Solar energy storage system 90 kWh

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Investing in a 90kW solar system can lead to significant savings on your electricity bills. On average, this system can save you up to $27,923 per year. Over its estimated panel lifetime of 25 years, the total savings can amount to a staggering $698,063. These savings are possible due to the ability of solar systems to generate electricity for your property, reducing your reliance on utility companies and the ever-increasing cost of grid electricity.

Electricity costs have been steadily rising, with an increase of 270% over the past 40 years. This trend is expected to continue, putting a strain on households and businesses alike. However, by generating your own electricity through a solar system, you can mitigate the impact of these rising costs and potentially even save money in the long run. Take a look at the graph below, sourced from the U.S. Bureau of Labor Statistics, to understand the dramatic rise in electricity costs.

One of the greatest advantages of installing a solar system is the opportunity to save on your electricity bills. The more self-generated electricity you consume, the less you have to pay utility companies. By utilizing solar energy during peak daylight hours, you can significantly reduce your reliance on grid electricity, leading to substantial savings.

In addition to saving on your electricity bills, a 90kW solar system can generate surplus electricity that you can sell back to the grid. In some regions, you can receive payment for this excess energy through net metering programs or feed-in tariffs. By selling back the electricity you don’t consume, you can potentially earn a 20% return on your investment per year, based on the current electricity costs.

The cost of a 90kW solar system is an essential consideration for any potential buyer. On average, the price for this solar system is $180,000. However, it is important to note that prices have come down substantially over the past 10 years, making solar systems more accessible to a broader range of customers. The graph below, sourced from The National Renewable Energy Laboratory (NREL), illustrates the decline in solar panel costs.

For customers seeking additional energy independence and backup power, a 90kW solar system can be paired with battery storage. There are two main types of batteries commonly used in solar systems: lead acid and lithium polymer.

On the other hand, a lithium polymer battery system would only require 90kWh x 1.2 (for 80% depth of discharge) x 1.05 (inefficiency factor) = 567 kWh. Therefore, lithium batteries are highly recommended as they require only half as many batteries, reducing both the initial investment cost and the physical footprint of the system. It is also advisable to procure both the batteries and panels together to reduce overall costs.

While most solar systems are connected to the grid, it is possible to create an off-grid system for those seeking

complete energy independence. A 90kW off-grid solar system requires approximately 300 or more panels to generate the necessary electricity. Additionally, you will need 567 kWh worth of lithium polymer batteries to store the energy and ensure a reliable power supply. The typical cost for the batteries required to run a 90kW off-grid system is $266,490.

To achieve a 90kW solar system, you will need 300 or more panels. On average, most panels have a capacity of 300 watts. Therefore, by installing 300 panels, each with a capacity of 300 watts, you can reach the desired 90kW capacity.

Considering that each solar panel has a footprint of approximately 17 sqft, a 90kW solar system with 300 panels would occupy a total footprint of 5100 sqft. It is important to account for this space requirement when planning the installation of a solar system on your property.

A 90kW solar system has an average output of 450 kWh per day under optimal conditions. This estimate assumes that the panels receive at least 5 hours of direct sunlight per day. Annually, this equates to 13500 kWh per month and a remarkable 164250 kWh per year.

The number of batteries needed for a 90kW solar panel system depends on the battery type, specifically lead acid or lithium polymer. For optimal performance and cost-efficiency, it is recommended to use lithium polymer batteries. With this battery type, a 90kW solar system would require 567 kWh worth of batteries. You can either opt for a single large battery system or wire several smaller batteries together to reach the required capacity.

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