

On Grid Residential Solar PV Module Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2024 to 2032

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Abstracts

The Global On Grid Residential Solar PV Module Market was valued at USD 58.1 billion in 2023 and is projected to expand at a CAGR of 4.7% from 2024 to 2032. Solar PV modules, commonly termed as solar panels, consist of multiple photovoltaic cells assembled within a framework that converts sunlight into electricity. These cells are typically made from semiconductor materials, primarily silicon, which generate an electric current when exposed to sunlight through the photovoltaic effect. Recent advancements in solar module efficiency have led to the development of cutting-edge technologies, such as monocrystalline panels, which achieve efficiencies exceeding 20%. These high-efficiency modules enable homeowners to produce more electricity within a limited roof space, making them particularly valuable for properties with restricted solar panel installation areas.

Innovations like bifacial modules designed to capture sunlight from both sides are also gaining popularity in the residential sector, further stimulating market growth. Additionally, supportive government policies aimed at promoting renewable energy adoption are expected to enhance the momentum of the industry. In terms of installation type, the rooftop segment is anticipated to surpass USD 78 billion by 2032. Regulations that allow homeowners to sell surplus electricity back to the grid significantly improve the financial feasibility of rooftop solar systems, providing additional income or credits to users. Many governments are implementing financial incentives, such as tax credits, rebates, and grants, to alleviate the initial costs of installing rooftop solar systems. These systems can drastically reduce electricity expenses by enabling homeowners to generate energy, thus decreasing their dependence on grid electricity. The Asia-Pacific market for on-grid residential solar PV modules is expected to exceed USD 39.5 billion, driven by technological innovations, supportive policies, and rising electricity costs. Several nations have adopted net metering schemes that enable homeowners to sell

excess solar energy back to the grid, increasing the financial attractiveness of on-grid systems. Additionally, various governments are providing subsidies and tax incentives to help offset the initial investment required for solar installations, promoting the uptake of on-grid residential systems. Furthermore, ambitious renewable energy targets, in line with climate commitments, will likely boost the adoption of solar PV technology in residential applications.

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