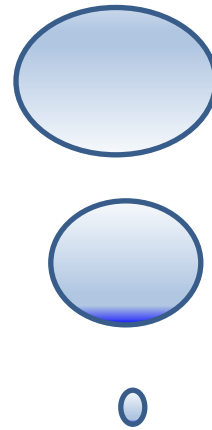


**WinterGreen Research, INC.**



**Personal Electric Vehicle EV Cars:  
Market Shares, Strategies, and Forecasts,  
Worldwide, 2019 to 2025**



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**WinterGreen Research, Inc.**  
**Lexington, Massachusetts**

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**CHECK OUT THESE KEY TOPICS**

**Personal Electric Vehicle EV Cars: Lowering the Total Cost of Electric Car Operation**

**Personal Electric Vehicle EV Cars**

New 811 battery technology  
EV Battery Improvement  
Electric Vehicle Car Segment  
Market Forecasts  
Small Electric Vehicle Car  
Mid-Size Electric Vehicle Car  
Luxury Electric Vehicle Car  
TaaS Shipments

**Electric Cars Market Driving Forces**

Motor Controller  
Electric Engine  
Other Components of an Electric Engine  
EV Economies of Scale  
Chinese EV Market  
US EV Market  
European EV Market

**German EV Market  
UK EV Market**

Japanese EV Market  
Regional EV Markets  
Renewable energy generation

**Personal Electric Vehicle EV Cars: Technology Evolves To Provide Better Implementation of Renewable Energy**

Personal Electric Vehicle EV Car manufacture promises to replace gasoline engine car manufacture by 2025. Electric cars leverage new battery technology to achieve better cost benefit ratios. Electric vehicles provide a positive ROI to owners because the cost of recharging batteries is significantly less than the cost of gasoline for similar mileage driven.

Electric car markets bring lower costs and higher value when battery technology is modernized. As lithium ion battery cathodes undergo rapid improvement, the lower cost batteries make electric vehicles less expensive than gas powered vehicles. Electric cars cost less than ICE engine cars, finally. Electric cars do require battery replacement after 5 years.

Global warming has become a serious issue. Consumers are making their voices heard directly, finding that the purchase of an electric car is a way to fight global warming. Consumers have become aware of the need to embrace renewable energy programs directly. The UK is in danger of completely running out of fresh water in 10 years. The high school students are protesting global warming every Friday - worldwide. Nebraska farmers and Iowa voters are fearful about global warming. Consumers are beginning to demand electric vehicles. Personal Electric Vehicle EV Cars that depend on efficient lithium ion batteries have finally begun to tow the mark with regard to addressing global warming.

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**Figure 1. Electric Automobile Segment Market Forecasts, Small, Mid Size, Luxury. And TaaS, Shipments, \$ per Unit, Worldwide, 2019 - 2025**

Electric Automobile Segment Market Forecasts, Small, Mid Size, Luxury. And TaaS, Shipments, \$ per Unit, Worldwide, 2019 - 2025

	2018	2019	2020	2021	2022	2023	2024	2025
<b>Personal Electric Automobile</b>								
(\$ per Small Unit)	xx	xx	xx	xx	xx	xx	xx	xx
(\$ per Mid Size Unit)	xx	xx	xx	xx	xx	xx	xx	xx
(\$ per Luxury Unit)	xx	xx	xx	xx	xx	xx	xx	xx
<b>TaaS Electric Automobile</b>								
Shipments (\$ per Unit)	xx	xx	xx	xx	xx	xx	xx	xx
<b>Electric Automobile Shipped Units (000\$ per U</b>								
Electric Automobile Shipped Units (MM)	xx	xx	xx	xx	xx	xx	xx	xx
<b>Personal Electric Automobile</b>								
Shipments (MM\$)	xx	xx	xx	xx	xx	xx	xx	xx
(MM\$ Small )	xx	xx	xx	xx	xx	xx	xx	xx
(MM\$ Mid-Size )	xx	xx	xx	xx	xx	xx	xx	xx
(MM\$ Luxury)	xx	xx	xx	xx	xx	xx	xx	xx
(MM\$ TaaS )	xx	xx	xx	xx	xx	xx	xx	xx

Note: Cars and Light Trucks on the Road are impacted by Transport as a Service (TaaS) in the following manner:

Cars and Light Trucks will be Purchased to Supply Transport as a Service (TaaS) Companies and will be Used in Urban Areas. to Supplement Current Metropolitan Transit Systems. TaaS will be Used in Suburban areas as a Compliment to the Family Automobile. Suburban Homes Will Keep Several Electric Automobiles to Provide Transport Convenience and Will Use TaaS as a Cost Saving System When Possible. They will continue to use gas powered Automobiles.

Source: WinterGreen Research, Inc.

**Figure 2. Cars and Light Truck Electric Automobile Regional Segment Market Forecasts, China, US, Europe, and Rest of World**

**Figure 3. Shipments, Units, Worldwide, 2019 - 2025**

Cars and Light Truck Electric Automobile Regional Segment Market Forecasts, China, US, Europe, and Rest of World  
Shipments, Units, Worldwide, 2019 - 2025

	2018	2019	2020	2021	2022	2023	2024	2025
<b>Personal Electric Automobile</b>								
US (000)	xx	xx	xx	xx	xx	xx	xx	xx
Europe (000)	xx	xx	xx	xx	xx	xx	xx	xx
China (000)	xx	xx	xx	xx	xx	xx	xx	xx
Japan (000)	xx	xx	xx	xx	xx	xx	xx	xx
Rest of World (000)	xx	xx	xx	xx	xx	xx	xx	xx
<b>Cars and Light Trucks</b>								
Electric Automobiles Shipped Units (000)	xx	xx	xx	xx	xx	xx	xx	xx

Source: WinterGreen Research, Inc.

**Figure 4. Cars and Light Truck Electric Automobile Regional Segment Market Forecasts, China, US, Europe, and Rest of World, Shipments, Percent Units, Worldwide, 2019 - 2025**

Cars and Light Truck Electric Automobile Regional Segment Market Forecasts, China, US, Europe, and Rest of World Shipments, Percent Units, Worldwide, 2019 - 2025

	2018	2019	2020	2021	2022	2023	2024	2025
<b>Personal Electric Automobile</b>								
US (%)	xx	xx	xx	xx	xx	xx	xx	xx
Europe (%)	xx	xx	xx	xx	xx	xx	xx	xx
China (%)	xx	xx	xx	xx	xx	xx	xx	xx
Japan (%)	xx	xx	xx	xx	xx	xx	xx	xx
Rest of World (%)	xx	xx	xx	xx	xx	xx	xx	xx
<b>Cars and Light Trucks</b>								
Electric Automobiles Shipped Units (000)	xx	xx	xx	xx	xx	xx	xx	xx

Source: WinterGreen Research, Inc.

Figure 5. US Electric Car Market Shares,

US Electric Car Market Shares, Dollars, 2018 In Millions of Dollars				
	MM\$ 2018	MM\$ % 2018	MM\$ 2017	MM\$ % 2017
Company 1	XX	XX	XX	XX
Company 2	XX	XX	XX	XX
Company 3	XX	XX	XX	XX
Company 4	XX	XX	XX	XX
Company 5	XX	XX	XX	XX
Company 6	XX	XX	XX	XX
Company 7	XX	XX	XX	XX
Company 8	XX	XX	XX	XX
Other	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

Source: WinterGreen Research, Inc.

**Figure 6. US Electric Car Market Shares, Units, 2018**

<b>US Electric Car Market Shares, Units, 2018</b>					
In Thousands of Units					
In Millions of Dollars					
	<b>MM\$ 2018</b>	<b>\$/Unit 2018</b>	<b>Units 2018</b>	<b>% Units 2018</b>	<b>MM\$ %</b>
Coompany 1	XX	XX	XX	XX	XX
Coompany 2	XX	XX	XX	XX	XX
Coompany 3	XX	XX	XX	XX	XX
Coompany 4	XX	XX	XX	XX	XX
Coompany 5	XX	XX	XX	XX	XX
Coompany 6	XX	XX	XX	XX	XX
Coompany 7	XX	XX	XX	XX	XX
Coompany 8	XX	XX	XX	XX	XX
Other	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

Source: WinterGreen Research, Inc.



**Figure 7. European Electric Car Market Shares, Dollars, 2018 and 2017**

**European Electric Car Market Shares,  
Dollars, 2018 and 2017**  
In Millions of Dollars

	MM\$ 2018	% 2018	MM\$ 2017	% 2017
Company 1	XX	XX	XX	XX
Company 2	XX	XX	XX	XX
Company 3	XX	XX	XX	XX
Company 4	XX	XX	XX	XX
Company 5	XX	XX	XX	XX
Company 6	XX	XX	XX	XX
Company 7	XX	XX	XX	XX
Company 8	XX	XX	XX	XX
Company 9	XX	XX	XX	XX
Company 10	XX	XX	XX	XX
Company 11	XX	XX	XX	XX
Company 12	XX	XX	XX	XX
Company 13	XX	XX	XX	XX
Company 14	XX	XX	XX	XX
Other	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

Source: WinterGreen Research, Inc.

**Figure 8. European Electric Car Market Shares, Units, 2018 and 2017**

<b>European Electric Car Market Shares, Units, 2018</b>					
In Thousands of Units					
In Millions of Dollars					
	<b>MM\$ 2018</b>	<b>\$/Unit 2018</b>	<b>Units 2018 (000).</b>	<b>Units 2018 %</b>	<b>MM\$ 2019</b>
					<b>%</b>
Company 1	XX	XX	XX	XX	XX
Company 2	XX	XX	XX	XX	XX
Company 3	XX	XX	XX	XX	XX
Company 4	XX	XX	XX	XX	XX
Company 5	XX	XX	XX	XX	XX
Company 6	XX	XX	XX	XX	XX
Company 7	XX	XX	XX	XX	XX
Company 8	XX	XX	XX	XX	XX
Company 9	XX	XX	XX	XX	XX
Company 10	XX	XX	XX	XX	XX
Company 11	XX	XX	XX	XX	XX
Company 12	XX	XX	XX	XX	XX
Company 13	XX	XX	XX	XX	XX
Company 14	XX	XX	XX	XX	XX
Other	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

Source: WinterGreen Research, Inc.

Figure 9. Chinese Electric Car Market Shares, Dollars, 2018 and 2017

Chinese Electric Car Market Shares, Dollars, 2018 and 2017 In Millions of Dollars				
	MM\$ 2018	% 2018	MM\$ 2017	% 2017
Company 1	XX	XX	XX	XX
Company 2	XX	XX	XX	XX
Company 3	XX	XX	XX	XX
Company 4	XX	XX	XX	XX
Company 5	XX	XX	XX	XX
Company 6	XX	XX	XX	XX
Company 7	XX	XX	XX	XX
Company 8	XX	XX	XX	XX
Company 9	XX	XX	XX	XX
Company 10	XX	XX	XX	XX
Company 11	XX	XX	XX	XX
Company 12	XX	XX	XX	XX
Other	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

Source: WinterGreen Research, Inc.

**Figure 10. Chinese Electric Car Market Shares, Units, 2018**

<b>Chinese Electric Car Market Shares, Units, 2018</b>					
In Thousands of Units					
In Millions of Dollars					
	<b>MM\$ 2018</b>	<b>\$/Unit 2018</b>	<b>Units 2018 (000).</b>	<b>Units 2018 %</b>	<b>MM\$ 2018</b>
Company 1	XX	XX	XX	XX	XX
Company 2	XX	XX	XX	XX	XX
Company 3	XX	XX	XX	XX	XX
Company 4	XX	XX	XX	XX	XX
Company 5	XX	XX	XX	XX	XX
Company 6	XX	XX	XX	XX	XX
Company 7	XX	XX	XX	XX	XX
Company 8	XX	XX	XX	XX	XX
Company 9	XX	XX	XX	XX	XX
Company 10	XX	XX	XX	XX	XX
Company 11	XX	XX	XX	XX	XX
Company 12	XX	XX	XX	XX	XX
Other	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

Source: WinterGreen Research, Inc.

# WinterGreen Research, INC.

**Figure 11. Personal Electric Vehicle EV Cars, 2018**

In Millions of Dollars			
	MM\$	% \$	Units
Company 1	XX	XX	XX
Company 2	XX	XX	XX
Company 3	XX	XX	XX
Company 4	XX	XX	XX
Company 5	XX	XX	XX
Company 6	XX	XX	XX
Company 7	XX	XX	XX
Company 8	XX	XX	XX
Company 9	XX	XX	XX
Company 10	XX	XX	XX
Company 11	XX	XX	XX
Company 12	XX	XX	XX
Company 13	XX	XX	XX
Company 14	XX	XX	XX
<b>Total (MM\$)</b>	<b>XX</b>	<b>XX</b>	

Source: WinterGreen Research, Inc.

# WinterGreen Research, INC.

**Figure 12. Personal Electric Vehicle EV Cars, 2017**

<b>Market Shares, Dollars, Worldwide, 2017</b>			
In Millions of Dollars			
	<b>MM\$</b>	<b>% \$</b>	<b>Units</b>
Company 1	XX	XX	XX
Company 2	XX	XX	XX
Company 3	XX	XX	XX
Company 4	XX	XX	XX
Company 5	XX	XX	XX
Company 6	XX	XX	XX
Company 7	XX	XX	XX
Company 8	XX	XX	XX
Company 9	XX	XX	XX
Company 10	XX	XX	XX
Company 11	XX	XX	XX
Company 12	XX	XX	XX
Company 13	XX	XX	XX
Company 14	XX	XX	XX
<b>Total (MM\$)</b>	<b>XX</b>	<b>XX</b>	

Source: WinterGreen Research, Inc.

**Personal Electric Vehicle EV Cars: Market Shares, Strategies, and Forecasts, Worldwide, 2019 to 2025**

**Report Methodology**

This is the 816th report in a series of primary market research reports that provide forecasts in technology, communications, telecommunications, the Internet, computer, software, telephone equipment, health equipment, and energy. Automated process and significant growth potential are priorities in topic selection. The project leaders take direct responsibility for writing and preparing each report. They have significant experience preparing industry studies. Forecasts are based on primary research and proprietary data bases.

The primary research is conducted by talking to customers, distributors and companies. The survey data is not enough to make accurate assessment of market size, so WinterGreen Research looks at the value of shipments and the average price to achieve market assessments. Our track record in achieving accuracy is unsurpassed in the industry. We are known for being able to develop accurate market shares and projections. This is our specialty.

The analyst process is concentrated on getting good market numbers. This process involves looking at the markets from several different perspectives, including vendor shipments. The interview process is an essential aspect as well. We do have a lot of granular analysis of the different shipments by vendor in the study and addenda prepared after the study was published if that is appropriate.

Forecasts reflect analysis of the market trends in the segment and related segments. Unit and dollar shipments are analyzed through consideration of dollar volume of each market participant in the segment. Installed base analysis and unit analysis is based on interviews and an information search. Market share analysis includes conversations with key customers of products, industry segment leaders, marketing directors, distributors, leading market participants, opinion leaders, and companies seeking to develop measurable market share.

Over 200 in depth interviews are conducted for each report with a broad range of key participants and industry leaders in the market segment. We establish accurate market forecasts based on economic and market conditions as a base. Use input/output ratios, flow charts, and other economic methods to quantify data. Use in-house analysts who meet stringent quality standards.

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## WinterGreen Research, INC.

Interviewing key industry participants, experts and end-users is a central part of the study. Our research includes access to large proprietary databases. Literature search includes analysis of trade publications, government reports, and corporate literature.

Findings and conclusions of this report are based on information gathered from industry sources, including manufacturers, distributors, partners, opinion leaders, and users. Interview data was combined with information gathered through an extensive review of internet and printed sources such as trade publications, trade associations, company literature, and online databases. The projections contained in this report are checked from top down and bottom up analysis to be sure there is congruence from that perspective.

The base year for analysis and projection is 2018. With 2018 data and several years prior to that baseline, market projections were developed for 2019 through 2025. These projections are based on a combination of a consensus among the opinion leader contacts interviewed combined with understanding of the key market drivers and their impact from a historical and analytical perspective.

The analytical methodologies used to generate the market estimates are based on penetration analyses, similar market analyses, and delta calculations to supplement independent and dependent variable analysis. All analyses are displaying selected descriptions of products and services.

This research includes reference to an ROI model that is part of a series that provides IT systems financial planners access to information that supports analysis of all the numbers that impact management of a product launch or large and complex data center. The methodology used in the models relates to having a sophisticated analytical technique for understanding the impact of workload on processor consumption and cost.

WinterGreen Research has looked at the metrics and independent research to develop assumptions that reflect the actual anticipated usage and cost of systems. Comparative analyses reflect the input of these values into models.

The variables and assumptions provided in the market research study and the ROI models are based on extensive experience in providing research to large enterprise organizations and data centers. The ROI models have lists of servers from different manufacturers, Systems z models from IBM, and labor costs by category around the world. This information has been developed from WinterGreen research proprietary data bases constructed as a result of preparing market research studies that address the software, energy, healthcare, telecommunications, and hardware businesses.

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## **ABOUT THE COMPANY**

**WinterGreen Research**, research strategy relates to identifying market trends through reading and interviewing opinion leaders. By using analysis of published materials, interview material, private research, detailed research, social network materials, blogs, and electronic analytics, the market size, shares, and trends are identified. Analysis of the published materials and interviews permits WinterGreen Research senior analysts to learn a lot more about markets. Discovering, tracking, and thinking about market trends is a high priority at WinterGreen Research. As with all research, the value proposition for competitive analysis comes from intellectual input.

**WinterGreen Research**, founded in 1985, provides strategic market assessments in telecommunications, communications equipment, health care, Software, Internet, Energy Generation, Energy Storage, Renewable energy, and advanced computer technology.

Industry reports focus on opportunities that expand existing markets or develop major new markets. The reports access new product and service positioning strategies, new and evolving technologies, and technological impact on products, services, and markets. Innovation that drives markets is explored. Market shares are provided. Leading market participants are profiled, and their marketing strategies, acquisitions, and strategic alliances are discussed. The principals of WinterGreen Research have been involved in analysis and forecasting of international business opportunities in telecommunications and advanced computer technology markets for over 30 years.

The studies provide primary analytical insight about the market participants. By publishing material relevant to the positioning of each company, readers can look at the basis for analysis. By providing descriptions of each major participant in the market, the reader is not dependent on analyst assumptions, the information backing the assumptions is provided, permitting readers to examine the basis for the conclusions.

WinterGreen Research is positioned to help customers facing challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust wintergreen research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.

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## About The Principal Authors

**Susan Eustis**, President, co-founder of WinterGreen Research, is a senior analyst. She has done research in communications, healthcare equipment, and computer markets and applications. She holds several patents in microcomputing and parallel processing. She has the original patents in electronic voting machines. She has new patent applications in format varying, multiprocessing, electronic voting, and oxygen management. She is the author of recent studies of the drone and robot marketing strategies, Internet equipment, biometrics, biomaterials, a study of Internet Equipment, Artificial Intelligence, IoT, Worldwide Telecommunications Equipment, Top Ten Telecommunications, Digital Loop Carrier, Web Hosting, Web Services, and Application Integration markets. Ms. Eustis is a graduate of Barnard College. Ms. Eustis was named Top Woman CEO in 2012 by Who's Who Worldwide. She was named Top Woman Market Research Analyst in 2012, 2013, 2014, 2015, and 2016. She has been twice featured on the cover of the Women of Distinction magazine. She was cited in a recent Time Magazine article and major media articles on Youth Sports market growth. Recently she has been quoted by The New York Times, the Wall Street Journal, HBO, the London Times and many others on that topic. Bloomberg, Barron's, the Wall Street Journal, and others quoted the studies on blockchain and cybercurrency.

**About the WinterGreen Research Team:** The WinterGreen Research Team is comprised of senior analysts that prepare the market research and analysis that is offered to the client and developed using an iterative process to achieve a final study. Typical projects include providing market/viability research. The team can look at how drones can be applied to critical infrastructures safety, including: type of market existing, Barriers, Forecast demand and competitors, SWOT and competitive advantages, Price Analysis, product design recommendations (marketing orientation).

Research is typically for many different regions or localities, for example EU countries including Spain, UK, Nordic, Germany, and France. Typical projects profile the United States and areas of Asia. It is common to three representative countries from South America, Brazil, Argentina, Chile, and Mexico. Representative countries from Asia APAC typically include Japan, China, India, and Australia.

Critical infrastructure safety, including: type of market existing, barriers to entry and to faithful execution of product provision, forecast of demand, market share, SWOT, competitive advantage of major competitors, identification of new technologies and new companies, price performance analysis, product design recommendations, and marketing considerations are typical topics covered.