

Solar power bahrain

Bahrain enjoys over 3,350 hours of sunshine annually.¹ Daylight hours in Manama fluctuate between 10.5 and 13.8 hours, with sunshine durations ranging from 7.3 to 11.3 hours.²

A domestic rooftop PV system study in Bahrain recorded a maximum daily specific yield of 6.12 kWh/kWp under optimal conditions.³ On average, the annual yield is estimated to be 1,600-1,700 kWh per kWp installed.⁴

In Bahrain, electricity costs about \$0.042 per kilowatt-hour (kWh) for homes and \$0.077 per kWh for businesses (for usage over 5,000 kWh). However, the government provides a subsidy for Bahraini households, which means they pay as little as \$0.008 per kWh for the first 3,000 kWh they use each month.⁵

Bahrain's electrical grid is generally reliable. The country generates approximately 36 billion kWh of electricity annually, exceeding its consumption of 34.52 billion kWh, signifying a generation capacity covering 103% of the national demand.⁶

Bahrain's National Renewable Energy Action Plan (NREAP) targets 200 MW of installed solar capacity by 2025 and 400 MW by 2035. These goals aim to achieve 5% and 20% of total electricity from renewables, respectively.⁹

The LCOE for solar PV is projected to be \$0.049-\$0.063/kWh in 2025 and \$0.036-\$0.055/kWh by 2035. This is significantly lower than the actual cost of electricity from conventional sources.¹¹

As of 2022, natural gas constitutes 99.97% of Bahrain's electricity generation. Solar energy contributes only 0.03% but is expected to increase significantly with new projects.¹²

While specific figures for residential installations are limited, the government has installed solar panels on 10 homes as part of a pilot project.³ Additionally, solar panels have been installed in several schools and malls.¹⁴

Currently, a limited number of solar farms are operational in Bahrain. Four notable installations include: Tatweer Petroleum,¹⁵ Bapco,¹⁶ Dragon City,⁶¹ Imerys Solar Plants.¹⁷

The off-grid market in Bahrain is currently relatively small due to the widespread availability of the grid electricity. However, there are some areas without a power system, creating a need for off-grid solutions.¹⁹

While specific figures are limited, there is evidence of off-grid solar adoption in the commercial sector. For example, GAC Bahrain installed over 550 solar panels on its warehouse, indicating a trend towards solar adoption even in grid-connected areas.²⁰



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The off-grid solar market in Bahrain is expected to expand gradually. This expansion is driven by factors such as growing understanding of the benefits of solar energy and the adoption of net metering policies.

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