ON-GRID VS OFF-GRID



Understanding Your Solar System Options

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On-grid solar systems

Also known as grid-connected systems, are connected to the public electricity network. These systems use solar panels to generate electricity for use within the property, and any excess energy can be exported back to the grid. If the system includes a battery, the excess energy is first stored for later use, typically covering evening and nighttime consumption. The battery is used as the first source of backup before drawing power from the grid. When both solar production and battery storage are insufficient, electricity is automatically sourced from the grid. On-grid systems are widely used in residential and commercial settings due to their ability to integrate with existing infrastructure and take advantage of feed-in tariffs or energy export arrangements.

Advantages

- Energy independence by using stored solar energy before drawing from the grid
- Reduced electricity bills through time-of-use savings and peak tariff management
- Lower carbon footprint by maximizing use of renewable energy
- Ability to export excess energy back to the grid (if allowed by local regulations)
- Increased energy reliability during blackouts (if system allows backup during outages)
- Supports overall grid stability by reducing demand during peak times
- Flexible system design allows for battery upgrades or expansions over time

Disadvantages

- High upfront cost for battery and system installation
- Limited battery storage capacity may not cover all energy needs, especially in poor weather
- Battery performance degrades over time and may require replacement
- Ongoing maintenance and monitoring needed for optimal performance
- Some systems may not provide power during outages without a backup configuration
- Safety risks if batteries are improperly installed or damaged
- Payback period can be long depending on usage patterns and energy prices

Off-grid solar systems

Off-grid solar and battery systems operate independently from the electricity grid. These systems generate power through solar panels and store excess energy in batteries for use when solar production is low, such as at night or during extended periods of cloud cover. Designed to supply 100% of a property's electricity needs, they are typically used in rural or remote locations where grid access is unavailable. However, off-grid systems are also becoming more common in urban environments where homeowners seek energy autonomy or backup power solutions. These systems must be carefully sized and designed to match energy usage patterns and seasonal variations in solar generation to ensure consistent and reliable supply.

Advantages

- Complete energy independence with no reliance on the grid
- Suitable for remote areas where grid connection is not feasible or cost-effective
- Protection from power outages and grid failures
- No ongoing electricity bills or connection charges from energy retailers
- Environmental benefits from using 100% renewable energy
- Custom system design allows for tailored energy solutions based on usage
- Can be expanded with additional panels or batteries as needs grow

Disadvantages

- Higher upfront costs due to the need for larger battery storage and backup components
- System must be correctly sized to avoid running out of power during low production periods
- Limited energy supply requires users to be more mindful of consumption
- Battery storage may need to be upgraded or replaced over time
- Requires ongoing monitoring and maintenance for batteries and system health
- Not suitable for high-energy-use properties unless carefully designed
- Limited access to government incentives in some regions compared to grid-connected systems.



If you have any other questions just ASK

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