAA	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-A1	GCR	1650	500	390	EDF	FRAM	1963-10	1969-3	1969-6	1990-4
	FR -8	ST. LAURENT-A2	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 (AVR)	HTGR	46	15	13	AVR	BBK	1961-8	1967-12	1969-5	1988-12
	DE -12	BIBLIS-A (KWB A)	PWR	3517	1225	1167	RWE	KWU	1970-1	1974-8	1975-2	2011-8

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2012 — continued

Country	Reactor		Type	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down
	Code	Name		Thermal	Gross	Net						
GERMANY	DE -18	BIBLIS-B (KWB B)	PWR	3733	1300	1240	RWE	KWU	1972-2	1976-4	1977-1	2011-8
	DE -13	BRUNSBUETTEL (KKB)	BWR	2292	806	771	KKB	KWU	1970-4	1976-7	1977-2	2011-8
	DE -502	GREIFSWALD-1 (KGR 1)	PWR	1375	440	408	EWN	AtEE	1970-3	1973-12	1974-7	1990-2
	DE -503	GREIFSWALD-2 (KGR 2)	PWR	1375	440	408	EWN	AtEE	1970-3	1974-12	1975-4	1990-2
	DE -504	GREIFSWALD-3 (KGR 3)	PWR	1375	440	408	EWN	AtEE	1972-4	1977-10	1978-5	1990-2
	DE -505	GREIFSWALD-4 (KGR 4)	PWR	1375	440	408	EWN	AtEE	1972-4	1979-9	1979-11	1990-7
	DE -506	GREIFSWALD-5 (KGR 5)	PWR	1375	440	408	EWN	AtEE	1976-12	1989-4	1989-11	1989-11
	DE -3	GUNDREMMINGEN-A (KRB A)	BWR	801	250	237	KGB	AEG,GE	1962-12	1966-12	1967-4	1977-1
	DE -7	HDR GROSSWELZHEIM	BWR	100	27	25	HDR	AEG,KWU	1965-1	1969-10	1970-8	1971-4
	DE -16	ISAR-1 (KKI 1)	BWR	2575	912	878	E.ON	KWU	1972-5	1977-12	1979-3	2011-8
	DE -8	KNK II	FBR	58	21	17	KBG	IA	1974-9	1978-4	1979-3	1991-8
	DE -20	KRUEMMEL (KKK)	BWR	3690	1402	1346	KKK	KWU	1974-4	1983-9	1984-3	2011-8
	DE -6	LINGEN (KWL)	BWR	520	268	183	KWL	AEG	1964-10	1968-7	1968-10	1977-1
	DE -22	MUELHEIM-KAERLICH (KMK)	PWR	3760	1302	1219	KGG	BBR	1975-1	1986-3	1987-8	1988-9
	DE -2	MZFR	PHWR	200	57	52	KBG	SIEMENS	1961-12	1966-3	1966-12	1984-5
	DE -15	NECKARWESTHEIM-1 (GKN 1)	PWR	2497	840	785	EnKK	KWU	1972-2	1976-6	1976-12	2011-8
	DE -11	NIEDERAICHBACH (KKN)	HWGCR	321	106	100	KKN	SIEM,KWU	1966-6	1973-1	1973-1	1974-7
	DE -5	OBRIGHEIM (KWO)	PWR	1050	357	340	EnBW	SIEM,KWU	1965-3	1968-10	1969-3	2005-5
	DE -14	PHILIPPSBURG-1 (KKP 1)	BWR	2575	926	890	EnKK	KWU	1970-10	1979-5	1980-3	2011-8
	DE -501	RHEINSBERG (KKR)	PWR	265	70	62	EWN	AtEE	1960-1	1966-5	1966-10	1990-6
	DE -10	STADE (KKS)	PWR	1900	672	640	E.ON	KWU	1967-12	1972-1	1972-5	2003-11
	DE -19	THTR-300	HTGR	760	308	296	HKG	HRB	1971-5	1985-11	1987-6	1988-9
	DE -17	UNTERWESER (KKU)	PWR	3900	1410	1345	E.ON	KWU	1972-7	1978-9	1979-9	2011-8
	DE -1	VAK KAHL	BWR	60	16	15	VAK	GE,AEG	1958-7	1961-6	1962-2	1985-11
	DE -9	WUERGASSEN (KWW)	BWR	1912	670	640	PE	AEG,KWU	1968-1	1971-12	1975-11	1994-8
ITALY	IT -4	CAORSO	BWR	2651	882	860	SOGIN	AMN/GETS	1970-1	1978-5	1981-12	1990-7
	IT -3	ENRICO FERMI	PWR	870	270	260	SOGIN	EL/WEST	1961-7	1964-10	1965-1	1990-7
	IT -2	GARIGLIANO	BWR	506	160	150	SOGIN	GE	1959-11	1964-1	1964-6	1982-3
	IT -1	LATINA	GCR	660	160	153	SOGIN	TNPG	1958-11	1963-5	1964-1	1987-12
JAPAN	JP -20	FUGEN ATR	HWLWR	557	165	148	JAEA	HITACHI	1972-5	1978-7	1979-3	2003-3

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2012 — 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/T	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 -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 -1	JPDR	BWR	90	13	12	JAEA	GE	1960-12	1963-10	1965-3	1976-3
	JP -2	TOKAI-1	GCR	587	166	137	JAPCO	GEC	1961-3	1965-11	1966-7	1998-3
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	REA	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	760	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
SLOVAKIA	SK -1	BOHUNICE A1	HWGCR	560	143	93	JAVYS	SKODA	1958-8	1972-12	1972-12	1977-2
	SK -2	BOHUNICE-1	PWR	1375	440	408	JAVYS	AEE	1972-4	1978-12	1980-4	2006-12
	SK -3	BOHUNICE-2	PWR	1375	440	408	JAVYS	AEE	1972-4	1980-3	1981-1	2008-12
SPAIN	ES -1	JOSE CABRERA-1 (ZORITA)	PWR	510	150	141	UFG	WH	1964-6	1968-7	1969-8	2006-4
	ES -3	VANDELLOS-1	GCR	1670	500	480	HIFRENSA	CEA	1968-6	1972-5	1972-8	1990-7
SWEDEN	SE -1	AGESTA	PHWR	80	12	10	BKAB	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
	SE -8	BARSEBACK-2	BWR	1800	615	600	BKAB	ABBATOM	1973-1	1977-3	1977-7	2005-5

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2012 — continued

Country	Reactor		Type	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down
	Code	Name		Thermal	Gross	Net						
SWITZERLAND	CH -8	LUCENS	HWGCR	28	6	6	EOS	NGA	1962-4	1968-1	NA	1969-1
UK	GB -3A	BERKELEY 1	GCR	620	166	138	MEL	TNPG	1957-1	1962-6	1962-6	1989-3
	GB -3B	BERKELEY 2	GCR	620	166	138	MEL	TNPG	1957-1	1962-6	1962-10	1988-10
	GB -4A	BRADWELL 1	GCR	481	146	123	MEL	TNPG	1957-1	1962-7	1962-7	2002-3
	GB -4B	BRADWELL 2	GCR	481	146	123	MEL	TNPG	1957-1	1962-7	1962-11	2002-3
	GB -1A	CALDER HALL 1	GCR	268	60	49	MEL	UKAEA	1953-8	1956-8	1956-10	2003-3
	GB -1B	CALDER HALL 2	GCR	268	60	49	MEL	UKAEA	1953-8	1957-2	1957-2	2003-3
	GB -1C	CALDER HALL 3	GCR	268	60	49	MEL	UKAEA	1955-8	1958-3	1958-5	2003-3
	GB -1D	CALDER HALL 4	GCR	268	60	49	MEL	UKAEA	1955-8	1959-4	1959-4	2003-3
	GB -2A	CHAPELCROSS 1	GCR	260	60	48	MEL	UKAEA	1955-10	1959-2	1959-3	2004-6
	GB -2B	CHAPELCROSS 2	GCR	260	60	48	MEL	UKAEA	1955-10	1959-7	1959-8	2004-6
	GB -2C	CHAPELCROSS 3	GCR	260	60	48	MEL	UKAEA	1955-10	1959-11	1959-12	2004-6
	GB -2D	CHAPELCROSS 4	GCR	260	60	48	MEL	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	UKAEA	TNPG	1966-1	1975-1	1976-7	1994-3
	GB -9A	DUNGENESS-A1	GCR	840	230	225	MEL	TNPG	1960-7	1965-9	1965-10	2006-12
	GB -9B	DUNGENESS-A2	GCR	840	230	225	MEL	TNPG	1960-7	1965-11	1965-12	2006-12
	GB -7A	HINKLEY POINT-A1	GCR	900	267	235	MEL	EE/B&W/T	1957-11	1965-2	1965-3	2000-5
	GB -7B	HINKLEY POINT-A2	GCR	900	267	235	MEL	EE/B&W/T	1957-11	1965-3	1965-5	2000-5
	GB -6A	HUNTERSTON-A1	GCR	595	173	150	MEL	GEC	1957-10	1964-2	1964-2	1990-3
	GB -6B	HUNTERSTON-A2	GCR	595	173	150	MEL	GEC	1957-10	1964-6	1964-7	1989-12
	GB -11A	OLDBURY-A1	GCR	730	230	217	MEL	TNPG	1962-5	1967-11	1967-12	2012-2
	GB -11B	OLDBURY-A2	GCR	660	230	217	MEL	TNPG	1962-5	1968-4	1968-9	2011-6
	GB -10A	SIZEWELL-A1	GCR	1010	245	210	MEL	EE/B&W/T	1961-4	1966-1	1966-3	2006-12
	GB -10B	SIZEWELL-A2	GCR	1010	245	210	MEL	EE/B&W/T	1961-4	1966-4	1966-9	2006-12
	GB -8A	TRAWSFYNYDD 1	GCR	850	235	195	MEL	APC	1959-7	1965-1	1965-3	1991-2
	GB -8B	TRAWSFYNYDD 2	GCR	850	235	195	MEL	APC	1959-7	1965-2	1965-3	1991-2
	GB -5	WINDSCALE AGR	GCR	120	36	24	UKAEA	UKAEA	1958-11	1963-2	1963-3	1981-4
	GB -12	WINFRITH SGHWR	SGHWR	318	100	92	UKAEA	ICL/FE	1963-5	1967-12	1968-1	1990-9
	GB -13B	WYLFA 2	GCR	1920	540	490	MEL	EE/B&W/T	1963-9	1971-7	1972-1	2012-4
UKRAINE	UA -25	CHERNOBYL-1	LWGR	3200	800	740	MTE	FAEA	1970-3	1977-9	1978-5	1996-11

TABLE 16. REACTORS PERMANENTLY SHUT DOWN, 31 DEC. 2012 — continued

Country	Reactor		Type	Capacity (MW)			Operator	NSSS supplier	Construction start	Grid connection	Commercial operation	Shut down
	Code	Name		Thermal	Gross	Net						
UKRAINE	UA -26	CHERNOBYL-2	LWGR	3200	1000	925	MTE	FAEA	1973-2	1978-12	1979-5	1991-10
	UA -42	CHERNOBYL-3	LWGR	3200	1000	925	MTE	FAEA	1976-3	1981-12	1982-6	2000-12
	UA -43	CHERNOBYL-4	LWGR	3200	1000	925	MTE	FAEA	1979-4	1983-12	1984-3	1986-4
USA	US -155	BIG ROCK POINT	BWR	240	71	67	CPC	GE	1960-5	1962-12	1963-3	1997-8
	US -014	BONUS	BWR	50	18	17	DOE/PRWR	GNEPRWRA	1960-1	1964-8	1965-9	1968-6
	US -144	CVTR	PHWR	65	19	17	CVPA	WH	1960-1	1963-12	NA	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	AC	1959-1	1963-8	1964-7	1968-2
	US -16	FERMI-1	FBR	200	65	61	DTEDISON	UEC	1956-12	1966-8	NA	1972-11
	US -267	FORT ST. VRAIN	HTGR	842	342	330	PSCC	GA	1968-9	1976-12	1979-7	1989-8
	US -018	GE VALLECITOS	BWR	50	24	24	GE	GE	1956-1	1957-10	1957-10	1963-12
	US -213	HADDAM NECK	PWR	1825	603	560	CYAPC	WH	1964-5	1967-8	1968-1	1996-12
	US -077	HALLAM	X	256	84	75	AEC/NPPD	GE	1959-1	1963-9	1963-11	1964-9
	US -133	HUMBOLDT BAY	BWR	220	65	63	PG&E	GE	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 -409	LACROSSE	BWR	165	55	48	DPC	AC	1963-3	1968-4	1969-11	1987-4
	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	NA	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	CofPiqua	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 -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	NA	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 -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 2012, 143 reactors (51524 MW) have been permanently shut down.

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2012

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management phase	Decom. licensee	License terminated
	Code	Name							
ARMENIA	AM -18	ARMENIA-1	1989-2	Other	Other			ANPPCJSC	
BELGIUM	BE -1	BR-3	1987-6	2,5	ID	4,9	4	CEN/SCK	
BULGARIA	BG -1	KOZLODUY-1	2002-12	7,Other	Dd+PD+SE	7	3,7	E-03492	2036
	BG -2	KOZLODUY-2	2002-12	7,Other	Dd+PD+SE	7	3,7	E-03493	2036
	BG -3	KOZLODUY-3	2006-12	7,Other	Dd+PD+SE	5,7	2,3,7	E-00174	2036
	BG -4	KOZLODUY-4	2006-12	7,Other	Dd+PD+SE	5,7	2,3,7	E-0008	2036
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	Other	ID			-	
	FR -2	CHINON-A1	1973-4	1,2	ID			EDF	
	FR -24	SUPER-PHENIX	1998-12	Other	ID	6,9	3,6	NERSA	
	FR -3	CHINON-A2	1985-6	1,2	ID	6		EDF	2025
	FR -4	CHINON-A3	1990-6	1,2	ID			EDF	
	FR -5	CHOOZ-A (ARDENNES)	1991-10	Other	ID	4,9		SENA	2019
	FR -6	EL-4 (MONTS D'ARREE)	1985-7	1,2	ID	9		EDF	2015
	FR -7	ST. LAURENT-A1	1990-4	1,2	ID			EDF	2027
	FR -8	ST. LAURENT-A2	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	Other	Other			VAK	
	DE -10	STADE (KKS)	2003-11	2	ID	3,4,6		E.ON	2014
	DE -11	NIEDERAICHBACH (KKN)	1974-7	6	Other			KIT	
	DE -17	UNTERWESER (KKU)	2011-8	7	Dd+SE			E.ON	
	DE -19	THTR-300	1988-9	6,Other	Other			HKG	
	DE -2	MZFR	1984-5	Other	Other			WAK	
	DE -22	MUELHEIM-KAERLICH (KMK)	1988-9	7	Other			RWE	
	DE -3	GUNDREMMINGEN-A (KRB A)	1977-1	6,8	ID			KGG	
	DE -4	AVR JUELICH (AVR)	1988-12	7	ID	3,4,9		xxxx	
	DE -501	RHEINSBERG (KKR)	1990-6	1,3,6,7	ID	9	4,7	G 01 KKR	
	DE -502	GREIFSWALD-1 (KGR 1)	1990-2	1,3,6,7	ID	3,9	3,7	G 01 KGR	
	DE -503	GREIFSWALD-2 (KGR 2)	1990-2	1,3,6,7	ID	3,9	3,7	G 01 KGR	

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2012 — continued

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management	Decom. licensee	License terminated
	Code	Name							
GERMANY	DE -504	GREIFSWALD-3 (KGR 3)	1990-2	1,3,6,7	ID	3,9	3,7	G 01 KGR	
	DE -505	GREIFSWALD-4 (KGR 4)	1990-7	1,3,6,7	ID	3	3,7	G 01 KGR	
	DE -506	GREIFSWALD-5 (KGR 5)	1989-11	1,3,6,7	ID	1,3,9	3,7	G 01 KGR	
	DE -6	LINGEN (KWL)	1977-1	2,5,6	Dd+PD+SE	8		KWL GmbH	
	DE -7	HDR GROSSWELZHEIM	1971-4	5	Other			KIT	
	DE -8	KNK II	1991-8	5	Other			WAK	
	DE -9	WUERGASSEN (KWW)	1994-8	2	ID	3,4,6		E.ON	2014
ITALY	IT -1	LATINA	1987-12	7,Other	ID	3,6,9		SOGIN	2040
	IT -2	GARIGLIANO	1982-3	3,4,Other	ID	3,4		SOGIN	2021
	IT -3	ENRICO FERMI	1990-7	7,Other	ID	3,4,9,10	3,6	SOGIN	2024
	IT -4	CAORSO	1990-7	7,Other	ID	4,6,9		SOGIN	2026
JAPAN	JP -1	JPDR	1976-3	Other	ID	3		JAERI	2002
	JP -11	HAMAOKA-1	2009-1	6	Dd+SE	1,6,7	2	CHUBU DL	2037
	JP -2	TOKAI-1	1998-3	2	Dd+PD+SE	3,4,6,7,9		JAPCO	2020
	JP -20	FUGEN ATR	2003-3	2	Dd+SE	1,5	2,5	JAEA	2034
	JP -24	HAMAOKA-2	2009-1	6	Dd+SE	1,6,7	2	CHUBU DL	2037
KAZAKHSTAN	KZ -10	AKTAU	1999-4	2,5	Dd+PD+SE	1,5,6	4,7	MAEC-KAZ	
LITHUANIA	LT -46	IGNALINA-1	2004-12	7,Other	ID	3,10		INPP	2029
	LT -47	IGNALINA-2	2009-12	7,Other	ID	2,3	1	INPP	2030
NETHERLANDS	NL -1	DODEWAARD	1997-3	2,Other	Dd+SE	7		BV GKN	2055
RUSSIA	RU -3	BELOYARSK-1	1983-1	Other	Other			EA	
	RU -4	NOVOVORONEZH-1	1988-2	Other	Other			EA	
	RU -6	BELOYARSK-2	1990-1	Other	Other			EA	
	RU -8	NOVOVORONEZH-2	1990-8	Other	Other			EA	
SLOVAKIA	SK -1	BOHUNICE A1	1977-2	4	Dd+PD+SE	3,6		JAVYS	
	SK -2	BOHUNICE-1	2006-12	7	ID	3,4,9	3,6	JAVYS	
	SK -3	BOHUNICE-2	2008-12	7	ID	3,4,9	3,6	JAVYS	
SPAIN	ES -1	JOSE CABRERA-1 (ZORITA)	2006-4	Other	ID	3,4,9	3,7	UFG	2015
	ES -3	VANDELLOS-1	1990-7	4	Dd+PD+SE	8		ENRESA	2032
SWEDEN	SE -1	AGESTA	1974-6	2,3	Dd+SE	7		BKAB	
	SE -6	BARSEBACK-1	1999-11	Other	Other		4	BKAB	2026
	SE -8	BARSEBACK-2	2005-5	Other	Other		4	BKAB	2026

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2012 — continued

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management	Decom. licensee	License terminated
	Code	Name							
SWITZERLAND	CH -8	LUCENS	1969-1	4	Dd+SE	1		EOS	2004
UK	GB -10A	SIZEWELL-A1	2006-12	2,8	Dd+SE	2,3,5,6		Magnox S	2110
	GB -10B	SIZEWELL-A2	2006-12	2,8	Dd+SE	2,3,5,6		Magnox S	2110
	GB -12	WINFRITH SGHWR	1990-9	Other	ID	3,4,9,10		UKAEA	2019
	GB -14	DOUNREAY DFR	1977-3	Other	Dd+PD+SE	5		DSR	2333
	GB -15	DOUNREAY PFR	1994-3	Other	Dd+PD+SE	5		Magnox N	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	3,8		Magnox S	2083
	GB -3B	BERKELEY 2	1988-10	2,8	Dd+SE	3,8		Magnox S	2083
	GB -4A	BRADWELL 1	2002-3	2,8	Dd+SE	3,5,6		Magnox S	2104
	GB -4B	BRADWELL 2	2002-3	2,8	Dd+SE	3,5,6		Magnox S	2104
	GB -5	WINDSCALE AGR	1981-4	Other	Dd+PD+SE	2,3,5,6		SL	2065
	GB -6A	HUNTERSTON-A1	1990-3	2,8	Dd+PD+SE	3,5,6		Magnox N	2090
	GB -6B	HUNTERSTON-A2	1989-12	2,8	Dd+PD+SE	3,5,6		Magnox N	2090
	GB -7A	HINKLEY POINT-A1	2000-5	2,8	Dd+PD+SE	3,5,6		Magnox S	2104
	GB -7B	HINKLEY POINT-A2	2000-5	2,8	Dd+PD+SE	3,5,6		Magnox S	2104
	GB -8A	TRAWSFYNYDD 1	1991-2	2,8	Dd+PD+SE	3,5,6,8		Magnox N	2098
	GB -8B	TRAWSFYNYDD 2	1991-2	2,8	Dd+PD+SE	3,5,6,8		Magnox N	2098
	GB -9A	DUNGENESS-A1	2006-12	2,8	Dd+PD+SE	3,5,6		Magnox S	2111
	GB -9B	DUNGENESS-A2	2006-12	2,8	Dd+PD+SE	3,5,6		Magnox S	2111
USA	US -001	SHIPPINGPORT	1982-10	3	ID			DOE DUQU	1989
	US -011	ELK RIVER	1968-2	1,Other	ID			RCPA	1974
	US -012	PIQUA	1966-1	4,5	ISD	11		CofPiqua	
	US -013	INDIAN POINT-1	1974-10	5	Dd+PD+SE			ENTERGY	
	US -014	BONUS	1968-6	5,6	ISD			DOE/PRWR	1970

TABLE 17. REACTORS IN DECOMMISSIONING PROCESS OR DECOMMISSIONED, 31 DEC. 2012 — continued

Country	Reactor		Shut down	Shutdown reason	Decom. strategy	Current decom. phase	Current fuel management	Decom. licensee	License terminated
	Code	Name							
USA	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	3,4,6,9		PG&E	2013
	US-144	CVTR	1967-1	7,Other	Dd+SE			CVPA	2009
	US-146	SAXTON	1972-5	Other	ID			GPUNC	2005
	US-155	BIG ROCK POINT	1997-8	2,Other	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		EXELON	
	US-206	SAN ONOFRE-1	1992-11	Other	Dd+PD+SE	4		SCE	2008
	US-213	HADDAM NECK	1996-12	6	ID	4,6		CYAPC	2007
	US-245	MILLSTONE-1	1998-7	6	Dd+PD+SE			DOMINRES	
	US-267	FORT ST. VRAIN	1989-8	1,Other	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		CommonEd	
	US-304	ZION-2	1998-2	5,6	Dd+PD+SE	1		COMMED	
	US-309	MAINE YANKEE	1997-8	6	ID	4	7	MYAPC	2005
	US-312	RANCHO SECO-1	1989-6	5,6	Dd+PD+SE	9		SMUD	2009
	US-320	THREE MILE ISLAND-2	1979-3	4,5	Other	11	4	GPU	
	US-322	SHOREHAM	1989-5	7,Other	ID			LIPA	1995
	US-344	TROJAN	1992-11	6	Dd+PD+SE			PORTGE	2005
	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	The technology or process being used became obsolete	ID	Immediate dismantling and removal of all radioactive materials
2	The process was no longer profitable	Dd+SE	Deferred dismantling, placing all radiological areas into safe enclosure
3	Changes in licensing requirements	Dd+PD+SE	Deferred dismantling, including partial dismantling and placing remaining radiological areas into safe enclosure
4	After an operating incident	ISD	In situ disposal, involving encapsulation of radioactive materials and subsequent restriction of access
5	Other technological reasons	Other	None of the above
6	Other economic reasons		
7	Public acceptance or political reasons		
8	After major component failure or deterioration		
Other	None of the above		

Fuel management	Description	Current decommissioning phase	Description
1	Transfer to a reactor facility	1	Drawing up the final decommissioning plan
2	Transfer away from a reactor facility	2	Reactor core defuelling
3	Storage in an on-site facility	3	Waste conditioning on-site (only for decommissioning waste)
4	Storage in an off-site facility	4	Waste shipment off-site (only for decommissioning waste)
5	Shipment to a reprocessing plant	5	Safe enclosure preparation
6	Underwater storage period	6	Partial dismantling
7	Dry storage period	7	Active safe enclosure period
8	Encapsulation	8	Passive safe enclosure period
		9	Final dismantling
		10	Final survey
		11	Licence terminated (legal act at the end of decommissioning process)

TABLE 18. PERFORMANCE FACTORS BY REACTOR CATEGORY, 2010 to 2012

Reactor category	Reactors reporting to IAEA PRIS (see note)						
	Number of units	Availability factor (%)	Planned cap. loss factor (%)	Capability factor (%)	Forced loss rate (%)	Operating factor (%)	Load factor (%)
PWR	274	80.5	14.5	81.5	2.6	81.1	79.7
PWR > 600 MWe	47	77.7	20.5	78.1	1.5	79.1	76.5
PWR ≥ 600 MWe	227	80.8	13.9	81.8	2.7	81.5	80.0
BWR	92	69.8	23.4	71.0	5.0	69.1	67.5
BWR < 600 MWe	11	54.4	31.6	57.2	13.7	58.6	54.2
BWR ≥ 600 MWe	81	70.6	23.0	71.7	4.6	70.5	68.3
PHWR	49	79.1	13.5	82.4	3.8	81.9	78.8
PHWR < 600 MWe	26	71.5	12.6	80.6	6.8	80.9	70.9
PHWR ≥ 600 MWe	23	82.8	13.9	83.3	2.3	83.1	82.6
LWGR	15	77.9	19.0	78.2	2.7	76.5	78.9
LWGR < 600 MWe	4	78.6	21.2	78.6	0.2	66.3	32.0
LWGR ≥ 600 MWe	11	77.9	19.0	78.2	2.7	80.2	79.1
GCR	18	70.2	10.8	70.4	13.4	77.8	70.4
FBR	2	76.7	22.1	76.7	1.0	77.4	78.3
TOTAL	450	77.8	16.4	78.9	3.4	78.4	76.7

Note: 2012 is the latest year for which operating experience data is currently available to the IAEA.
Reactors permanently shut down during 2010 to 2012 (25 units) are considered.

TABLE 19. FULL OUTAGE STATISTICS DURING 2012

Reactor type	Number of operating reactors	Full outage hours per operating reactor	Planned outages (%)	Unplanned outages (%)	External outages (%)
PWR	270	2091	82.3	15.1	2.6
PWR < 600 MWe	47	2643	94.2	4.6	1.2
PWR ≥ 600 MWe	223	1975	79.0	18.0	3.0
BWR	84	3454	83.0	10.9	6.1
BWR < 600 MWe	10	4933	83.8	16.2	0.0
BWR ≥ 600 MWe	74	3255	82.9	9.8	7.3
PHWR	49	1298	75.2	20.4	4.4
PHWR < 600 MWe	26	1280	71.7	24.5	3.8
PHWR ≥ 600 MWe	23	1318	79.1	15.9	5.0
LWGR	15	2061	81.3	5.7	13.0
LWGR < 600 MWe	4	2494	62.3	0.2	37.5
LWGR ≥ 600 MWe	11	1904	90.4	8.3	1.3
GCR	17	1497	48.3	51.7	0.0
FBR	1	1540	100.0	0.0	0.0
ALL REACTORS	436	2239	81.2	14.8	4.0

Note: 2012 is the latest year for which outage information is currently available to the IAEA.
Only reactors in commercial operation are considered.
Reactors shut down during 2012 (11 units) are considered.

TABLE 20. DIRECT CAUSES OF FULL OUTAGES DURING 2012

Direct outage cause	Planned full outages				Unplanned full outages			
	Energy lost		Time lost		Energy lost		Time lost	
	GW(e)·h	%	Hours	%	GW(e)·h	%	Hours	%
Plant equipment problem/failure					59360	97.21	69663	96.06
Refuelling without maintenance	29937	4.01	31824	3.64				
Inspection, maintenance or repair combined with refuelling	338182	45.26	378381	43.32				
Inspection, maintenance or repair without refuelling	40440	5.41	56309	6.45				
Testing of plant systems or components	2845	0.38	3413	0.39				
Major back-fitting, refurbishment or upgrading activities with refuelling	74894	10.02	92075	10.54				
Major back-fitting, refurbishment or upgrading activities without refuelling	256207	34.29	298368	34.16				
Nuclear regulatory requirements	4		28		317	0.52	421	0.58
Human factor related					1171	1.92	1783	2.46
Other	4676	0.63	12984	1.49	219	0.36	653	0.90
TOTAL	747185	100.00	873382	100.00	61067	100.00	72520	100.00

Note: Only reactors which had achieved full commercial operation in or before 2012 are counted.

TABLE 21. DIRECT CAUSES OF FULL OUTAGES, 2008 TO 2012

Direct outage cause	Planned full outages				Unplanned full outages			
	Energy lost		Time lost		Energy lost		Time lost	
	GW(e)·h	%	Hours	%	GW(e)·h	%	Hours	%
Plant equipment problem/failure					357516	89.77	419697	87.96
Refuelling without a maintenance	120650	4.34	134076	4.00				
Inspection, maintenance or repair combined with refuelling	1731531	62.29	1999427	59.63				
Inspection, maintenance or repair without refuelling	170473	6.13	277027	8.26				
Testing of plant systems or components	8030	0.29	16432	0.49	1031	0.26	2350	0.49
Major back-fitting, refurbishment or upgrading activities with refuelling	175958	6.33	254420	7.59				
Major back-fitting, refurbishment or upgrading activities without refuelling	565055	20.33	636918	19.00				
Nuclear regulatory requirements	4		28		30416	7.64	40712	8.53
Human factor related					4829	1.21	7186	1.51
Fire					2363	0.59	3928	0.82
External restrictions on supply and services	382	0.01	1909	0.06				
Fuel management limitation (including high flux tilt, stretch out or coast-down operation)	1405	0.05	2192	0.07	1204	0.30	1133	0.24
Other	6254	0.22	30506	0.91	878	0.22	2116	0.44
TOTAL	2779742	100.00	3352935	100.00	398237	100.00	477122	100.00

Note: Only reactors which had achieved full commercial operation in or before 2012 are counted.

TABLE 22. COUNTRIES: ABBREVIATIONS AND SUMMARY

Country code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
AE	UNITED ARAB EMIRATES		1			1
AM	ARMENIA	1			1	
AR	ARGENTINA	2	1			
BE	BELGIUM	7			1	
BG	BULGARIA	2			4	
BR	BRAZIL	2	1			
CA	CANADA	19			6	
CH	SWITZERLAND	5			1	1
CN	CHINA	17	29			38
CZ	CZECH REPUBLIC	6				
DE	GERMANY	9			27	
ES	SPAIN	8			2	
FI	FINLAND	4	1			
FR	FRANCE	58	1		12	
GB	UNITED KINGDOM	16			29	
HU	HUNGARY	4				
IN	INDIA	20	7			
IR	IRAN, ISLAMIC REPUBLIC OF	1				3
IT	ITALY				4	
JP	JAPAN	50	2	1	9	10
KR	KOREA, REPUBLIC OF	23	4			1
KZ	KAZAKHSTAN				1	
LT	LITHUANIA				2	
MX	MEXICO	2				
NL	NETHERLANDS	1			1	
PK	PAKISTAN	3	2			
RO	ROMANIA	2				
RU	RUSSIA	33	11		5	26
SE	SWEDEN	10			3	
SI	SLOVENIA	1				

TABLE 22. COUNTRIES: ABBREVIATIONS AND SUMMARY — continued

Country code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
SK	SLOVAKIA	4	2		3	
UA	UKRAINE	15	2		4	
US	UNITED STATES OF AMERICA	104	1		28	20
VN	VIETNAM					2
ZA	SOUTH AFRICA	2				
TOTAL		437	67	1	143	102

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. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
BWR	Boiling light water cooled and moderated reactor	84	4		31	10
FBR	Fast breeder reactor	2	2	1	7	5
GCR	Gas cooled, graphite moderated reactor	15			37	
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	1		9	
PHWR	Pressurized heavy water moderated and cooled reactor	48	5		8	
PWR	Pressurized light water moderated and cooled reactor	273	54		38	87
SGHWR	Steam generating heavy water reactor				1	
X	Other				2	
TOTAL		437	67	1	143	102

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY

Operator code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
AEC/NPPD	ATOMIC ENERGY COMMISSION AND NEBRASKA PUBLIC POWER DISTRICT				1	
AEP	AMERICAN ELECTRIC POWER COMPANY, INC.	2				
AmerenUE	AMEREN UE, UNION ELECTRIC COMPANY	1				
ANAV	ASOCIACION NUCLEAR ASCO-VANDELLOS A.I.E. (ENDESA/ID)	3				
ANPPCJSC	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				
BHAVINI	BHARATIYA NABHIKIYA VIDYUT NIGAM LIMITED		1			
BKAB	BARSEBÄCK KRAFT AB				3	
BKW	BKW ENERGIE AG	1				
BRUCEPOW	BRUCE POWER	8				
BV GKN	BV GEMEENSCHAPPELIJKE KERNENERGIECENTRALE NEDERLAND (BV GKN)				1	
CEA/EDF	COMMISSARIAT À L'ENERGIE ATOMIQUE (80%) ELECTRICITE DE FRANCE (20%)				1	
CEN/SCK	CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE/STUDIECENTRUM VOOR KERNENERGIE				1	
CEZ	CZECH POWER COMPANY, CEZ A.S.	6				
CFE	COMISION FEDERAL DE ELECTRICIDAD	2				
CHUBU	CHUBU ELECTRIC POWER CO., INC.	3			2	1
CHUGOKU	THE CHUGOKU ELECTRIC POWER CO., INC.	2	1			2
CIAE	CHINA INSTITUTE OF ATOMIC ENERGY	1				
CNAT	CENTRALES NUCLEARES ALMARAZ-TRILLO(ID/UFG/ENDESA/HC/NUCLENOR)	3				
CNNO	CNNC NUCLEAR OPERARION MANAGEMENT COMPANY LIMITED.	1				
CofPiqua	CITY OF PIQUA GOVERNMENT				1	
COGEMA	COMPAGNIE GENERALE DES MATIERES NUCLEAIRES				2	
CONSTELL	CONSTELLATION ENERGY NUCLEAR GROUP, LLC	5				
CPC	CONSUMERS POWER CO.				1	
CVPA	CAROLINAS-VIRGINIA NUCLEAR POWER ASSOC.				1	
CYAPC	CONNECTICUT YANKEE ATOMIC POWER CO.				1	
DNMC	DAYA BAY NUCLEAR POWER OPERATIONS AND MANAGEMENT CO, LTD.	6				

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
DOE DUQU	DEPARTMENT OF ENERGY AND DUQUESNE LIGHT CO.				1	
DOE/PRWR	DOE & PUERTO RICO WATER RESOURCES				1	
DOMINION	DOMINION GENERATION	7			1	
DPC	DAIRYLAND POWER COOPERATIVE				1	
DTEDISON	DETROIT EDISON CO.	1			1	
DUKEENER	DUKE ENERGY CORP.	7				
E.ON	E.ON KERNKRAFT GMBH	3			3	
EDF	ELECTRICITE DE FRANCE	58	1		8	
EDF UK	EDF ENERGY	15				
ELECTRAB	ELECTRABEL M. V. NUCLEAIRE PRODUKTIE	7				
ELETRONU	ELETROBRAS ELETRONUCLEAR S.A.	2	1			
EnBW	ENBW KRAFTWERKE AG				1	
ENEC	EMIRATES NUCLEAR ENERGY CORPORATION		1			1
ENERGYNW	ENERGY NORTHWEST	1				
EnKK	ENBW KERNKRAFT GMBH (SITZ IN OBRIGHEIM)	2			2	
ENTERGY	ENTERGY NUCLEAR OPERATIONS, INC.	12			1	
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				
EVN	VIETNAM ELECTRICITY					2
EWN	ENERGIEWERKE NORD GMBH				6	
EXELON	EXELON GENERATION CO., LLC	17			4	
FENOC	FIRST ENERGY NUCLEAR OPERATING CO.	4				
FKA	FORSMARK KRAFTGRUPP AB	3				
FORTUMPH	FORTUM POWER AND HEAT OY (FORMER IVO)	2				
FPL	FLORIDA POWER & LIGHT CO.	4				
FQNP	CNNC FUJIAN FUQING NUCLEAR POWER CO., LTD.		4			2
FSNPC	FUJIAN SANMING NUCLEAR POWER CO., LTD.					2
GE	GENERAL ELECTRIC				1	
GFNPC	GUANGXI FANGCHENGGANG NUCLEAR POWER COMPANY, LTD.		2			

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
GPU	GENERAL PUBLIC UTILITIES (OWNED BY FIRSTENERGY CORP.)				1	
HDR	HEISSDAMPFREAKTOR-BETRIEBSGESELLSCHAFT MBH				1	
HEPCO	HOKKAIDO ELECTRIC POWER CO., INC.	3				
HIFRENSA	HISPANO-FRANCESA DE ENERGIA NUCLEAR, S.A.				1	
HKG	HOCHTEMPERATUR-KERNKRAFTWERK GMBH				1	
HNPC	HAINAN NUCLEAR POWER COMPANY		2			
HOKURIKU	HOKURIKU ELECTRIC POWER CO.	2				
HONGYANH	HONGYANHE NUCLEAR POWER COMPANY					1
HQ	HYDRO QUEBEC				2	
HSNPC	HUANENG SHANDONG SHIDAO BAY NUCLEAR POWER COMPANY, LTD.		1			
ID	IBERDROLA, S.A.	1				
INPP	IGNALINA NUCLEAR POWER PLANT				2	
JAEA	JAPAN ATOMIC ENERGY AGENCY			1	2	
JAPCO	JAPAN ATOMIC POWER CO.	3			1	2
JAVYS	JADROVA A VYRADOVACIA SPOLOCNOST/NUCLEAR AND DECOMMISSIONING COMPANY, PLC.				3	
JNPC	JIANGSU NUCLEAR POWER CORPORATION	2	1			3
KBG	KERNKRAFTWERK-BETRIEBSGESELLSCHAFT MBH				2	
KEPCO	KANSAI ELECTRIC POWER CO.	11				
KGB	KERNKRAFTWERKE GUNDREMMINGEN BETRIEBSGESELLSCHAFT MBH				1	
KGG	KERNKRAFTWERK GUNDREMMINGEN GMBH	2			1	
KHNP	KOREA HYDRO AND NUCLEAR POWER CO.	23	4			1
KKB	KERNKRAFTWERK BRUNSBÜTTEL GMBH				1	
KKG	KERNKRAFTWERK GOESGEN-DAENIKEN AG	1				
KKK	KERNKRAFTWERK KRÜMMEL GMBH & CO. OHG				1	
KKL	KERNKRAFTWERK LEIBSTADT	1				
KKN	KERNKRAFTWERK NIEDERAICHBACH GMBH				1	
KKN AG	KERNKRAFTWERK NIEDERAMT AG					1
KLE	KERNKRAFTWERKE LIPPE-EMS GMBH	1				
KOZNPP	KOZLODUY NPP-PLC	2			4	
KWG	GEMEINSCHAFTSKERNKRAFTWERK GROHNDE GMBH & CO. OHG	1				
KWL	KERNKRAFTWERK LINGEN GMBH				1	

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
KYUSHU	KYUSHU ELECTRIC POWER CO., INC.	6				1
LHNPC	LIAONING HONGYANHE NUCLEAR POWER CO. LTD. (LHNPC)		4			2
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	
MEL	MAGNOX ELECTRIC LIMITED	1			25	
MTE	MINTOPENERGO OF UKRAINE - MINISTRY OF FUEL AND ENERGY OF UKRAINE				4	
MYAPC	MAINE YANKEE ATOMIC POWER CO.				1	
NASA	NUCLEOELECTRICA ARGENTINA S.A.	2	1			
NBEPC	NEW BRUNSWICK ELECTRIC POWER COMMISSION	1				
NDNP	FUJIAN NINGDE NUCLEAR POWER COMPANY LTD.	1	3			
NEK	NUKLERANA ELEKTRARNA KRŠKO	1				
NEXTERA	NEXTERA ENERGY RESOURCES, LLC	4				
NMC	NUCLEAR MANAGEMENT CO.				1	
NNEGC	NATIONAL NUCLEAR ENERGY GENERATING COMPANY <ENERGOATOM>	15	2			
NPCIL	NUCLEAR POWER CORPORATION OF INDIA LTD.	20	6			
NPPDCO	NUCLEAR POWER PRODUCTION & DEVELOPEMENT CO. OF IRAN	1				3
NPQJVC	NUCLEAR POWER PLANT QINSHAN JOINT VENTURE COMPANY LTD.	4				
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	
OPPD	OMAHA PUBLIC POWER DISTRICT	1				
PAEC	PAKISTAN ATOMIC ENERGY COMMISSION	3	2			
PAKS Zrt	PAKS NUCLEAR POWER PLANT LTD	4				
PE	PREUSSENELEKTRA KERNKRAFT GMBH&CO KG				1	
PG&E	PACIFIC GAS AND ELECTRIC COMPANY	2			1	
PORTGE	PORTLAND GENERAL ELECTRIC CO.				1	
PPL_SUSQ	PPL SUSQUEHANNA, LLC	2				

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
PROGRESS	PROGRESS ENERGY	5				1
PSCC	PUBLIC SERVICE CO. OF COLORADO				1	
PSEG	PSEG NUCLEAR LLCPUBLIC SERVICE ELECTRIC & GAS CO.	3				
QNPC	QINSHAN NUCLEAR POWER COMPANY		2			
RAB	RINGHALS AB	4				
RCPA	RURAL COOPERATIVE POWER ASSOC.				1	
REA	JOINT STOCK COMPANY CONCERN ROSENERGOATOM	33	11		5	26
RWE	RWE POWER AG				2	
SCE	SOUTHERN CALIFORNIA EDISON CO.	2			1	
SCE&G	SOUTH CAROLINA ELECTRIC & GAS CO.	1				2
SDNPC	SHANDONG NUCLEAR POWER COMPANY LTD.		2			2
SE,plc	SLOVENSKÉ ELEKTRÁRNE, A.S.	4	2			
SENA	SOCIETE D'ENERGIE NUCLEAIRE FRANCO-BELGE DES ARDENNES				1	
SHIKOKU	SHIKOKU ELECTRIC POWER CO., INC	3				
SMNPC	SANMEN NUCLEAR POWER CO., LTD.		2			2
SMUD	SACRAMENTO MUNICIPAL UTILITY DISTRICT				1	
SNEC	SAXTON NUCLEAR EXPIRAMENTAL REACTOR CORPORATION				1	
SNN	SOCIETATEA NATIONALA NUCLEARELECTRICA S.A.	2				
SOGIN	SOCIETA GESTIONE IMPANTI NUCLEARI S.P.A.				4	
SOUTHERN	SOUTHERN NUCLEAR OPERATING COMPANY, INC.	6				2
STP	STP NUCLEAR OPERATING CO.	2				
TEPCO	TOKYO ELECTRIC POWER CO.,INC.	13			4	2
TNPC	GUANGDONG TAISHAN NUCLEAR POWER JOINT VENTURE COMPANY LIMITED (TNPC) JOINT VENTURE BETWEEN EDF (30%) AND GUANGDONG NUCLEAR POWER GROUP (CGNPC)		2			
TOHOKU	TOHOKU ELECTRIC POWER CO., INC	4				2
TPC	TAI POWER CO.	6	2			
TQNPC	THE THIRD QINSHAN JOINTED VENTURE COMPANY LTD.	2				
TVA	TENNESSEE VALLEY AUTHORITY	6	1			
TVO	TEOLLISUUDEN VOIMA OYJ	2	1			
UFG	UNION FENOSA GENERATION S.A.				1	
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY				4	

TABLE 24. OPERATORS: ABBREVIATIONS AND SUMMARY — continued

Operator code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
VAK	VERSUCHSATOMKRAFTWERK KAHL GMBH				1	
WCNOC	WOLF CREEK NUCLEAR OPERATION CORP.	1				
YAEC	YANKEE ATOMIC ELECTRIC CO.				1	
YJNPC	YANGJIANG NUCLEAR POWER COMPANY		4			2
Not specified						35
TOTAL		437	67	1	143	102

TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY

NSSS supplier code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
A/F/W	ASSOCIATION ACEC,FRAMATOME ET WESTINGHOUSE				1	
ABBATOM	ABBATOM (FORMERLY ASEA-ATOM)	7			2	
AC	ALLIS CHALMERS				3	
ACECOWEN	ACECOWEN (ACEC-COCKERILL-WESTINGHOUSE)	4				
ACLF	(ACECOWEN - CREUSOT LOIRE - FRAMATOME)	1				
AECL	ATOMIC ENERGY OF CANADA LTD.	8			3	
AECL/DAE	ATOMIC ENERGY OF CANADA LTD. AND DEPARTMENT OF ATOMIC ENERGY (INDIA)	1				
AECL/DHI	ATOMIC ENERGY OF CANADA LTD./DOOSAN HEAVY INDUSTRY & CONSTRUCTION	3				
AEE	ATOMENERGOEXPORT	8			6	
AEG	ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT				1	
AEG,GE	ALLGEMEINE ELECTRICITAETS-GESELLSCHAFT, GENERAL ELECTRIC COMPANY (US)				1	
AEG,KWU	ALLGEMEINE ELEKTRICITAETS GESELLSCHAFT, KRAFTWERK UNION AG				2	
AMN/GETS	ANSALDO MECCANICO NUCLEARE SPA / GENERAL ELECTRIC TECHNICAL SERVICES CO				1	
APC	ATOMIC POWER CONSTRUCTION LTD.	2			2	
AREVA	AREVA		4			1
ASE	ATOMSTROYEXPORT	1	2			1
ASEASTAL	ASEA-ATOM/STAL-LAVAL	2			1	
ASPALDO	ASPALDO				1	
AtEE	ATOMENERGOEXPORT				6	
B&W	BABCOCK & WILCOX CO.	7			3	
BBK	BROWN BOVERI-KRUPP REAKTORBAU GMBH				1	
BBR	BROWN BOVERI REAKTOR GMBH				1	
CE	COMBUSTION ENGINEERING CO.	14			1	
CEA	COMMISSARIAT A L'ENERGIE ATOMIQUE				1	
CFHI	CHINA FIRST HEAVY INDUSTRIES		6			2
CGE	CANADIAN GENERAL ELECTRIC	1			1	
CNCLNEY	CNIM-CONSTRUCTIONS NAVALES ET INDUSTRIELLES DE MEDITERRANEE CL - CREUSOT LOI				1	
CNNC	CHINA NATIONAL NUCLEAR CORPORATION	7				
CZEC	CHINA ZHONGYUAN ENGINEERING CORPORATION		2			
DEC	DONGFANG ELECTRIC CORPORATIONDEC-NPIC-FANP	3	8			7

TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY — continued

NSSS supplier code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	Shut down	Planned
DHICKAEC	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO. LTD.	2				
DHICKOPC	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO. LTD.	9	4			1
EE/B&W/T	THE ENGLISH ELECTRIC CO. LTD./BABCOCK & WILCOX CO.	1			5	
EL/WEST	ELETTRONUCLEARE ITALIANA / WESTINGHOUSE ELECTRIC CORP.				1	
FAEA	FEDERAL ATOMIC ENERGY AGENCY	1			5	
FRAM	FRAMATOME	66			3	
FRAMACEC	FRAMACECO (FRAMATOME-ACEC-COCKERILL)	2				
GA	GENERAL ATOMIC CORP.				2	
GAAA	GROUPEMENT ATOMIQUE ALSACIENNE ATLANTIQUE				1	
GE	GENERAL ELECTRIC CO.	47	2		11	
GE,AEG	GENERAL ELECTRIC COMPANY (US), ALLGEMEINE ELEKTRICITAETS- GESELLSCHAFT				1	
GE/GETSC	GENERAL ELECTRIC CO./GENERAL ELECTRIC TECHNICAL SERVICES CO.				1	
GE/T	GENERAL ELECTRIC CO./TOSHIBA CORPORATION	1			1	
GEC	GENERAL ELECTRIC COMPANY (UK)				3	
GETSCO	GENERAL ELECTRIC TECHNICAL SERVICES CO.	2				
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.	9	1		2	
HRB	HOCHTEMPERATUR-REAKTORBAU GMBH				1	
IA	INTERATOM INTERNATIONALE ATOMREAKTORBAU GMBH				1	
ICL/FE	INTERNATIONAL COMBUSTION LTD./FAIREY ENGINEERING LTD.				1	
IZ	IZHORSKIYE ZAVODY	3	1			1
KEPCO	KOREA ELECTRIC POWER CORPORATION		1			1
KWU	SIEMENS KRAFTWERK UNION AG	12	1		9	
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.	20				2
MSM	MINISTRY OF MEDIUM MACHINE BUILDING OF THE USSR (MINSREDMASH)				5	
NGA	NATIONALE GESELLSCHAFT ZUR FÖRDERUNG DER INDUSTRIELLEN ATOMTECHNIK				1	

TABLE 25. NSSS SUPPLIERS: ABBREVIATIONS AND SUMMARY — continued

NSSS supplier code	Full name	Number of reactors, as of 31 Dec. 2012				
		Operational	Construction	LT shutdown	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		6			2
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				
RDM	ROTTERDAMSE DROOGDOK MAATSCHAPPIJ (RDM) IN ROTTERDAM (NL)				1	
ROSATOM	STATE ATOMIC ENERGY CORPORATION ROSATOM	33	11			26
S/KWU	SIEMENS/KRAFTWERK UNION AG	1				
SACM	SOCIETE ALSACIENNE DE CONSTRUCTIONS MECANIQUES				2	
SHE	SHANGHAI ELECTRIC		1			
SIEM,KWU	SIEMENS AG, KRAFTWERK UNION AG				2	
SIEMENS	SIEMENS AG, POWER GENERATION -FRG	1	1		1	
SKODA	SKODA CONCERN NUCLEAR POWER PLANT WORKS	10	2		1	
T/H/F/M	TOSHIBA / HITACHI / FUJI ELECTRIC HOLDINGS / MITSUBISHI HEAVY INDUSTRIES			1		
TBD	TBD					1
TNPG	THE NUCLEAR POWER GROUP LTD.	4			10	
TOSHIBA	TOSHIBA CORPORATION	14			3	
Tsinghua	TSINGHUA UNIVERSITY		1			
UEC	UNITED ENGINEERS AND CONTRACTORS				1	
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY				10	
WH	WESTINGHOUSE ELECTRIC CORPORATION	71	3		10	8
WH/MHI	WESTINGHOUSE ELECTRIC CORPORATION/MITSUBISHI HEAVY INDUSTRIES LTD.	1	2			2
Not specified			1			46
TOTAL		437	67	1	143	102

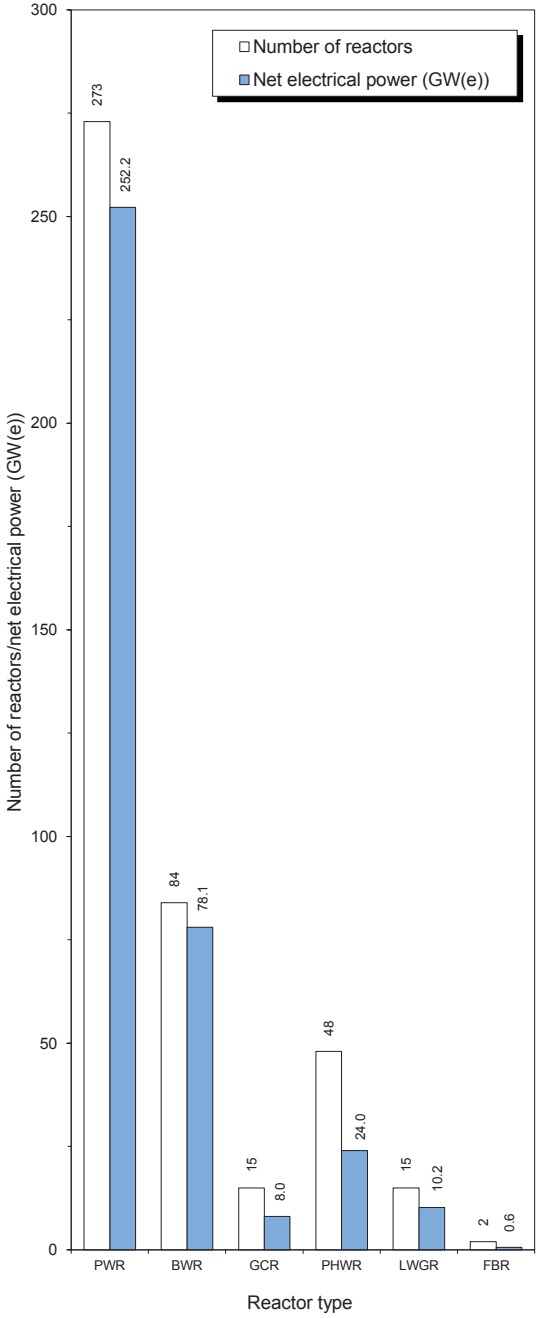

Figure 1. Number of operational reactors by type and net electrical power (as of 31 Dec. 2012).

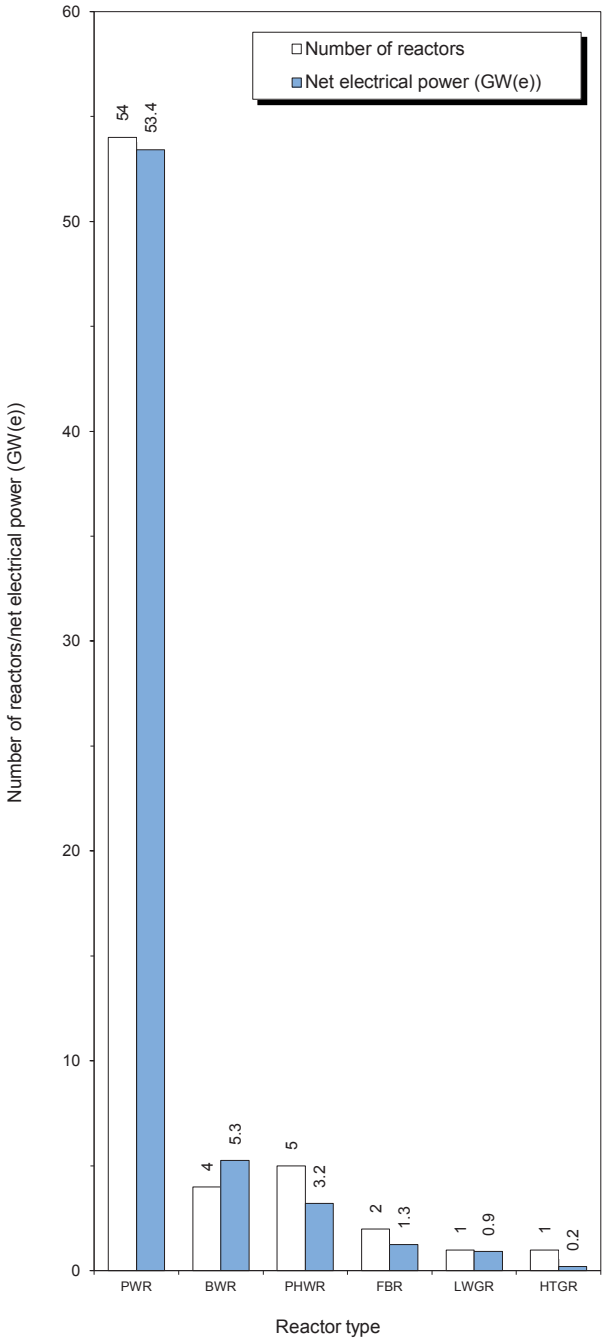

Figure 2. Reactors under construction by type and net electrical power (as of 31 Dec. 2012).

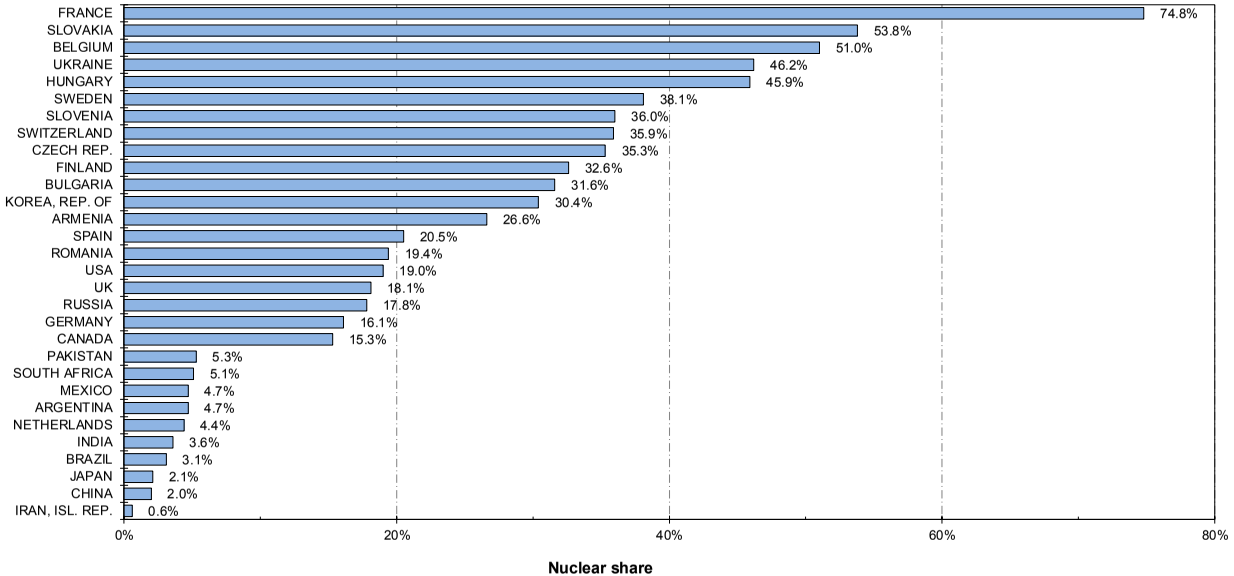

Figure 3. Nuclear share of electricity generation (as of 31 Dec. 2012).

Note: The nuclear share of electricity supplied in Taiwan, China, was 18.4% of the total.

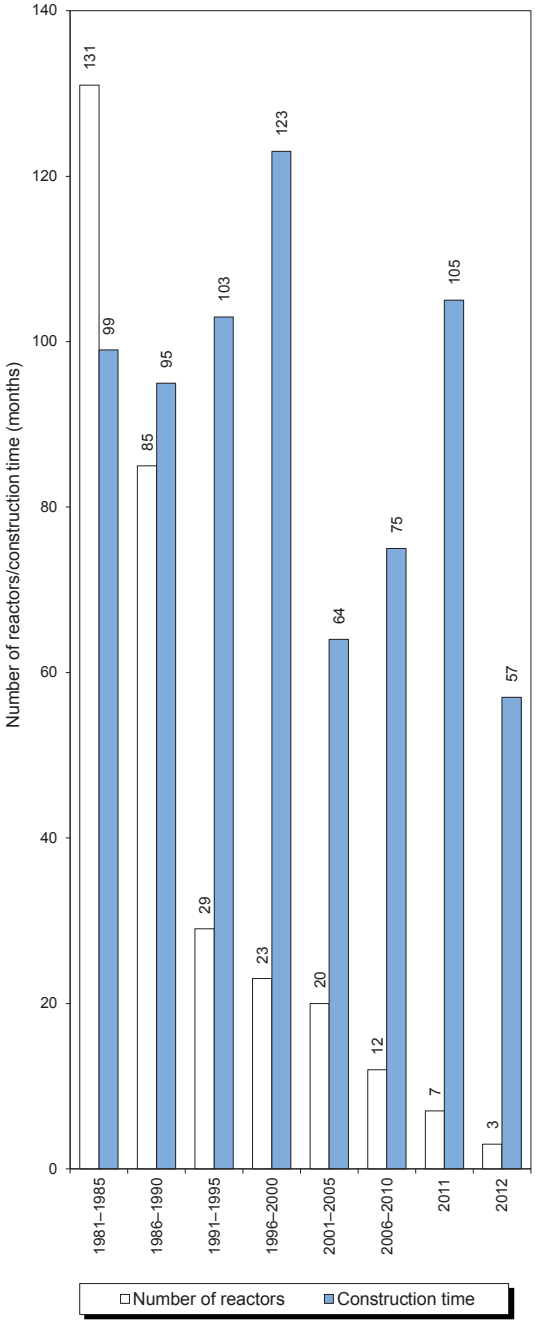

Figure 4. Worldwide median construction time in months (as of 31 Dec. 2012).

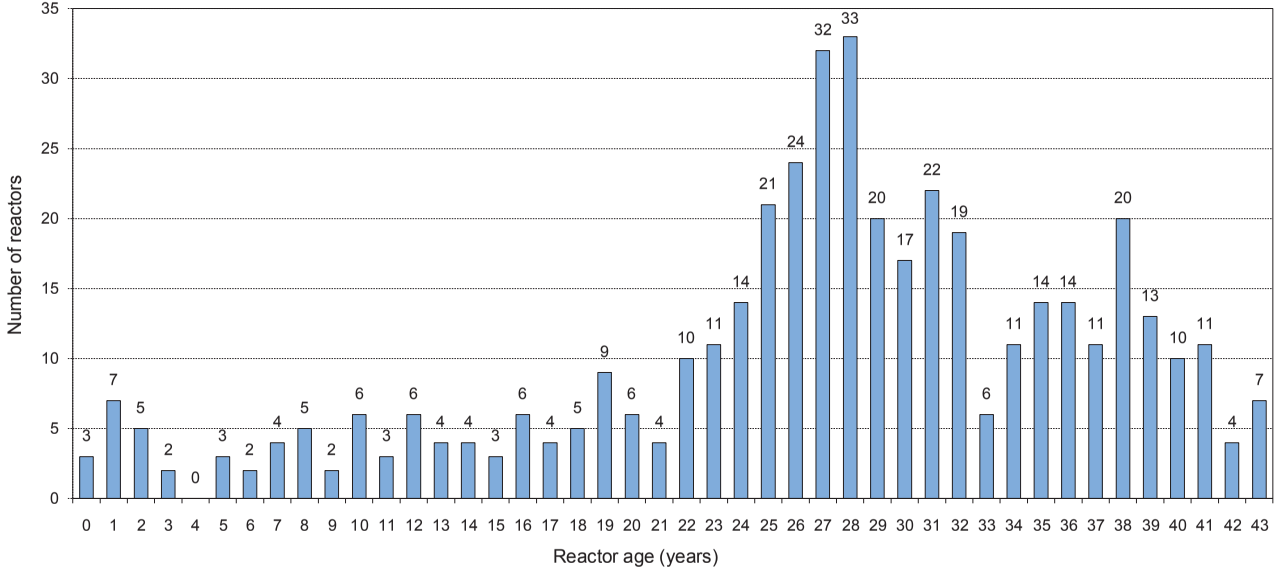

Figure 5. Number of reactors in operation by age (as of 31 Dec. 2012).

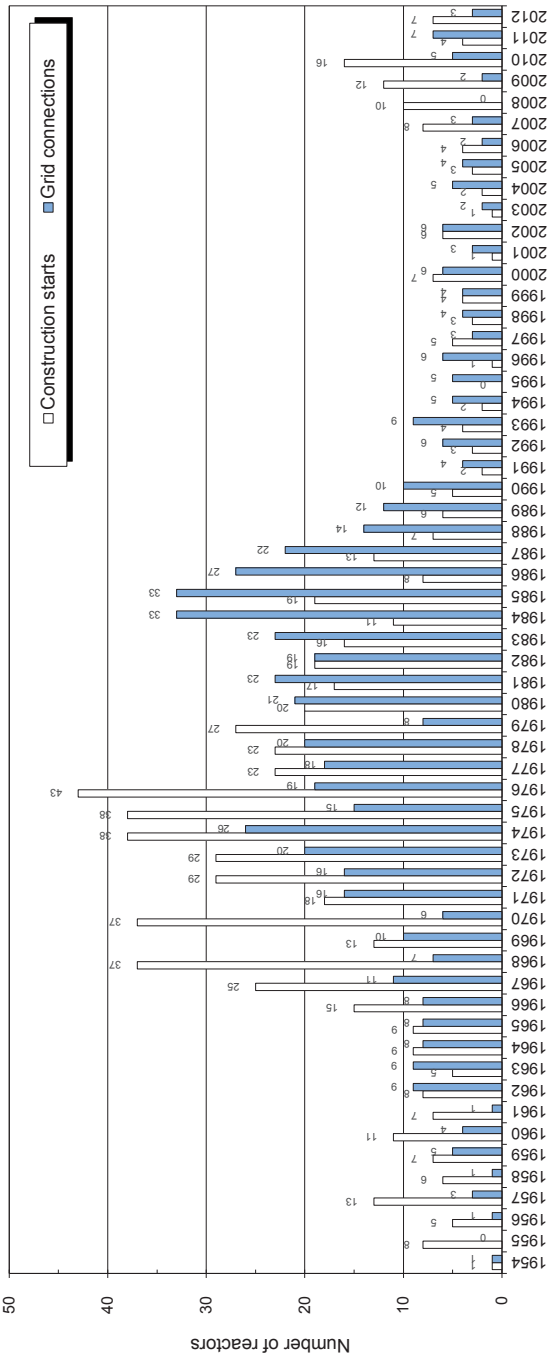

Figure 6. Annual construction starts and connections to the grid, 1954 to 2012.

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ISSN 1011–2642