

Nuclear Basics

**CURTISS-
WRIGHT**

BWR AND PWR NUCLEAR REACTORS IN THE UNITED STATES OF AMERICA

Nuclear is a critical part of America's power sector.

94

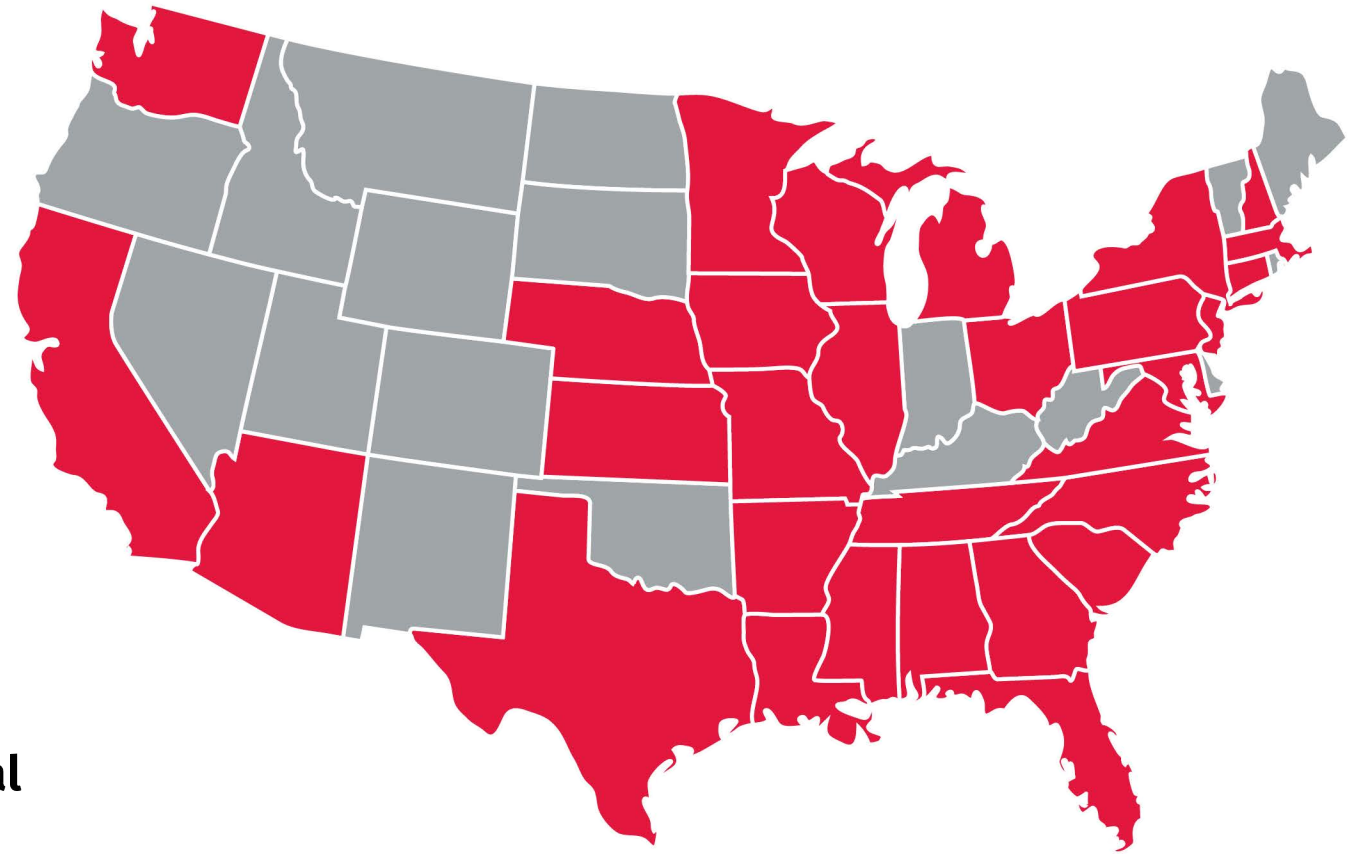
Number of Nuclear Reactors in the United States

55

Number of Nuclear Sites in the United States

98%

Average Annual Reactor Generation Capacity



States with Nuclear Reactors
States without Nuclear Reactors

PWR

Pressurized Water Reactors

All of these traditional nuclear power plants operate off of the same basic principle - Water is heated to create steam, and the steam is used to turn the turbine, producing electricity.

BWR

Boiling Water Reactors

Nuclear Reactors Produce



America's Total Energy



America's Clean Energy

Pressurized water reactors are more common than boiling water reactors, with 63 PWRs and 31 BWRs currently operational in the US.

63
PWRs



31
BWRs

Unlike BWRs, the water in pressurized water reactors never boils; instead, PWRs utilize a secondary steam system that is heated by the primary system to produce steam.



NUCLEAR BASICS:

BWR and PWR Nuclear Reactors

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Nuclear is a critical part of America's power sector, producing more than [50% of America's clean energy](#) and roughly 20% of its energy overall. [This energy is created by 94 reactors spread across 55 sites](#), with most sites achieving an [average annual capacity factor of around 98%](#). All of these traditional nuclear power plants operate off of the same basic principle – [water is heated to create steam, and the steam is used to turn the turbine, producing electricity](#). There are two types of lightwater reactors US plants use to do this: pressurized water reactors, also known as PWRs, and boiling water reactors, also known as BWRs.

Boiling water reactors are the simpler of the two designs, with a closed, single loop system creating steam and then cooling it to be used again. In a BWR, the water is heated in the reactor core, [causing it to boil and turn into steam](#). This steam passes through two phases of moisture separation on its way to the turbine, [where the steam turns the turbine to create electricity](#). After this, the steam is cooled, and the water returns to the reactor to begin the process again.

Pressurized water reactors are more common than boiling water reactors, with [63 PWRs and 31 BWRs currently operational in the US](#). Unlike BWRs, the water in pressurized water reactors never boils; instead, PWRs utilize a secondary steam system that is [heated by the primary system to produce steam](#). The water in the primary steam system is highly pressurized – [a pressure which pushes it into and out of the reactor core where it is heated](#). This hot water then heats tubes that are in contact with the secondary steam system, heating the water in the [secondary system and turning it into the steam needed to move the turbine](#).

Together, BWR and PWR plants have formed the basis for over 60 years of successful nuclear plant operation. US nuclear plants employ [almost half a million people in primary and secondary job functions, and prevent 506 million metric tons of CO2 emissions each year](#), making them a vital part of America's power infrastructure.