Nuclear Power

Physics and Mathematics of Sustainable Energy

College of the Atlantic. November 7, 2025

The Palo Verde generating station consists of three nuclear reactors, each of which has a nameplate capacity of 1.4 GW. It is located near Tonopah, Arizona, which is about 45 miles (75 km) west of Phoenix. In 2017 its capacity factor was 92.55%.

1. The power plant takes up approximately 1600 ha of land. What is the plant's power density, in W/m^2?

2. What is the typical power density for solar PV?

3. The average home in Arizona uses maybe around 1200 kWh a month. How many homes could Palo Verde power.

4. The cost of electricity in AZ is roughly \$0.16/kWh. What is the value of the electricity generated ty Palo Verde in one year?