

## SolarInnovate Energy Solutions

# How big is the outdoor power battery



## Overview

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What is battery energy storage capacity?

Battery energy storage capacity is the total amount of energy the battery can store, measured in kilowatt-hours (kWh) or megawatt-hours (MWh). Think of this as like the size of a water tank where you measure the water capacity in litres.

What is a battery size?

Battery “size” also needs to be understood over time—how much energy the battery can deliver across its usable life. This is often described as lifetime energy throughput, measured in total MWh, or in terms of some number of full charge and discharge cycles.

What determines battery size?

Learn what determines battery size, including energy storage capacity (kWh), power rating (kW), charge rate (C-rate), storage duration, and energy density. Understand how these factors impact performance in energy storage systems.

What is battery storage duration?

Battery storage duration describes how long the battery can discharge at its rated power. It's calculated:  $\text{Energy Capacity (MWh)} \div \text{Power Rating (MW)}$ . A 4 MWh battery with a 1 MW power rating has a 4-hour duration. A 1 MWh battery with a 2 MW power rating has a 0.5-hour duration. We've written about storage duration in more detail [here](#).

How long does a 4 MW battery last?

A 4 MWh battery with a 1 MW power rating has a 4-hour duration. A 1 MWh battery with a 2 MW power rating has a 0.5-hour duration. We've written about storage duration in more detail [here](#). C-rate or 'charge rate', is another way of defining how quickly a battery can be charged or discharged relative to

its storage capacity.

How much energy does a 12V battery use?

Energy (Wh) =  $12V \times 200Ah = 2400Wh$ . Considering 50% DoD, the usable energy =  $2400Wh \times 50\% = 1200Wh$ . Another relevant observation is that battery capacity rating standards can be misleading. This means that the Ah advertised by manufacturers expresses the battery capacity in ideal conditions.

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