

# **United States Solar Energy Solutions Market By Type (Photovoltaic Cells, Concentrated Solar Power Systems), By Application (Agriculture & Horticulture, Architecture, Transportation & Others), By Region, Competition, Forecast and Opportunities, 2019-2029F**

<https://marketpublishers.com/r/U4CA7EADDEEFEN.html>

Date: August 2024

Pages: 86

Price: US\$ 3,500.00 (Single User License)

ID: U4CA7EADDEEFEN

## **Abstracts**

United States Solar Energy Solutions Market was valued at USD 30.4 billion in 2023 and is anticipated to project robust growth in the forecast period with a CAGR of 15.7% through 2029. The rising focus on environmental sustainability has prompted a significant shift towards solar power as a primary player in the country's energy transition. Advances in solar technology have driven down installation costs, making solar energy increasingly competitive with traditional sources. Government initiatives and financial incentives, both federally and at the state level, further boost market expansion, encouraging businesses and consumers to invest in solar infrastructure. Consequently, there has been a notable increase in solar installations across residential, commercial, and industrial sectors. The combination of environmental consciousness, technological advancements, and supportive policies creates a favorable environment for the continued growth of the United States solar energy solutions market, offering sustainable and economically viable energy alternatives to meet the nation's diverse energy needs.

### **Key Market Drivers**

#### **Environmental Awareness and Sustainable Practices**

The rapid growth of the United States solar energy solutions market is primarily driven by increasing environmental awareness among businesses and consumers. With growing concerns about climate change, there's a widespread shift towards prioritizing

sustainable practices, with solar energy playing a central role. Businesses are particularly embracing solar power to reduce carbon footprints and address the negative impacts of conventional energy sources. This demand surge is driven by a strategic recognition of the importance of eco-friendly initiatives among businesses, who aim to meet the expectations of an environmentally conscious consumer base. The rising awareness of the ecological effects of energy choices is a significant market driver, positioning solar energy as the leading clean and renewable energy alternative. As sustainability becomes a priority across industries, the solar industry is not just meeting market demands but leading the charge towards a more environmentally friendly energy landscape.

### Declining Solar Technology Costs

At the core of the extraordinary rise of the United States solar energy solutions market lies a pivotal catalyst—the consistent decline in the costs of solar technology. This fundamental shift is underpinned by a convergence of factors, including notable technological advancements, economies of scale, and heightened manufacturing efficiencies. Collectively, these forces have orchestrated a substantial reduction in the costs associated with solar panels and their integral components. The transformative impact of this cost decline extends across the residential and commercial landscape, rendering solar energy installations increasingly economically viable. As solar power emerges as a formidable contender against traditional energy sources, businesses and homeowners are strategically embracing solar solutions to harness the considerable long-term cost savings they offer. This diminishing cost barrier, acting as a linchpin in the sector's ascent, plays a pivotal role in democratizing access to solar energy solutions. No longer confined by economic constraints, the allure of solar energy becomes pervasive, fostering a widespread adoption that transcends traditional boundaries and propelling the United States towards a more sustainable and accessible energy future. This paradigm shift reflects not only the triumph of innovation and efficiency but also a democratization of clean energy, marking a decisive step towards a more inclusive and environmentally conscious energy landscape.

### Government Incentives and Supportive Policies

An indispensable force propelling the forward momentum of the United States solar energy solutions market is the constellation of government initiatives and supportive policies operating across federal, state, and local levels. This intricate web of measures constitutes a critical driver in incentivizing and accelerating the adoption of solar infrastructure. Various financial enticements, ranging from tax credits and rebates to

grants, have been strategically deployed to galvanize both businesses and individuals, mitigating the upfront costs associated with solar installations. The economic landscape for solar businesses is further enriched by these incentives, creating a favorable environment for sustained growth. Beyond mere financial incentives, the regulatory arena has witnessed the establishment of renewable energy standards and initiatives aimed at fostering the widespread embrace of clean energy solutions. This comprehensive governmental framework serves as a bedrock for the expansion of the solar energy solutions market, creating a symbiotic relationship where economic interests harmoniously align with overarching environmental objectives. The result is a conducive atmosphere wherein the solar sector not only thrives economically but also actively contributes to the realization of broader sustainability goals, thus illustrating the potent impact of policy-driven support in steering the trajectory of the clean energy landscape.

### Energy Independence and Security

The pursuit of energy independence and security has evolved into a compelling impetus driving the widespread adoption of solar energy solutions across the United States. As the nation endeavors to diversify its energy portfolio and diminish reliance on finite, non-renewable resources, solar power has emerged as a pivotal player in fortifying energy resilience. Solar installations, particularly when synergized with energy storage systems, present a decentralized and distributed energy model that stands poised to contribute significantly to grid stability. This becomes particularly salient during peak demand periods or unforeseen disruptions, where the adaptability and reliability of solar technologies come to the forefront. The overarching focus on energy security, entwined with a resolute commitment to curbing dependence on fossil fuels, has catalyzed substantial investments in solar technologies. Consequently, these solar solutions have entrenched themselves as integral components within the fabric of the nation's overarching strategy for achieving energy independence. This strategic alignment underscores not only a concerted effort to navigate towards sustainable energy alternatives but also positions solar technologies as linchpins in fortifying the resilience and self-sufficiency of the United States' energy landscape.

### Technological Innovation and Advancements

Government initiatives and supportive policies at federal, state, and local levels play a crucial role in driving the growth of the United States solar energy solutions market. These measures, including tax credits, rebates, grants, and renewable energy standards, incentivize and accelerate the adoption of solar infrastructure by businesses

and individuals. Financial incentives help offset upfront costs associated with solar installations, enriching the economic landscape for solar businesses and fostering sustained growth. Regulatory initiatives aim to promote the widespread adoption of clean energy solutions, creating a supportive framework for market expansion. This comprehensive governmental support establishes a symbiotic relationship between economic interests and environmental objectives, fostering a conducive atmosphere for the solar sector to thrive economically while contributing to broader sustainability goals. The impact of policy-driven support is evident in steering the trajectory of the clean energy landscape towards a more sustainable future.

## Key Market Challenges

### Regulatory and Policy Uncertainties

The United States Solar Energy Solutions Market faces challenges stemming from regulatory and policy uncertainties at the federal, state, and local levels. The absence of consistent and long-term policies related to solar energy incentives, tax credits, and net metering creates uncertainty for investors, developers, and consumers. Fluctuating regulations and policies can impact the financial viability of solar projects, leading to hesitancy in long-term investments and project development. Addressing this challenge requires a cohesive and stable regulatory framework that provides clarity and predictability for solar energy stakeholders, fostering a conducive environment for sustained market growth and investment in solar panel installations across the United States.

### Grid Integration and Infrastructure

The United States Solar Energy Solutions Market faces a significant challenge in integrating solar energy into the existing electrical grid infrastructure. As solar installations increase, grid integration becomes more complex, requiring upgrades and modernization to accommodate distributed solar generation. Additionally, the variability of solar power generation due to weather conditions calls for advanced grid management and energy storage solutions to ensure grid stability and reliability. Overcoming this challenge necessitates strategic investments in grid modernization, smart grid technologies, energy storage systems, and grid interconnection standards. These investments facilitate seamless integration of solar energy into the grid, maximizing its contribution to the overall energy mix while maintaining grid stability and resilience.

## Supply Chain Disruptions and Material Costs

The United States Solar Energy Solutions Market is confronted with challenges related to supply chain disruptions and material costs, particularly in the context of global market dynamics and trade policies. Fluctuations in raw material prices, including silicon, aluminum, and glass, can impact the overall cost of solar panel production and installation. Moreover, disruptions in the supply chain, such as those experienced during the COVID-19 pandemic, can lead to delays in project timelines and increased procurement costs. Addressing this challenge necessitates diversification of the supply chain, strategic stockpiling of critical materials, and fostering domestic manufacturing capabilities to mitigate reliance on international suppliers. Additionally, collaborative efforts to streamline trade policies and reduce trade barriers can contribute to stabilizing material costs and ensuring supply chain resilience for the solar energy industry in the United States.

## Public Perception and Education

The United States Solar Energy Solutions Market faces challenges concerning public perception, awareness, and education about solar energy. Despite the increasing use of solar panels, there's a need to improve public understanding of the benefits, affordability, and long-term value of solar energy systems. Misconceptions about solar technology, aesthetic concerns, and limited awareness about financial incentives and energy savings can hinder widespread adoption. To address this challenge, comprehensive public education and outreach initiatives are necessary to inform consumers, businesses, and policymakers about the environmental, economic, and societal benefits of solar energy. Collaborative efforts among industry stakeholders, educational institutions, and community organizations can play a crucial role in raising awareness, debunking myths, and promoting the advantages of solar energy. This fosters a supportive environment for the continued growth of the solar energy solutions market in the United States.

## Key Market Trends

### Accelerated Adoption of Solar-Plus-Storage Systems

A prominent trend shaping the United States solar energy solutions market is the accelerated adoption of solar-plus-storage systems. This integration of energy storage technologies, such as lithium-ion batteries, with solar installations addresses the intermittent nature of solar power generation. It allows for the storage of excess energy

produced during peak sunlight hours, enabling consumers to draw on this stored energy during periods of low sunlight or high demand. This trend aligns with the increasing focus on grid resiliency and the need for reliable and consistent power supply, making solar-plus-storage systems an attractive solution for both residential and commercial applications. As advancements in energy storage technologies continue, the integration of storage with solar installations is expected to become more commonplace, further enhancing the appeal and reliability of solar energy solutions.

### Continued Decline in Solar Panel Costs and Increased Efficiency

A significant market trend in the United States solar energy sector is the continued decline in solar panel costs coupled with increased efficiency. Technological advancements and economies of scale have led to a steady reduction in the cost of solar panels, making solar energy more economically competitive with conventional energy sources. Simultaneously, innovations in solar cell technologies have improved energy conversion rates, enhancing the overall efficiency of solar installations. This trend not only makes solar energy more accessible to a broader range of consumers but also contributes to the scalability and feasibility of large-scale solar projects. As solar panel costs trend downward and efficiency increases, the overall economic viability of solar energy solutions continues to improve, fostering sustained market growth.

### Growing Embrace of Community Solar Programs

The United States solar energy solutions market is witnessing a growing embrace of community solar programs as a notable trend. Community solar allows individuals or businesses to subscribe to a shared solar project and receive credits on their electricity bills based on their share of the energy produced. This approach enables those without suitable rooftops or financial capacity for individual solar installations to access the benefits of solar energy. The communal aspect of these programs aligns with a broader shift towards decentralized energy generation and community-driven sustainability initiatives. As more states enact supportive policies and regulatory frameworks for community solar, this trend is expected to expand, promoting inclusivity in solar energy adoption and contributing to the overall diversification of the solar energy solutions market.

### Increasing Integration of Smart Technologies in Solar Systems

An emerging trend in the United States solar energy solutions market is the increasing



integration of smart technologies within solar systems. Advancements in digitalization, monitoring, and control systems allow for enhanced performance optimization, real-time monitoring, and predictive maintenance of solar installations. Smart inverters, for example, enable better grid integration and responsiveness to fluctuations in energy demand. Additionally, the integration of Internet of Things (IoT) technologies facilitates the creation of intelligent solar ecosystems, where data-driven insights improve overall system efficiency and reliability. This trend aligns with the broader evolution towards smart grids and sustainable infrastructure, positioning solar energy solutions as integral components of a technologically advanced and interconnected energy landscape.

## Segmental Insights

### Type Insights

The United States solar energy solutions market saw the dominance of the Photovoltaic Cells segment, and this trend is expected to persist during the forecast period. Photovoltaic (PV) cells, also known as solar cells, have established themselves as the primary driver of solar energy installations due to their widespread use in both residential and commercial applications. The ease of integration into various settings, coupled with declining manufacturing costs, has propelled the adoption of PV cells. Residential rooftop installations, utility-scale solar farms, and commercial solar projects predominantly rely on photovoltaic technology, contributing to its market dominance. Additionally, advancements in PV cell efficiency and ongoing research and development efforts have further solidified the dominance of this segment. While Concentrated Solar Power (CSP) systems have their niche in utility-scale applications, the versatility, scalability, and cost-effectiveness of photovoltaic cells continue to position them as the preferred choice across a broad spectrum of solar energy projects. As the demand for distributed energy generation and grid independence grows, PV cells are expected to maintain their dominance in the United States solar energy solutions market, playing a pivotal role in driving the industry's growth and shaping the trajectory of solar energy adoption in the country.

### Regional Insights

West region emerged as the dominant force in the United States solar energy solutions market, and this dominance is projected to persist during the forecast period. The West has consistently led in solar energy adoption, benefiting from abundant sunlight, progressive state policies, and a strong commitment to renewable energy initiatives. States such as California, Arizona, and Nevada have been at the forefront of large-scale

solar installations, with favorable regulatory environments and incentives driving substantial growth. The region's commitment to clean energy goals and ambitious renewable portfolio standards has attracted significant investments in solar projects, both residential and utility-scale. The combination of favorable climatic conditions, robust policy support, and a culture that values sustainability positions the West as a leader in solar energy adoption. While other regions, such as the Northeast and Midwest, are also making significant strides in solar deployment, the West's early and sustained commitment to solar energy solutions is expected to maintain its dominance, playing a pivotal role in shaping the overall trajectory of the United States solar energy market.

### Recent Developments

In Jan 2024, First Solar, Inc. announced its acquisition of a 1.2 million square foot facility situated in Troy Township, Ohio. Previously known as Peloton Output Park, this facility will be repurposed as a new distribution center to bolster First Solar's manufacturing operations in Ohio. These operations encompass three manufacturing facilities with a collective annual nameplate capacity of approximately 6 gigawatts (GW).

### Key Market Players

First Solar, Inc.

SunPower Corporation

Sunrun Inc.

Tesla, Inc

Canadian Solar Inc.

Vivint Solar Inc.

JinkoSolar Holding Co., Ltd

SolarEdge Technologies, Inc



Enphase Energy, Inc

Trina Solar Limited

## Report Scope:

In this report, the United States Solar Energy Solutions Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

United States Solar Energy Solutions Market, By Type:

Photovoltaic Cells

Concentrated Solar Power Systems

United States Solar Energy Solutions Market, By Application:

Agriculture & Horticulture

Architecture

Transportation

Others

United States Solar Energy Solutions Market, By Region:

South US

Midwest US

North-East US

West US

## Competitive Landscape

*United States Solar Energy Solutions Market By Type (Photovoltaic Cells, Concentrated Solar Power Systems), By...*

Company Profiles: Detailed analysis of the major companies present in the United States Solar Energy Solutions Market.

Available Customizations:

United States Solar Energy Solutions Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

## Contents

### **1. PRODUCT OVERVIEW**

- 1.1. Market Definition
- 1.2. Scope of the Market
  - 1.2.1. Markets Covered
  - 1.2.2. Years Considered for Study
  - 1.2.3. Key Market Segmentations

### **2. RESEARCH METHODOLOGY**

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Formulation of the Scope
- 2.4. Assumptions and Limitations
- 2.5. Sources of Research
  - 2.5.1. Secondary Research
  - 2.5.2. Primary Research
- 2.6. Approach for the Market Study
  - 2.6.1. The Bottom-Up Approach
  - 2.6.2. The Top-Down Approach
- 2.7. Methodology Followed for Calculation of Market Size & Market Shares
- 2.8. Forecasting Methodology
  - 2.8.1. Data Triangulation & Validation

### **3. EXECUTIVE SUMMARY**

### **4. IMPACT OF COVID-19 ON UNITED STATES SOLAR ENERGY SOLUTIONS MARKET**

### **5. VOICE OF CUSTOMER**

### **6. UNITED STATES SOLAR ENERGY SOLUTIONS MARKET OVERVIEW**

### **7. UNITED STATES SOLAR ENERGY SOLUTIONS MARKET OUTLOOK**

- 7.1. Market Size & Forecast
  - 7.1.1. By Value

## 7.2. Market Share & Forecast

7.2.1. By Type (Photovoltaic Cells, Concentrated Solar Power Systems)

7.2.2. By Application (Agriculture & Horticulture, Architecture, Transportation & Others)

7.2.3. By Region (South, Midwest, North-East, West)

## 7.3. By Company (2023)

## 7.4. Market Map

# 8. SOUTH UNITED STATES SOLAR ENERGY SOLUTIONS MARKET OUTLOOK

## 8.1. Market Size & Forecast

8.1.1. By Value

## 8.2. Market Share & Forecast

8.2.1. By Type

8.2.2. By Application

# 9. MIDWEST UNITED STATES SOLAR ENERGY SOLUTIONS MARKET OUTLOOK

## 9.1. Market Size & Forecast

9.1.1. By Value

## 9.2. Market Share & Forecast

9.2.1. By Type

9.2.2. By Application

# 10. NORTH-EAST UNITED STATES SOLAR ENERGY SOLUTIONS MARKET OUTLOOK

## 10.1. Market Size & Forecast

10.1.1. By Value

## 10.2. Market Share & Forecast

10.2.1. By Type

10.2.2. By Application

# 11. WEST UNITED STATES SOLAR ENERGY SOLUTIONS MARKET OUTLOOK

## 11.1. Market Size & Forecast

11.1.1. By Value

## 11.2. Market Share & Forecast

11.2.1. By Type

11.2.2. By Application

## **12. MARKET DYNAMICS**

- 12.1. Drivers
- 12.2. Challenges

## **13. MARKET TRENDS AND DEVELOPMENTS**

## **14. COMPANY PROFILES**

- 14.1. First Solar, Inc.
  - 14.1.1. Business Overview
  - 14.1.2. Key Revenue and Financials
  - 14.1.3. Recent Developments
  - 14.1.4. Key Personnel/Key Contact Person
  - 14.1.5. Key Product/Services Offered
- 14.2. SunPower Corporation
  - 14.2.1. Business Overview
  - 14.2.2. Key Revenue and Financials
  - 14.2.3. Recent Developments
  - 14.2.4. Key Personnel/Key Contact Person
  - 14.2.5. Key Product/Services Offered
- 14.3. Sunrun Inc.
  - 14.3.1. Business Overview
  - 14.3.2. Key Revenue and Financials
  - 14.3.3. Recent Developments
  - 14.3.4. Key Personnel/Key Contact Person
  - 14.3.5. Key Product/Services Offered
- 14.4. Tesla, Inc
  - 14.4.1. Business Overview
  - 14.4.2. Key Revenue and Financials
  - 14.4.3. Recent Developments
  - 14.4.4. Key Personnel/Key Contact Person
  - 14.4.5. Key Product/Services Offered
- 14.5. Canadian Solar Inc.
  - 14.5.1. Business Overview
  - 14.5.2. Key Revenue and Financials
  - 14.5.3. Recent Developments
  - 14.5.4. Key Personnel/Key Contact Person

- 14.5.5. Key Product/Services Offered
- 14.6. Vivint Solar Inc.
  - 14.6.1. Business Overview
  - 14.6.2. Key Revenue and Financials
  - 14.6.3. Recent Developments
  - 14.6.4. Key Personnel/Key Contact Person
  - 14.6.5. Key Product/Services Offered
- 14.7. JinkoSolar Holding Co., Ltd
  - 14.7.1. Business Overview
  - 14.7.2. Key Revenue and Financials
  - 14.7.3. Recent Developments
  - 14.7.4. Key Personnel/Key Contact Person
  - 14.7.5. Key Product/Services Offered
- 14.8. SolarEdge Technologies, Inc
  - 14.8.1. Business Overview
  - 14.8.2. Key Revenue and Financials
  - 14.8.3. Recent Developments
  - 14.8.4. Key Personnel/Key Contact Person
  - 14.8.5. Key Product/Services Offered
- 14.9. Enphase Energy, Inc
  - 14.9.1. Business Overview
  - 14.9.2. Key Revenue and Financials
  - 14.9.3. Recent Developments
  - 14.9.4. Key Personnel/Key Contact Person
  - 14.9.5. Key Product/Services Offered
- 14.10. Trina Solar Limited
  - 14.10.1. Business Overview
  - 14.10.2. Key Revenue and Financials
  - 14.10.3. Recent Developments
  - 14.10.4. Key Personnel/Key Contact Person
  - 14.10.5. Key Product/Services Offered

## **15. STRATEGIC RECOMMENDATIONS**

## **16. ABOUT US & DISCLAIMER**



## I would like to order

Product name: United States Solar Energy Solutions Market By Type (Photovoltaic Cells, Concentrated Solar Power Systems), By Application (Agriculture & Horticulture, Architecture, Transportation & Others), By Region, Competition, Forecast and Opportunities, 2019-2029F

Product link: <https://marketpublishers.com/r/U4CA7EADDEEFEN.html>

Price: US\$ 3,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/U4CA7EADDEEFEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:  
Last name:  
Email:  
Company:  
Address:  
City:  
Zip code:  
Country:  
Tel:  
Fax:  
Your message:

**\*\*All fields are required**

Customer signature \_\_\_\_\_

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below  
and fax the completed form to +44 20 7900 3970