

## Nuclear capacity in the UK

This article looks at UK nuclear electricity generation capacity from the 1950's to 2016, and how capacity would fall off as existing nuclear plants close. Proposed plants not yet approved are not covered here.

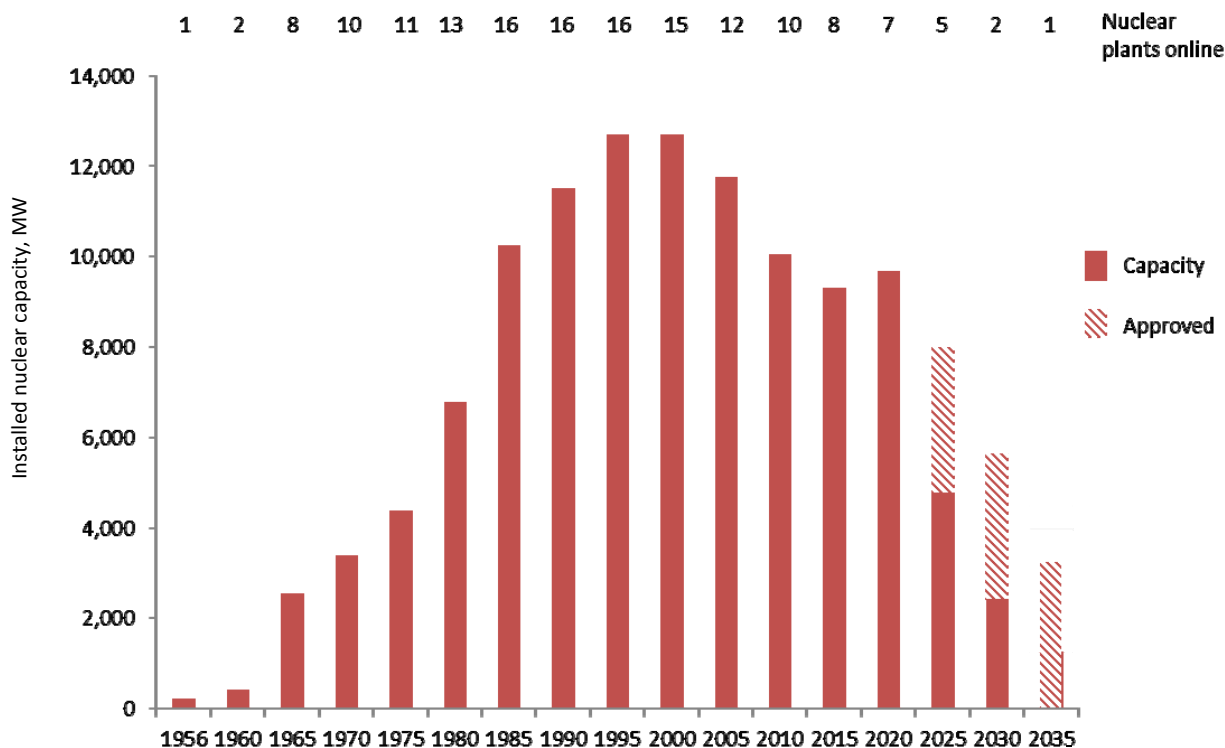
### Key points

- The first nuclear power station opened in 1956 with installed capacity of 220 MW<sup>1</sup>. This capacity contributed 0.9 per cent to total UK installed capacity<sup>2</sup> at the time.
- Peak nuclear capacity was in 1994, at 17 per cent of total installed capacity.
- Based on power stations operational at the end of May 2016, nuclear installed capacity was 9,308 MW, 9 per cent of installed capacity.
- Nuclear's share of generation in 2016 was 21 per cent, greater than installed capacity might indicate. This is because the nuclear's uptime is high – its load factor was 77 per cent.

### Nuclear power stations in the UK

In 1956, Calder Hall was the first nuclear plant to supply electricity to the public supply grid, followed by Chapelcross in 1959. A further 17 nuclear plants came online over the next four decades: eight in the 60's, three in the 70's, and five in the 80's. The most recent plant built in the UK is Sizewell B, which opened in 1995. Plant numbers peaked at 18 in 1988 whilst peak nuclear installed capacity was 12.7 GW in 1994. Since then the rate of plant closures has outstripped openings and capacity has fallen. Hinkley Point C is currently the only approved nuclear power station with an operating date beyond 2035.

**Chart 1: UK installed nuclear capacity and plants online, 1956-2035<sup>3</sup>**



<sup>1</sup> Power stations in the United Kingdom, May 2016 (DUKES 5.10), [www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes](http://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes)

<sup>2</sup> Historical electricity data: 1920 to 2015, [www.gov.uk/government/statistical-data-sets/historical-electricity-data-1920-to-2011](http://www.gov.uk/government/statistical-data-sets/historical-electricity-data-1920-to-2011)

<sup>3</sup> Power stations in the United Kingdom, May 2016 (DUKES 5.10), [www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes](http://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes)

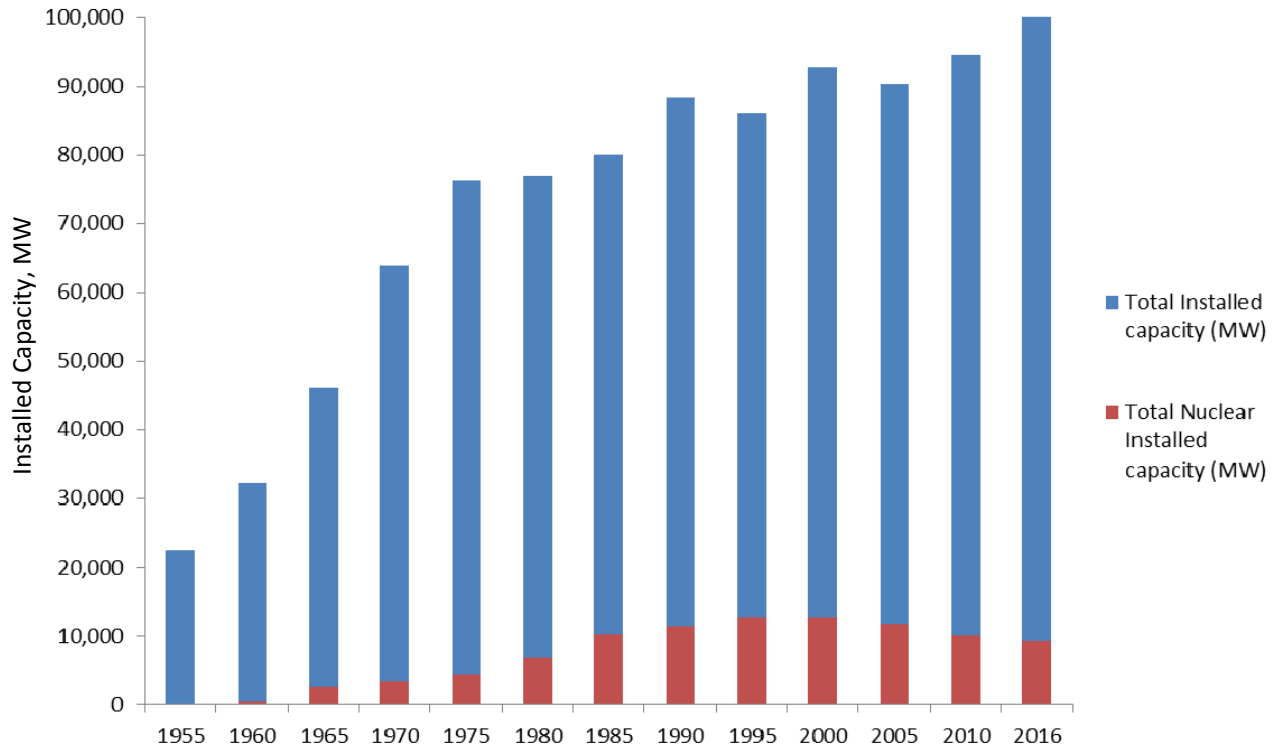
**Table 1: Nuclear power stations in the UK supplying electricity to the public distribution network, 1956 - 2016**

Power station	Opening date	Closed / Planned closure	Installed capacity (MW)	Current status
Calder Hall	1956	2003	220	Closed
Chapelcross	1959	2004	196	Closed
Berkeley	1962	1989	276	Closed
Bradwell	1962	2002	242	Closed
Hunterston A	1964	1989	180	Closed
Dungeness A	1965	2006	450	Closed
Trawsfynydd	1965	1991	470	Closed
Hinkley Point A	1965	2000	500	Closed
Sizewell A	1966	2006	420	Closed
Oldbury	1967	2012	434	Closed
Wylfa	1971	2015	980	Closed
Hinkley Point B	1976	2023	1220	Operational
Hunterston B	1976	2023	1190	Operational
Hartlepool	1983	2024	1210	Operational
Heysham1	1983	2024	1150	Operational
Dungeness B	1983	2028	1110	Operational
Heysham2	1988	2030	1250	Operational
Torness	1988	2030	1250	Operational
Sizewell B	1995	2035	1188	Operational
Hinkley Point C	2023	2083	3200	Approved

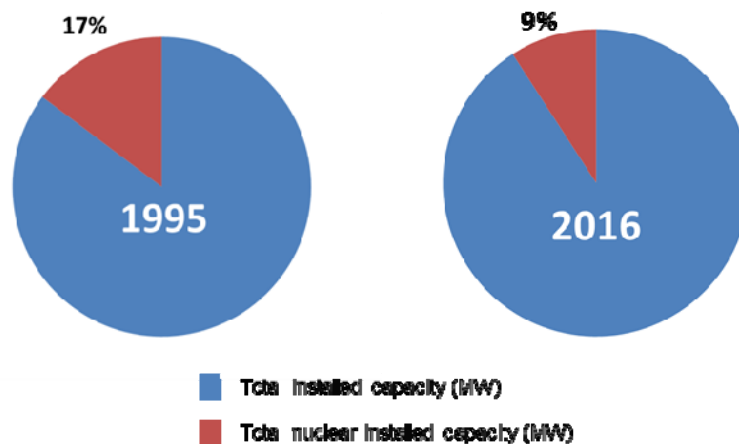
**Nuclear capacity vs total capacity: past, present & future**

Total installed electricity generation capacity has been on an upward trend since 1955 with some fluctuations over the years (chart 2). Total installed capacity in 2016 was four times larger than that in 1955. Over the same period installed nuclear capacity rose from a zero base in 1955, peaked at 12.7 GW in 1994 before falling back to 9.3 GW in 2016. Chart 2 shows that the proportion of total capacity made up by nuclear capacity has been falling since its peak level of 17 per cent in 1994. In 2016 nuclear's share was 9 per cent of total generation capacity (chart 3). The opening of the 3.2 GW plant Hinkley Point C in 2023 is expected to boost the share until existing capacity closes. There are several proposals for new nuclear plants at various stages of planning. These have not been included in this analysis.

**Chart 2: Nuclear capacity as a proportion of total capacity, 1955-2016**



**Chart 3: Nuclear capacity as a proportion of total capacity, 1995 vs 2016**



Whilst nuclear’s share of capacity was 9 per cent in 2016, its share of UK electricity generation was 21 per cent. In 1995 nuclear’s share of capacity was 17 per cent and its share of UK generation was 26 per cent. Nuclear plants generated electricity for a relatively high proportion of time compared to other technologies. In 2016 nuclear’s load factor was 77 per cent, calculated as the total electricity generated as a proportion of potential generation, given the average capacity over the year. This compares to provisional average load factors of 46 per cent for gas-fired generation by major power producers, 22 per cent for coal, 24 per cent for onshore wind, 37 per cent for offshore wind and 11 per cent for solar in 2016.

### **User feedback**

We welcome all feedback from users; therefore, if you have any comments or queries regarding this analysis, please contact either Ravina Singh or Stephen Ashcroft using the contact details below.

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