

# **United States Supercapacitor Market by Product Type (Double-Layer Capacitor, Pseudo capacitors, Hybrid Capacitors), Module Type (Less Than 10 Volts Modules, 10 Volts to 25 Volts Modules, 25 Volts to 50 Volts Modules, 50 Volts to 100 Volts Modules, and Above 100 Volts Modules), Material (Activated carbon, Carbide Derived Carbon, Carbon Aerogel, and Others), and Application (Automotive, Industrial, Energy, Consumer Electronics, and Aerospace & Defense)), By Region, Competition, Forecast and Opportunities, 2028**

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## **Abstracts**

United States Supercapacitor Market is anticipated to grow at a good pace during the forecast period. The increasing demand for renewable energy solutions and the rising installation of renewable power generation will boost the market.

A supercapacitor (SC), also known as an ultracapacitor, is a high-capacity capacitor with lower voltage restrictions and a much higher capacitance value than ordinary capacitors. It bridges the gap between electrolytic capacitors and rechargeable batteries. It has 10 to 100 times the energy storage capacity of electrolytic capacitors per unit volume or mass, can take and distribute charge much faster than batteries, and can withstand many more charge and discharge cycles than rechargeable batteries. In contrast to conventional capacitors, which store electrical energy between two parallel plates via charge separation under the influence of an electric field, supercapacitors store electrical energy in an electrical double layer between electrode and electrolyte

interfaces via the adsorption of oppositely charged ions that are attracted to the electrode and electrolyte interfaces through the adsorption of oppositely charged ions that are manifest within an Angstrom (Å) distance of the interface. Basic materials that are taken into consideration for manufacturing such electrodes have extremely large surface areas (1500–3000 m<sup>2</sup>/g), which opens the door to achieving higher specific capacitance values (1–1000 F) as well as high specific power.

### Increasing Demand for Renewable Energy Solutions to Drive Market Growth

Supercapacitor charging and discharging is critical for continuous operation, in addition to sustaining peak loads and backup power. It comprises industrial battery-powered gadgets including smart meters, smoke detectors, video doorbells, and medical gadgets. Several suppliers are introducing new products to assist this. For instance, on November 2021, Texas Instruments (TI) recently unveiled a new 60 nA quiescent current (IQ) bidirectional buck/boost converter. Engineers can increase battery life by up to 20% by using the TPS61094 buck/boost converter instead of routinely utilized hybrid-layer capacitors (HLCs), which also give ultra-low IQ and have a buck mode for supercapacitor charging.

Based on current supercapacitor technology, more investigation is being done into the creation of inexpensive and creative solutions. It underlines the need to lower the cost of producing carbon-based electrodes and the dependence on essential components while providing a more cost-effective and environmentally friendly alternative to current versions. For instance, in 2021, scientists at Imperial College London and University College London (UCL) have recently created an electrode material for supercapacitors that is more energy-dense and environmentally friendly, paving the way for increased market adoption of high-power, quick-charging electric vehicle technology.

More solar and wind energy installations are being built around the nation because of the growing responsibility to protect Earth's resources and practice environmental sustainability. To strengthen the structure of renewable energy sources, the US administration has also developed supportive policies and regulatory frameworks. For instance, the United States of America installed 29 gigawatts of renewable energy in the same year, about 80% more than in 2019, including 15 gigawatts of solar energy and roughly 14 gigawatts of wind energy, according to a March 2020 report from the International Renewable Energy Agency (IRENA).

The pace of the local market in the US is also anticipated to be accelerated by the expanding use of solar photovoltaic (PV) technology and ambitious goals to promote the

transition to low-carbon energy. Also, several governments and organizations have noted that the primary generating mix of the nation has seen a significant expansion of solar PV technology over time. For instance, the Energy Information Administration (EIA) in the United States reports that the total generation from solar PV technology accounted for about 9.6% of the net utility-scale renewable resources in 2019 compared to 8.5% in 2018, with an increase of over 8.78 million megawatt-hours year over year (MWh). The market for renewable energy systems is anticipated to be driven by these reasons, which include the adoption of profitable government programs to encourage sustainable infrastructure development.

### Increasing Demand for Fuel Cell Electric Vehicles to Augment US Supercapacitor Market Growth

To increase the use of fuel cell electric cars (FCEVs) across the nation, the U.S. has been concentrating on investing in hydrogen vehicles and refilling facilities. To support the long-term adoption of FCEVs, the government, and the U.S. Department of Energy (DoE) have made major investments in research and development initiatives. The U.S. DoE awarded funds to the fuel cell R&D sub-program in 2019 totaling roughly USD 30 million to fulfill future cost, performance, and durability goals. Also, several nations and states are concentrating independently on creating and establishing a sizable hydrogen FCEV fleet for private and business activities. During the anticipated timeframe, these variables are anticipated to increase product demand in the United States.

### Extended Life Cycle & High Energy Density of U.S. Supercapacitors to Aid Market Value

Supercapacitors are high-capacity capacitors that are less voltage-restricted and have a higher capacitance than regular capacitors. This capacitor, which is a new energy storage component, has a wider temperature range, higher current capability, higher efficiency, a longer cycle life, an easily observable state of charge, and a wider voltage range. Lithium-ion batteries typically last between 500 and 10,000 charge cycles, whereas supercapacitors can last between 100,000 and a million cycles. It can also function in a far wider temperature range than conventional batteries—from -40°C to 70°C—and at any voltage lower than its maximum continuous working voltage. This could lead to these capacitors being a desirable power solution for more and more applications, which is projected to drive the market

Consideration of supercapacitors as a viable substitute for conventional batteries  
Supercapacitors can charge and release energy more quickly than conventional

batteries, which carry out the same function much more slowly. These electrode- and electrolyte-equipped capacitors can rapidly charge and discharge over a very large number of cycles, making them an effective replacement for conventional batteries in a variety of applications. The usage of energy storage technology with little or no emissions is becoming more popular among consumers as environmental friendliness gains importance.

The market for alternative energy technologies is expanding as major technology companies step up their efforts to minimize greenhouse gas emissions. Supercapacitors reduce the possibility of producing any dangerous toxic waste because they can be recharged and recycled. They can therefore be viewed as an environmentally benign alternative to conventional batteries. Supercapacitors are not yet as advanced as traditional battery-based energy storage systems, but with recent developments in graphene-based supercapacitors, they may soon overtake them.

### Increasing Installation of Renewable Power Generation to Fuel Growth

In comparison to batteries and conventional capacitors, supercapacitors are a new technology in the field of energy storage systems that can provide better power and energy densities. These batteries will be a desirable power source for the production of renewable energy because of their benefits, such as their capacity for large charge and discharge currents, extremely high efficiency, and a wider temperature range.

The Renewable Portfolio Standards (RPS) were developed by the National Conference of State Legislatures (NCSL) to promote domestic energy production, diversify energy sources, and promote economic growth in the United States. Phase I utilities must meet the renewables target of 14% by 2025, 30% by 2030, 65% by 2040, and 100% by 2050 under the new laws. For Phase II utilities, the accelerated renewables target is 26% by 2025, 41% by 2030, and 100% by 2045. As a result of these government laws, the market for renewable energy is anticipated to develop throughout the forecast period.

### Market Segmentation

The United States Supercapacitor Market is divided into Product Type, Module Type, Service, Material, and Application. Based on Product Type, the market is divided into Double-Layer capacitors, Pseudo capacitors, and Hybrid Capacitors. Based on Module Type, the market is divided into Less Than 10 Volts Modules, 10 Volts to 25 Volts Modules, 25 Volts to 50 Volts Modules, 50 Volts to 100 Volts Modules, and Above 100 Volts Modules. Based on Material, the market is divided into Activated carbon, Carbide

Derived Carbon, Carbon Aerogel, and Others. Based on Application, the market is divided into Automotive, Industrial, Energy, Consumer Electronics, and Aerospace & Defense.

## Market Players

Major market players in the United States Supercapacitor Market are Eaton Corporation plc, Maxwell Technologies Inc., TOKIN Corporation, Panasonic Corporation of North America, Loxus Inc., AVX Corporation, ADA TECHNOLOGIES, and Tesla, Inc.

## Report Scope:

In this report, the United States Supercapacitor Market has been segmented on the basis of the following categories, in addition to the industry trends which have also been detailed below:

### United States Supercapacitor Market, By Product Type:

Double-Layer Capacitor

Pseudo capacitors

Hybrid Capacitors

### United States Supercapacitor Market, By Module Type:

Less Than 10 Volts Modules

10 Volts to 25 Volts Modules

25 Volts to 50 Volts Modules

50 Volts to 100 Volts Modules

Above 100 Volts Modules

### United States Supercapacitor Market, By Material:

Activated carbon

Carbide Derived Carbon

Carbon Aerogel

Others

United States Supercapacitor Market, By Application:

Automotive

Industrial

Energy

Consumer Electronics

Aerospace & Defense

United States Supercapacitor Market, By Region:

West

Midwest

Northeast

South

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the United States Supercapacitor Market.

Available Customizations:

The United States Supercapacitor Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following

*United States Supercapacitor Market by Product Type (Double-Layer Capacitor, Pseudo capacitors, Hybrid Capacit...*

customization options are available for the report:

### Company Information

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

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