



# THE FUTURE OF ELECTRIC VEHICLES

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GYAN REPORT

# ABOUT GYAN AI

Gyan (pronounced gee-yahn) is an auto-curating AI research platform. It discovers relevant content, automatically identifies major themes and ideas, organizes results into a table of contents and discovers new insights from the web or your content repository in real-time.

## THE VALUE



### **DISCOVERS RELEVANT CONTENT**

*Given a research area, Gyan's AI casts an expansive search to find the most relevant content. Gyan linguistically analyzes entire articles to determine whether they're relevant to your research. Gyan extracts relevant insights from each document so that you can be pointed to the most important information quickly.*



### **ORGANIZES YOUR RESEARCH TO REDUCE TIME**

*Gyan saves you time by compiling all relevant content into a table of contents tailored around your research needs. For each topic in your table of contents, Gyan will produce an organized list of relevant articles that discuss that topic, and for each article you will be navigated to the portions of it that are most relevant to your objectives.*



### **PROVIDES CONTENT SUMMARY**

*Gyan provides a brief set of highlights for each selected article, so that you can decide if the article is relevant for your research efforts.*

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# RESEARCH BRIEF

The client tasked Gyan with this key research question:

***What will the electric vehicle (EV) industry look like by 2030?***

Based on this question, Gyan suggested the following topics to be a part of this research process:

- Electric Vehicle Types
- Manufacturers
- Battery Technology
- Government Incentives
- Industry Constraints

The sources Gyan searched: the web and Google Scholar.

Once Gyan did its search, it found **1,432 total articles**. Of those articles, it identified **781 articles** to be the most relevant for the search:

- Electric Vehicle Types: 396 articles
- Manufacturers: 187 articles
- Battery Technology: 73 articles
- Government Incentives: 70 articles
- Industry Constraints: 55 articles

The subsequent pages will feature these articles, as well as additional resources that will help the client in their research discovery process.

# ELECTRIC VEHICLE TYPES

## Top Search Results

*Articles are organized according to their relevance to the client's research. Only the articles that include an extensive, robust discussion of the critical topics are included in the top search results.*

### **6 electric aviation companies to watch**

***GreenBiz***

**August 20, 2019**

- As interest around all-electric regional air travel continues to grow, Eviation is reportedly in talks with several countries and organizations interested in purchasing Alice planes, and Bar-Yohay has predicted that supply, not demand, will be the challenge for Eviation.

### **Electric Vehicles**

***Car and Driver***

- A growing number of drivers are looking for electrified vehicles to save gas and help the environment.
- Today's electric vehicles offer driving ranges from 84 miles to 373 on a single charge.
- We cranked up the heat in our Tesla Model 3 to find out just how much of an impact it has.

### **The Best Electric Cars of 2021, According to Engineers**

***Good Housekeeping***

**April 5, 2021**

- For over 10 years, the experts at Good Housekeeping Institute have been recognizing the best vehicles to buy, from the best sedans to the best SUVs, culminating in our Best Family Cars Awards.
- From there, we holistically look at the vehicles to ensure not only do they drive well, but that they are also going to be vehicles that will thrill and delight drivers and passengers.
- While it's taken a while to get here, the market for electric vehicles is compelling enough that there really is an EV for just about everyone.

**[CLICK HERE TO VIEW MORE ARTICLES ON THIS TOPIC](#)**

## Key Videos



### What's the difference between the 4 main types of Electric Vehicle?

Ford Europe  
April 7, 2019



### Electric Cars: Types of Electric Vehicles

edX  
January 23, 2019



### Types of Electric Vehicles Explained

Energy Saving Trust  
June 14, 2017

# MANUFACTURERS

## Top Search Results

*Articles are organized according to their relevance to the client's research. Only the articles that include an extensive, robust discussion of the critical topics are included in the top search results.*

### **General Motors plans to exclusively offer electric vehicles by 2035**

**CNBC**

**January 28, 2021**

- Electric vehicles, including battery-electric and fuel cell-powered vehicles, are currently a niche segment of the global automotive industry, estimated at less than 5% of sales by analysts.
- GM has already announced plans to shift all three of its U.S. plants to produce electric vehicles.
- GM plans to release 30 new EVs globally by 2025 under a \$27 billion investment in electric and autonomous vehicles during that time frame.

### **Renault-Nissan Alliance and Dongfeng Motor Group Co., Ltd. Forge partnership to co-develop electric vehicles in China**

**Nissan Motor Corporation**

**August 29, 2017**

- The electric vehicle will be produced at the Dongfeng plant of Shiyan which has a production and sales capacity of 120,000 vehicles a year.
- The new joint venture, eGT New Energy Automotive Co., Ltd., will focus on the core competencies of each partner and will harness the full potential of the Renault-Nissan Alliance electric vehicle leadership, as well as the resources of Dongfeng in the new energy industry, to meet the expectations of the Chinese market.
- "The establishment of the new joint venture with Dongfeng confirms our common commitment to develop competitive electric vehicles for the Chinese market," said Carlos Ghosn, chairman and chief executive officer of the Renault-Nissan Alliance.

### **FORD EUROPE GOES ALL-IN ON EVS ON ROAD TO SUSTAINABLE PROFITABILITY; COLOGNE SITE BEGINS \$1 BILLION TRANSFORMATION**

**Ford**

**February 17, 2021**

- Ford today is taking a significant step forward in its European transformation with a commitment to go all-in on its electric passenger vehicles and to substantially grow and electrify its leading commercial vehicle business.
- The investment will transform the existing vehicle assembly operations into the Ford Cologne Electrification Center for the manufacture of electric vehicles, Ford's first such facility in Europe.
- Ford also confirmed that its first European-built, volume all-electric passenger vehicle for European customers will be produced at the facility from 2023, with the potential for a second all-electric vehicle built there under consideration.

**[CLICK HERE TO VIEW MORE ARTICLES ON THIS TOPIC](#)**

## Key Videos



### Special Report: EVs: On the Brink of Change

*Bloomberg Market & Finance*

February 21, 2020



### Tesla vs. NIO: Battle for the World's Largest EV Market

*Wall Street Journal*

January 5, 2021



### How Lucid Motors plans to differentiate itself from Tesla and Nikola

*CNBC*

June 19, 2020



# BATTERY TECHNOLOGY

## Top Search Results

*Articles are organized according to their relevance to the client's research. Only the articles that include an extensive, robust discussion of the critical topics are included in the top search results.*

### **SVOLT: The Future of Cobalt-Free Batteries for Electric Vehicles**

***AZO Materials***

***December 3, 2020***

- Lithium-ion batteries are the current technology of choice, and research efforts advancing this technology are also attempting to lower the technology's dependence on cobalt, as it is relatively scarce and often sourced unethically.
- Earlier this year, a Chinese battery business called SVOLT formally debuted two cobalt-free batteries online via live stream.
- It could boost electric vehicles' competitive advantage over conventional vehicles by eliminating range anxiety, boosting confidence in electric vehicle technology, and accelerating the replacement of internal-combustion vehicles with electric vehicles.

### **Who Will Drive Electric Cars to the Tipping Point?**

***BCG***

***January 2, 2020***

- Battery-powered electric vehicles and plug-in hybrids will seize almost a quarter of the market by 2030.
- We had previously projected their global market share at about a fifth.
- Battery-powered electric vehicles and plug-in hybrids will seize almost a quarter of the market by 2030.

### **Factbox: The world's biggest electric vehicle battery makers**

***Reuters***

***November 26, 2019***

- The world's biggest electric vehicle battery makers.

**[CLICK HERE TO VIEW MORE ARTICLES ON THIS TOPIC](#)**

## Key Videos



### **Why The U.S. EV Industry Is Facing A Battery Shortage**

CNBC

April 8, 2021



### **How Tesla Builds Batteries So Fast**

Tech Vision

February 21, 2021



### **The Story Of Electric Vehicle Batteries**

NewMind

May 25, 2020

# GOVERNMENT INCENTIVES

## Top Search Results

*Articles are organized according to their relevance to the client's research. Only the articles that include an extensive, robust discussion of the critical topics are included in the top search results.*

### **China is rolling back the subsidies that fueled its electric-vehicle boom**

***Fortune***

**January 5, 2021**

- Last Friday, China's Ministry of Finance cut subsidies for electric vehicles (EVs) by 20% this year, as sales of so-called new energy vehicles (NEVs)—a category covering hybrids, plug-ins, and hydrogen-powered autos—regained momentum after plunging during the pandemic last year.
- Subsidies on electric-vehicle purchases have helped China become the world's largest market for EVs, accounting for roughly 50% of global sales.
- The cut in subsidies will create more competition in the hotly contested market, where Tesla has gained a lead over local rivals since opening its Shanghai Gigafactory in 2019.

### **The Netherlands goes for EV purchase subsidies**

***Electrify.com***

**March 5, 2020**

- Those wanting to purchase an electric vehicle in the Netherlands will now be beckoned by a subsidy of 4,000 euros for the purchase of new electric cars with a list price of between 12,000 and 45,000 euros and a minimum range of 120 kilometers.

### **Electric Vehicles**

***City of Glendale Water and Power***

- The California Department of Motor Vehicles issues Clean Air Vehicle decals that allow vehicles meeting specified emissions standards single occupancy use of High Occupancy Vehicle lanes.
- Vehicles displaying a current DMV-issued CAV sticker may be eligible for a 15% discount on the I-10 and I-110 Metro Expresslane.

**[CLICK HERE TO VIEW MORE ARTICLES ON THIS TOPIC](#)**

## Key Videos



### Why China Is Beating The U.S. In Electric Vehicles

CNBC

March 23, 2021



### How Norway's government made electric cars irresistible

PBS NewsHour

May 29, 2017



### President Joe Biden's plan for Electric Cars

Alex Sibila

January 17, 2021

# INDUSTRY CONSTRAINTS

## Top Search Results

Articles are organized according to their relevance to the client's research. Only the articles that include an extensive, robust discussion of the critical topics are included in the top search results.

### **How Having an Electric Car Affects Your Auto Insurance Rates**

*ValuePenguin by lendingtree*

**February 12, 2021**

- Car insurance for an electric vehicle is about 23% more expensive than the cost for an equivalent combustion model.
- We compared four types of electric cars to their gas counterparts to see how your insurance quotes may go up when you opt for an electric car.
- The more a vehicle costs, the more expensive it is to repair.

### **What Are Extended Range Electric Vehicles?**

*Samsara*

**September 15, 2020**

- "Range anxiety" is one of the biggest factors that prevent fleet managers from adopting an electric vehicle fleet.
- For fleets looking to make the most of their electric vehicle investment, telematics is the next critical step.
- Since electric cars take over eight hours to fully charge, electric vehicle fleets require a major shift in driver behavior.

### **Electric Vehicles Cause Greater Air Pollution Through Power Plant Emissions**

*Carnegie Mellon University Tepper School of Business*

**July 1, 2018**

- However, ongoing research by Nicholas Muller, Lester and Judith Lave Associate Professor of Economics, Engineering and Public Policy, demonstrates that the environmental benefits of electric vehicles often are outweighed by the damages caused by the increased emissions of power plants.
- In one study, Muller and colleagues found that an electric vehicle can cause up to \$5,000 more damage than an equivalent gasoline vehicle when driven in the Midwest, where coal-fired power plants are common.
- They found that while urban countries saw \$2.9 million less in air pollution damages from electric vehicles, rural countries had almost \$3 million more.

**[CLICK HERE TO VIEW MORE ARTICLES ON THIS TOPIC](#)**

## Key Videos



### How Tesla, GM And Others Will Fix Electric Vehicle Range Anxiety

CNBC

September 22, 2020



### Tesla's Battery Supply Problem

Real Engineering

October 24, 2020



### Biggest Challenge to EV Adoption (ARK Invest)

Alex Sibila

August 6, 2020

# ADDITIONAL SEARCH CONCEPTS TO CONSIDER

*After analyzing all of these articles – individually and as a collective – it looks like these are the concepts that were most prominent. Gyan can generate a new report with additional information related to any of these concepts:*

## **Electric Vehicle Types**

- Other Electrified Models
- Plug-in Hybrid Electric Vehicles

## **Manufacturers**

- 2021 Hyundai Kona Electric Vehicle
- Electric Car Race, New Hybrids
- General Electric
- Renault Nissan Mitsubishi
- 2021 Chevy Bolt EV
- NIO
- All Electric Compact Sedan
- GM Ford
- U.S. Motor Giant Ford
- Automobile Manufacturers Renault
- 2020 Tesla Q4 Vehicle
- World Top 10 Electric Vehicle Manufacturers
- Apple
- General Motor
- BMW-and-M-Electric Vehicles
- Electric Nissan Vehicles
- 2022 BMW I4
- 2021 Ford Mustang Mach-E SUV
- Q2 Top Electric Car Stocks
- Tesla Electric Vehicles
- BMW PLUG-IN HYBRID ELECTRIC VEHICLES
- GMC Hummer EV
- Ford
- 21 Best Electric Car Companies 2021
- Nissan, Renault-Nissan Alliance
- NIO Inc. Stock Price
- Ford Europe

## **Battery Technology**

- Todd Alhart GE

## **Government Incentives**

- Investor Relations

# ADDITIONAL ARTICLES: ELECTRIC VEHICLE TYPES

*The full set of articles discovered by Gyan based on your research question can be found in this section.*

## **2019 Best Electric Car Companies and Manufacturers| EnergySage**

URL: <https://www.energysage.com/electric-vehicles/buyers-guide/top-ev-companies/>

Publisher: energysage.com

- Where can you find the best electric vehicles today?
- An electric vehicle can be a serious investment, and it is important to make sure that the vehicle you are purchasing has a positive review history, and is generally respected in the car industry.
- Which electric vehicle companies produce the best cars?

## **Renault Nissan Mitsubishi**

URL: <https://usa.nissannews.com/en-US/channels/Renault-Nissan-Alliance-News>

Publisher: usa.nissannews.com

- The Renault-Nissan Alliance and Dongfeng Motor Group Co., Ltd. announced a new joint venture to co-develop and sell electric vehicles in China.
- The car group also reinforced its leadership in zero-emission vehicles with cumulative sales of nearly 425,000 electric vehicles since the introduction

## **Mobility - Electrification- The Alliance- Renault Nissan Mitsubishi**

URL: <https://www.alliance-2022.com/electrification/>

Publisher: alliance-2022.com

- Groupe Renault has sold electric vehicles worldwide since 2011.
- It has the largest electric vehicle line-up with Renault ZOE, the RSM SM3 Z.E, Renault City K-ZE and Twizy, Kangoo Z.E. and Master Z.E. Renault leads the European electric mobility and almost one out of five EVs on the European roads is a Renault.

## **CVRP Eligible Vehicles| Clean Vehicle Rebate Project**

URL: <https://cleanvehiclerebate.org/eng/eligible-vehicles>

Publisher: cleanvehiclerebate.org

- CVRP Eligible Vehicles

## **XPeng and NIO Deliver More Electric Vehicles in March. Here's How They Compare.**

URL: <https://www.barrons.com/articles/xpeng-and-nio-delivered-more-electric-vehicles-in-march-heres-how-they-compare-51617291363>

Publisher: barrons.com

- XPeng and NIO Deliver More Electric Vehicles in March.



- XPeng, for its part, delivered about 13,300 vehicles in the first quarter, compared with just under 13,000 in the fourth quarter.
- XPeng and NIO Delivered More Electric Vehicles in March.

### **Renault-Nissan-Mitsubishi sells 10.6 million vehicles in 2017**

URL: <https://global.nissannews.com/en/releases/180130-02-e?source=nng&lang=en-US>

Publisher: [global.nissannews.com](https://global.nissannews.com)

- Zero-emission leadership maintained with cumulative sales of 540,623 electric vehicles since 2010
- Since 2010, when the Nissan LEAF was first introduced, Renault-Nissan-Mitsubishi has sold 540,623 electric vehicles worldwide through its different brands.
- In 2017 Renault remained, for the third consecutive year, the leader in Europe's electric-vehicle segment with a market share of 23.8 percent and sales volumes increased by 38 percent.

### **Tesla, Inc.- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Tesla,\\_Inc.](https://en.wikipedia.org/wiki/Tesla,_Inc.)

Publisher: [en.wikipedia.org](https://en.wikipedia.org)

- Tesla, Inc. is an American electric vehicle and clean energy company based in Palo Alto, California.
- According to Musk, the purpose of Tesla is to help expedite the move to sustainable transport and energy, obtained through electric vehicles and solar power.
- From the beginning, Musk consistently maintained that Tesla's long-term strategic goal was to create affordable mass market electric vehicles.

### **Electrification and autonomy at the heart of Renault-Nissan-Mitsubishi growth strategy**

URL: <https://www.automotiveworld.com/articles/electrification-and-autonomy-at-the-heart-of-renault-nissan-mitsubishi-growth-strategy/>

Publisher: [automotiveworld.com](https://www.automotiveworld.com)

- The launch of 12 pure electric vehicle models, 40 vehicles with autonomous drive technology and a move into robo-vehicle ride-hailing services are some of the key objectives laid out by the Renault Nissan Mitsubishi Alliance as it seeks to raise group-wide annual sales to 14 million units.
- Nissan's strategy calls for annual sales of 1 million electrified Nissan and Infiniti vehicles by FY 2022, using a range of electrification technologies

### **Wuling's tiny electric hatchback that's outsold Tesla Model 3**

URL: <https://www.cnbc.com/2021/03/28/wulings-tiny-electric-hatchback-photos.html>

Publisher: [cnbc.com](https://www.cnbc.com)

- Wuling sold more than 36,700 of the popular electric cars in January, compared to just over 21,500 Model 3 sales in the same month, according to electric vehicle sales tracker EV Volumes.
- In the second half of 2020, Wuling sold more than 112,000 units of the car, which ranked second worldwide in the electric vehicle market, behind only Tesla.

## **BMW i Models- BMW USA**

URL: <https://www.bmwusa.com/vehicles/bmwi.html>

Publisher: [bmwusa.com](https://www.bmwusa.com)

- You've never met an electric vehicle that looks-- or drives-- like this.
- Each BMW i vehicle is built to harness electric power with innovative eDrive technology.
- From the fully electric world of BMW i to the powerful and stylish lineup of plug-in hybrid electric vehicles, our goal is to create a future that delivers more.

## **5 EV Stocks Every Investor Should Know | Kiplinger**

URL: <https://www.kiplinger.com/investing/stocks/tech-stocks/601080/electric-vehicle-ev-stocks-every-investor-should-know>

Publisher: [kiplinger.com](https://www.kiplinger.com)

- But electric vehicle stocks are a clear exception to that rule.
- the electric vehicle market.
- -LRB- NIO,\$ 11.09-RRB- is a Chinese electric vehicle maker, which makes it interesting for several reasons.

## **How does an Electric Car work? | Tesla Model S- YouTube**

URL: <https://www.youtube.com/watch?v=3SAxXUlr28>

Publisher: [youtube.com](https://www.youtube.com)

- How does an Electric Car work?

## **Greentech Media: US Electric Vehicle Sales Increased by 81% in 2018**

URL: <https://www.greentechmedia.com/articles/read/us-electric-vehicle-sales-increase-by-81-in-2018>

Publisher: [greentechmedia.com](https://www.greentechmedia.com)

- US Electric Vehicle Sales Increased by 81% in 2018
- U.S. electric vehicle sales may be finally seeing the hockey stick growth market watchers have been waiting for.

## **In China, an Electric Car Maker Loses Money but Thinks Big- The New York Times**

URL: <https://www.nytimes.com/2021/02/25/business/china-nio-electric-cars.html>

Publisher: [nytimes.com](https://www.nytimes.com)

- But Nio has the advantage of being able to tap into China's vast and well-funded supply chain for electric vehicles.

## **How Far Will Ford's All-Electric SUV Take You? New Website Feature Lets You Map Your Journey**

URL: <https://media.ford.com/content/fordmedia/feu/en/news/2019/09/12/how-far-will-fords-all-electric-suv-take-you--new-website-featur.html>

Publisher: [media.ford.com](https://media.ford.com)

- Nearly 9 in 10 of hybrid and electric vehicle owners or intenders agree that electric vehicles are fun to drive

- 3 in 4 people aspire to own an electric vehicle one day, including 92 per cent of Chinese people, 73 per cent of Europeans and 53 per cent of Americans
- Nearly 3 in 4 of owners or intenders of hybrid and electric vehicles agree that electric vehicles are easy to own

### **Nissan LEAF first electric car to pass 400,000 sales**

URL: <https://global.nissannews.com/en/releases/release-5227ef5dbab9f1e0871062f0c003e618-nissan-leaf-first-electric-car-to-pass-400k-sales>

Publisher: [global.nissannews.com](https://global.nissannews.com)

- Introduced in 2010 as the world's first mass-market electric vehicle, the Nissan LEAF has led the way in making the excitement and convenience of electric driving accessible to non-luxury buyers.
- The company committed itself to working with governments and utility companies to support the adoption of electric vehicles, make charging them easier and more convenient, and develop second-life uses for electric car batteries.
- Nissan Energy also includes new efforts to reuse batteries, a vital step in enhancing the sustainability of electric vehicles.

### **Nio(NIO) Vs Xpeng(XPEV): Which Is A Better Electric Vehicle Stock To Buy?**

URL: <https://www.nasdaq.com/articles/nio-nio-vs-xpeng-xpev%3A-which-is-a-better-electric-vehicle-stock-to-buy-2021-04-03>

Publisher: [nasdaq.com](https://www.nasdaq.com)

- Which Is A Better Electric Vehicle Stock To Buy?
- How Do These 2 Top EV Stocks Stack Up Against Each Other?
- Electric Vehicle stocks were some of the hottest investment trends in the stock market in 2020.

### **All-New 2022 Bolt EUV: Electric Vehicle| Chevrolet**

URL: <https://www.chevrolet.com/upcoming-vehicles/2022-bolt-euv>

Publisher: [chevrolet.com](https://www.chevrolet.com)

- Safety or driver assistance features are no substitute for the driver's responsibility to operate the vehicle in a safe manner.
- Connected Services vary by vehicle and model and require active service plan, working electrical system, cell reception and GPS signal.

### **NISSAN| ZERO EMISSION | History**

URL: <https://www.nissan-global.com/EN/ZEROEMISSION/HISTORY/>

Publisher: [nissan-global.com](https://www.nissan-global.com)

- Modern style 5 seater electric vehicle powered by forty 2V lead batteries.
- The vehicle is based on a newly developed EV platform designed for the Nissan LEAF.
- An all-electric vehicle powered by laminated compact lithium-ion batteries designed for mass-market.

## **BMW will make an all-electric 5 Series, 7 Series, and X1- The Verge**

URL: <https://www.theverge.com/2020/7/28/21345464/bmw-5-7-series-x1-electric-car-ev-plug-in>

Publisher: theverge.com

- The company was once viewed as one of the pioneers in the electric vehicle space, but it ultimately doubled down on internal combustion cars.
- The German automaker has not only lost market share since, but it is also one of the companies most directly impacted by the rise of Tesla, as Elon Musk has targeted the same affluent buyers that BMW covets.

## **Tesla Isn't the Only Start-Up Disrupting the Car Business- The New York Times**

URL: <https://www.nytimes.com/2020/03/04/business/new-electric-car-companies.html>

Publisher: nytimes.com

- "The government sees electric vehicles as a chance to play at a global level," said Daniel Kirchert, a former BMW executive who founded Byton with financial help from the government.
- In addition, Ford plans to use Rivian's platform for some of its own electric vehicles, including a pickup.

## **About us- The Alliance- Renault Nissan Mitsubishi**

URL: <https://www.alliance-2022.com/about-us/>

Publisher: alliance-2022.com

- ZERO EMISSION VEHICLES

## **Electric Vehicles- Sustainability and Public Health- MnDOT**

URL: <http://www.dot.state.mn.us/sustainability/electric-vehicle-dashboard.html>

Publisher: dot.state.mn.us

- This dashboard shows the distribution of plug-in electric vehicles and charging stations throughout the state of Minnesota.

## **New& Used Electric Cars| Tesla**

URL: <https://www.tesla.com/inventory/new/ms>

Publisher: tesla.com

- New& Used Electric Cars

## **Electric Vehicles**

URL: <https://www.rockymountainpower.net/savings-energy-choices/electric-vehicles.html>

Publisher: rockymountainpower.net

- Electric vehicles are cheaper to operate than gas-powered cars and help lower emissions.
- What rate will I pay to charge my electric vehicle?
- How much does it cost to charge a plug-in electric vehicle?

## **Plug In Electric Vehicles(EV) overview**

URL: [https://www.pge.com/en\\_US/residential/solar-and-vehicles/options/clean-vehicles/electric/electric.page](https://www.pge.com/en_US/residential/solar-and-vehicles/options/clean-vehicles/electric/electric.page)

Publisher: pge.com

- Plug In Electric Vehicles overview

### **Factcheck: How electric vehicles help to tackle climate change**

URL: <https://www.carbonbrief.org/factcheck-how-electric-vehicles-help-to-tackle-climate-change>

Publisher: carbonbrief.org

- Electric vehicles are an important part of meeting global goals on climate change.
- They feature prominently in mitigation pathways that limit warming to well-below 2C or 1.5 C, which would be inline with the Paris Agreement's targets.
- However, while no greenhouse gas emissions directly come from EVs, they run on electricity that is, in large part, still produced from fossil fuels in many parts of the world.

### **6 myths about electric vehicles busted| National Grid Group**

URL: <https://www.nationalgrid.com/stories/journey-to-net-zero/5-myths-about-electric-vehicles-busted>

Publisher: nationalgrid.com

- 6 myths about electric vehicles busted
- Really simply the sweet-spot for the range of an EV is between 200 and 300 miles, this gives the optimal balance between cost and range.

### **Green Mountain Power EV Rebate**

URL: <https://greenmountainpower.com/rebates-programs/electric-vehicles/ev-rebate/>

Publisher: greenmountainpower.com

- All customers can get\$ 1,500 rebate on a new all electric vehicle, or\$ 1,000 for a new plug in hybrid.
- In addition to this rebate, all customers who buy a new electric vehicle are eligible for a free In-home Level 2 EV Charger, a\$ 600 value.
- Getting an all electric vehicle?

### **Electric Vehicles/ Minnesota.gov**

URL: <https://mn.gov/puc/energy/electric-vehicles/>

Publisher: mn.gov

- In order to facilitate EV integration in a manner consistent with the interests of the public and of ratepayers, in December of 2017 the Commission opened an Inquiry into Electric Vehicle Charging and Infrastructure-LRB- Docket No.
- As of February, 2020 nearly 13,000 electric vehicles were registered in the State of Minnesota.
- The Minnesota Department of Transportation maintains an electric vehicle dashboard with additional data on electric vehicles in Minnesota.

### **Electric Vehicles| Baltimore Gas and Electric Company**

URL: <https://www.bge.com/SmartEnergy/InnovationTechnology/Pages/ElectricVehicles.aspx>

Publisher: bge.com

- As the charging network rolls out, EV drivers will have the option to charge their vehicles at any of the 500 BGE-owned Level 2 smart chargers or DC fast chargers throughout the BGE service area.

### **Electric vehicles threaten engines: GM, Volvo, Jaguar ditch gas cars**

URL: <https://www.usatoday.com/story/money/cars/2021/03/11/electric-vehicles-tesla-gm-lucid-rivian-volvo-gas-cars/4581584001/>

Publisher: usatoday.com

- Electric vehicles threaten engines
- After years of sluggish adoption, electric vehicles are poised for a sharp increase in sales, new products and investments that could eventually make the gasoline engine a thing of the past.
- There are still plenty of signs that the gas engine is n't going anywhere anytime soon, including lingering concerns about electric vehicle battery range, cost and the availability of public car chargers.

### **All-Electric Vehicles**

URL: <https://www.fueleconomy.gov/feg/evtech.shtml>

Publisher: fueleconomy.gov

- All-electric vehicles run on electricity only.
- They are propelled by one or more electric motors powered by rechargeable battery packs.

### **Improving electric vehicle economics| McKinsey**

URL: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/making-electric-vehicles-profitable>

Publisher: mckinsey.com

- Improving electric vehicle economics
- Electric-vehicle economics
- Optimize electric-vehicle designs for the market

### **Hybrid and Plug-In Electric Vehicles- Alternative Fuels Data Center**

URL: <https://afdc.energy.gov/vehicles/electric.html>

Publisher: afdc.energy.gov

- Hybrid electric vehicles, plug-in hybrid electric vehicles, and all-electric vehicles all use electricity to improve vehicle efficiency.
- In colloquial references, these three vehicle types are sometimes called electric cars, electric vehicles, or simply EVs even though some of these vehicles still use liquid fuels in conjunction with electricity.
- The U.S. Department of Energy funded 16 electric vehicle projects in 24 states and the District of Columbia to help communities prepare for plug-in electric vehicles and charging infrastructure.

## **Santa Monica OSE- Electric Vehicles**

URL: [https://www.smgov.net/departments/ose/categories/transportation/electric\\_vehicles.aspx](https://www.smgov.net/departments/ose/categories/transportation/electric_vehicles.aspx)

Publisher: smgov.net

- After a 10-minute grace period, a charge of \$ 1.00/ minute will start if vehicles exceed the posted time limit at ChargePoint stations.
- When it's time to move your vehicle, you'll receive a text notification.
- The driver must move the vehicle within 10 minutes after the allotted time period or when the vehicle is fully charged.

## **Volvo Cars to go fully electric by 2030- BBC News**

URL: <https://www.bbc.com/news/business-56245618>

Publisher: bbc.com

- Volvo Cars is only going to sell electric vehicles by 2030, the Swedish firm has said.

## **Electric Vehicles: Car and Driver Buying Guide**

URL: <https://www.caranddriver.com/ev/>

Publisher: caranddriver.com

- A growing number of drivers are looking for electrified vehicles to save gas and help the environment.
- Today's electric vehicles offer driving ranges from 84 miles to 373 on a single charge, and how far you can go is n't tied directly to p...
- We cranked up the heat in our Tesla Model 3 to find out just how much of an impact it has.

## **Residential Electric Vehicles**

URL: <https://www.smud.org/en/Going-Green/Electric-Vehicles/Residential>

Publisher: smud.org

- There are many things to consider before buying or leasing an electric vehicle.
- But for those with larger battery packs and longer range, you may want to consider an electrical upgrade.
- SMUD offers a Time-of-Day discount rate for electric vehicle charging.

## **Electric vehicle- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_vehicle](https://en.wikipedia.org/wiki/Electric_vehicle)

Publisher: en.wikipedia.org

- Vehicle propelled by one or more electric motors
- An electric vehicle is a vehicle that uses one or more electric motors or traction motors for propulsion.
- An electric vehicle may be powered through a collector system by electricity from off-vehicle sources, or may be self-contained with a battery, solar panels, fuel cells or an electric generator to convert fuel to electricity.

## **Electric Cars- Best Electric Cars | Cars.com**

URL: <https://www.cars.com/electric-cars/>

Publisher: cars.com

- Electric vehicles are the technology of choice for eco-friendly car buyers because they have no emissions tied to their operation
- they can be powered with clean, renewable energy
- Even though they're technically more efficient, how much cheaper electric vehicles are to drive depends on the cost of electricity and gasoline where you live.

### **Big Market Delusion: Electric Vehicles**

URL: [https://www.researchaffiliates.com/en\\_us/publications/articles/826-big-market-delusion-electric-vehicles.html](https://www.researchaffiliates.com/en_us/publications/articles/826-big-market-delusion-electric-vehicles.html)

Publisher: researchaffiliates.com

- The electric vehicle industry, with its astronomical growth in market-cap over the 12 months ending January 31, 2021, is a prime example of a big market delusion.
- In the highly competitive and capital-intensive auto industry, the January 2021 valuations of electric vehicle manufacturers are simply not sustainable over the long term.
- Traditional automakers absorbed almost all of the decline in value, while the market value of electric vehicle specialists remained flat.

### **Committing to an All-Electric Future| General Motors**

URL: <https://www.gm.com/commitments/electrification.html>

Publisher: gm.com

- We're committed to putting every driver in an electric vehicle on a scale previously unseen and bringing the world to an all-electric future.
- The system uses cells stacked vertically or horizontally, allowing us to build electric vehicles for every customer and segment.

### **Electric Vehicles| International Council on Clean Transportation**

URL: <https://theicct.org/electric-vehicles>

Publisher: theicct.org

- Electric vehicles are several times more efficient in converting energy into vehicle movement than conventional gasoline and diesel vehicles.
- They are much more compatible with renewable energy sources.
- They can produce no emissions at the vehicle tailpipe and much lower life-cycle emissions.

### **Electric Vehicles- Ameren.com**

URL: <https://www.ameren.com/company/electric-vehicles>

Publisher: ameren.com

- Electric vehicles provide low maintenance and fueling costs, a variety of models, smooth acceleration and easy charging options.

### **2020 I-PACE| Electric SUV | Jaguar USA**

URL: <https://www.jaguarusa.com/all-models/i-pace/index.html>

Publisher: jaguarusa.com

- The I-PACE is a Jaguar vehicle above all else-a true driver's car.



- Whether this is your first or next electric vehicle, discover how the Jaguar I-PACE fits seamlessly with your lifestyle using our charging questionnaire.

### **Electric Vehicles| Sarasota County, FL**

URL: <https://www.scgov.net/government/sustainability/sustainability/electric-vehicles>

Publisher: scgov.net

- Sarasota County has a history of leadership on Electric Vehicles.
- Learn more about the benefits of electric vehicles.
- An all-electric vehicle stores all its energy in batteries.

### **Introducing Cadillac LYRIQ: An All-Electric Future**

URL: <https://www.cadillac.com/future-vehicles/lyriq>

Publisher: cadillac.com

- Discover the visual and auditory experience that is the Cadillac LYRIQ virtual lookbook, and be moved by the inspiration behind this revolutionary EV.

### **Supply Constraints Could Put the Brakes on Electric Vehicle Rollouts**

URL: <https://www.greentechmedia.com/articles/read/supply-constraints-could-put-the-brake-on-electric-vehicle-rollouts>

Publisher: greentechmedia.com

- Supply Constraints Could Put the Brakes on Electric Vehicle Rollouts

### **Electric vehicles - Tucson Electric Power**

URL: <https://www.tep.com/electric-vehicles/>

Publisher: tep.com

- Electric vehicles drive powerful economic and environmental benefits for our community, including

### **Recycling lithium-ion batteries from electric vehicles | Nature**

URL: <https://www.nature.com/articles/s41586-019-1682-5>

Publisher: nature.com

- Rapid growth in the market for electric vehicles is imperative, to meet global targets for reducing greenhouse gas emissions, to improve air quality in urban centres and to meet the needs of consumers, with whom electric vehicles are increasingly popular.
- However, growing numbers of electric vehicles present a serious waste-management challenge for recyclers at end-of-life.
- recycled lithium-ion batteries from electric vehicles could provide a valuable secondary source of materials.

### **Electric Vehicle Rebates| Efficiency Maine**

URL: <https://www.efficiencymaine.com/evehicles/electric-vehicle-rebates/>

Publisher: efficiencymaine.com

- Used vehicles must be purchased from a participating dealer.

- Only vehicles with a total manufacturer suggested retail price including optional features and dealer mark-ups and excluding destination and delivery charges, of \$ 50,000 or less, are eligible for a rebate.
- Vehicles purchased from private parties are not eligible.

### **Go behind the scenes as Amazon develops a new electric vehicle**

URL: <https://www.aboutamazon.com/news/sustainability/go-behind-the-scenes-as-amazon-develops-a-new-electric-vehicle>

Publisher: aboutamazon.com

- Go behind the scenes as Amazon develops a new electric vehicle
- Amazon ordered 100,000 electric delivery vehicles-the largest-ever order of electric delivery vehicles-from Rivian, a producer of emissions-free electric vehicles with a vehicle development center in Plymouth, just outside Detroit.
- A full-sized clay model of Amazon's electric delivery vehicle at Rivian headquarters in Plymouth, Michigan.

### **MOR-EV**

URL: <https://mor-ev.org/>

Publisher: mor-ev.org

- MOR-EV is a Massachusetts program that issues rebates to electric vehicle drivers
- Beginning June 25, 2020, commercial and nonprofit fleets, which include company-owned vehicles, companies with vans, rental car companies, and companies that provide vehicles to employees instead of paying mileage, will be eligible to receive rebates.
- Apply for incentives of up to \$ 2,500 for the purchase or lease of new electric vehicles, including battery and fuel-cell electric vehicles and up to \$ 1,500 for plug-in hybrid electric vehicles.

### **LG and SK, two rival Korean battery giants, are complicating Biden's electric car push- The Washington Post**

URL: <https://www.washingtonpost.com/climate-environment/2021/04/04/electric-cars-batteries/>

Publisher: washingtonpost.com

- President Biden's ambitious plan to jump-start the U.S. electric vehicle market faces a roadblock
- "There is an arms race around the world to build as much lithium capacity as possible to gain dominance in the electric vehicle space," said Simon Moores, managing director of London-based Benchmark Mineral Intelligence, specializing in lithium-ion batteries and the electric vehicle supply chain.
- One of the people trying to get in on the supply chain portion of the \$ 174 billion worth of electric vehicle spending proposed in Biden's infrastructure package is Gerard Barron, chief executive of DeepGreen Metals, a start-up that raised about \$ 600 million in March to collect the mineral-rich rocks from the ocean floor.

### **Global EV Outlook 2020 - Analysis- IEA**

URL: <https://www.iea.org/reports/global-ev-outlook-2020>

Publisher: [iea.org](http://iea.org)

- As technological progress in the electrification of two/three-wheelers, buses, and trucks advances and the market for them grows, electric vehicles are expanding significantly.
- About 380 000 light commercial electric vehicles are in circulation, often as part of a company or public authority vehicle fleet.
- Electric vehicles are a key technology to reduce air pollution in densely populated areas and a promising option to contribute to energy diversification and greenhouse gas emissions reduction objectives.

### **Battery Electric Vehicles, BEV, EVs, HEVs, BHEV's| EVgo**

URL: <https://www.evgo.com/ev-drivers/types-of-evs/>

Publisher: [evgo.com](http://evgo.com)

- Low-emission vehicles that use an electric motor to assist gas-powered engines.

### **How Green Are Electric Vehicles?- The New York Times**

URL: <https://www.nytimes.com/2021/03/02/climate/electric-vehicles-environment.html>

Publisher: [nytimes.com](http://nytimes.com)

- As a result, researchers have found, electric vehicles have generally gotten cleaner, too.
- And they are likely to get cleaner still.

### **Electric Vehicle News, Photos and Buying Information| Autoblog**

URL: <https://www.autoblog.com/electric/>

Publisher: [autoblog.com](http://autoblog.com)

- Electric Vehicle News, Photos and Buying Information
- Electric Vehicles

### **Plug In Electric Vehicle Credit IRC 30 and IRC 30D**

URL: <https://www.irs.gov/businesses/plug-in-electric-vehicle-credit-irc-30-and-irc-30d>

Publisher: [irs.gov](http://irs.gov)

- Plug In Electric Vehicle Credit IRC 30 and IRC 30D
- Internal Revenue Code Section 30D provides a credit for Qualified Plug-in Electric Drive Motor Vehicles including passenger vehicles and light trucks.
- Section 30D was also modified by the American Taxpayer Relief Act 2013 for certain 2 or 3 wheeled vehicles acquired after December 31, 2011 and before January 1, 2014.

### **7 Best Electric Cars of 2021- Top Tested EVs**

URL: <https://www.goodhousekeeping.com/travel-products/car-reviews/a34905891/best-electric-cars-2021/>

Publisher: [goodhousekeeping.com](http://goodhousekeeping.com)

- For over 10 years, the experts at the Good Housekeeping Institute have been recognizing the best vehicles to buy, from the best sedans to the best SUVs, culminating in our Best Family Car Awards.
- But now many vehicles offer 200+ miles of range, meaning a typical driver will be OK for the day.

- They have a much larger battery than a gas-powered hybrid so they can function as an EV during typical drives.

### **Electric Vehicles Should Be a Win for American Workers- Center for American Progress**

URL: <https://www.americanprogress.org/issues/economy/reports/2020/09/23/489894/electric-vehicles-win-american-workers/>

Publisher: americanprogress.org

- Electric Vehicles Should Be a Win for American Workers
- The global auto manufacturing industry is undergoing a rapid transition from reliance on internal combustion engines to battery electric vehicles.

### **Electric vehicles from life cycle and circular economy perspectives- TERM 2018 – European Environment Agency**

URL: <https://www.eea.europa.eu/publications/electric-vehicles-from-life-cycle>

Publisher: eea.europa.eu

- Electric vehicles from life cycle and circular economy perspectives European Environment Agency

### **Here's every electric vehicle on sale in the US for 2020 and its range- Roadshow**

URL: <https://www.cnet.com/roadshow/news/every-electric-car-ev-range-audi-chevy-tesla/>

Publisher: cnet.com

- Here's every electric vehicle on sale in the US for 2020 and its range
- That in mind, here's a list of every electric vehicle on sale in the US, and how far each will go on a single charge, according to the EPA.
- Hyundai is getting way more into the electric vehicle game, but the car that started it out for them was the Ioniq Electric, and you can still get it.

### **Charging at Home | Department of Energy**

URL: <https://www.energy.gov/eere/electricvehicles/charging-home>

Publisher: energy.gov

- Home charging can use either the relatively simple Level 1 electric vehicle supply equipment or the slightly more complex Level 2 EVSE.
- In general, this means keeping the cord out of walking areas and positioning the wall unit as close as possible to the vehicle's electrical inlet.

### **Governor Newsom Announces California Will Phase Out Gasoline-Powered Cars& Drastically Reduce Demand for Fossil Fuel in California's Fight Against Climate Change**

URL: <https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/>

Publisher: gov.ca.gov

- The upfront cost of electric vehicles are projected to reach parity with conventional vehicles

### **Lincoln® Luxury Hybrid Electric Vehicles| Performance With Efficiency**

URL: <https://www.lincoln.com/hybrid-electric-vehicles/>

Publisher: lincoln.com

- Lincoln plug-in hybrid electric vehicles come with a dual-voltage cord capable of charging at 120V or 240V.
- The Lincoln Grand Touring vehicles are the future of luxury performance.
- Lincoln plug-in hybrid electric vehicles offer the best of both worlds, combining gas and electric to deliver constant, powerful performance.

### **Pros and Cons of Electric Cars| The Personal**

URL: <https://www.thepersonal.com/blog/-/is-an-electric-car-right-for-you->

Publisher: thepersonal.com

- How environmentally friendly are electric vehicles?
- Can electric vehicles handle Canadian winters?
- A lot of people choose electric vehicles to help protect the environment.

### **Home- Drive Green- Air Quality, Energy and Sustainability(AQES)**

URL: <https://www.drivegreen.nj.gov/>

Publisher: drivegreen.nj.gov

- Here we have a basic breakdown of the main types of electric vehicles that either plug in or have no harmful tailpipe emissions.
- On January 17, 2020 Governor Murphy signed landmark legislation to boost the use of plug-in electric vehicles in New Jersey.
- Explore Electric Vehicle Affordability with calculators that determines your personal cost.

### **Electric Vehicles| Virginia| Dominion Energy**

URL: <https://www.dominionenergy.com/virginia/save-energy/electric-vehicles>

Publisher: dominionenergy.com

- You are changing locations
- Are you sure you want to leave your current location?
- Additional EV Resources

### **EEA report confirms: electric cars are better for climate and air quality**

URL: <https://www.eea.europa.eu/highlights/eea-report-confirms-electric-cars>

Publisher: eea.europa.eu

- The report confirms that the greenhouse gas emissions of electric vehicles, with the current EU energy mix and over the entire vehicle life cycle, are about 17-30% lower than the emissions of petrol and diesel cars.
- However, as the carbon intensity of the EU energy mix is projected to decrease, the life-cycle emissions of a typical electric vehicle could be cut by at least 73% by 2050.
- However, even electric vehicles emit particulate matter from road, tyre and break wear, the report reminds.

### **Another EV Benefit: Less Noise Pollution**

URL: <https://cleantechnica.com/2019/01/27/another-ev-benefit-less-noise-pollution%E2%80%A8%E2%80%A8%E2%80%A8/>

Publisher: cleantechnica.com

- One well known electric vehicle benefit is that EVs do n't produce tailpipe emissions from directly burning fossil fuels
- With gas/diesel vehicles, it does n't help matters that some owners get modified mufflers that are louder than their stock counterparts.
- How much quieter are electric vehicles than gas-powered ones?

### **Deloitte Insights Electric vehicles Setting a course for 2030**

URL: <https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/electric-vehicle-trends-2030.html>

Publisher: www2.deloitte.com

- Before the COVID-19 pandemic shook up the automotive industry-- along with every other industry-- electric vehicles were moving steadily into the spotlight.
- The combined annual sales of battery electric vehicles and plug-in hybrid electric vehicles tipped over the two-million-vehicle mark for the first time in 2019.
- Since Deloitte last presented a forecast for electric vehicle sales, in January 2019, the EV market has made great strides, and not just in terms of sales.

### **Best Electric Cars- Top Rated Electric Car Models**

URL: <https://www.motortrend.com/style/electric/>

Publisher: motortrend.com

- Best Electric Cars

### **Electric car owners could choose which fake sounds their cars make under new proposal- The Verge**

URL: <https://www.theverge.com/2019/9/16/20869035/electric-car-ev-fake-noise-nhtsa>

Publisher: theverge.com

- "The National Highway Traffic Safety Administration is requesting public comment on amending the new Quiet Vehicle safety standard FMVSS No. 141, Minimum Sound Requirements for Hybrid and Electric Vehicles, to allow multiple driver-selectable sounds so long as they meet the existing performance requirements," an agency spokesperson said in a statement.
- Mercedes-Benz has an artificial humming sound picked out for its electric EQC lineup, while VW has said its compact ID.3 electric vehicles will come installed with a fake sound for low speeds when they hit showroom floors in 2020.
- The new rule requires all newly manufactured electric vehicles that weigh 10,000 pounds or fewer to make an audible noise when traveling forward or in reverse at speeds of 19 mph or less.

### **Electric Cars vs Gas Cars: What Do They Cost? | EnergySage**

URL: <https://www.energysage.com/electric-vehicles/costs-and-benefits-evs/evs-vs-fossil-fuel-vehicles/>

Publisher: energysage.com

- Costs and benefits of electric cars vs. conventional vehicles

- If you are considering purchasing a new car and are also looking at an electric vehicle as a serious option, it is important to understand where your costs will come from, and how an electric vehicle can lead to different sources of spending and saving when compared to conventional ICEs.
- The cost to run an electric vehicle is slightly more complicated.

### **Net Air Emissions from Electric Vehicles: The Effect of Carbon Price and Charging Strategies**

URL: <https://pubs.acs.org/doi/10.1021/es102464y>

Publisher: [pubs.acs.org](https://pubs.acs.org)

- Plug-in hybrid electric vehicles may become part of the transportation fleet on time scales of a decade or two.
- We calculate the electric grid load increase and emissions due to vehicle battery charging in PJM and NYISO with the current generation mix, the current mix with a \$ 50/tonne CO<sub>2</sub>
- Mass-market electric vehicles have recently been introduced in the USA, following the introduction in China of the BYD plug-in hybrid electric vehicle in 2008.

### **Charging Plug-In Electric Vehicles at...- Alternative Fuels Data Center**

URL: [https://afdc.energy.gov/fuels/electricity\\_charging\\_home.html](https://afdc.energy.gov/fuels/electricity_charging_home.html)

Publisher: [afdc.energy.gov](https://afdc.energy.gov)

- Most drivers of plug-in electric vehicles charge their vehicles overnight at home using AC Level 1 or AC Level 2 charging equipment.
- Electricians can inform homeowners whether their home has adequate electrical capacity for vehicle charging.
- State and utility incentives may be available to help offset the cost of charging equipment.

### **True Cost of Electric Vehicles**

URL: <https://www.aaa.com/autorepair/articles/true-cost-of-ev>

Publisher: [aaa.com](https://www.aaa.com)

- Electric Vehicle Owners to the World-- Going Green is Not as Scary as You Think
- On average, electric vehicle owners drive 39 miles per day.
- AAA's new study pulls back the curtain on the true cost AND experience of electric vehicle ownership

### **Electric Cars: Pros and Cons**

URL: <https://www.caranddriver.com/research/a32758614/electric-cars-pros-and-cons/>

Publisher: [caranddriver.com](https://www.caranddriver.com)

- Because fully electric vehicles do n't use an exhaust system, they have no emissions.
- Many electric vehicles also use regenerative braking to add to the energy the car needs to run, which is completely cost-free.
- They Require Less Expensive and Less Frequent Maintenance

### **AutoNation CEO: Range anxiety less of concern for electric vehicle owners**

URL: <https://www.cnbc.com/2021/02/16/autonation-ceo-electric-car-range-anxiety.html>

Publisher: [cnbc.com](https://www.cnbc.com)



- But in an interview on "Squawk Box," Jackson said Americans have better understood how to maximize the benefits of electric vehicles.
- For the most part, people will be driving their electric vehicle for day-to-day trips, Jackson said.
- "For their daily use around their home or office, they're delighted to have an electric vehicle."

### **UK watchdog studies 'range anxiety' in electric vehicle charging**

URL: <https://www.reuters.com/article/us-britain-autos-antitrust/uk-watchdog-studies-range-anxiety-in-electric-vehicle-charging-idUSKBN28C0UE>

Publisher: reuters.com

- UK watchdog studies 'range anxiety' in electric vehicle charging
- Research showed range anxiety was a key concern for many consumers and ensuring easy access to chargepoints was key to persuading drivers to switch to electric vehicles, the Competition and Markets Authority said.
- There are almost 20,000 vehicle chargepoints, up from around 1,500 in 2011, although more will be needed in the future as this is the only way to power electric vehicles, the CMA said.

### **Pay Less for Vehicle Maintenance With an EV- Consumer Reports**

URL: <https://www.consumerreports.org/car-repair-maintenance/pay-less-for-vehicle-maintenance-with-an-ev/>

Publisher: consumerreports.org

- New research from Consumer Reports shows that pure electric vehicles-which have fewer moving parts-need less maintenance, and generally cost less to repair than the average gas-powered vehicle.

### **Electric Vehicle Benefits| Department of Energy**

URL: <https://www.energy.gov/eere/electricvehicles/electric-vehicle-benefits>

Publisher: energy.gov

- Plug-in electric vehicles are connected, fun, and practical.

### **Electric Car Battery Life, Cost of Replacement, Recycling& Leasing**

URL: <https://www.edfenergy.com/electric-cars/batteries>

Publisher: edfenergy.com

- So as an electric vehicle ages and the battery cycles, the additional spare capacity is used up.
- Once a battery has finished powering an electric vehicle, it can be used to power our homes and businesses.
- Another major electric vehicle manufacturer BYD is China's largest electric vehicle manufacturer more than doubled its sales in December 2020 compared to the same time in 2019 and have been selling more battery-powered vehicles since the beginning of 2019.



## IJERPH

URL: <https://www.mdpi.com/1660-4601/17/18/6701>

Publisher: mdpi.com

- New Risk Situations Related to Low Noise from Electric Vehicles
- Sales of electric and hybrid electric vehicles are increasing steadily worldwide, and consequently their presence increases in city areas.
- Thus, in relation to low noise levels of electric and hybrid vehicles, this study aimed to characterise the risk situations and determine the risk perception of workers as pedestrians and internal combustion engine vehicle drivers coming into contact with these vehicles.

## The Effectiveness of Alert Sounds for Electric Vehicles Based on Pedestrians' Perception

URL: <https://ieeexplore.ieee.org/document/9226134>

Publisher: ieeexplore.ieee.org

- The Effectiveness of Alert Sounds for Electric Vehicles Based on Pedestrians' Perception

## Overcoming EV range anxiety with electric vehicles | Geotab

URL: <https://www.geotab.com/blog/range-anxiety/>

Publisher: geotab.com

- An increasing number of fleet managers are becoming interested in electric vehicles, spurred on by the promise of lower operating costs and the ability to reduce their environmental impact.
- Range anxiety is the fear that the electric vehicle won't have sufficient charge to complete its duty, and it's still perceived to be one of the greatest barriers preventing fleets from going electric.
- What can 6,000 electric vehicles tell us about EV battery health?

## Top 7 Disadvantages Of Electric Cars | Autowise

URL: <https://autowise.com/top-7-disadvantages-of-electric-cars/>

Publisher: autowise.com

- Like all new innovations, there are plenty of pros and cons surrounding the modern electric vehicle.
- In general electric cars are still behind gas powered vehicles in their ability to accelerate and climb quickly.
- The main reason why many drivers are reluctant to purchase an electric or hybrid electric vehicle is because they're not clued up with the current state of the electric automotive industry.

## US7841431B2- Electric vehicle thermal management system- Google Patents

URL: <https://www.google.com/patents/US7841431>

Publisher: google.com

- Electric vehicle thermal management system
  - Information or communication technologies improving the operation of electric vehicles
- Abstract A method for managing thermal loads within an electric vehicle using an efficient thermal management system that utilizes a single heat exchanger is provided.

- TRANSPORTING B60-VEHICLES IN GENERAL B60H-ARRANGEMENTS OF HEATING, COOLING, VENTILATING OR OTHER AIR-TREATING DEVICES SPECIALLY ADAPTED FOR PASSENGER OR GOODS SPACES OF VEHICLES B60H1/00-Heating, cooling or ventilating-LSB- HVAC-RSB- devices B60H1/00357-Air-conditioning arrangements specially adapted for particular vehicles B60H1/00385-Air-conditioning arrangements specially adapted for particular vehicles for vehicles having an electrical drive, e.g. hybrid or fuel cell B60H1/00392-Air-conditioning arrangements specially adapted for particular vehicles for vehicles having an electrical drive, e.g. hybrid or fuel cell for electric vehicles having only electric drive means B-PERFORMING OPERATIONS

### **Electric Vehicles- Making Sense of the Rates**

URL: [https://www.pge.com/en\\_US/residential/rate-plans/rate-plan-options/electric-vehicle-base-plan/electric-vehicle-base-plan.page](https://www.pge.com/en_US/residential/rate-plans/rate-plan-options/electric-vehicle-base-plan/electric-vehicle-base-plan.page)

Publisher: pge.com

- PG&E offers two electric vehicle rate plans for residential customers.
- Home Charging, EV2-A combines your vehicle's electricity costs with those of your residence.
- EV-B involves the installation of another meter, which separates your vehicle's electricity costs from those of your home.

### **New Risk Situations Related to Low Noise from Electric Vehicles: Perception of Workers as Pedestrians and Other Vehicle Drivers**

URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7558663/>

Publisher: ncbi.nlm.nih.gov

- New Risk Situations Related to Low Noise from Electric Vehicles
- Sales of electric and hybrid electric vehicles are increasing steadily worldwide, and consequently their presence increases in city areas.
- Thus, in relation to low noise levels of electric and hybrid vehicles, this study aimed to characterise the risk situations and determine the risk perception of workers as pedestrians and internal combustion engine vehicle drivers coming into contact with these vehicles.

### **How Much Does It Cost to Charge an Electric Car? | Kelley Blue Book**

URL: <https://www.kbb.com/car-news/how-much-does-it-cost-to-charge-an-ev/>

Publisher: kbb.com

- To answer the question of cost, we enlisted the help of John Voelcker, a longtime automotive journalist and industry analyst, who specializes in electric vehicles.
- He's heard every argument that's been made for electric vehicle ownership, including the cost of recharging compared to traditional refueling.

## **What Drives EV Adoption?**

URL: <https://www.samsara.com/fleet/research/electric-vehicle-benefits>

Publisher: samsara.com

- The case for Electric Vehicles often revolves around environmental impact.
- Samsara's "The Power of Data Transparency: Electric Vehicles" survey was conducted by Wakefield Research in March 2020 among 300 Fleet Managers in the United States

## **Electric Cars vs. Gas Cars Cost | Enel X**

URL: <https://evcharging.enelx.com/resources/blog/570-electric-cars-vs-gas-cars-cost>

Publisher: evcharging.enelx.com

- Whether you are looking at a new or used vehicle, or gas versus electric, sale price is usually dependant on your location, the brand of the car and the type of vehicle.
- Alternately, the average cost of an electric vehicle is \$55,000, though this average is skewed by the recent popularity of high-end electric vehicles like the Tesla Model S and Model X. Several electric vehicles beat the national average transaction price of gas cars.
- It's important to understand the type of electric vehicle as this relates to the lifetime ownership costs, given different fueling and maintenance costs across the three categories.

## **The uncertain future for China's electric car makers- BBC News**

URL: <https://www.bbc.com/news/business-51711019>

Publisher: bbc.com

image caption China has the world's biggest market for electric vehicles

- In 2018 more than a million electric vehicles were sold in China, more than three times the number sold in the US.
- Over the last three years the number of Chinese electric vehicle manufacturers has tripled, with more than 400 registered nationwide.

## **In Cabin Heating in Electric Vehicles| Croda Phase Change Materials**

URL: <https://www.crodatherm.com/en-gb/products-and-applications/crodatherm-wax/vehicles-and-automotive/in-cabin-heating-in-electric-vehicles>

Publisher: crodatherm.com

- In Cabin Heating in Electric Vehicles

## **Electric vehicle heating and cooling| Automotive IQ**

URL: <https://www.automotive-iq.com/electrics-electronics/articles/electric-vehicle-heating-and-cooling>

Publisher: automotive-iq.com

- Electric vehicle heating and cooling

### **Why the disadvantages of electric cars include lack of noise**

URL: <https://blogs.sw.siemens.com/thought-leadership/2019/08/08/why-the-disadvantages-of-electric-cars-include-lack-of-noise/>

Publisher: [blogs.sw.siemens.com](https://blogs.sw.siemens.com)

- As consumers started purchasing and driving electric vehicles, it soon became clear there was a noise issue that significantly hindered passenger comfort.
- Good luck bringing a horrible sounding electric vehicle to mass market.
- As the electric engine is smaller, lighter and quieter than a traditional internal combustion engine, the design of the vehicle can be altered fundamentally.

### **Electric vehicle adoption improves air quality and climate outlook: Ozone pollution reduced even when electricity is produced by combustion sources-- ScienceDaily**

URL: <https://www.sciencedaily.com/releases/2019/04/190412122912.htm>

Publisher: [sciencedaily.com](https://www.sciencedaily.com)

- Electric vehicle adoption improves air quality and climate outlook
- "Electric vehicle adoption improves air quality and climate outlook: Ozone pollution reduced even when electricity is produced by combustion sources."
- The researchers found that even when their electricity is generated from combustion sources, electric vehicles have a net positive impact on air quality and climate change.

### **The Biggest Pros and Cons of Electric Vehicles | Earth911**

URL: <https://earth911.com/eco-tech/pros-cons-electric-vehicles/>

Publisher: [earth911.com](https://earth911.com)

- The Biggest Pros and Cons of Electric Vehicles
- For many motorists, simply knowing that electric vehicles are better for the environment is reason enough to make the investment.
- Perhaps you live in an area where electric vehicles are relatively common, and so there's a wide availability of EV charging stations for your convenience.

### **Here's Every New Electric Vehicle Model for Sale in the U.S.**

URL: <https://www.caranddriver.com/shopping-advice/g32463239/new-ev-models-us/>

Publisher: [caranddriver.com](https://www.caranddriver.com)

- Jaguar's first electric vehicle is now in its second year of sales.
- Not only is the Volvo XC40 Recharge Volvo's first fully-electric vehicle, it's also an all-wheel drive compact crossover with two motors that produce a combined output of 402 horsepower.

### **Electric Vehicle Basics| Department of Energy**

URL: <https://www.energy.gov/eere/electricvehicles/electric-vehicle-basics>

Publisher: [energy.gov](https://www.energy.gov)

- Just as there are a variety of technologies available in conventional vehicles, plug-in electric vehicles have different capabilities that can accommodate different drivers' needs.

- All-electric vehicles run only on electricity.
- If this range is not sufficient, a plug-in electric vehicle may be a better choice.

### **Market share of electric vehicles in new car sales**

URL: <https://www.climate-transparency.org/en/media/market-share-of-electric-vehicles-in-new-car-sales>

Publisher: climate-transparency.org

- Market share of electric vehicles in new car sales

### **Electric vs. Gas: Is It Cheaper to Drive an EV?| NRDC**

URL: <https://www.nrdc.org/stories/electric-vs-gas-it-cheaper-drive-ev>

Publisher: nrdc.org

- There are plenty of climate and air quality reasons to buy an electric vehicle, but are they cheaper to drive?
- The average sticker price on an electric car is \$19,000 higher than an average gasoline-powered vehicle, so consumers want to know how much of that cost will be recouped in fuel savings over the life of the vehicle.
- Over the anticipated 15-year life span of a vehicle, the electricity required to run a battery-powered electric car can be as much as \$14,480 cheaper than fueling up an internal combustion vehicle.

### **US7789176B2- Electric vehicle thermal management system- Google Patents**

URL: <https://patents.google.com/patent/US7789176B2/en>

Publisher: patents.google.com

- Electric vehicle thermal management system
- Description FIELD OF THE INVENTION The present invention relates generally to electric vehicles and, more particularly, to a method and apparatus for efficiently managing the thermal loads in an electric vehicle.
- ; TRANSPORTING B60-VEHICLES IN GENERAL B60H-ARRANGEMENTS OF HEATING, COOLING, VENTILATING OR OTHER AIR-TREATING DEVICES SPECIALLY ADAPTED FOR PASSENGER OR GOODS SPACES OF VEHICLES B60H1/00-Heating, cooling or ventilating-LSB- HVAC-RSB- devices B60H1/00357-Air-conditioning arrangements specially adapted for particular vehicles B60H1/00385-Air-conditioning arrangements specially adapted for particular vehicles for vehicles having an electrical drive, e.g. hybrid or fuel cell B60H1/00392-Air-conditioning arrangements specially adapted for particular vehicles for vehicles having an electrical drive, e.g. hybrid or fuel cell for electric vehicles having only electric drive means B-PERFORMING OPERATIONS

### **Metal mining constraints on the electric mobility horizon| McKinsey**

URL: <https://www.mckinsey.com/industries/oil-and-gas/our-insights/metal-mining-constraints-on-the-electric-mobility-horizon>

Publisher: mckinsey.com

- Between now and 2030, this emerging supply chain is expected to produce over 340 million electric vehicles
- This figure includes all the electric mobility vehicle segments-including two-wheelers, passenger cars, vans and pick-ups, trucks and buses-and includes pure battery electric vehicles as well as plug-in hybrid electric vehicles.
- We project one in five passenger cars sold globally to be battery electric vehicles by 2030 and global sales of BEV passenger cars to overtake those of internal combustion engine vehicles by 2040.

### **Reducing Pollution with Electric Vehicles| Department of Energy**

URL: <https://www.energy.gov/eere/electricvehicles/reducing-pollution-electric-vehicles>

Publisher: energy.gov

- Plug-in electric vehicles can help keep your town and your world clean.
- All-electric vehicles produce zero direct emissions, which specifically helps improve air quality in urban areas.
- Plug-in hybrid electric vehicles, which have a gasoline engine in addition to an electric motor, produce evaporative emissions from the fuel system as well as tailpipe emissions when operating on gasoline.

### **The five major challenges facing electric vehicles- BBC News**

URL: <https://www.bbc.com/news/uk-49578790>

Publisher: bbc.com

- Sales of all-electric vehicles are up 70% on last year, leading to suggestions that we have reached a turning point.
- We will need many more places for charging electric vehicles, for example.
- Individuals and businesses also need to be convinced that electric vehicles suit their needs.

### **Emissions from Hybrid and Plug-In...- Alternative Fuels Data Center**

URL: [https://afdc.energy.gov/vehicles/electric\\_emissions.html](https://afdc.energy.gov/vehicles/electric_emissions.html)

Publisher: afdc.energy.gov

- Hybrid electric vehicles, plug-in hybrid electric vehicles, and all-electric vehicles typically produce lower tailpipe emissions than conventional vehicles do.
- Learn more about electric-drive vehicle emissions in the Well-to-Wheels Energy Use and Greenhouse Gas Emissions Analysis of Plug-in Hybrid Electric Vehicles report, and the Emissions Associated with Electric Vehicle Charging

### **The road to electric vehicles with lower sticker prices than gas cars - battery costs explained**

URL: <https://theconversation.com/the-road-to-electric-vehicles-with-lower-sticker-prices-than-gas-cars-battery-costs-explained-137196>

Publisher: theconversation.com

- The road to electric vehicles with lower sticker prices than gas cars-- battery costs explained

- Electric vehicle sales have grown exponentially in recent years, accompanied by dropping prices.
- Materials make up the largest portion of the total battery cost, around 50%.

### **Various Advantages and Disadvantages of Electric Cars- Conserve Energy Future**

URL: <https://www.conserve-energy-future.com/advantages-and-disadvantages-of-electric-cars.php>

Publisher: [conserve-energy-future.com](https://www.conserve-energy-future.com)

- Although some companies have based their entire model of cars around being proactive and using electricity, some also offer hybrid vehicles that work off both electricity and gas.
- The electric vehicle is easy to recharge, and the best part is you will no longer need to run to the fuel station to recharge your car before hitting the road!
- The biggest advantage of an electric vehicle is its green credential.

### **Electric car owners to 'choose' engine sounds- BBC News**

URL: <https://www.bbc.com/news/technology-49726841>

Publisher: [bbc.com](https://www.bbc.com)

- Calls to ensure electric and hybrids were noisy enough to hear when moving at low speeds began in 2010, and rules to ensure vehicles complied were first drafted in 2016.
- In response to requests from car makers, the NHTSA has suggested that vehicles be allowed to make several sounds.

### **Electric Vehicle Sound Quality**

URL: <https://www.sae.org/publications/technical-papers/content/1999-01-1694/>

Publisher: [sae.org](https://www.sae.org)

- Environmental concerns as well as regulatory requirements are driving the development of alternative vehicle propulsion systems.
- Electric vehicles are attractive because they emit no pollutants.
- In this paper, we examine the sound quality characteristics of wind and powertrain noise in electric vehicles.

### **Electric cars. Advantages and disadvantages- IOPscience**

URL: <https://iopscience.iop.org/article/10.1088/1742-6596/1015/5/052029>

Publisher: [iopscience.iop.org](https://iopscience.iop.org)

- The article considers the positive and negative aspects of the use of electric vehicles.
- Also priorities to avoid the existing problems in the market of electric vehicles were set.

### **Polestar points to "a disturbing lack of transparency" about EV carbon footprint**

URL: [https://www.greencarreports.com/news/1129651\\_polestar-points-to-a-disturbing-lack-of-transparency-about-ev-carbon-footprint](https://www.greencarreports.com/news/1129651_polestar-points-to-a-disturbing-lack-of-transparency-about-ev-carbon-footprint)

Publisher: [greencarreports.com](https://www.greencarreports.com)



- As a peer-reviewed process from the Union of Concerned Scientists has attested for years, electric cars have had a far lower lifetime carbon footprint than internal combustion vehicles-and recently, in nearly every set of conditions.

### **EV vs. Gas: Which Cars Are Cheaper to Own?**

URL: <https://www.caranddriver.com/shopping-advice/a32494027/ev-vs-gas-cheaper-to-own/>

Publisher: caranddriver.com

- EV aficionados will tell you that electric vehicles are cheaper to fuel and maintain, so that means they must be cheaper to own and operate.
- Cari Crane, Director of Insights at ALG, told us that the high cost of electric vehicles contributes to their steeper depreciation.

### **The Costs of Revving Up the Grid for Electric Vehicles**

URL: <https://www.bcg.com/publications/2019/costs-revving-up-the-grid-for-electric-vehicles>

Publisher: bcg.com

- -LRB- See the sidebar, "Modeling the Impact of Electric Vehicles."-RRB-
- To model this dynamic, we look at the impact on both costs and revenues.
- The cost impact includes both the cost of generating or buying electricity and the investment required in transmission and distribution.

### **Improved acoustics for electric vehicles with Hybrid-Acoustics ECO+**

URL: <https://www.autoneum.com/2017/06/15/improved-acoustics-for-electric-vehicles-with-hybrid-acoustics-eco/>

Publisher: autoneum.com

- Improved acoustics for electric vehicles with Hybrid-Acoustics ECO+
- Accordingly, Autoneum now supplements its portfolio of effective noise and heat protection components for electric vehicles with Hybrid-Acoustics ECO+.
- For example, in the absence of engine noise in electric vehicles, more attention is drawn to sound sources that are new or were previously drowned out, such as fans and pumps or electronic drive components.

### **Evaluation of electric vehicle production and operating costs(Technical Report)**

URL: <https://www.osti.gov/biblio/764206-evaluation-electric-vehicle-production-operating-costs>

Publisher: osti.gov

- Evaluation of electric vehicle production and operating costs
- To accomplish this, commercialized lightduty vehicle electric drive components shall be used.
- A key element in the project is the use of commercially available Bosch electric drive components from the larger passenger vehicle segment.

### **Electric Cars With the Longest Range in 2021**

URL: <https://cars.usnews.com/cars-trucks/electric-cars-with-the-longest-range>

Publisher: cars.usnews.com



- Electric vehicles have also routinely come saddled with prices that are significantly higher than their closest gas-powered rivals.

### **Heat-Pump Cabin Heater**

URL: [https://www.nissan-](https://www.nissan-global.com/EN/TECHNOLOGY/OVERVIEW/heat_pump_cabin_heater.html)

[global.com/EN/TECHNOLOGY/OVERVIEW/heat\\_pump\\_cabin\\_heater.html](https://www.nissan-global.com/EN/TECHNOLOGY/OVERVIEW/heat_pump_cabin_heater.html)

Publisher: [nissan-global.com](https://www.nissan-global.com)

- A heat-pump cabin heater has been adopted for heating an electric vehicle, using less power than conventional models.

### **A Cobalt Crisis Could Put the Brakes on Electric Car Sales | WIRED**

URL: <https://www.wired.com/story/a-cobalt-crisis-could-put-the-brakes-on-electric-car-sales/>

Publisher: [wired.com](https://www.wired.com)

- Electric vehicle sales are soaring, with factories working full pelt to churn out as many batteries as possible.
- And that's creating some bottlenecks.
- Global production of electric vehicles is predicted to top 4 million cars globally this year, rising to 12 million in 2025.

### **The Clock Is Ticking On Electric Car Batteries- And How Long They Will Last**

URL: <https://www.forbes.com/sites/billroberson/2019/09/30/the-clock-is-ticking-on-electric-car-batteriesand-how-long-they-will-last/>

Publisher: [forbes.com](https://www.forbes.com)

- What can electric vehicle owners expect from them in the years to come?
- With electric vehicles, the checklist also includes not making a habit of fully charging to 100% all the time and not to run them down to zero, lest the voltage drop so far that the battery becomes damaged or "unrecoverable."
- As you can imagine, with electric vehicles becoming more popular and the need for ever more batteries for our tech toys, the race is on to find a new battery formulations to replace the dependable, but ultimately limited capabilities of the lithium-ion battery.

### **Electric Car Battery Life: Everything You Need to Know**

URL: <https://www.caranddriver.com/research/a31875141/electric-car-battery-life/>

Publisher: [caranddriver.com](https://www.caranddriver.com)

- An electric car's mechanisms tend to be much simpler than those of a standard-powered vehicle.
- While a battery's kilowatt-hour help to determine the distance you can travel on one charge, it's important to remember that an electric car's management system prevents the vehicle from doing either one of the following
- This is why most electric vehicles are equipped with a liquid-cooled battery pack.

### **New law to tackle electric cars' silent menace to pedestrians**

URL: <https://www.theguardian.com/environment/2018/may/06/new-law-combats-silent-menace-electric-cars>

Publisher: theguardian.com

- It is this latter quality, initially seen by many as a good thing, that has become an acute concern for safety campaigners, who fear that the rising number of electric vehicles constitutes a silent menace.
- Research shows electric cars are about 40% more likely to hit a pedestrian than a conventional vehicle.
- By 2030 the National Grid predicts there could be as many as 9 million electric vehicles on Britain's roads.

### **The dirty secret of electric vehicles | World Economic Forum**

URL: <https://www.weforum.org/agenda/2019/03/the-dirty-secret-of-electric-vehicles/>

Publisher: weforum.org

- The number of electric vehicles on the world's roads is rising fast.
- Amnesty International says human rights abuses, including the use of child labour, in the extraction of minerals, like cobalt, used to make the batteries that power electric vehicles is undermining ethical claims about the cars.

### **Federal Vehicle Fleets: Agencies Have Continued to Incorporate Alternative Fuel Vehicles into Fleets, but Challenges Remain**

URL: <https://www.gao.gov/products/gao-19-397>

Publisher: gao.gov

- According to GSA data, agencies purchased 373 electric vehicles in fiscal year 2017-along with about 4,500 hybrid electric sedans-out of a total of over 16,000 sedans and minivans acquired.
- The directives to reduce per-mile greenhouse gas emissions and increase acquisitions of electric vehicles were revoked by an Executive Order issued in May 2018.

### **New Electric Vehicle Battery Technology| General Motors**

URL: <https://www.gm.com/our-stories/commitment/ev-battery-modular-technology.html>

Publisher: gm.com

- General Motors' all-new modular platform and Ultium batteries will be the heartbeat of its all-electric future-- powering electric vehicles in every segment to meet the needs of every person.
- General Motors' vision of a world with zero emissions will be powered by a future where every vehicle is an electric vehicle.
- One platform can underpin vehicles of all sizes-- from Cadillac cars to Chevrolet trucks to GMC HUMMER EVs.

### **Lithium-Ion Batteries for Electric Vehicles 2020-2030: IDTechEx**

URL: <https://www.idtechex.com/en/research-report/lithium-ion-batteries-for-electric-vehicles-2020-2030/678>

Publisher: idtechex.com

- The annual demand for LiBs in electric vehicles will exceed 1,000 GWh by 2030
- Lithium-ion batteries are the clear winner, with only a few percent of their business threatened by alternatives such as other advanced batteries and supercapacitors even in 2030.
- Beyond that advanced Li-ion batteries and solid-state batteries are rapidly emerging into commercial areas.

### **Driving Electric: Achieving Full Price Transparency - AVERE**

URL: <https://www.avere.org/driving-electric-achieving-full-price-transparency/>

Publisher: avere.org

- The electric vehicle charging market is going through a process of transition and is evolving at a rapid pace.
- Today, for recent EV owners it is still a challenge to understand the process of how, where, and with who you can charge an EV.
- One of the main differences in this specific analogy, however, is the transparency and clarity of options for those looking to find the best package and subscriptions for their electric vehicle.

### **How Nickel is Replacing Cobalt in Electric Vehicles, IDTechEx Reveals**

URL: <https://www.prnewswire.com/news-releases/how-nickel-is-replacing-cobalt-in-electric-vehicles-idtechex-reveals-301149643.html>

Publisher: prnewswire.com

- "Materials for Electric Vehicles 2020-2030", [www.IDTechEx.com/EVMat](http://www.IDTechEx.com/EVMat)
- Nickel is the most expensive material in electric vehicle batteries after Cobalt and is also one of the most highly used outside of the battery industry.
- As the electric vehicle market grows with the trend towards higher Nickel chemistries, IDTechEx expects the demand for Nickel from electric vehicle batteries to increase ten-fold by 2030 compared to 2019.

### **The History of the Electric Car| Department of Energy**

URL: <https://www.energy.gov/articles/history-electric-car>

Publisher: energy.gov

- With this growing interest in electric vehicles, we are taking a look at where this technology has been and where it's going.
- At the same time, new battery technology-- supported by the Energy Department's Vehicle Technologies Office-- began hitting the market, helping to improve a plug-in electric vehicle's range.
- It's hard to pinpoint the invention of the electric car to one inventor or country.

### **Are hydrogen fuel cell vehicles the future of autos?- ABC News**

URL: <https://abcnews.go.com/Business/hydrogen-fuel-cell-vehicles-future-autos/story?id=74583475>

Publisher: abcnews.go.com

- What if your electric vehicle could be refueled in less than 5 minutes?
- "Most automakers are betting on battery electric vehicles for the passenger market and delivery trucks."

### **New Risk Situations Related to Low Noise from Electric Vehicles...**

URL: <https://pubmed.ncbi.nlm.nih.gov/32938012/>

Publisher: pubmed.ncbi.nlm.nih.gov

- New Risk Situations Related to Low Noise from Electric Vehicles
- Sales of electric and hybrid electric vehicles are increasing steadily worldwide, and consequently their presence increases in city areas.
- Thus, in relation to low noise levels of electric and hybrid vehicles, this study aimed to characterise the risk situations and determine the risk perception of workers as pedestrians and internal combustion engine vehicle drivers coming into contact with these vehicles.

### **Traction Batteries. EV and HEV- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/B978044452160650005X>

Publisher: sciencedirect.com

- Energy storage is the key technology that governs the development of electric vehicles.

### **Fake noise will be added to new electric cars starting today in the EU- The Verge**

URL: <https://www.theverge.com/2019/7/1/20676854/electric-cars-artificial-safety-noise-low-speeds-european-union-rules-2019-2021>

Publisher: theverge.com

- Due to the absence of an internal combustion engine, electric vehicles can be a lot quieter than their gas-powered counterparts.
- In a written submission to the British Parliament from November 2017, the charity Guide Dogs pointed to research that says electric and hybrid vehicles are 40 percent more likely to be involved in an accident which causes injury to a pedestrian.
- In the US, the National Highway Traffic Safety Administration will require that all hybrid and electric vehicles emit artificial noise by September 2020, although they'll have to emit the sounds up to the slightly faster speed of 18.6 mph.

### **Top 10 Pros and Cons of Electric Cars**

URL: <https://www.solarreviews.com/blog/10-pros-and-cons-of-electric-cars>

Publisher: solarreviews.com

- Even though you can charge an electric vehicle at home, finding a charging station if you're driving through rural areas or on a long-distance road trip can be a challenge.

### **Electric Vehicles for All: An Equity Toolkit**

URL: <https://greenlining.org/publications/online-resources/2016/electric-vehicles-equity-toolkit/>

Publisher: greenlining.org

- Electric vehicles have no tail-pipe emissions.

### **A new EV battery shows big promise| Greenbiz**

URL: <https://www.greenbiz.com/article/new-ev-battery-shows-big-promise>

Publisher: greenbiz.com

### **Plug-in Electric Vehicle Charging| Green Vehicle Guide| US EPA**

URL: <https://www.epa.gov/greenvehicles/plug-electric-vehicle-charging>

Publisher: epa.gov

- Charging your all-electric vehicle or plug-in hybrid electric vehicle-- together known as plug-in electric vehicles-- is similar to charging your other electronics.
- There are still far more gas stations than public charging stations, so vehicle charging may require a bit more planning when you hit the road with your PEV.
- You can plug your car directly into the 120V outlet, but you will need the appropriate Electric Vehicle Supply Equipment to charge a PEV via the 240V outlet.

### **Electric cars: New vehicles to emit noise to aid safety- BBC News**

URL: <https://www.bbc.com/news/business-48815968>

Publisher: bbc.com

- New electric vehicles will have to feature a noise-emitting device, under an EU rule coming into force on Monday.
- It follows concerns that low-emission cars and vans are too quiet, putting pedestrians at risk because they can not be heard as they approach.
- All new types of four-wheel electric vehicle must be fitted with the device, which sounds like a traditional engine.

### **How Do Hybrid Electric Cars Work?- Alternative Fuels Data Center**

URL: <https://afdc.energy.gov/vehicles/how-do-hybrid-electric-cars-work>

Publisher: afdc.energy.gov

- Hybrid electric vehicles are powered by an internal combustion engine and an electric motor, which uses energy stored in batteries.
- In an electric drive vehicle, the auxiliary battery provides electricity to start the car before the traction battery is engaged and also powers vehicle accessories.
- A hybrid electric vehicle can not be plugged in to charge the battery.

### **How Do Batteries For Electric Cars Work?| EnergySage**

URL: <https://www.energysage.com/electric-vehicles/101/how-do-electric-car-batteries-work/>

Publisher: energysage.com

- Battery type can vary depending on if the vehicle is all-electric or plug-in hybrid electric.
- Nickel-metal hydride batteries are more widely used in hybrid-electric vehicles, but are also used successfully in some all-electric vehicles.
- Lead-acid batteries are only currently being used in electric vehicles to supplement other battery loads.

### **EV Battery Recycling| Union of Concerned Scientists**

URL: <https://www.ucsusa.org/resources/ev-battery-recycling>

Publisher: [ucsusa.org](https://www.ucsusa.org)

- Battery electric vehicles are a key strategy for reducing air pollution and global warming emissions.
- They have zero tailpipe emissions, and even when powered by today's sources of electricity, their life cycle global warming emissions are significantly lower than those for vehicles fueled with gasoline or diesel.
- Fortunately, strategies for recycling lithium-ion batteries offer the possibility of a sustainable, long-term supply of such materials, supporting the continued deployment of electric vehicles.

### **The different types of electric car batteries- Easy Electric Life**

URL: <https://easyelectriclife.groupe.renault.com/en/outlook/technology/technology-on-the-market-electric-car-battery/>

Publisher: [easyelectriclife.groupe.renault.com](https://easyelectriclife.groupe.renault.com)

- In 1899, the electric vehicle "La Jamais contente" featuring this technology was in fact the first automobile to exceed 100 km/h, well before combustion engine vehicles.
- Used for the production of electric vehicles in the 90s, Ni-Cd batteries are now prohibited due to the toxicity of cadmium.

### **Electric Cars Could Be As Affordable as Conventional Vehicles In Just Three Years- Yale E360**

URL: <https://e360.yale.edu/digest/electric-cars-could-be-as-affordable-as-conventional-vehicles-in-just-three-years>

Publisher: [e360.yale.edu](https://e360.yale.edu)

- Electric Cars Could Be As Affordable as Conventional Vehicles In Just Three Years
- And as Nathaniel Bullard, an analyst with BNEF, writes on Bloomberg Opinion, cheaper electric vehicle batteries do n't just mean cheaper electric passenger cars.

### **Automakers look to electrify sales of EVs with cheaper models- ABC News**

URL: <https://abcnews.go.com/Business/automakers-electrify-sales-evs-cheaper-models/story?id=76250585>

Publisher: [abcnews.go.com](https://abcnews.go.com)

- Convincing Americans to give up gas-powered cars for electric vehicles.
- A general bewilderedness of what an electric vehicle is and how it works.

- Tesla, of course, has dominated the burgeoning electric vehicle market since its curvy, high-tech Model S sedan launched in June 2012.

### **Batteries for Hybrid and Plug-In...- Alternative Fuels Data Center**

URL: [https://afdc.energy.gov/vehicles/electric\\_batteries.html](https://afdc.energy.gov/vehicles/electric_batteries.html)

Publisher: [afdc.energy.gov](https://afdc.energy.gov)

- Energy storage systems, usually batteries, are essential for hybrid electric vehicles, plug-in hybrid electric vehicles, and all-electric vehicles.
- Advanced high-power lead-acid batteries are being developed, but these batteries are only used in commercially available electric-drive vehicles for ancillary loads.
- Therefore, battery design that considers disassembly and recycling is important in order for electric-drive vehicles to succeed from a sustainability standpoint.

### **Benefits to Driving Electric| Concord, MA**

URL: <https://concordma.gov/2213/Benefits-to-Driving-Electric>

Publisher: [concordma.gov](https://concordma.gov)

- Plug-in electric vehicles get their energy from electricity instead of gasoline.
- Battery Electric Vehicles have a rechargeable electric battery and rely on electricity as their sole source of fuel.
- Plug-in Hybrid Electric Vehicles have a rechargeable battery that can run on electricity as a sole fuel source, but can also run on gasoline alone.

### **How Do All-Electric Cars Work?- Alternative Fuels Data Center**

URL: <https://afdc.energy.gov/vehicles/how-do-all-electric-cars-work>

Publisher: [afdc.energy.gov](https://afdc.energy.gov)

- All-electric vehicles, also referred to as battery electric vehicles, have an electric motor instead of an internal combustion engine.
- The vehicle uses a large traction battery pack to power the electric motor and must be plugged in to a wall outlet or charging equipment, also called electric vehicle supply equipment.
- In an electric drive vehicle, the auxiliary battery provides electricity to power vehicle accessories.

### **Robert Anderson(19th Century Scottish Inventor)- News about Energy Storage, Batteries, Climate Change and the Environment**

URL: <https://www.upsbatterycenter.com/blog/robert-anderson-19th-century-scottish-inventor/>

Publisher: [upsbatterycenter.com](https://www.upsbatterycenter.com)

- In contrast to the gasoline-powered vehicles, which came later, the crude electric carriage is an absolutely environmentally-friendly.
- The progress of electric vehicles depends almost entirely on the progress of the battery.
- It was n't until the 1880s and 1890s, several decades after Anderson's first electric vehicle, and after Faure's improvement on the lead acid battery, that electric cars grew in popularity in the United States and Europe.

### **Four Companies Leading the Rise of Lithium& Battery Technology - Global X ETFs**

URL: <https://www.globalxetfs.com/four-companies-leading-the-rise-of-lithium-battery-technology/>

Publisher: globalxetfs.com

- But beyond these firms, there are still dozens of other lithium miners and battery producers around the world, who together are enabling the rapid growth of electric vehicles.

### **Best Electric Cars: Top-Rated EVs for 2021| Edmunds**

URL: <https://www.edmunds.com/electric-car/articles/best-electric-cars/>

Publisher: edmunds.com

- Electric vehicles are n't a new phenomenon.

### **Tesla and the science behind low-cost, next-gen million-mile EV battery**

URL: <https://www.cnbc.com/2020/06/30/tesla-and-the-science-of-low-cost-next-gen-ev-million-mile-battery.html>

Publisher: cnbc.com

- As in, the difference between a lithium-ion battery, like those found in today's electric vehicles made by Tesla and others, and the lithium-iron phosphate batteries coming soon to market.
- Canning cobalt is one of the biggest elements of cutting the cost of batteries below the \$100/kWh threshold that is a rough proxy for making electric vehicles as cheap as those powered by internal combustion engines, said James Frith, head of energy storage at Bloomberg New Energy Finance in London.
- The most obvious is that the cost of electric vehicles could catch up to internal combustion engines by about 2023, Bloomberg's Frith said.

### **Batteries for Electric Vehicles**

URL: <https://www.tva.com/energy/technology-innovation/batteries-for-electric-vehicles>

Publisher: tva.com

- Vehicles built before 2010 may have used lead acid, nickel metal hydride, or nickel cadmium batteries.
- Some homemade electric vehicles may still use nickel cadmium batteries.
- In addition, lead acid batteries have often been used in many special-purpose vehicles, including fork-lifts, low-speed utility vehicles and golf carts.

### **Nickel-Metal-Hydride Batteries For Electric Cars? Energy Density Can Rise 10-Fold: Researchers**

URL: [https://www.greencarreports.com/news/1097016\\_nickel-metal-hydride-batteries-for-electric-cars-energy-density-can-rise-10-fold-researchers](https://www.greencarreports.com/news/1097016_nickel-metal-hydride-batteries-for-electric-cars-energy-density-can-rise-10-fold-researchers)

Publisher: greencarreports.com

- Lithium-ion cells, on the other hands, are the only ones with sufficient energy density to be used in the much larger packs of battery-electric and plug-in hybrid vehicles.



### **Recycling lithium-ion batteries from electric vehicles**

URL: <https://pubmed.ncbi.nlm.nih.gov/31695206/>

Publisher: pubmed.ncbi.nlm.nih.gov

- Rapid growth in the market for electric vehicles is imperative, to meet global targets for reducing greenhouse gas emissions, to improve air quality in urban centres and to meet the needs of consumers, with whom electric vehicles are increasingly popular.
- However, growing numbers of electric vehicles present a serious waste-management challenge for recyclers at end-of-life.
- recycled lithium-ion batteries from electric vehicles could provide a valuable secondary source of materials.

### **High performance nickel-cadmium cells for electric vehicles- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/0378775394019649>

Publisher: sciencedirect.com

- High performance nickel-cadmium cells for electric vehicles

### **Nickel Metal Hydride- an overview| ScienceDirect Topics**

URL: <https://www.sciencedirect.com/topics/engineering/nickel-metal-hydride>

Publisher: sciencedirect.com

- Although both nickel-- iron and nickel-- zinc systems commanded significant attention as possible candidates for electric vehicles, they fell from favor because of insurmountable problems.

### **Electric Vehicles: Total will install and operate up to 20,000 new EV charging points for 'Metropolitan Region Amsterdam Electric'**

URL: <https://www.total.com/en/media/news/press-releases/electric-vehicles-total-will-install-and-operate-20000-new-ev-charging-points-metropolitan-region>

Publisher: total.com

- 'Metropolitan Region Amsterdam Electric' has awarded Europe's largest concession contract for electric vehicles charging to Total.
- This new contract intends to address the fast growing demand for public Electric Vehicle charging points in the Netherlands.
- Total Netherlands has additionally pledged to gradually source part of it from the MRA region itself, enabling EV drivers to charge their electric vehicles with locally-generated and sustainable energy.

### **The Top 5 countries for electric cars- Easy Electric Life**

URL: <https://easyelectriclife.groupe.renault.com/en/outlook/lifestyle/electric-implantation/>

Publisher: easyelectriclife.groupe.renault.com

- The country with the most electric vehicles available through carsharing services
- By comparison, the largest electric carsharing service in Europe, WeShare in Berlin, has a fleet of "only" 2000 vehicles!!

## Europe: PEV market share by country 2020

URL: <https://www.statista.com/statistics/625795/eu-electric-vehicle-market-share-by-country/>

Publisher: statista.com

- Norway has the highest penetration of plug-in electric vehicles in Europe.
- Norway's jump in electric mobility is due to the country's high car import tolls being lifted for electric vehicles, with registration taxes also waived.
- Such incentives make an electric vehicle comparatively cheaper to the purchase of a combustion engine powered car.

## Electric car use by country- Wikipedia

URL: [https://en.wikipedia.org/wiki/Electric\\_car\\_use\\_by\\_country](https://en.wikipedia.org/wiki/Electric_car_use_by_country)

Publisher: en.wikipedia.org

- Electric car use by country varies worldwide, as the adoption of plug-in electric vehicles is affected by consumer demand, market prices, availability of charging infrastructure, and government policies, such as purchase incentives and long term regulatory signals.
- Plug-in electric vehicles are generally divided into all-electric or battery electric vehicles, that run only on batteries, and plug-in hybrids, that combine battery power with internal combustion engines.
- The PEV market has been shifting towards fully electric battery vehicles.

## Plug-in electric vehicles in the Netherlands- Wikipedia

URL: [https://en.wikipedia.org/wiki/Plug-in\\_electric\\_vehicles\\_in\\_the\\_Netherlands](https://en.wikipedia.org/wiki/Plug-in_electric_vehicles_in_the_Netherlands)

Publisher: en.wikipedia.org

- Plug-in electric vehicles in the Netherlands
- Stock of light-duty plug-in electric vehicles on the road in the Netherlands from 2011 to 2020.
- The adoption of plug-in electric vehicles in the Netherlands is actively supported by the Dutch government through the exemption of the registration fee and road taxes.

## Major countries commit to increase the share of electric vehicles in government fleets- News-IEA

URL: <http://www.iea.org/news/major-countries-commit-to-increase-the-share-of-electric-vehicles-in-government-fleets>

Publisher: iea.org

- Major countries commit to increase the share of electric vehicles in government fleets IEA
- Recognising the importance of reducing carbon emission in the transportation sector, eight major nations-- Canada, China, France, Japan, Norway, Sweden, the United Kingdom and the United States of America-- signed a Government Fleet Declaration today, pledging to increase the share of electric vehicles in their government fleets and calling for other governments to join them.
- This support for electric vehicles contributes to our government's overall strategy to advance clean technology and innovation in Canada.

### **How many electric cars are on the road in the United States?**

URL: <https://usafacts.org/articles/how-many-electric-cars-in-united-states/>

Publisher: usafacts.org

- There are three categories of electric-drive vehicles
- The Department of Energy defines electric-drive vehicles as those that "use electricity as their primary power source or to improve the efficiency of conventional vehicle designs."
- Within this definition, electric-drive vehicles fall into three main categories, as defined by the DOE

### **Goupil: Adaptive and versatile electric utility vehicles**

URL: <https://www.goupil-ev.com/>

Publisher: goupil-ev.com

- Adaptive and versatile electric utility vehicles
- The development of a new range of electrical vehicles has been co-financed by the European Union as part of the "Operational Programme ERDF-ESF 2014-2020".

### **China's transition to electric vehicles | MIT Energy Initiative**

URL: <https://energy.mit.edu/news/chinas-transition-to-electric-vehicles/>

Publisher: energy.mit.edu

- China's transition to electric vehicles
- Recently, China imposed a mandate on automakers requiring that electric vehicles make up 40% of all sales by 2030.
- From 2016 to 2020, both types of EVs benefit from the electric vehicle subsidy, so the TCO of each is less than that of an ICE vehicle.

### **Perspectives of electric mobility: Total cost of ownership of electric vehicles in Germany- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/S0967070X16302839>

Publisher: sciencedirect.com

- Total cost of ownership of electric vehicles in Germany
- abatement potential offered by different types of electric vehicles.
- Finally, we analyse buyer's premiums as an incentive to accelerate the uptake of electric vehicles on German roads.

### **Why Japan Is Holding Back as the World Rushes Toward Electric Cars**

URL: <https://www.nytimes.com/2021/03/09/business/electric-cars-japan.html>

Publisher: nytimes.com

- While governments and automakers worldwide are staking out bold pledges to transition to electric-only vehicles, Japanese car companies and regulators are hedging their bets.
- But ready or not, he added, "a big wave of electric vehicles is really coming."
- The rush into electric vehicles has been spurred in part by plans in China, in European nations and elsewhere to either mandate higher sales of electric cars in the coming years or to ban gasoline-burning vehicles.

### **Actions speak louder than words: the French commitment to electric vehicles**

URL: <https://theicct.org/blog/staff/actions-speak-louder-words-french-commitment-electric-vehicles>

Publisher: theicct.org

- the French commitment to electric vehicles
- Various policy measures support France's ambition to electrify its vehicle fleet.
- There is no bonus if the purchase price is greater than \$ 60,000, with the exception of light commercial or fuel cell electric vehicles above \$ 60,000, for which individuals and businesses receive a bonus of \$ 3,000.

### **South Korea: registered electric vehicles by type and use 2020**

URL: <https://www.statista.com/statistics/1113376/south-korea-number-of-registered-electric-vehicles-by-type-and-use/>

Publisher: statista.com

- Amidst the increasing environmental awareness of the general public coupled with the continued improvements of electric vehicle models, it is predicted that the number of registrations for electric vehicles will increase in the future.

### **Norway sets electric car record as battery autos least dented by Covid-19 crisis**

URL: <https://www.climatechangenews.com/2020/07/02/norway-sets-electric-car-record-battery-autos-least-dented-covid-19-crisis/>

Publisher: climatechangenews.com

- Pure electric cars made up almost half of car sales in Norway in the first half of 2020, in a world record as battery-powered vehicles suffer less than fossil-fueled rivals in the economic downturn caused by Covid-19.
- The Norwegian Electric Vehicle Association, which represents electric car owners, said that sales were lagging a parliamentary goal that all new cars sold should be zero emissions by 2025.
- That is still possible but more and more difficult," deputy leader Petter Haugneland told Climate Home News.

### **With Norway in Lead, Europe Set for Surge in Electric Vehicles- Yale E360**

URL: <https://e360.yale.edu/features/with-norway-in-the-lead-europe-set-for-breakout-on-electric-vehicles>

Publisher: e360.yale.edu

- With Norway in Lead, Europe Set for Surge in Electric Vehicles
- Norway is the clear electric vehicle pacesetter in Europe, which now has about 500,000 electric vehicles.
- China leads the world in EV usage, with about 600,000 all-electric vehicles on its roads and an ambitious plan to deploy 5 million EVs by 2020.

### **60% of cars sold in Norway in September were electric**

URL: <https://www.weforum.org/agenda/2020/10/norway-electric-cars-majority-sales/>

Publisher: weforum.org

- From next year, it will increase the road tax rate for electric vehicles-- which currently benefit from discounts of up to 90%-- to \$ 229 a year, the same as for motorcycles.

### **EVBox: Flexible electric vehicle charging solutions**

URL: <https://evbox.com/en/>

Publisher: evbox.com

- Flexible electric vehicle charging solutions

### **Why Norway leads the world in electric vehicle adoption**

URL: [https://www.greencarreports.com/news/1123160\\_why-norway-leads-the-world-in-electric-vehicle-adoption](https://www.greencarreports.com/news/1123160_why-norway-leads-the-world-in-electric-vehicle-adoption)

Publisher: greencarreports.com

- This is obvious to economist Lasse Fridstrøm, senior research economist at the Norwegian Center for Transport Research, who wrote " Electrifying the vehicle fleet: Projections for Norway 2018-2050."
- Taxation on gas and diesel vehicles turns into incentives for electric vehicles, whether powered via batteries or fuel cells.
- Five years prior, electric vehicle sales were 5.5 percent

### **Electric Vehicles in Germany Archives- Charged EVs- Charged EVs**

URL: <https://chargedevs.com/tag/electric-vehicles-in-germany/>

Publisher: chargedevs.com

- Electric Vehicles in Germany Archives Charged EVs

### **Electric Vehicles in China: Emissions and Health Impacts**

URL: <https://pubs.acs.org/doi/10.1021/es202347q>

Publisher: pubs.acs.org

- Electric Vehicles in China

### **Electric vehicle industry in China- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_vehicle\\_industry\\_in\\_China](https://en.wikipedia.org/wiki/Electric_vehicle_industry_in_China)

Publisher: en.wikipedia.org

- Electric vehicle industry in China
- The government established a policy framework to accelerate electric-vehicle technology development, while encouraging market transformation that will support research and development, regulate the industry and encourage consumption.
- China is both the largest manufacturer and buyer of electric vehicles in the world, accounting for more than half of all electric cars made and sold in the world in 2018.

### **Sony begins testing its electric car concept on public roads**

URL: <https://www.cnbc.com/2021/01/13/sony-begins-testing-its-electric-car-concept-on-public-roads.html>

Publisher: cnbc.com

- The Japanese tech giant's foray into mobility comes at a time when established players in the sector are looking to ramp up their electric vehicle offerings and challenge Elon Musk's Tesla.
- Sony's foray into mobility comes at a time when established players in the sector are looking to ramp up their electric vehicle offerings and challenge Elon Musk's Tesla, which delivered 499,550 vehicles in 2020.
- Sony has started testing its Vision-S electric car on public roads, with the Japanese tech giant stating that the development of the prototype vehicle has "reached the next stage."

### **On-the-Fly Electric Vehicle Charging Demonstrated on Test Track in France**

URL: <https://www.govtech.com/fs/On-the-Fly-Electric-Vehicle-Charging-Demonstrated-on-Test-Track-in-France.html>

Publisher: govtech.com

- On-the-Fly Electric Vehicle Charging Demonstrated on Test Track in France
- But last week, San Diego's Qualcomm demonstrated its vision of dynamic electric vehicle charging on a test track in France, showcasing that progress is being made toward recharging while in motion.
- Using its Qualcomm Halo wireless electric vehicle charging system, the San Diego company said it charged Renault Kangoo electric vehicles on a 100-meter test track at highway speeds, delivering 20 kilowatts of power along a track.

### **The Coming NEV War? Implications of China's Advances in Electric Vehicles**

URL: <https://www.csis.org/analysis/coming-nev-war-implications-chinas-advances-electric-vehicles>

Publisher: csis.org

- Implications of China's Advances in Electric Vehicles

### **The US Is Falling Behind China in the Race for Electric Vehicles - The Diplomat**

URL: <https://thediplomat.com/2021/03/the-us-is-falling-behind-china-in-the-race-for-electric-vehicles/>

Publisher: thediplomat.com

- The US Is Falling Behind China in the Race for Electric Vehicles-- The Diplomat
- While China is spending billions to lengthen its lead as the global electric vehicle leader, the United States is spending an order of magnitude less.

### **German Automakers Are Charged Up and Ready to Take on Tesla- The New York Times**

URL: <https://www.nytimes.com/2020/12/31/automobiles/tesla-german-automakers.html>

Publisher: nytimes.com

- “ Our plan from the beginning was that our electric vehicle should be a real Porsche,” Stefan Weckbach, the Porsche executive in charge of the Taycan, told reporters this year.
- The pandemic has only increased the pressure on traditional carmakers to offer true electric vehicles.
- The EQS, which will cost more than \$ 100,000, will be the first vehicle built with Mercedes's so-called electric vehicle architecture, the same idea as Volkswagen's modular toolbox.

### **Good news for Tesla: Germany's electric-vehicle sales are booming**

URL: <https://www.businessinsider.com/electric-vehicle-sales-booming-germany-is-good-news-tesla-2020-12>

Publisher: businessinsider.com

- Germany's Electric-Vehicle Sales Are Booming
- Electric-vehicle sales in Germany are booming.
- President-elect Joe Biden has ambitious climate goals, with electric vehicles front-and-center.

### **Automakers embrace electric vehicles. But what about buyers?**

URL: <https://apnews.com/article/technology-us-news-electric-vehicles-united-states-6f24ab68fddb8fd4ef0c91c4dc769364>

Publisher: apnews.com

- Automakers embrace electric vehicles.
- What if American consumers reject electric vehicles for many years to come?
- They believe electric vehicles will dominate their industry in the years ahead.

### **South Korea to halve electric vehicle prices by 2025- Electrek**

URL: <https://electrek.co/2021/02/19/south-korea-to-halve-electric-vehicle-prices-by-2025/>

Publisher: electrek.co

- South Korea to halve electric vehicle prices by 2025
- In an effort to expedite the country's transition toward electric vehicles, the South Korean government is lowering the prices of electric vehicles by 2025.
- Lowering South Korean electric vehicle prices

### **ZSW: Electric cars on the rise: Global count climbs to 10.9 million**

URL: <https://www.automotiveworld.com/news-releases/zsw-electric-cars-on-the-rise-global-count-climbs-to-10-9-million/>

Publisher: automotiveworld.com

- According to the ZSW's data, three German automakers figure prominently among the top six brands of newly registered electric vehicles.
- The authors of this report were able to ascertain the number of previously and newly registered electric vehicles in countries worldwide.
- New electric vehicle registrations surged worldwide in 2020, rising 38 percent to a record high of 3.18 million and bucking the overall market trend of markedly declining sales, a slump that owes much to the coronavirus pandemic.

### **Update on electric vehicle adoption across U.S. cities**

URL: <https://theicct.org/publications/ev-update-us-cities-aug2020>

Publisher: theicct.org

- Update on electric vehicle adoption across U.S. cities

### **Electric vehicles in South Korea| LMC AUTOMOTIVE**

URL: <https://lmc-auto.com/news-and-insights/electric-vehicles-in-south-korea/>

Publisher: lmc-auto.com

- Electric vehicles in South Korea
- The future of pure electric vehicles in Korea

### **The U.S. electric vehicle industry- statistics& facts| Statista**

URL: <https://www.statista.com/topics/4421/the-us-electric-vehicle-industry/>

Publisher: statista.com

- The U.S. electric vehicle industry
- The electric vehicle market in the United States remained flat in 2020.
- The sedan is the best-selling electric vehicle on the U.S. market to date.

### **France Automotive High Performance Electric Vehicles Market- Trends, Growth and Forecast(2020- 2025)**

URL: <https://www.mordorintelligence.com/industry-reports/france-automotive-high-performance-electric-vehicles-market>

Publisher: mordorintelligence.com

- The France automotive high performance electric vehicle market is expected to register a CAGR of about 20% during the forecasted period
- The France automotive high performance electric vehicles market is highly consolidated, with only few players dominating the market.
- Growing awareness of vehicle emissions, lower operating and maintenance costs, along with increasing government initiatives to encourage the use of electric vehicles, will drive the growth of high-performance electric vehicles in France.

### **Plug-in electric vehicles in Norway- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Plug-in\\_electric\\_vehicles\\_in\\_Norway](https://en.wikipedia.org/wiki/Plug-in_electric_vehicles_in_Norway)

Publisher: en.wikipedia.org

- Plug-in electric vehicles in Norway
- The fleet of plug-in electric vehicles in Norway is the largest per capita in the world.
- According to a 2018 analysis by McKinsey& Company, Norway has already reached a critical mass of electric vehicles.

### **How Norway's government made electric cars irresistible- YouTube**

URL: <https://www.youtube.com/watch?v=YE6yEP48anM>

Publisher: youtube.com



- How Norway's government made electric cars irresistible

### **Electric cars rise to record 54% market share in Norway in 2020**

URL: [https://www.youtube.com/watch?v=czLoKq5\\_v0E](https://www.youtube.com/watch?v=czLoKq5_v0E)

Publisher: youtube.com

- Electric cars rise to record 54% market share in Norway in 2020

### **Driving an Electric Car in France | Europcar**

URL: <https://www.europcar.com/editorial/en/ready-steady-move/electric-vehicles-in-france-everything-you-need-to-know-898/>

Publisher: europcar.com

- Driving an Electric Car in France
- Plan to charge your electric car overnight or coincide it with meals so you don't have to wait.

### **Which country is leading in the electric car race? | carwow**

URL: <https://www.carwow.co.uk/blog/which-country-is-leading-in-the-electric-car-race>

Publisher: carwow.co.uk

- Which country is leading in the electric car race?

### **The Road That Gives Electric Vehicles A Charge: The Two-Way: NPR**

URL: <https://www.npr.org/sections/thetwo-way/2013/08/07/209855151/the-road-that-gives-electric-vehicles-a-charge>

Publisher: npr.org

- The Road That Gives Electric Vehicles A Charge
- An electric city bus in Gumi, South Korea, is part of a program using electromagnetic fields to charge batteries of electric vehicles.
- The charging road would allow electric vehicles to have much smaller batteries, according to researchers, and to be recharged whether they're parked or on the move.

### **Number of all-electric cars has doubled**

URL: <https://www.cbs.nl/en-gb/news/2019/19/number-of-all-electric-cars-has-doubled>

Publisher: cbs.nl

- Number of plug-in electric vehicles, 1 January

### **South Korea carmaker Kia's shares jump 14.5% on Apple EV tie-up report**

URL: <https://www.reuters.com/article/us-auto-tech-apple-kia/south-korea-carmaker-kias-shares-jump-14-5-on-apple-ev-tie-up-report-idUSKBN2A30HS>

Publisher: reuters.com

- South Korea's Kia Corp shares surged to their highest in over two decades on Wednesday after a local media report said the carmaker will sign a 4 trillion won deal with Apple Inc to build electric vehicles.

### **Where Electric Vehicles Reign Supreme | Best Countries| US News**

URL: <https://www.usnews.com/news/best-countries/articles/2018-03-22/where-electric-vehicles-reign-supreme>

Publisher: usnews.com

- Where Electric Vehicles Reign Supreme
- Although the Nordic nations trail the U.S. and China in total electric vehicle sales, in Norway alone electric vehicles made up 39 percent of new car sales in 2016.
- Together the incentives, along with initiatives to install large numbers of easy-to-access charging stations around each country, have helped make electric vehicles-- which can have a high sticker price largely due to the high costs of batteries-- cost competitive with gas

### **Electric Vehicles in France Archives- Charged EVs- Charged EVs**

URL: <https://chargedevs.com/tag/electric-vehicles-in-france/>

Publisher: chargedevs.com

- Electric Vehicles in France Archives Charged EVs

### **Estimated electric vehicles in use in selected countries| Statista**

URL: <https://www.statista.com/statistics/244292/number-of-electric-vehicles-by-country/>

Publisher: statista.com

- "Electric vehicles in Japan"

### **Why Japan is holding back as the world rushes toward electric cars- Baltimore Sun**

URL: <https://www.baltimoresun.com/news/nation-world/ct-aud-nw-japan-electric-cars-20210309-tkdghvqgdvhvdad7hhkg6tsfu4-story.html>

Publisher: baltimoresun.com

- While governments and automakers worldwide are staking out bold pledges to transition to electric-only vehicles, Japanese car companies and regulators are hedging their bets.
- The car accounted for nearly 65% of all Japanese battery-electric vehicles sold.
- It owns Daihatsu and in recent years has entered into partnerships for developing electric vehicles, including hybrids, with three smaller automakers a grouping that manufactures more than half of all Japanese cars.

### **Electric Cars Threaten the Heart of Germany's Economy- The New York Times**

URL: <https://www.nytimes.com/2019/12/31/business/electric-cars-germany-economy.html>

Publisher: nytimes.com

- The growing popularity of electric vehicles could force a shift in the balance of power in the global car business that would have long-term consequences for Germany.
- "There is a transition toward more electric vehicles that have far fewer components and are easier to manufacture," Bernhard Mattes, the president of the German Association of the Automotive Industry, said in an interview in Berlin.

## **Electric Vehicles - Analysis- IEA**

URL: <https://www.iea.org/reports/electric-vehicles>

Publisher: [iea.org](https://www.iea.org)

- Battery electric vehicles, accounting for roughly three-quarters of electric car sales globally, were particularly successful in many markets in 2019, with rises of 80% across Europe as a whole and 43% in Canada, and stable sales in China and the United States, leading to global annual sales growth of 14% in 2019.
- In 2017, the Electric Vehicles Initiative launched the EV30@30 campaign, which set a collective goal of a 30% market share for EVs by 2030 to help meet the Paris Agreement targets.

## **Business Japan lagging much of the world in shift to electric vehicles**

URL: <https://www.japantimes.co.jp/news/2021/01/17/business/japan-electric-vehicles/>

Publisher: [japantimes.co.jp](https://www.japantimes.co.jp)

- Electric vehicles are apparently regarded as not practical for consumers for a number of reasons, including a lack of charging stations, high prices and some functional challenges.
- The government has recently hammered out a plan to stop selling new gasoline-only vehicles by the mid-2030s, meaning that new vehicle sales will be limited to electric and fuel-cell vehicles as well as gas-electric hybrid models.
- Responding to the government's call, Nissan Motor Co. will launch the Ariya electric vehicle this summer.

## **Paris plans to banish all but electric cars by 2030 | Reuters**

URL: <https://www.reuters.com/article/us-france-paris-autos/paris-plans-to-banish-all-but-electric-cars-by-2030-idUSKBN1CH0SI>

Publisher: [reuters.com](https://www.reuters.com)

- The move marks an acceleration in plans to wean the country off gas-guzzlers and switch to electric vehicles in a city often obliged to impose temporary bans due to surges in particle pollution in the air.

## **16% of New Vehicle Sales= Fully Electric Vehicles in Netherlands**

URL: <https://cleantechnica.com/2020/09/07/16-of-new-vehicle-sales-fully-electric-vehicles-in-netherlands/>

Publisher: [cleantechnica.com](https://cleantechnica.com)

- # 1 most loved electric vehicle, solar energy, and battery news& analysis site in the world.
- Sales numbers are in for electric vehicles in Sweden, Spain, Denmark, and Ireland for the month of March, and thus for the first quarter...
- Norway, the world's leading nation in the clean transport transition, saw 84.9% plugin electric vehicle market share in March 2021, the second highest month...

## **The Netherlands reaches impressive 69% all-electric market share- Electrek**

URL: <https://electrek.co/2021/01/08/the-netherlands-69-all-electric-market-share/>

Publisher: [electrek.co](https://electrek.co)

- Global all-electric vehicle sales are at roughly 3% of total vehicle sales and only a handful of markets achieve two-digit EV market shares.
- The Netherlands is early to push for electric vehicle adoption and had some good numbers early on.
- In 2020, they kept things going and achieved record electric-vehicle adoption thanks to new EVs hitting the market.

### **South Korea to spend \$95 billion on green projects to boost economy**

URL: <https://www.reuters.com/article/us-southkorea-president-newdeal/south-korea-to-spend-95-billion-on-green-projects-to-boost-economy-idUSKCN24F0GA>

Publisher: reuters.com

- South Korea outlined a plan on Tuesday to spend 114.1 trillion won on a "New Deal" to create jobs and help the economy recover from the coronavirus fallout, anchored in part by "green" investment in electric vehicles and hydrogen cars.
- South Korea aims to have 1.13 million electric vehicles and 200,000 hydrogen cars on the roads by 2025, up from 91,000 and 5,000 each by the end of 2019, Moon said, while the government would add more charging stations for the vehicles.
- Hyundai Motor plans to launch a next-generation electric vehicle with a range of 450 kilometres for every charge, which will take 20 minutes or less, Chung said in a televised message.

### **Environmental Implication of Electric Vehicles in China**

URL: <https://pubs.acs.org/doi/10.1021/es100520c>

Publisher: pubs.acs.org

- Environmental Implication of Electric Vehicles in China
- Today, electric vehicles are being proposed in China as one of the potential options to address the dramatically increasing energy demand from on-road transport.
- Today in China one frequently proposed answer is electric vehicles, which could alleviate dependence on petroleum by using other energy sources such as coal and hydro.

### **WEVJ**

URL: <https://www.mdpi.com/2032-6653/9/2/17>

Publisher: mdpi.com

- Estimating the Charging Profile of Individual Charge Sessions of Electric Vehicles in The Netherlands
- Van den Hoed, R. Estimating the Charging Profile of Individual Charge Sessions of Electric Vehicles in The Netherlands.

### **South Korea's electric vehicle sales, exports up in Jan**

URL: <https://www.argusmedia.com/en/news/2189859-south-koreas-electric-vehicle-sales-exports-up-in-jan>

Publisher: argusmedia.com

- South Korea's electric vehicle sales, exports up in Jan

### **Plug-in electric vehicles in Germany- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Plug-in\\_electric\\_vehicles\\_in\\_Germany](https://en.wikipedia.org/wiki/Plug-in_electric_vehicles_in_Germany)

Publisher: en.wikipedia.org

- Plug-in electric vehicles in Germany
- The adoption of plug-in electric vehicles in Germany is actively supported by the German Federal Government.
- An incentive scheme to promote plug-in electric vehicle adoption was approved in April 2016 with a budget of \$ 1 billion.

### **Electric vehicle industry in the Netherlands- Statistics and Facts**

URL: <https://www.statista.com/topics/3434/electric-vehicle-industry-in-the-netherlands/>

Publisher: statista.com

- Electric vehicle industry in the Netherlands
- In the following 7 chapters, you will quickly find the- LCB- amount- Statistics- RCB- most important statistics relating to "Electric vehicle industry in the Netherlands".
- Electric vehicles by brand

### **The surge of electric vehicles in United States cities**

URL: <https://theicct.org/publications/surge-EVs-US-cities-2019>

Publisher: theicct.org

- The surge of electric vehicles in United States cities
- States, cities, and utilities continue to develop comprehensive electric vehicle policy packages.
- Markets like Atlanta, Austin, Columbus, Denver, New York, Portland, Seattle, Washington, DC, and those in California continue to construct and implement their own electric vehicle promotion policies to help reach their emission-reduction goals.

### **Nearly 200 thousand plug-in electric vehicles**

URL: <https://www.cbs.nl/en-gb/news/2020/16/nearly-200-thousand-plug-in-electric-vehicles>

Publisher: cbs.nl

- Nearly 200 thousand plug-in electric vehicles
- Plug-in electric vehicles are all passenger cars with an electric motor and a battery that can be recharged by plugging it into an external power source.
- They comprise fully electric vehicles with an electric motor as the sole source of propulsion and plug-in hybrids.

### **Toyota Ramps Up Hydrogen Fuel Cell Vehicles, As Japan Boosts Investment: NPR**

URL: <https://www.npr.org/2019/03/18/700877189/japan-is-betting-big-on-the-future-of-hydrogen-cars>

Publisher: npr.org

- Nearly half of them are in California, which has stringent vehicle emission regulations and tax credits that incentivize electric and fuel cell vehicles.

- Today there are far more battery electric vehicles on the road than hydrogen cars, with more than 5 million plug-in cars worldwide, according to José Pontes, an analyst at EV-Volume.com, a website that tracks the industry.
- The city of Tokyo plans to deploy 100 hydrogen fuel cell buses during the games, and it wants to have 40,000 fuel cell electric vehicles on the road, with a longer-term goal of 200,000 such vehicles in the next six years.

### **Germany hands out cash for electric cars as part of huge new stimulus splurge- CNN**

URL: <https://www.cnn.com/2020/06/04/business/germany-stimulus-electric-cars/index.html>

Publisher: cnn.com

- The European market for electric vehicles and plug-in hybrids grew by 72% in the first quarter of 2020, according to research firm Canalys.
- Chris Jones, chief analyst for the automotive sector at Canalys, said the "impressive" results for electric vehicles could have been even better if not for the disruption caused by the pandemic.

### **Which country has become a world leader in electric vehicles?**

URL: <https://www.siliconrepublic.com/machines/electric-vehicles-emissions-cars>

Publisher: siliconrepublic.com

- Which country has become a world leader in electric vehicles?

### **Electric vehicles in Norway and the potential for demand response**

URL: <https://ieeexplore.ieee.org/document/8541926>

Publisher: ieeexplore.ieee.org

- Electric vehicles in Norway and the potential for demand response

### **These countries want to ditch gas and diesel cars**

URL: <https://money.cnn.com/2017/07/26/autos/countries-that-are-banning-gas-cars-for-electric/index.html>

Publisher: money.cnn.com

- New Delhi said earlier this year that every vehicle sold in the country should be powered by electricity by 2030.

### **What France Can Teach The World About Selling EVs**

URL: <https://www.forbes.com/sites/oliverwyman/2019/06/24/what-france-can-teach-the-world-about-selling-evs/>

Publisher: forbes.com

- Yet, only two percent of cars sold in France in 2018 were either pure electric or plugin hybrids primarily because consumers appear to be basing their car-buying decisions on out-of-date information about both the performance of electric vehicles and the total cost to own and operate one.

### **Small but mighty: The Netherlands' leading role in electric vehicle adoption**

URL: <https://theicct.org/blog/staff/netherlands-ev-leader-feb2021>

Publisher: theicct.org

- The Netherlands' leading role in electric vehicle adoption
- The Netherlands is also one of the leading electric vehicle markets, both in Europe and globally.
- The Netherlands set an example by implementing strong incentive policies for electric vehicles, particularly BEVs, while setting disincentives in the form of significantly higher taxes for gasoline and particularly diesel cars.

### **S.Korea's Kia says looking at electric car projects with multiple firms after Apple report**

URL: <https://www.reuters.com/article/us-autos-tech-apple-kia-motors/s-koreas-kia-says-looking-at-electric-car-projects-with-multiple-firms-after-apple-report-idUSKBN29P051>

Publisher: reuters.com

- S.Korea's Kia says looking at electric car projects with multiple firms after Apple report

### **Electric Cars Hit Record In Norway, Making Up Nearly 60 Percent Of Sales In March: NPR**

URL: <https://www.npr.org/2019/04/02/709131281/electric-cars-hit-record-in-norway-making-up-nearly-60-of-sales-in-march>

Publisher: npr.org

- Electric vehicles are now the norm in Norway when it comes to new car sales, accounting for 58 percent of all car sales in March.
- In addition to the all-electric vehicles, 3,469 new hybrid cars were sold, reflecting a 10 percent drop from March 2018.
- The U.S. has n't embraced electric vehicles with the same enthusiasm as Norway.

### **The Countries With the Most Ev Owners | IE**

URL: <https://interestingengineering.com/the-countries-with-the-most-electric-vehicle-owners>

Publisher: interestingengineering.com

- Have you ever thought of which country has the most electric vehicles?

### **France to uphold ban on sale of fossil fuel cars by 2040 | Reuters**

URL: <https://www.reuters.com/article/us-france-autos/france-to-uphold-ban-on-sale-of-fossil-fuel-cars-by-2040-idUSKCN1TC1CU>

Publisher: reuters.com

- The mobility law will also facilitate the rollout of electric vehicle charging stations, notably by giving the residents of apartment buildings the right to ask for the installation of EV plugs in their parking lots.

### **Chinese EV Invasion! The Electric Cars To Look Out For In 2021**

URL: <https://www.forbes.com/sites/jamesmorris/2021/01/09/chinese-electric-vehicles-to-look-out-for-in-2021/>

Publisher: forbes.com

- which sells more EVs per hour than any other electric vehicle company in the world, and indeed more than BMW, VW and Renault put together.
- It has a joint venture with Daimler to produce a brand called Denza, and its electric buses are in use in Scandinavia, with electric garbage trucks on the streets in California.

### **Japan to Phase Out Gasoline-Powered Cars, Bucking Toyota Chief- WSJ**

URL: <https://www.wsj.com/articles/japan-to-phase-out-gasoline-powered-cars-bucking-toyota-chief-11608887640>

Publisher: wsj.com

- Earlier this month, Toyota President Akio Toyoda said that if Japan banned gasoline-powered cars and moved to electric vehicles too hastily, "the current business model of the car industry is going to collapse."

### **News Release: Research Determines Financial Benefit from Driving Electric Vehicles**

URL: <https://www.nrel.gov/news/press/2020/research-determines-financial-benefit-from-driving-electric-vehicles.html>

Publisher: nrel.gov

- Researchers at NREL calculated the savings in fuel costs from driving an electric vehicle vs. a conventional automobile.
- Previous studies assumed a singular value for the cost to charge an electric vehicle, but this new work provides an unprecedented state-level assessment of the cost of EV charging that considers when, where, and how a vehicle is charged, and considers thousands of electricity retail tariffs and real-world charging equipment and installation costs.
- The researchers examined vehicles of the same class and size and driven the same number of miles a year.

### **Can Protection Motivation Theory predict pro-environmental behavior? Explaining the adoption of electric vehicles in the Netherlands- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/S0959378014001150>

Publisher: sciencedirect.com

- Next, we present results of a questionnaire study among a large representative sample of Dutch drivers that showed that the Protection Motivation Theory is a relevant theory for modeling different indicators of full electric vehicle adoption.
- The most important barriers for electric vehicle adoption were perceived high monetary and non-monetary costs of electric vehicles, and benefits associated with the use of a conventional vehicle.
- Interestingly, we found that environmental risks are more prominent in predicting close adoption indicators

### **Why China is so far ahead of the U.S. when it comes to EV production**

URL: <https://www.cnbc.com/2021/03/24/why-china-is-so-far-ahead-of-the-us-when-it-comes-to-ev-production-.html>

Publisher: cnbc.com



- The global electric vehicle market is heating up, and China wants to dominate.
- It has invested at least \$60 billion to support the EV industry and it's pushing an ambitious plan to transition to all-electric or hybrid cars by 2035.

### **Japan may ban sale of new gasoline-powered vehicles in mid-2030s: media**

URL: <https://www.reuters.com/article/us-japan-autos-gasoline/japan-may-ban-sale-of-new-gasoline-powered-vehicles-in-mid-2030s-media-idUSKBN28D044>

Publisher: reuters.com

- Measures already in place in Japan mean Japanese automakers, particularly big ones such as Toyota Motor Corp with greater research and development resources, could use electric vehicle technology they have already developed at home.

### **The Role of Electric Vehicles in Decarbonizing China's Transportation Sector**

URL: <https://www.belfercenter.org/publication/role-electric-vehicles-decarbonizing-chinas-transportation-sector>

Publisher: belfercenter.org

- The Role of Electric Vehicles in Decarbonizing China's Transportation Sector
- Starting in 2012, China made an ambitious strong commitment to electric vehicles in the form of generous subsidies available in select provinces and cities.

### **Plug-in electric vehicles in France- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Plug-in\\_electric\\_vehicles\\_in\\_France](https://en.wikipedia.org/wiki/Plug-in_electric_vehicles_in_France)

Publisher: en.wikipedia.org

- Annual registration of light-duty plug-in electric vehicles in France by type of vehicle between 2010 and 2020.
- , there were 504,354 light-duty plug-in electric vehicles in use in France, consisting of 354,729 all-electric passenger cars and commercial vans, and 149,625 plug-in hybrids.
- Of these, over 50,000 were fully electric light commercial vehicles.

### **Tokyo one-ups rest of Japan with 2030 electric vehicle goal- Nikkei Asia**

URL: <https://asia.nikkei.com/Business/Automobiles/Tokyo-one-ups-rest-of-Japan-with-2030-electric-vehicle-goal>

Publisher: asia.nikkei.com

- Tokyo one-ups rest of Japan with 2030 electric vehicle goal
- Toyota Motor has said that all new vehicles will be equipped with electric vehicle functions by 2025.

### **How Norway Convinced Drivers to Switch to Electric Cars- EcoWatch**

URL: <https://www.ecowatch.com/norway-electric-cars-2645762341.html>

Publisher: ecowatch.com

- The Scandinavian nation has the highest share of new electric vehicle purchases in the world.

- And, as electric vehicles have become increasingly advanced in terms of speed, range and aesthetics, growing numbers of consumers have become motivated to cash in on the perks.
- Cost issues aside, American drivers, most of whom can't name an electric car make and model or describe how the vehicles work, are still largely paralyzed by two key worries

### **G.M. Wants to Make Electric Cars. China Dominates the Market.- The New York Times**

URL: <https://www.nytimes.com/2021/01/29/business/gm-china-electric-cars.html>

Publisher: nytimes.com

- Just three months ago, Chinese policymakers ordered that most vehicles sold in China must be electric by 2035.
- By this autumn, said Mr. Liu of the Cheung Kong Graduate School of Business, "you're going to see a flood of electric vehicles all over the place, going into the market."

### **Amid global push to reduce carbon emissions, Japan looks past battery-powered electric cars and envisions a 'hydrogen society'**

URL: <https://stateimpact.npr.org/pennsylvania/2019/03/14/for-electric-vehicles-japan-bets-on-hydrogen/>

Publisher: stateimpact.npr.org

- But in countries like Japan, where much of the population lives in dense urban areas, it's not easy to charge up a battery electric vehicle.
- And critics point out that while the hydrogen fuel cell car emits only water, if fossil fuels are used to produce the hydrogen fuel, then the vehicles still contribute to global warming, just as battery electric vehicles charged with energy produced by coal plants can't be considered completely carbon-free.

### **German electric-car sales triple in 2020**

URL: <https://europe.autonews.com/automakers/german-electric-car-sales-triple-2020>

Publisher: europe.autonews.com

- FRANKFURT-- Sales of full-electric vehicles in Germany increased three-fold to 194,163 units in 2020, the KBA motor vehicle authority said, citing the appeal of a more diversified product offering and of more reliable technology.
- Electrified vehicles with full or partial electric propulsion reached a market share of 22 percent in the fourth quarter of 2020, signaling that the German government is well on its way to reaching its goal of having 7 million to 10 million registered electric vehicles on German roads by 2030, Damm said.

### **McKinsey Electric Vehicle Index: Electric Vehicle Trends| McKinsey**

URL: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/mckinsey-electric-vehicle-index-europe-cushions-a-global-plunge-in-ev-sales>

Publisher: mckinsey.com

- Growth in the electric-vehicle market has slowed
- What is the Electric Vehicle Index?

- Since we created the EVI, several years ago, it has given organizations in the automotive, mobility, and energy sectors a detailed view of the electric-vehicle market, while highlighting potential future trends.

### **The Allure of Technology: How France and California Promoted Electric Vehicles to Reduce Urban Air Pollution by David Calef, Robert Goble:: SSRN**

URL: <https://www.ssrn.com/abstract=650041>

Publisher: ssrn.com

- : How France and California Promoted Electric Vehicles to Reduce Urban Air Pollution by David Calef, Robert Goble
- : How France and California Promoted Electric Vehicles to Reduce Urban Air Pollution
- : How France and California Promoted Electric Vehicles to Reduce Urban Air Pollution.

### **Toyota Boss Warns Electric Vehicle Shift May Cause Big Problems**

URL: <https://observer.com/2020/12/toyota-akio-toyoda-electric-vehicle-japan-transition/>

Publisher: observer.com

- But the company does n't have a fully electric vehicle for the mass market just yet.
- Toyota plans to invest more than\$ 13 billion in electrification over the next ten years as the company targets sales of 4.5 million hybrid cars and one million fully electric vehicles a year by 2030 or sooner.

### **China's electric car strategy's implications for U.S. energy security**

URL: <https://www.cnbc.com/2020/10/23/chinas-electric-car-strategys-implications-for-us-energy-security.html>

Publisher: cnbc.com

- The researchers expect CATL to increase its share of the ex-China market from 2% in 2019, to 14% in 2025, helped by`` hyperbolic" growth of electric vehicles in Europe.
- She noted that there is relatively more cross-border collaboration among manufacturers in the electric vehicle industry so far, and that the future of the industry going forward will rely more on making batteries cheap enough so that consumers will want to switch over to electric cars.
- Once a fringe item in a global energy market centered on oil, electric vehicles are part of a potential new ecosystem that includes self-driving cars and ride-hailing.

### **How China is driving the future of electric cars| PBS NewsHour**

URL: <https://www.pbs.org/newshour/show/how-china-is-driving-the-future-of-electric-cars>

Publisher: pbs.org

- And China's electric vehicle market is transforming not only Chinese automakers, but forcing international companies to ramp up production as well.
- With the support of the Pulitzer Center, we return to our series`` China: Power& Prosperity."
- Top-selling electric vehicle manufacturer BYD has turned the southern metropolis of Shenzhen into the world's first city to rely only on electric buses.

### **EEI Celebrates 1 Million Electric Vehicles on U.S. Roads**

URL:

<https://www.eei.org/resourcesandmedia/newsroom/Pages/Press%20Releases/EEI%20Celebrates%201%20Million%20Electric%20Vehicles%20on%20U-S-%20Roads.aspx>

Publisher: eei.org

- EEI Celebrates 1 Million Electric Vehicles on U.S. Roads

### **The electric vehicle revolution will come from China, not the US**

URL: <https://theconversation.com/the-electric-vehicle-revolution-will-come-from-china-not-the-us-116102>

Publisher: theconversation.com

- The electric vehicle revolution will come from China, not the US
- The electric vehicle revolution is coming, but it won't be driven by the U.S. Instead, China will be at the forefront.
- It has never been able to match the efficiency and quality of established automakers at making gas-powered vehicles, but electric vehicles are easier to build, giving Chinese firms a new opportunity to compete.

### **New electric vehicles by country – European Environment Agency**

URL: <https://www.eea.europa.eu/data-and-maps/daviz/new-electric-vehicles-by-country-1>

Publisher: eea.europa.eu

- New electric vehicles by country

### **Biden's push for electric vehicles puts US in international race to electrify- ABC News**

URL: <https://abcnews.go.com/Politics/bidens-push-electric-vehicles-puts-us-international-race/story?id=75835697>

Publisher: abcnews.go.com

- Biden's push for electric vehicles puts US in international race to electrify
- Since President Joe Biden jump-started the conversation around electric vehicles in the early days of his administration, American car companies have announced plans to follow suit in making electric vehicle adoption a priority in the United States.
- China is another country that has invested heavily in electric vehicles and charging infrastructure

### **User satisfaction with battery electric vehicles in South Korea- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/S1361920919308296>

Publisher: sciencedirect.com

- User satisfaction with battery electric vehicles in South Korea
- Battery electric vehicles have been promoted by the government over the last several years, driven by public concern over pollutant emissions from internal combustion engines.
- In the past decade, battery electric vehicles have drawn attention as a potential solution to environmental issues in the transportation sector, which is heavily dependent on fossil fuels.

### **Norway's EV revolution creeps northward- Bellona.org**

URL: <https://bellona.org/news/transport/electric-vehicles/2021-02-norways-ev-revolution-creeps-northward>

Publisher: bellona.org

- That's because the lithium-ion batteries forming the core of electric vehicles-- as well as cellphones and laptops-- are temperature sensitive.

### **Overview- Electric vehicles: Tax benefits& purchase incentives in the European Union**

URL: <https://www.acea.be/publications/article/overview-of-incentives-for-buying-electric-vehicles>

Publisher: acea.be

- Although fiscal measures to stimulate electric vehicle sales are available in nearly all EU member states now, this 2020 overview shows that the nature and the monetary value of these benefits and incentives still varies widely across Europe.
- 20 EU member states offer incentives to buyers of electric vehicles.

### **Do you know what the Netherlands' most popular EV is? Hint: It's not a Tesla**

URL: <https://thenextweb.com/shift/2020/08/17/do-you-know-what-the-netherlands-most-popular-ev-is-hint-its-not-a-tesla/>

Publisher: thenextweb.com

- that the Netherlands has the fastest growing electric vehicle charging network in the world.

### **The allure of technology: How France and California promoted electric and hybrid vehicles to reduce urban air pollution**

URL: <https://link.springer.com/article/10.1007/s11077-006-9022-7>

Publisher: link.springer.com

- : How France and California promoted electric and hybrid vehicles to reduce urban air pollution

### **Electric vehicles in Japan- statistic& facts| Statista**

URL: <https://www.statista.com/topics/5628/electric-vehicles-in-japan/>

Publisher: statista.com

- Electric vehicles in Japan
- The venture, established by Toyota, Mazda, and Denso, is an agreement among Japan's top automotive players to collaborate on affordable electric vehicle technologies to catch up with
- , a greater share of consumers in Japan would be willing to invest in the purchase of an electric vehicle, if the state offered additional incentives.

### **Developing countries pay environmental cost of electric car batteries**

URL: <https://unctad.org/news/developing-countries-pay-environmental-cost-electric-car-batteries>

Publisher: unctad.org

- "Most consumers are only aware of the 'clean' aspects of electric vehicles," says Pamela Coke-Hamilton, UNCTAD's director of international trade.

## **Monthly Funding Recap: India, e-Commerce And Electric Vehicles Raise Supergiant**

Funding In July – Crunchbase News

URL: <https://news.crunchbase.com/news/monthly-funding-recap-india-e-commerce-and-electric-vehicles-raise-supergiant-funding-in-july/>

Publisher: news.crunchbase.com

- Beijing-based electric vehicle company Li Auto raised \$1.1 billion, valuing the company at \$10 billion.

## **Knowledge of the new individual electric vehicles France 2018**

URL: <https://www.statista.com/statistics/1129191/knowledge-new-vehicles-electric-individual-france/>

Publisher: statista.com

- Knowledge of the new individual electric vehicles France 2018
- This statistic represents the distribution of French people who have already heard of new individual electric vehicles in 2018.
- Distribution of French people who have already heard of different individual electric vehicles in 2018

## **Will last-mile logistics recharge the electric-vehicle market? | JOC.com**

URL: [https://www.joc.com/trucking-logistics/trucking-equipment/will-last-mile-logistics-recharge-electric-vehicle-market\\_20170823.html](https://www.joc.com/trucking-logistics/trucking-equipment/will-last-mile-logistics-recharge-electric-vehicle-market_20170823.html)

Publisher: joc.com

- Will last-mile logistics recharge the electric-vehicle market?

## **Electric Vehicles: Sustainable Logistics In 2020 | Discover DHL**

URL: <https://www.dhl.com/discover/business/business-ethics/electric-cars>

Publisher: dhl.com

- We're in the middle of an electric vehicle revolution.
- One of the unsung heroes of the electric vehicle revolution, StreetScooter's affordable electric delivery vans are helping reduce carbon emissions in urban areas and are introducing viable battery electric logistics to companies across Europe and the world.
- We covered them in more detail back in November, and you can read the article here.

## **The UK's first forecourt dedicated to electric vehicles has opened**

URL: <https://www.cnbc.com/2020/12/07/the-uks-first-forecourt-dedicated-to-electric-vehicles-has-opened-.html>

Publisher: cnbc.com

- The facility is able to charge up to 36 electric vehicles at once, and uses rooftop solar panels.
- The U.K.'s first forecourt dedicated to charging electric vehicles opened for business on Monday, as part of a plan to establish more than 100 similar sites across the country.
- Sustainable energy firm Gridserve's forecourt is able to charge 36 electric vehicles at once.

### **U.S. Postal chief commits to 10% of new delivery fleet as electric vehicles**

URL: <https://www.reuters.com/article/us-usa-postal-service-vehicles/u-s-postal-chief-commits-to-10-of-new-delivery-fleet-as-electric-vehicles-idUSKBN2AO2LI>

Publisher: reuters.com

- U.S. Postal chief commits to 10% of new delivery fleet as electric vehicles
- U.S. Postmaster General Louis DeJoy told lawmakers on Wednesday the Postal Service was committed to having electric vehicles make up 10% of its next-generation fleet as part of its multibillion-dollar plan to retire its 30-year-old delivery vehicles.
- The USPS rejected a proposal from electric-vehicle maker Workhorse Group Inc, which said on Wednesday it had requested more information on the decision.

### **Electric Cars& Plugin Hybrids| Everything EV at MYEV.com**

URL: <https://www.myev.com/>

Publisher: myev.com

- With more positives than negatives to owning a battery-powered vehicle, this could be the year you go electric

### **Germany registers more than 20,000 pure electric cars in a month for first time**

URL: <https://www.cleanenergywire.org/news/germany-registers-more-20000-pure-electric-cars-month-first-time>

Publisher: cleanenergywire.org

- The number of new purely electric vehicles rose to 21,188 last month, an increase of 260 percent compared to a year ago, the country's Federal Motor Transport Authority KBA said in a press release.
- Battery electric vehicles now account for an 8 percent share of the car market.

### **The Dutch Revolution in Smart Charging of Electric Vehicles**

URL: <https://www.prnewswire.com/news-releases/the-dutch-revolution-in-smart-charging-of-electric-vehicles-597268791.html>

Publisher: prnewswire.com

- The Dutch Revolution in Smart Charging of Electric Vehicles
- A full electric vehicle charging at a Smart Charging station in the city of The Hague

### **Electric Vehicles**

URL: <https://www.irena.org/transport/Electric-Vehicles>

Publisher: irena.org

- As energy-consuming technologies, electric vehicles create new demand for electricity that can be supplied by renewables.

### **Electric car with solar and wind energy may change the environment and economy: A tool for utilizing the renewable energy resource- Liu- 2014- Earth's Future- Wiley Online Library**

URL: <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2013EF000206>

Publisher: agupubs.onlinelibrary.wiley.com



- We can imagine how good air could be if everyone used electric vehicles.
- This article discussed a future perspective of zero-emission electric vehicles derived by solar and wind energy.

### **How Countries are Encouraging the Ownership of Electric Vehicles**

URL: <https://globaledge.msu.edu/blog/post/55753/how-countries-are-encouraging-the-ownership-of-electric-vehicles->

Publisher: [globaledge.msu.edu](https://globaledge.msu.edu)

- : How Countries are Encouraging the Ownership of Electric Vehicles>> globalEDGE
- This article gives an overview of five countries encouraging the ownership of electric vehicles and how they are doing it.
- Norway is the world's largest electric vehicle market.

### **Assessment of Light-Duty Plug-In Electric Vehicles in the United States, 2010-2018(Technical Report)**

URL: <https://www.osti.gov/biblio/1506474-assessment-light-duty-plug-electric-vehicles-united-states>

Publisher: [osti.gov](https://www.osti.gov)

- Assessment of Light-Duty Plug-In Electric Vehicles in the United States, 2010-- 2018

### **BYD Auto discuss EVs, energy storage systems, solar farms and more**

URL: <https://www.idtechex.com/en/research-article/byd-auto-discuss-evs-energy-storage-systems-solar-farms-and-more/16066>

Publisher: [idtechex.com](https://www.idtechex.com)

- BYD Auto discuss EVs, energy storage systems, solar farms and more

### **Economics of Electric Vehicles Mean Oil's Days As A Transport Fuel Are Numbered**

URL: <https://www.forbes.com/sites/mikescott/2019/09/02/economics-of-electric-vehicles-mean-oils-days-as-a-transport-fuel-are-numbered/>

Publisher: [forbes.com](https://www.forbes.com)

- Our analysis indicates that for the same capital outlay today, new wind and solar-energy projects in tandem with battery electric vehicles will produce six to seven times more useful energy at the wheels than will oil at\$ 60 per barrel for gasoline powered light-duty vehicles, and three to four times more than will oil at\$ 60 per barrel for light-duty vehicles running on diesel," says Lewis.
- This means that" the oil industry has never before in its history faced the kind of threat that renewable electricity in tandem with electric vehicles poses to its business model.

### **Smart Charging Schedules for Highway Travel With Electric Vehicles**

URL: <https://ieeexplore.ieee.org/document/7462307>

Publisher: [ieeexplore.ieee.org](https://ieeexplore.ieee.org)

- Smart Charging Schedules for Highway Travel With Electric Vehicles



### **Electric Vehicles: Is Electric Last-Mile Delivery the Key to Sustainable eCommerce?**

URL: <https://theecobahn.com/logistics/electric-vehicles-are-electric-delivery-vehicles-really-more-sustainable/>

Publisher: theecobahn.com

- Some of the Big Players Are Starting to Lead the Way with Electric Vehicles
- While the transition from ICEs to electric vehicles is a move in the right direction, it is n't an overnight fix to the carbon problem.
- There are also CO2 emissions created during the manufacturing of electric vehicles-- particularly their lithium batteries-- which needs to be factored in when weighing up their overall environmental impact.

### **E-commerce surge spurs race for electric delivery vehicles**

URL: <https://www.autonews.com/manufacturing/e-commerce-surge-spurs-race-electric-delivery-vehicles>

Publisher: autonews.com

- E-commerce surge spurs race for electric delivery vehicles
- Delivery fleet operators face regulatory pressure in California and other states to buy electric vehicles, but a surge in package deliveries thanks to coronavirus lockdowns has major firms itching to switch to electric right now.
- Like other fleet operators, FedEx is not a fueling company-- conventional fleets send vehicles to gas stations to fill up-- so it lacked chargers for a large fleet.

### **Tesla's delivery boom heralds broader surge in EV market- Axios**

URL: <https://www.axios.com/electric-vehicle-sales-surge-7e5fc81a-5c6c-4e0a-8295-8a760297289f.html>

Publisher: axios.com

- The electric vehicle sales surge
- Over 181,000 fully electric vehicles were sold worldwide in February, which is up 138% compared to February 2020, per Morgan Stanley and data partner EV-Volumes.

### **Planning for State Transportation Revenue in a Coming Era of Electric Vehicles- National Governors Association**

URL: <https://www.nga.org/center/publications/planning-for-state-transportation-revenue-in-a-coming-era-of-electric-vehicles/>

Publisher: nga.org

- Planning for State Transportation Revenue in a Coming Era of Electric Vehicles
- This shift is occurring as the technology improves, consumer appeal increases and states and others support greater electric vehicle use stemming from benefits for

### **From Amazon To FedEx, The Delivery Truck Is Going Electric: NPR**

URL: <https://www.npr.org/2021/03/17/976152350/from-amazon-to-fedex-the-delivery-truck-is-going-electric>

Publisher: npr.org

- Pictured is a FedEx truck produced by BrightDrop, a General Motors company dedicated exclusively to electric delivery vehicles.
- UPS has placed an order for 10,000 electric delivery vehicles.
- One challenge, though, has been sourcing enough electric vehicles to meet the needs of a giant fleet.

### **Pandemic e-commerce surge spurs race for 'Tesla-like' electric delivery vans**

URL: <https://www.reuters.com/article/autos-electric-delivery/pandemic-e-commerce-surge-spurs-race-for-tesla-like-electric-delivery-vans-idUSKBN2601H6>

Publisher: reuters.com

- Demand for electric commercial vehicles is accelerating in part because battery range, long a concern for fleets, has improved dramatically, while battery costs have fallen.
- Chanje's vans are assembled in China by FDG Electric Vehicles Ltd, currently its main investor.

### **Chinese electric car start-ups Nio, Xpeng post strong March deliveries**

URL: <https://www.cnbc.com/2021/04/02/chinese-electric-car-start-ups-nio-xpeng-post-strong-march-deliveries.html>

Publisher: cnbc.com

- They also predict March was a good month for Tesla in China, and expect electric vehicle stocks will climb 30% to 40% higher this year.
- However, the start-ups' record quarterly deliveries still pale in comparison with Chinese electric vehicle and battery manufacturer BYD.

### **Yes, Electric Cars Are Cleaner, Even When The Power Comes From Coal**

URL: <https://www.forbes.com/sites/mikescott/2020/03/30/yes-electric-cars-are-cleaner-even-when-the-power-comes-from-coal/>

Publisher: forbes.com

- "The idea that electric vehicles or electric heat pumps could increase emissions is essentially a myth," said lead author Dr Florian Knobloch, from the University of Nijmegen.

### **Top 20 electric vehicle charging station companies**

URL: <https://roboticsandautomationnews.com/2019/05/01/top-20-electric-vehicle-charging-station-companies/22138/>

Publisher: roboticsandautomationnews.com

- Top 20 electric vehicle charging station companies
- has reported on numerous new developments in electric vehicle charging technology.
- ChargePoint-- previously called Coulomb Technologies-- claims to manage the world's largest network of electric vehicle charging points.

### **4 Emerging Ways to Pair Electric Vehicles and Renewable Energy**

URL: <https://www.wri.org/blog/2019/11/4-emerging-ways-pair-electric-vehicles-and-renewable-energy>

Publisher: wri.org

- 4 Emerging Ways to Pair Electric Vehicles and Renewable Energy
- The good news is that passenger vehicles in the U.S. are electrifying at an unprecedented rate.
- In 2018, one million electric vehicles were on the road, and recent studies project that by 2030, approximately 20 million EVs will be deployed across the country.

### **Setting the Record Straight About Renewable Energy**

URL: <https://www.wri.org/blog/2020/05/setting-record-straight-about-renewable-energy>

Publisher: wri.org

- Electric vehicles reduce emissions substantially.
- Electrification of passenger vehicles has quickened in recent years, with more than 1 million electric vehicles now operating in the United States.

### **Six power companies announce plan to add electric vehicle fast chargers to connect Atlantic Coast, Midwest, Gulf Coast, Central Plains destinations**

URL: <https://www.wafb.com/2021/03/02/six-power-companies-announce-plan-add-electric-vehicle-fast-chargers-connect-atlantic-coast-midwest-gulf-coast-central-plains-destinations/>

Publisher: wafb.com

- Six power companies announce plan to add electric vehicle fast chargers to connect Atlantic Coast, Midwest, Gulf Coast, Central Plains destinations
- Six power companies announce plan to add electric vehicle fast chargers to connect Atlantic Coast, Midwest, Gulf Coast and Central Plains destinations
- Six major utilities today announced a plan to ensure that electric vehicle drivers have access to a seamless network of charging stations connecting major highway systems from the Atlantic Coast through the Midwest and South, and into the Gulf Coast and Central Plains regions.

### **Electrifying the nation's last-mile fleet requires some heavy lifting- FreightWaves**

URL: <https://www.freightwaves.com/news/electrifying-the-nations-last-mile-fleet-requires-some-heavy-lifting>

Publisher: freightwaves.com

- With large players like Amazon adopting electric vehicles, pressure will start building on smaller fleets and owner-operators to adopt them as well, and that will require companies like GoFor Industries to provide support and all-in-one packages.
- "The big fleets that have used electric vehicles have seen significant benefits for driver retention, safety and health," Ian Gardner, founder and CEO of Royale EV, said in a January statement announcing the agreement.
- Amazon is pushing to have 10,000 Rivian electric vehicles on the road in 2022 and 100,000 by 2030.

### **CarParts.com Launches First Electric Vehicle& Hybrid Focused Shopping Hub**

URL: <https://www.businesswire.com/news/home/20210126005666/en/CarParts.com-Launches-First-Electric-Vehicle-Hybrid-Focused-Shopping-Hub>

Publisher: businesswire.com

- CarParts.com Launches First Electric Vehicle& Hybrid Focused Shopping Hub

### **Auto trends of 2020: Online buying, electric trucks and SUVs go off-road again- CNN**

URL: <https://www.cnn.com/2020/12/29/success/auto-trends-of-2020-electric-trucks-suvs/index.html>

Publisher: cnn.com

- -LRB- Electric vehicles cost less to maintain because they have fewer moving parts, do n't require oil changes and do n't wear out their brakes as quickly as gasoline or diesel vehicles.

### **The Future of Electric Vehicles in Fleet- Green Fleet- Automotive Fleet**

URL: <https://www.automotive-fleet.com/342585/the-future-of-electric-vehicles-in-fleet>

Publisher: automotive-fleet.com

- We're on the cusp of yet another revolution perhaps virtually all our transportation systems.
- They point out that there are merely 6 million electric vehicles on the road, compared to over a billion vehicles on the road, worldwide.
- The question is, how fast and how soon are electric vehicles going to be widely incorporated into fleets?

### **Electric vehicles performing last-mile delivery in B2C e-commerce: An economic and environmental assessment: International Journal of Sustainable Transportation: Vol 0, No 0**

URL: <https://www.tandfonline.com/doi/full/10.1080/15568318.2020.1847367>

Publisher: tandfonline.com

- In this context, electric vehicles could substitute internal combustion engine vehicles to mitigate their harmful impact on the environment.

### **Fair Energy Scheduling for Vehicle-to-Grid Networks Using Adaptive Dynamic Programming- PubMed**

URL: <https://pubmed.ncbi.nlm.nih.gov/26930694/>

Publisher: pubmed.ncbi.nlm.nih.gov

- Electric vehicles, which are powered by clean energy, are adopted increasingly year by year.
- It is predictable that the huge charge load caused by high EV penetration will have a considerable impact on the reliability of the smart grid.

### **Electric Vehicles and the Future of Transportation- Protect Our Winters**

URL: <https://protectourwinters.org/electric-vehicles-and-the-future-of-transportation/>

Publisher: protectourwinters.org

- Fortunately, electric vehicles, are increasingly popular options for people who want to save money on gas and decrease their reliance on fossil fuels, but still, need a car of their own.
- By 2025, new passenger cars and 'light' trucks will reduce average emissions to 163 grams per mile, which means that these vehicles will be getting at least 54.5 miles to the gallon.

### **The Road Ahead: Planning for Electric Vehicles by Managing Grid Interactions- National Governors Association**

URL: <https://www.nga.org/center/publications/planning-electric-vehicles-managing-grid-interactions/>

Publisher: nga.org

- Transportation electrification is growing across the country and Governors are taking steps to advance electric vehicle adoption and prepare for the increasing interactions between EVs and the electric grid.
- The transportation sector is rapidly evolving as electric vehicles, including both battery-electric vehicles and Plug-in Hybrid Electric Vehicles, grow in popularity, costs decline, and EV technology advances.

### **EV Life- Save thousands on electric cars. It's absurdly easy.**

URL: <https://evlife.co/>

Publisher: evlife.co

- It's absurdly easy.

### **GM considering regional Bolt EV stock, taking inspiration from e-commerce- Roadshow**

URL: <https://www.cnet.com/roadshow/news/gm-regional-stock-centers-bolt-ev-e-commerce/>

Publisher: cnet.com

- GM considering regional Bolt EV stock, taking inspiration from e-commerce
- It's also a way to push EV sales in areas that might not be huge markets yet, with less risk for dealers.

### **VW project to transition Greek "model island" to electric vehicles, renewable power**

URL: [https://www.greencarreports.com/news/1130195\\_vw-project-to-transition-greek-model-island-to-electric-vehicles-renewable-power](https://www.greencarreports.com/news/1130195_vw-project-to-transition-greek-model-island-to-electric-vehicles-renewable-power)

Publisher: greencarreports.com

- VW project to transition Greek "model island" to electric vehicles, renewable power
- The demonstration of electric vehicles with renewable energy for charging is another indication that VW is taking a holistic approach to emissions reduction.
- In total, 1,000 electric vehicles will replace about 1,500 internal-combustion vehicles on the island, according to VW.

### **WO2017171386A1- Electric vehicle equipped with wind power generator- Google Patents**

URL: <https://www.google.com/patents/WO2017171386A1?cl=en>

Publisher: google.com

- ; AUXILIARY DRIVES FOR VEHICLES
- ; ARRANGEMENTS IN CONNECTION WITH COOLING, AIR INTAKE, GAS EXHAUST OR FUEL SUPPLY OF PROPULSION UNITS IN VEHICLES B60K16/00-Arrangements in connection with power supply of propulsion units in vehicles from forces of nature, e.g. sun or wind B60K2016/003-Arrangements in connection with power supply of propulsion units in vehicles from forces of nature, e.g. sun or wind solar power driven B-PERFORMING OPERATIONS
- ; ELECTRIC SAFETY DEVICES FOR ELECTRICALLY-PROPELLED VEHICLES B60L50/00-Electric propulsion with power supplied within the vehicle B60L50/50-Electric propulsion with power supplied within the vehicle using propulsion power supplied by batteries or fuel cells B-PERFORMING OPERATIONS

### **Electric vehicles performing last-mile delivery in B2C e-commerce: An economic and environmental assessment: International Journal of Sustainable Transportation: Vol 0, No 0**

URL: <https://www.tandfonline.com/doi/abs/10.1080/15568318.2020.1847367>

Publisher: tandfonline.com

- In this context, electric vehicles could substitute internal combustion engine vehicles to mitigate their harmful impact on the environment.

### **Can you take a road trip in an electric vehicle?| Roadtrippers**

URL: <https://roadtrippers.com/magazine/can-you-take-a-road-trip-in-an-electric-vehicle/>

Publisher: roadtrippers.com

- It became clear that even though electric vehicles may be the way of the future, the future-including its necessary infrastructure-isn't here quite yet.
- Since everything in an electric vehicle runs off the battery, minimizing battery use can help extend the range.

### **Canoo targets last-mile delivery with its second electric vehicle - TechCrunch**

URL: <https://techcrunch.com/2020/12/17/canoo-targets-last-mile-delivery-with-its-second-electric-vehicle/>

Publisher: techcrunch.com

- Canoo targets last-mile delivery with its second electric vehicle-- TechCrunch
- Canoo, the Los Angeles-based electric vehicle startup that will make its debut later this month on the Nasdaq as a publicly traded company, revealed Thursday an all-electric multi-purpose delivery vehicle.
- The electric delivery vehicle, which includes a high roof height, storage lockers and a software as a service platform to manage fleets, is targeted at both small businesses and large last-mile delivery companies such as package delivery fleets, retailers, major corporations and logistics companies.

### **3 Top Stocks That Will Benefit From the Coming EV Boom**

URL: <https://www.fool.com/investing/2020/09/12/3-top-stocks-that-will-benefit-from-the-coming-ev/>

Publisher: fool.com

- Electric vehicle companies have been the darlings of Wall Street in 2020, with
- Did you know that GM has developed a new electric-vehicle battery technology, called Ultium, and that together with Korean battery giant
- Or that GM has developed a new and extremely flexible electric-vehicle architecture that will underpin a wide range of new EVs within a couple of years?

### **Amazon Creating a Fleet of 100,000 Electric Delivery Vehicles**

URL: <https://www.businessinsider.com/amazon-creating-fleet-of-electric-delivery-vehicles-rivian-2020-2>

Publisher: businessinsider.com

- The e-commerce giant has ordered 100,000 custom electric delivery vehicles from electric vehicle maker Rivian.
- In October, Amazon showed off the first of its planned custom electric delivery vehicles, with plans to have 10,000 on the road by 2022, and 100,000 by 2030.
- The electric vehicles will help Amazon reach its goal of being carbon neutral by 2040 for The Climate Pledge, and help Amazon continue to grow its logistics business.

### **Industries That Would Reap The Benefits Of The EV Revolution**

URL: <https://inc42.com/resources/industries-benefits-ev-revolution/>

Publisher: inc42.com

- The Electric Vehicles revolution is all set to sweep India.

### **Electric Vehicles Are the Next Dominant Class of Renewable Energy Buyers- RMI**

URL: <https://rmi.org/electric-vehicles-are-the-next-dominant-class-of-renewable-energy-buyers/>

Publisher: rmi.org

- Electric Vehicles Are the Next Dominant Class of Renewable Energy Buyers
- New research from The Climate Group's EV100 initiative, which is a growing collection of organizations with 100% EV fleet adoption targets that today represents over 80,000 vehicles, also confirms growing corporate interest in zero-emissions EV charging given how over 40% of EV100's current 67 members charge their EV fleets with 100% renewables.
- However, even if these companies do n't absorb these costs and pass them on to their customers, customers will still reduce their overall operational costs of their EV compared to ICE vehicles.



## US8513828B1- Wind turbine for electric car- Google Patents

URL: <https://patents.google.com/patent/US8513828B1/en>

Publisher: patents.google.com

- ; ELECTRIC SAFETY DEVICES FOR ELECTRICALLY-PROPELLED VEHICLES B60L50/00-Electric propulsion with power supplied within the vehicle B60L50/50-Electric propulsion with power supplied within the vehicle using propulsion power supplied by batteries or fuel cells B60L50/53-Electric propulsion with power supplied within the vehicle using propulsion power supplied by batteries or fuel cells in combination with an external power supply, e.g. from overhead contact lines Y-GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS
- Background Art As used here, the term "all-electric vehicle" refers to any motor vehicle that is powered exclusively by an electric drive train.
- ; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS-LSB- XRACs-RSB- AND DIGESTS Y02-TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE Y02T-CLIMATE CHANGE MITIGATION TECHNOLOGIES RELATED TO TRANSPORTATION Y02T10/00-Road transport of goods or passengers Y02T10/60-Other road transportation technologies with climate change mitigation effect Y02T10/7072-Electromobility specific charging systems or methods for batteries, ultracapacitors, supercapacitors or double-layer capacitors Abstract A system for harnessing wind energy to charge the electric storage battery of an all-electric motor vehicle, whether the vehicle is parked or in motion.

## Lisbon- Frevue

URL: <https://frevue.eu/cities/lisbon/>

Publisher: frevue.eu

- Lisbon has also developed a strategic plan for electric vehicles, defined models for Public Private Partnerships with car sharing companies, energy suppliers, parking companies and vehicle manufacturers.

## The role of electric utilities in the future of mobility| Deloitte Insights

URL: <https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/power-utilities-future-of-electric-vehicles.html>

Publisher: www2.deloitte.com

- But after years of hype, promotion, and government incentives, electric vehicles represent barely 1
- PEVs are "plug-in electric vehicles," including plug-in hybrid electric vehicles and battery electric vehicles.
- Ridesharing service Lyft, which is partnering with several automakers, aims to provide at least 1 billion rides per year using electric autonomous vehicles by

## How charging in buildings can power up the electric-vehicle industry

URL: <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/how-charging-in-buildings-can-power-up-the-electric-vehicle-industry>

Publisher: mckinsey.com



- How charging in buildings can power up the electric-vehicle industry
- In terms of electricity distribution, a vehicle fleet this size would drive additional annual power demand from 180 to 2
- The 'hidden costs' of electric-vehicle chargers

### **Electric Cars Are Not Necessarily Clean- Scientific American**

URL: <https://www.scientificamerican.com/article/electric-cars-are-not-necessarily-clean/>

Publisher: scientificamerican.com

- In California, which has one of the highest proportions of clean electricity in the country, the electric vehicle would produce only 100 grams per mile, half that of the hybrid.
- Minnesota could go for hybrids and California could go for electric vehicles.

### **The Last Mile: Electric Vehicle Design, the Supply Chain Ecosystem, and An Efficiency Boost for Last-Mile Logistics**

URL: <https://blogs.3ds.com/northamerica/the-last-mile-electric-vehicle-design-the-supply-chain-ecosystem-and-an-efficiency-boost-for-last-mile-logistics/>

Publisher: blogs.3ds.com

- When a good is transported through its supply chain, it can move through different modes of transport and passes through various nodes in the journey.
- Electric vehicles are ideal for last-mile logistics.
- They're quick, do n't use much energy, do use clean energy, are maneuverable, and travel distances that can make the delivery there and back without recharging.

### **Stochastic Coordination of Plug-In Electric Vehicles and Wind Turbines in Microgrid: A Model Predictive Control Approach**

URL: <https://ieeexplore.ieee.org/document/7289432>

Publisher: ieeexplore.ieee.org

- Stochastic Coordination of Plug-In Electric Vehicles and Wind Turbines in Microgrid

### **Fully charged: how electric vehicles transformed post- Museum for Communication Frankfurt, Museum Foundation Post and Telecommunication – Google Arts& Culture**

URL: <https://artsandculture.google.com/exhibit/fully-charged-how-electric-vehicles-transformed-post/EgJSqCsKftqVKA>

Publisher: artsandculture.google.com

- Electric vehicles were particularly convenient on short routes and with low payloads, so the postal service mainly used them for local and suburban transport.
- The Reichspost used these electric vehicles in 1910 to carry mailbags and express parcel deliveries.
- Electric parcel delivery vehicle from Maschinenfabrik Esslingen, EL 2500 E, Maschinenfabrik Esslingen, 1952, From the collection of

## **Electric Vehicle Benefits and...- Alternative Fuels Data Center**

URL: [https://afdc.energy.gov/fuels/electricity\\_benefits.html](https://afdc.energy.gov/fuels/electricity_benefits.html)

Publisher: [afdc.energy.gov](https://afdc.energy.gov)

- Hybrid electric vehicles typically use less fuel than similar conventional vehicles, because they employ electric-drive technologies to boost vehicle efficiency through regenerative braking-recapturing energy otherwise lost during braking.
- Plug-in hybrid electric vehicles and all-electric vehicles, also referred to as battery electric vehicles, are both capable of being powered solely by electricity, which is produced in the United States from natural gas, coal, nuclear energy, wind energy, hydropower, and solar energy.
- The federal Qualified Plug-In Electric-Drive Motor Vehicle Tax Credit is available for PHEV and EV purchases from manufacturers that have not yet met certain thresholds of vehicle sales.

## **China's EV Market: Why a Storm of Competition Is Coming**

URL: <https://knowledge.wharton.upenn.edu/article/chinas-ev-market/>

Publisher: [knowledge.wharton.upenn.edu](https://knowledge.wharton.upenn.edu)

- Wharton's John Paul MacDuffie and Harvard's Willy Shih discuss what's ahead for China's burgeoning electric vehicle market.
- China's booming electric vehicle industry is headed for some tough price competition followed by a shakeout, according to experts.
- "China has been willing to pull all of the policy levers available to them to jumpstart the electric vehicle market," MacDuffie said."

## **India: Electric vehicle market and stocks**

URL: <https://www.cnbc.com/2021/02/16/india-electric-vehicle-market-and-stocks.html>

Publisher: [cnbc.com](https://www.cnbc.com)

- India's move toward electric vehicles is expected to pick up, says analyst
- The move toward electric vehicles is "inevitable" globally as well as in India, where higher fuel prices can make owning cars that run on electricity comparatively more affordable, Siddhartha Khemka, head of research for retail, said Monday on CNBC's "Street Signs Asia."
- The bulk of the excitement in India's electric vehicle sector is in ancillary spaces where companies are working with global players, many of whom are looking to enter the lucrative market, according to Khemka.

## **Why electric cars are only as clean as their power supply**

URL: <https://www.theguardian.com/environment/2016/dec/08/electric-car-emissions-climate-change>

Publisher: [theguardian.com](https://www.theguardian.com)

- "How you incentivize them to charge could really matter," Zivin says about electric vehicle owners.
- It's not only the region that an electric vehicle plugs into that matters.

- Zivin concluded that a plug-in electric vehicle, such as the Nissan Leaf, always produces less carbon dioxide emissions than a hybrid electric

### **The Key to Electric Cars Is Batteries. One Chinese Firm Dominates the Industry.- WSJ**

URL: <https://www.wsj.com/articles/how-china-positioned-itself-to-dominate-the-future-of-electric-cars-11572804489>

Publisher: wsj.com

- The Key to Electric Cars Is Batteries.

### **Electric cars and wind energy: Two problems, one solution? A study to combine wind energy and electric cars in 2020 in The Netherlands- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/S0360544212005336>

Publisher: sciencedirect.com

- ; one of the initiatives for the transport sector is to have one million EVs in the same year.
- Buffering of excess electricity in EVs is beneficial for both.
- The Dutch 2020 electricity system can cope with 1 million EVs and 10 GW wind power.

### **BYD talks Electric Cars, Batteries, Solar Farms and more- YouTube**

URL: <https://www.youtube.com/watch?v=jL4WzCGgqks>

Publisher: youtube.com

- BYD talks Electric Cars, Batteries, Solar Farms and more

### **Electric Boats, Small Submarines and Autonomous Underwater Vehicles(AUV) 2014-2024: IDTechEx**

URL: <https://www.idtechex.com/en/research-report/electric-boats-small-submarines-and-autonomous-underwater-vehicles-auv-2014-2024/371>

Publisher: idtechex.com

- Marine electric vehicles are now a rapidly growing market due to new capability, affordability and legislation banning or restricting internal combustion engines.
- Marine electric vehicle market US\$ billion in 2013 by applicational sector\*
- Marine electric vehicles make new things possible and increasingly they have lower cost of ownership and are the only practicable way of meeting the newer, more onerous pollution regulations for inland waterways and harbours.

### **City to Double its Use of Electric Vehicles, Hits New Milestone**

URL: <https://www1.nyc.gov/site/dcas/news/19-005/city-double-its-use-electric-vehicles-hits-new-milestone>

Publisher: www1.nyc.gov

- When Mayor Bill de Blasio took office in 2014, the City had only 211 electric vehicles in its fleet.
- The City also announced at the Fleet Show that NYPD has received the first of its 200 hybrid police cars and unveiled the first electric vehicle` fast charger' that will be used by various City fleet vehicles.

- Earlier this year, Mayor de Blasio also signed an executive order that will eliminate at least 1,000 non-electric vehicles from the City vehicle fleet by June 2021, reduce the number of take-home vehicles for employees by at least 500, and replace 250 SUVs with electric plug-in sedans.

## **Electric vehicles: moving towards a sustainable mobility system – European Environment Agency**

**URL:** <https://www.eea.europa.eu/articles/electric-vehicles-moving-towards-a>

Publisher: eea.europa.eu

- We spoke to Magdalena Jóźwicka, project manager of an upcoming report on electric vehicles, about the environmental advantages and challenges of using electricity as an alternative to conventional fuels for vehicles.
- What types of electric vehicles are used around Europe nowadays?
- What is the European policy on electric vehicles?

## **US4900944A- Booster unit for diesel electric locomotive- Google Patents**

**URL:** <https://www.google.com/patents/US4900944>

Publisher: google.com

- ; ELECTRIC SAFETY DEVICES FOR ELECTRICALLY-PROPELLED VEHICLES B60L50/00-Electric propulsion with power supplied within the vehicle B60L50/10-Electric propulsion with power supplied within the vehicle using propulsion power supplied by engine-driven generators, e.g. generators driven by combustion engines B-PERFORMING OPERATIONS

## **Germany: Regulation to Allow Use of E-scooters on Public Roads Enacted**

**URL:** <https://www.loc.gov/law/foreign-news/article/germany-regulation-to-allow-use-of-e-scooters-on-public-roads-enacted/>

Publisher: loc.gov

- : Regulation to Allow Use of E-scooters on Public Roads Enacted
- -LRB- June 25, 2019-RRB- On June 14, 2019, a regulation was published in Germany's
- The Light Electric Vehicles Regulation defines light electric vehicles as`` motor vehicles with electric drive and a top speed of no less than 6 kmh and no more than 20 kmh that meet the following criteria:

## **Beyond Electric Vehicles in India: A Comprehensive Transport Plan**

**URL:** <https://www.rti.org/insights/electric-vehicles-india-transport-plan>

Publisher: rti.org

- India's Energy Solution for Transportation Must Go Beyond Electric Vehicles
- Electric vehicles are part of India's evolving plans on energy and transportation.
- India has the potential to become one of the largest electric vehicle markets in the world.

## **Why aren't there electric airplanes yet?**

**URL:** <https://theconversation.com/why-arent-there-electric-airplanes-yet-103955>

Publisher: theconversation.com

- Therefore, e-VTOL batteries must be able to discharge at rates roughly 10 times faster than the batteries in electric road vehicles.
- This is a crucial difference between electric road vehicles and electric aircraft

### **Electric cars | Transport& Environment**

URL: <https://www.transportenvironment.org/what-we-do/electric-cars>

Publisher: transportenvironment.org

- But analyses of full life cycle CO2 consistently show that on average battery electric vehicles emit less CO2 over their lifetime than diesel cars.
- The shift to electric vehicles will help European carmakers remain competitive and contribute to job creation across the continent.

### **Expanding electric-vehicle adoption despite EV market growing pains**

URL: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/expanding-electric-vehicle-adoption-despite-early-growing-pains>

Publisher: mckinsey.com

- Expanding electric-vehicle adoption despite EV market growing pains
- What is the Electric Vehicle Index?
- McKinsey's proprietary Electric Vehicle Index assesses the e-mobility performance of 15 key countries around the world.

### **Jaguar is Outfitting its Electric Cars with Spaceship-Like Noises**

URL: <https://www.thedrive.com/tech/24182/jaguar-is-outfitting-its-electric-cars-with-spaceship-like-noises>

Publisher: thedrive.com

- Jaguar revealed the noises that its newest lineup of electric vehicles will emit, and it sounds out of this world.
- "The absence of traditional engine noise from electric vehicles creates a problem for vulnerable pedestrians, such as the blind or visually impaired," said Iain Suffield, a technical specialist at Jaguar.
- "This is especially true at low speeds in town centres and car parks.

### **The Compelling Economic Benefits of Electric Vehicles**

URL: <https://www.powermag.com/blog/the-compelling-economic-benefits-of-electric-vehicles/>

Publisher: powermag.com

- Their adoption brings a variety of advantages to society and consumers-and foremost among these is EV economic benefits.
- But the benefits go far beyond the grid and the overall state economic picture.

### **Volvo XC40 Recharge pure electric| Volvo Cars**

URL: <https://www.volvocars.com/us/v/cars/xc40-electric>

Publisher: volvocars.com

- This is an electric vehicle.

## **GMC HUMMER EV Teams Up for Off-Road Extreme E Racing Series**

URL:

<https://media.gm.com/media/us/en/gmc/news.detail.html/content/Pages/news/us/en/2021/jan/0126-hummer.html>

Publisher: media.gm.com

- “Both GMC HUMMER EV and the Extreme E series are designed to be revolutionary-- to challenge perceptions of electric vehicles and to showcase their true capability.”
- The Extreme E five-race global championship will take place in some of the world's most remote locations and promotes the adoption of electric vehicles.
- About Extreme E Extreme E is a groundbreaking new motorsport series which aims to highlight the impact of climate change and human interference in some of the world's most remote locations and promotes the adoption of electric vehicles in the quest for a lower carbon future for the planet.

## **The EVs of the Seas- Cargo Ships, Sailboats, Yachts, and ferries**

URL: <https://blog.greenenergyconsumers.org/blog/the-evs-of-the-seas-cargo-ships-sailboats-yachts-and-ferries>

Publisher: blog.greenenergyconsumers.org

- We've written extensively on vehicle electrification, and our Drive Green program works to accelerate the transition to electric vehicles.
- Similar to electric vehicles, electric boats, ships, and ferries play a major role in decarbonizing our economy, and speeding the transition to a low carbon future.
- Electric vehicles are an excellent example of how amazing technological strides can be made swiftly.

## **Alternative Fuels | Hybrid, EV& Plug-In Hybrid Technology | Kia**

URL: <https://www.kia.com/us/en/ecodynamics>

Publisher: kia.com

- Everything you'd want to know about our electric vehicles can be found on our Electric Vehicle FAQs page.

## **Which Industries Could Benefit Most From Electric Vehicles?**

URL: [https://www.renewableenergymagazine.com/electric\\_hybrid\\_vehicles/which-industries-could-benefit-most-from-electric-20210113](https://www.renewableenergymagazine.com/electric_hybrid_vehicles/which-industries-could-benefit-most-from-electric-20210113)

Publisher: renewableenergymagazine.com

- Which Industries Could Benefit Most From Electric Vehicles?
- The merits and disadvantages of electric vehicles have been debated for years.
- To analyze this situation we've put together a list of some of the industries most likely to benefit from a full transition to electric vehicles, whether that is in terms of profit or productivity.

## **Electric vehicles - Tracking Transport 2020 - Analysis- IEA**

URL: <https://www.iea.org/reports/tracking-transport-2020/electric-vehicles>

Publisher: [iea.org](https://www.iea.org)

- Progress in decarbonising the power sector will accelerate the CO2 emissions reduction benefits of EVs.

## **The Next Electric Vehicles Could Be Planes. They Won't Take Off Soon.**

URL: <https://www.barrons.com/articles/the-next-electric-vehicles-could-be-planes-they-wont-take-off-soon-51601049012>

Publisher: [barrons.com](https://www.barrons.com)

- The Next Electric Vehicles Could Be Planes.
- Electric vehicles are taking over the automotive world.
- But can they also take over commercial aviation?

## **On-road charging of electric vehicles**

URL: <https://ieeexplore.ieee.org/document/6573511>

Publisher: [ieeexplore.ieee.org](https://ieeexplore.ieee.org)

- On-road charging of electric vehicles

## **IRC 30D New Qualified Plug-In Electric Drive Motor Vehicle Credit**

URL: <https://www.irs.gov/businesses/irc-30d-new-qualified-plug-in-electric-drive-motor-vehicle-credit>

Publisher: [irs.gov](https://www.irs.gov)

- For vehicles acquired after 12/31/2009, the credit is equal to \$2,500 plus, for a vehicle which draws propulsion energy from a battery with at least 5 kilowatt hours of capacity, \$417, plus an additional \$417 for each kilowatt hour of battery capacity in excess of 5 kilowatt hours.
- The credit begins to phase out for a manufacturer's vehicles when at least 200,000 qualifying vehicles manufactured by that manufacturer have been sold for use in the United States.
- The list of qualified vehicles provided below applies only to vehicles acquired after December 31, 2009.

## **UConn Researchers Advance Submarine Power**

URL: <https://niuvt.us/uconn-researchers-advance-submarine-power/>

Publisher: [niuvt.us](https://niuvt.us)

- The U.S. Navy is currently shifting from mechanical drive to electric drive in many propulsion systems for combat ships, just as plug-in electric vehicles run on electrical motors.

## **Electric Trains - CalMod**

URL: <https://calmod.org/electric-trains/>

Publisher: [calmod.org](https://calmod.org)

- The new electric trains will be state-of-the art vehicles with many enhanced amenities over the current diesel fleet.

### **Hot New Electric Cars That Are Coming Soon- Consumer Reports**

URL: <https://www.consumerreports.org/hybrids-evs/hot-new-electric-cars-are-coming-soon/>

Publisher: consumerreports.org

- A close relative of the Volkswagen ID.4, Audi's compact electric SUV will be built on the Volkswagen MEB modular electric vehicle platform.
- Audi's new flagship, the E-Tron GT, shares the electric vehicle architecture that underpins the Porsche Taycan, an EV that also falls under the aegis of Volkswagen Group, one of the world's largest automakers.
- BMW calls its stylish new i4 electric vehicle a "four-door coupe."

### **A Comparison of Electric Vehicle Power Systems to Predict Architectures, Voltage Levels, Power Requirements, and Load Characteristics of the Future All-Electric Aircraft**

URL: <http://ieeexplore.ieee.org/document/8450240/>

Publisher: ieeexplore.ieee.org

- A Comparison of Electric Vehicle Power Systems to Predict Architectures, Voltage Levels, Power Requirements, and Load Characteristics of the Future All-Electric Aircraft

### **TRANSPORTATION CODE CHAPTER 551. OPERATION OF BICYCLES AND MOPEDS, GOLF CARTS, AND OTHER LOW-POWERED VEHICLES**

URL: <https://statutes.capitol.texas.gov/Docs/TN/htm/TN.551.htm>

Publisher: statutes.capitol.texas.gov

- -LRB- a-RRB- In this section, "bicycle" means a nonmotorized vehicle propelled by human power.

### **A New AMC Off-Road Electric Car?**

URL: <https://cleantechnica.com/2021/02/17/a-new-amc-off-road-electric-car/>

Publisher: cleantechnica.com

- "More importantly, it represents Alpha's commitment to move humanity with innovations in electric vehicle modularity, customization flexibility, and practicality."
- It's very refreshing to see a new electric vehicle that is n't a boring, generic crossover.
- # 1 most loved electric vehicle, solar energy, and battery news& analysis site in the world.

### **Electric Aircraft Start-Up Accuses Rival of Stealing Its Secrets- The New York Times**

URL: <https://www.nytimes.com/2021/04/06/business/wisk-archer-lawsuit.html>

Publisher: nytimes.com

- The niche market for electric vehicles and planes has become frenzied in recent months as so-called blank check companies, which have little more than a stock market listing and a pot of cash, have snapped up fledgling businesses with little or no revenue, let alone profits.



### **Electric vehicle on-road dynamic charging system with wireless power transfer technology**

URL: <https://ieeexplore.ieee.org/document/6556258>

Publisher: [ieeexplore.ieee.org](https://ieeexplore.ieee.org)

- Electric vehicle on-road dynamic charging system with wireless power transfer technology

### **Bird- Enjoy the Ride**

URL: <https://www.bird.co/>

Publisher: [bird.co](https://www.bird.co/)

- An electric vehicle that's second to none.

### **Use Google Maps features for your electric vehicle- Google Maps Help**

URL: <https://support.google.com/maps/answer/9773205?hl=en>

Publisher: [support.google.com](https://support.google.com/maps/answer/9773205?hl=en)

- Use Google Maps features for your electric vehicle
- You can get useful information for your electric vehicle on Google Maps.

### **IDTechEx Research: The Challenges Ahead for Electric Leisure Boating**

URL: <https://www.prnewswire.com/news-releases/idtechex-research-the-challenges-ahead-for-electric-leisure-boating-301051990.html>

Publisher: [prnewswire.com](https://www.prnewswire.com/news-releases/idtechex-research-the-challenges-ahead-for-electric-leisure-boating-301051990.html)

- As a result, growth has been steady, but also slow and is not taking off in the same way as other electric vehicle markets like passenger cars.
- This is common in the more niche electric vehicle categories, which are often overlooked by policymakers in favour of cars and commercial vehicles.
- This report also forms a part of the broader electric vehicle and energy storage research at IDTechEx, where we track adoption of electric vehicles, battery trends and demand across more than 100 different mobility sectors, summarised in one master report, "Electric Vehicles 2020-2030: 2nd Edition".

### **Electrifying Cars, Buses, and Trains**

URL: <https://blog.greenenergyconsumers.org/blog/electrifying-cars-buses-and-trains>

Publisher: [blog.greenenergyconsumers.org](https://blog.greenenergyconsumers.org/blog/electrifying-cars-buses-and-trains)

- Massachusetts and Rhode Island have ambitious adoption goals for electric vehicles

### **Comparison of Traction Controllers for Electric Vehicles With On-Board Drivetrains**

URL: <https://ieeexplore.ieee.org/document/7847428>

Publisher: [ieeexplore.ieee.org](https://ieeexplore.ieee.org/document/7847428)

- Comparison of Traction Controllers for Electric Vehicles With On-Board Drivetrains

### **Maps and Data- Alternative Fuels Data Center**

URL: <https://afdc.energy.gov/data/search?q=electricity>

Publisher: [afdc.energy.gov](https://afdc.energy.gov/data/search?q=electricity)

- U.S. light-duty electric vehicle population as of December 2018 Last update August 2020
- : California had approximately 256,800 electric vehicle registrations in 2018.

- Provides driving range and efficiency factors of on-road electric vehicles in the United States in 2017, based on vehicle registration data Last update January 2020

### **Electric Bikes& Scooters, Electric Scooty- Prices, Images, and Reviews- BikeWale**

URL: <https://www.bikewale.com/electric-bikes-and-scooters/>

Publisher: bikewale.com

- This allows us to provide relevant content for you.
- View the complete list of model with information regarding price, images, colours, reviews, driving range, charging time and other specifications and features and much more for each of these bikes so that you get to choose the best electric bike or scooty of your choice.
- Well, we know that fuel type is one of the most crucial things while buying a two wheeler and with so many options available out there, it gets really difficult to find a good option which suits your requirement.

### **§ 46.2-908.1. Electric personal assistive mobility devices, electrically powered toy vehicles, electric power-assisted bicycles, and motorized skateboards or scooters**

URL: <https://law.lis.virginia.gov/vacode/title46.2/chapter8/section46.2-908.1/>

Publisher: law.lis.virginia.gov

- Electric personal assistive mobility devices, electrically powered toy vehicles, electric power-assisted bicycles, and motorized skateboards or scooters
- Electric personal assistive mobility devices, electrically powered toy vehicles, electric power-assisted bicycles, and motorized skateboards or scooters.
- Operation of electric personal assistive mobility devices, motorized skateboards or scooters, electrically powered toy vehicles, bicycles, and electric power-assisted bicycles is prohibited on any Interstate Highway System component except as provided by the section.

### **HOME: Z Electric Vehicle- Electric Scooter Manufacturer and Retailer**

URL: <https://www.zelectricvehicle.com/>

Publisher: zelectricvehicle.com

- : Z Electric Vehicle

### **Elon Musk| Biography& Facts| Britannica**

URL: <https://www.britannica.com/biography/Elon-Musk>

Publisher: britannica.com

- Unlike most previous electric vehicles, which Musk thought were stodgy and uninteresting, it was a sports car that could go from 0 to 60 miles per hour in less than four seconds.

### **8 Reasons Electric Trucks will be better at off-roading- DNV GL Blog- Energy in Transition**

URL: <https://blogs.dnvgl.com/energy/8-reasons-electric-trucks-will-be-better-at-off-roading>

Publisher: blogs.dnvgl.com

- In 2013, I published a blog about electric vehicles from the motorhead perspective.
- Electric vehicle manufacturers and custom tuners alike have been implementing four-wheel-drive and all-wheel-drive via multiple motors placed at each axel or each wheel.

- Since electric vehicles do n't require most of the components of their internal combustion counterparts, there is a lot less need for that protection.

### **Electric Aircraft- CitiGPS**

URL: <https://www.citivelocity.com/citigps/electric-aircraft/>

Publisher: citivelocity.com

- Public perception and safety is also a headwind as running out of charge in an electric vehicle on the highway is a lot different from running out of charge in an electric aircraft at 10,000 feet.

### **Battery Breakthrough Gives Boost to Electric Flight and Long-Range EVs**

URL: <https://newscenter.lbl.gov/2020/07/20/battery-electric-planes-cars/>

Publisher: newscenter.lbl.gov

- that can power electric vehicles for hundreds of miles on a single charge, scientists have endeavored to replace the graphite anodes currently used in EV batteries with lithium metal anodes.

### **Audi e-tron® Electric Cars| Audi USA| Audi USA**

URL: <https://www.audiusa.com/us/web/en/innovation/e-tron.html>

Publisher: audiusa.com

- We take electric vehicles and give them Audi DNA to turn the world on to a limitless EV future.
- Our vision for electric vehicles goes beyond the e-tron vehicles of today and into a world where artificial intelligence powers innovative mobility technologies, creating an entirely new driving experience in the process.

### **Motor vehicle- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Motor\\_vehicle](https://en.wikipedia.org/wiki/Motor_vehicle)

Publisher: en.wikipedia.org

- This term embraces trolley-buses, that is to say, vehicles connected to an electric conductor and not rail-borne.
- The stock of highway-legal plug-in electric or new energy vehicles in China totaled 2.21 million units by the end of September 2018, of which, 81% are all-electric vehicles.
- Regarding the electrified segment, the fleet of hybrid electric vehicles in the United States is the second largest in the world after Japan, with more than four million units sold through April 2016.

### **How Electric Spacecraft Could Fly NASA to Mars| Space**

URL: <https://www.space.com/21199-space-electric-propulsion-engines.html>

Publisher: space.com

- Electric vehicles are n't just popular on the ground
- -LSB- Electric Vehicles to Explore Deep Space-RSB-

### **Special Price For rc on road electric car brands and get free shipping- a419**

URL: <https://sites.google.com/a/ss.afsv.info/a419/ToysHobbies/rc-on-road-electric-car>

Publisher: sites.google.com

- SL200A RC Car 1:16 2.4 G RWD Remote Control Alloy Shell Electric Drift On-Road Vehicles RTR Model Vehicles Toys for Children
- SuLong RC Car Merc SL200 Series 1:24 2.4 G RWD Alloy Shell Electric Drift On-Road Controlled Machine Vehicles Children Kids Gifts

### **Hybrid electric vehicle- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Hybrid\\_electric\\_vehicle](https://en.wikipedia.org/wiki/Hybrid_electric_vehicle)

Publisher: en.wikipedia.org

- A hybrid electric vehicle is a type of hybrid vehicle that combines a conventional internal combustion engine system with an electric propulsion system.
- The presence of the electric powertrain is intended to achieve either better fuel economy than a conventional vehicle or better performance.
- Some varieties of HEV use an internal combustion engine to turn an electrical generator, which either recharges the vehicle's batteries or directly powers its electric drive motors

### **UConn Researchers Advance Submarine Power- UConn Today**

URL: <https://today.uconn.edu/2018/05/uconn-researchers-advance-submarine-power/>

Publisher: today.uconn.edu

- The U.S. Navy is currently shifting from mechanical drive to electric drive in many propulsion systems for combat ships, just as plug-in electric vehicles run on electrical motors.

### **Special Offers train electric rail car near me and get free shipping- a382**

URL: <https://sites.google.com/a/qq.afsv.info/a382/ToysHobbies/train-electric-rail-car>

Publisher: sites.google.com

- Special Offers train electric rail car near me and get free shipping
- City Electric Harmony High-speed Rail Transit Train Building Blocks RC Car Track Bricks Figures Toys for Children Gift
- w115 Free Shipping Electric Trucks Express Delivery Car Compatible BRIO Rail Various wooden tracks Kids Rail Car Toys

### **Electric& Folding Bikes Northwest**

URL: <https://www.electricvehiclesnw.com/>

Publisher: electricvehiclesnw.com

- We are in the process of launching our new website.
- We are still open for service and sales.

### **Ultra-low temperature batteries could one day power EVs and spacecraft by UC San Diego Jacobs School of Engineering**

URL: <https://soundcloud.com/user-26581533/ultra-low-temperature-batteries-could-one-day-power-evs-and-spacecraft>

Publisher: soundcloud.com

- Ultra-low temperature batteries could one day power EVs and spacecraft by UC San Diego Jacobs School of Engineering

### **National links: Electric vehicles can't fight climate change the way bicycles can - Greater Greater Washington**

URL: <https://gwwash.org/view/80899/national-links-electric-vehicles-cant-fight-climate-change-the-way-bicycles-can>

Publisher: gwwash.org

- : Electric vehicles can't fight climate change the way bicycles can-- Greater Greater Washington
- Electric vehicles are not enough to halt climate change, but bicycling has more promise.

### **Careers in Electric Vehicles: U.S. Bureau of Labor Statistics**

URL: [https://www.bls.gov/green/electric\\_vehicles/](https://www.bls.gov/green/electric_vehicles/)

Publisher: bls.gov

- Careers in Electric Vehicles
- Electric vehicles have been around in one form or another since the invention of the automobile.
- Throughout the 20th century, several models of electric vehicles were produced, but none became widely adopted by consumers.

### **Liebreich: Planes, Trains and Automobiles - the Electric Remake**

URL: <https://about.bnef.com/blog/planes-trains-automobiles-electric-remake/>

Publisher: about.bnef.com

- There may still be some who are convinced that battery electric vehicles will never catch on, or that the world's drivers will wait for hydrogen cars, but their numbers are dwindling.
- UPS is doubling the number of electric vehicles in its London fleet to 170.
- I have been saying for a few years that the real barrier for electric vehicles is not weight, but distance

### **Jeep's plan to go from gas-guzzling SUVs to 'green' off-road EVs**

URL: <https://www.cnbc.com/2021/03/24/jeeps-plan-to-go-from-gas-guzzling-suvs-to-green-off-road-evs.html>

Publisher: cnbc.com

- The brand currently only has three plug-in hybrid electric vehicles available outside the U.S. and a new PHEV of its flagship Wrangler SUV, a vehicle that will be sold globally, arriving in domestic showrooms throughout spring.
- Those plans are expected to include all-electric vehicles as well as hybrid and PHEVs that combine electrification with internal combustion engines.

## How Does the Electric Car Tax Credit Work?

URL: <https://cars.usnews.com/cars-trucks/how-does-the-electric-car-tax-credit-work>

Publisher: cars.usnews.com

- Electric vehicles and plug-in hybrids promise to save buyers a massive amount of money in fuel costs over their lifetimes.
- Battery-electric vehicles and PHEVs carry significantly higher sticker prices than similar cars powered with only an internal combustion engine.
- The rules state the federal electric tax credit only applies to road-going vehicles that are charged from external sources.

## Definition of Electric Vehicles Description ElectricVehiclesNews.com

URL: <https://electricvehiclesnews.com/Definition/description.htm>

Publisher: electricvehiclesnews.com

- Definition of Electric Vehicles Description ElectricVehiclesNews.com
- An electric vehicle, also referred to as an electric drive vehicle, is a vehicle which uses one or more electric motors for propulsion.
- Electric vehicles can include electric cars, electric trains, electric trucks, electric lorries, electric airplanes, electric boats, electric motorcycles and scooters, and electric spacecraft.

## What can we learn from France about EV adoption?

URL: <https://www.fleetcarma.com/can-learn-france-ev-adoption/>

Publisher: fleetcarma.com

- What can we learn from France about EV adoption?
- France embraces e-mobility by providing financial incentives to buy electric vehicles, investing in ever-advancing electric cars technology and developing EV infrastructure.

## Benefits| Glenn Research Center| NASA

URL: <https://www1.grc.nasa.gov/research-and-engineering/silicon-carbide-electronics-and-sensors/benefits/>

Publisher: www1.grc.nasa.gov

- Advanced Launch Vehicles
- Silicon carbide will enable more practical electric vehicles and other transportation systems.

## How the Electric Car Charging Network Is Expanding- Consumer Reports

URL: <https://www.consumerreports.org/hybrids-evs/electric-car-charging-network-is-expanding/>

Publisher: consumerreports.org

- Life may be getting easier for electric-vehicle owners looking to recharge.

## Alabama seeks to have first U.S. all-electric vehicle ferry| WorkBoat

URL: <https://www.workboat.com/shipbuilding/alabama-looks-first-u-s-electric-ferry>

Publisher: workboat.com

- Alabama seeks to have first U.S. all-electric vehicle ferry

## **VW's MEB Electric-Vehicle Components Will Power Solar Yachts in 2022**

URL: <https://www.caranddriver.com/news/a35374624/2022-vw-meb-electric-solar-yacht/>

Publisher: caranddriver.com

- VW's MEB Electric-Vehicle Components Will Power Solar Yachts in 2022
- Now, Silent-Yachts and VW will take the automaker's modular electric vehicle platform, called MEB, to the water as a way to reduce the costs of making zero-emission ships.
- Volkswagen says its expansion to yacht building partnerships is a way both to encourage excitement about electric vehicles in general and to prove that "driving pleasure, long ranges, quiet cruising, and clean mobility are also possible on the high seas."

## **The California Carpool Sticker: How Electric Cars Buy You Life In The Fast Lane**

URL: <https://evlife.co/blog/california-carpool-sticker-electric-car/>

Publisher: evlife.co

- Which electric vehicles qualify for carpool?
- New electric vehicles, plugin hybrids, and hydrogen fuel cell vehicles all qualify for carpool stickers.
- Browse any car on EV Life to see if your vehicle is eligible for the carpool sticker and up to \$10,000+ in EV tax credits, rebates, and other incentives.

## **Electric motorcycles and scooters- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_motorcycles\\_and\\_scooters](https://en.wikipedia.org/wiki/Electric_motorcycles_and_scooters)

Publisher: en.wikipedia.org

- Electric motorcycles and scooters are plug-in electric vehicles with two or three wheels.
- She became the first woman to develop and manufacture an electric vehicle in the US.

## **Sweden's new bonus-malus scheme: From rocky roads to rounded fells?**

URL: <https://theicct.org/blog/staff/swedens-fee-bate-system-20181008>

Publisher: theicct.org

- Sweden's electric vehicle uptake looks nothing like its fells.
- In a previous blog, we noted peaks in monthly EV market shares followed by sudden drops in sales-in one case from more than 5% to less than 1% in two consecutive months-induced by the rocky funding for the "super green car rebate".

## **The myth of electric cars: Why we also need to focus on buses and trains**

URL: <https://theconversation.com/the-myth-of-electric-cars-why-we-also-need-to-focus-on-buses-and-trains-147827>

Publisher: theconversation.com

- It almost seems like owning an electric vehicle is a silver bullet in the fight against climate change, but it is n't.



### **New Electric Locomotives and Bi-level Car Procurement**

URL: <https://www.septa.org/rebuilding/vehicles/locomotives.html>

Publisher: [septa.org](https://www.septa.org)

- On July 10, 2015, SEPTA gave Siemens the official Notice-to-Proceed on a contract valued up to \$154 million for new ACS-64 electric locomotives to replace the existing AEM-7s/ ALP-44 locomotives that have exceeded their useful life.
- By this autumn, all push-pull service will be provided by these new ACS-64 locomotives, and will provide our riders improved, reliable service.

### **best top submarine electric motor ideas and get free shipping- a774**

URL: <https://sites.google.com/a/qq.afsv.info/a774/ToysHobbies/submarine-electric-motor>

Publisher: [sites.google.com](https://sites.google.com)

- best top submarine electric motor ideas and get free shipping
- 2\_ The US Navy plans to acquire up to 120 AeroVironment Blackwing unmanned air vehicles for its submarines.
- 6\_ DRUG cartels are developing new advanced smuggling submarines that can carry \$86-million worth of cocaine undetected beneath the waves.

### **Philly passes moratorium on electric vehicle parking spots bill- Curbed Philly**

URL: <https://philly.curbed.com/2017/4/6/15207600/philadelphia-electric-car-charging-permits-killed>

Publisher: [philly.curbed.com](https://philly.curbed.com)

- Philly passes moratorium on electric vehicle parking spots bill
- Notwithstanding the provisions of this subsection, effective with the adoption of the Ordinance adding this subsection-LRB- d-RRB-, the Parking Authority shall designate no additional electric vehicle parking spaces, pending Council's review of the impact of these spaces on overall parking availability and enactment of further legislation.
- During such moratorium on new spaces, all existing Electric Vehicle Parking spaces shall be designated as exclusively reserved for Electric Vehicles only from 6:00 p.m. to 6:00 a.m., and non-electric vehicles shall be authorized to park in electric vehicle parking spaces for no more than two hours between the hours of 6:00 a.m. and 6:00 p.m.

### **Uber Fails to Pay Some Electric Car Bonuses, Citing Glitch**

URL: <https://www.bloombergquint.com/business/uber-fails-to-pay-some-electric-car-bonuses-citing-glitch>

Publisher: [bloombergquint.com](https://www.bloombergquint.com)

- Bruce Schaller, a former transportation official with New York City who has studied the impacts of the ride-hailing industry for years, said the turbulent foray into EVs is a sign that Uber and its competitors—who have promised investors they'd turn a profit this year—are unlikely to spend the kind of money needed to help large numbers of their drivers into pricier electric vehicles.
- To help meet that goal, the ride-hailing giant promised in September to pay drivers of electric vehicles in the U.S. and Canada an extra dollar per ride.



- Lyft went first in June, committing to transition all of the drivers on its network to electric vehicles by 2030.

### **How California Can Use Electric Vehicles to Keep the Lights On**

URL: <https://www.wri.org/blog/2019/11/how-california-can-use-electric-vehicles-keep-lights>

Publisher: wri.org

- How California Can Use Electric Vehicles to Keep the Lights On
- California leads the world in the fight against climate change and is largely responsible for the global proliferation of electric vehicles.
- More consequentially, their EVs became the first in California to provide vehicle-to-grid services, where the batteries in electric vehicles can send energy back to the grid, enabling cleaner, more efficient, more reliable power.

### **Electric Vehicle& Solar Incentives| Tesla**

URL: <https://www.tesla.com/support/incentives>

Publisher: tesla.com

- Several states and local utilities offer electric vehicle and solar incentives for customers, often taking the form of a rebate.
- Many states also offer non-cash incentives for electric vehicles, such as carpool lane access and free municipal parking.

### **New England aims to ensure electric vehicle rebates aren't just for wealthy**

URL: <https://energynews.us/2019/09/11/new-england-aims-to-ensure-electric-vehicle-rebates-arent-just-for-wealthy/>

Publisher: energynews.us

- New England aims to ensure electric vehicle rebates are n't just for wealthy
- Access and equity are becoming part of the conversation around electric vehicle incentives in the Northeast.
- Access and equity are emerging as priorities in the design of electric vehicle programs in the region.

### **New York DMV| New York Vehicle Inspection Program(NYVIP2)**

URL: <https://dmv.ny.gov/inspection/new-york-vehicle-inspection-program-nyvip>

Publisher: dmv.ny.gov

- electric-powered vehicles

### **Electric cars will challenge state power grids**

URL: [https://www.washingtonpost.com/science/electric-cars-will-challenge-state-power-grids/2020/01/24/136a2a30-32e6-11ea-a053-dc6d944ba776\\_story.html](https://www.washingtonpost.com/science/electric-cars-will-challenge-state-power-grids/2020/01/24/136a2a30-32e6-11ea-a053-dc6d944ba776_story.html)

Publisher: washingtonpost.com

- But as Washington and other states urge their residents to buy electric vehicles they also need to make sure the electric grid can handle it.

- If many people buy electric vehicles and mostly try to charge right when they get home from work the system could get overloaded or force utilities to deliver more electricity than they are capable of producing.
- The state projects that electric vehicles will consume 5.4 percent of the state's electricity, or 17,000 gigawatt hours, by 2030.

### **High-Occupancy Vehicle(HOV) Lane Access**

URL: <https://cleanvehiclerebate.org/eng/ev/incentives/hov-lane-access>

Publisher: [cleanvehiclerebate.org](https://cleanvehiclerebate.org)

- A coveted benefit of electric vehicle driving is single-driver access to most HOV lanes throughout California.

### **6 electric aviation companies to watch| Greenbiz**

URL: <https://www.greenbiz.com/article/6-electric-aviation-companies-watch>

Publisher: [greenbiz.com](https://www.greenbiz.com)

- As interest around all-electric regional air travel continues to grow, Eviation is reportedly in talks with several countries and organizations interested in purchasing Alice planes, and Bar-Yohay has predicted that supply, not demand, will be the challenge for Eviation.

# ADDITIONAL ARTICLES: MANUFACTURERS

*The full set of articles discovered by Gyan based on your research question can be found in this section.*

## **i3 All Electric Compact Sedan| BMW USA**

URL: <https://www.bmwusa.com/vehicles/bmwi/i3/sedan/overview.html>

Publisher: [bmwusa.com](https://www.bmwusa.com)

- Every BMW i vehicles comes equipped with an Occasional Use Cable, compatible with any standard wall socket.
- These compact electric vehicles are built to deliver new dimensions of performance, reliability, and fun.
- Low-impact materials for an impactful electric vehicle.

## **Here Are the BMW–and M–Electric Vehicles Coming by 2023**

URL: <https://www.automobilemag.com/news/bmw-and-m-evs-phevs-electric-vehicles-2023/>

Publisher: [automobilemag.com](https://www.automobilemag.com)

- Here Are the BMW-and M-Electric Vehicles Coming by 2023

## **How NIO Makes Money: Electric Vehicles and Other Services**

URL: <https://www.investopedia.com/how-nio-makes-money-5120181>

Publisher: [investopedia.com](https://www.investopedia.com)

- NIO primarily generates revenue through the sale of electric vehicles, including its ES8, ES6, and EC6 models.

## **STMicroelectronics to Supply Advanced Silicon-Carbide Power Electronics to Renault-Nissan-Mitsubishi for High-Speed Battery Charging in Next-Generation Electric Vehicles Paris Stock Exchange:STM**

URL: [http://www.globenewswire.com/news-](http://www.globenewswire.com/news-release/2019/09/09/1912776/0/en/STMicroelectronics-to-Supply-Advanced-Silicon-Carbide-Power-Electronics-to-Renault-Nissan-Mitsubishi-for-High-Speed-Battery-Charging-in-Next-Generation-Electric-Vehicles.html)

[release/2019/09/09/1912776/0/en/STMicroelectronics-to-Supply-Advanced-Silicon-Carbide-Power-Electronics-to-Renault-Nissan-Mitsubishi-for-High-Speed-Battery-Charging-in-Next-Generation-Electric-Vehicles.html](http://www.globenewswire.com/news-release/2019/09/09/1912776/0/en/STMicroelectronics-to-Supply-Advanced-Silicon-Carbide-Power-Electronics-to-Renault-Nissan-Mitsubishi-for-High-Speed-Battery-Charging-in-Next-Generation-Electric-Vehicles.html)

Publisher: [globenewswire.com](http://www.globenewswire.com)

- STMicroelectronics to Supply Advanced Silicon-Carbide Power Electronics to Renault-Nissan-Mitsubishi for High-Speed Battery Charging in Next-Generation Electric Vehicles Paris Stock Exchange
- STMicroelectronics to Supply Advanced Silicon-Carbide Power Electronics to Renault-Nissan-Mitsubishi for High-Speed Battery Charging in Next-Generation Electric Vehicles
- a global semiconductor leader serving customers across the spectrum of electronics applications, has been chosen to supply high-efficiency silicon-carbide power electronics by

Renault-Nissan-Mitsubishi for advanced on-board chargers in its upcoming electric vehicles.



### **General Motors plans to exclusively offer electric vehicles by 2035**

URL: <https://www.cnbc.com/2021/01/28/general-motors-plans-to-exclusively-offer-electric-vehicles-by-2035.html>

Publisher: cnbc.com

- General Motors plans to exclusively offer electric vehicles by 2035
- Electric vehicles, including battery-electric and fuel cell-powered vehicles, are currently a niche segment of the global automotive industry, estimated at less than 5% of sales by analysts.
- GM has already announced plans to shift three of its U.S. plants to produce electric vehicles.

### **Renault-Nissan Alliance and Dongfeng Motor Group Co., Ltd. forge partnership to co-develop electric vehicles in China**

URL: <https://usa.nissannews.com/en-US/releases/release-6ed2782caf284a7fb13085978dd7b254-renault-nissan-alliance-and-dongfeng-motor-group-co-ltd-forge-partnership-to-co-develop-electric-vehicles-in-china>

Publisher: usa.nissannews.com

- Renault-Nissan Alliance and Dongfeng Motor Group Co., Ltd. forge partnership to co-develop electric vehicles in China
- the Renault-Nissan Alliance and Dongfeng Motor Group Co., Ltd. announced a new joint venture to co-develop and sell electric vehicles in China.
- The electric vehicle will be produced at the Dongfeng plant of Shiyan which has a production and sales capacity of 120,000 vehicles a year.

### **Ford Europe Goes All-In on EVs on Road to Sustainable Profitability; Cologne Site Begins \$1 Billion Transformation**

URL: <https://media.ford.com/content/fordmedia/feu/en/news/2021/02/17/ford-europe-goes-all-in-on-evs-on-road-to-sustainable-profitabil.html>

Publisher: media.ford.com

- Ford's drive to a fully electric future spearheaded by a \$1 billion investment in a new electric vehicle manufacturing center in Cologne
- Similarly, Ford's entire commercial vehicle range will be zero-emissions capable, all-electric or plug-in hybrid, by 2024, with two-thirds of Ford's commercial vehicle sales expected to be all-electric or plug-in hybrid by 2030.
- COLOGNE, Germany, Feb. 17, 2021-- Ford today is taking a significant step forward in its European transformation with a commitment to go all-in on its electric passenger vehicles and to substantially grow and electrify its leading commercial vehicle business.

### **Apple and Hyundai-Kia pushing toward deal on Apple Car**

URL: <https://www.cnbc.com/2021/02/03/apple-and-hyundai-kia-driving-towards-deal-on-apple-car.html>

Publisher: cnbc.com

- After years of speculation that it will eventually get into the auto business with its own vehicle, Apple is close to finalizing a deal with Hyundai-Kia to manufacture an Apple-branded autonomous electric vehicle at the Kia assembly plant in West Point, Georgia according to multiple sources who briefed CNBC on the plan.

### **Biden's electric vehicle ambitions may send Tesla stock skyrocketing beyond\$1,300: analyst**

URL: <https://finance.yahoo.com/news/bidens-electric-vehicle-ambitions-may-send-tesla-stock-skyrocketing-to-1300-analyst-165650966.html>

Publisher: finance.yahoo.com

- Biden's electric vehicle ambitions may send Tesla stock skyrocketing beyond\$ 1,300

### **The race to the electric car is just getting started**

URL: <https://www.cnn.com/interactive/2019/08/business/electric-cars-audi-volkswagen-tesla/>

Publisher: cnn.com

- The company is spending\$ 30 billion over the next five years to make an electric or hybrid version of every vehicle in its lineup, and it plans to launch 70 new electric models by 2028.
- General Motors' EV1 appeared on American roads in 1996, the same year the auto industry successfully lobbied against a mandate from the California Air Resources Board to make more electric vehicles.
- It sold only 1,000 electric vehicles last year, an increase from zero in 2017.

### **Ford Introduces North America's Largest Electric Vehicle Charging Network, Helping Customers Confidently Switch to an All-Electric Lifestyle**

URL: <https://media.ford.com/content/fordmedia/fna/us/en/news/2019/10/17/ford-introduces-north-americas-largest-electric-vehicle-charting-network.html>

Publisher: media.ford.com

- Ford Introduces North America's Largest Electric Vehicle Charging Network, Helping Customers Confidently Switch to an All-Electric Lifestyle
- Ford is offering its all-electric vehicle customers North America's largest electric vehicle public charging network, with more than 12,000 places to charge, including fast charging, and more than 35,000 charge plugs-- more than any other automotive manufacturer, addressing a big concern for those switching to all-electric cars
- By providing easy access to more electric vehicle public charging stations in North America than any other automaker, Ford will make it easier for customers to find a place to charge when the company starts delivering new models next year.

### **Tesla Electric Vehicles: Reviews, Pricing, and Specs**

URL: <https://www.caranddriver.com/tesla>

Publisher: caranddriver.com

- : his electric vehicles have changed the world.

### **Plug-in Hybrid Electric Vehicles| BMW USA**

URL: <https://www.bmwusa.com/vehicles/plug-in-hybrid-electric.html>

Publisher: bmwusa.com

- Plug-in Hybrid Electric Vehicles

### **Ford and Porsche invest in electric vehicles for European market**

URL: <https://www.greenbiz.com/article/ford-and-porsche-invest-electric-vehicles-european-market>

Publisher: greenbiz.com

- Ford and Porsche invest in electric vehicles for European market
- Two of the most iconic names in automobile history last week laid out plans for a huge electric vehicle investment drive that will see almost \$ 50 billion channelled into the technology through the next five years.

### **2021 Hyundai Kona Electric Vehicle| Hyundai USA**

URL: <https://www.hyundaiusa.com/us/en/vehicles/kona-electric>

Publisher: hyundaiusa.com

- And with the Hyundai Drive app's Remote Test Drive feature you can schedule a test drive that brings the vehicle to you.
- 2019 Kona Electric is 2019 North American Utility Vehicle of the Year <sup>TM</sup>.

### **21 Best Electric Car Companies 2021| Built In**

URL: <https://builtin.com/transportation-technology/electric-car-companies>

Publisher: builtin.com

- Electric vehicles now include sports cars, freight trucks, bikes and a bevy of other products designed to make travel easier, quicker and more
- aims to combine sustainability with luxury, developing smart electric vehicles that display all the features of traditional luxury cars.
- manages a network of accessible electric vehicle charging stations across the country.

### **Top 10 electric vehicle manufacturers in the world**

URL: <https://www.energydigital.com/top10/top-10-electric-vehicle-manufacturers-world>

Publisher: energydigital.com

- Top 10 electric vehicle manufacturers in the world

### **Top Electric Car Stocks for Q2 2021**

URL: <https://www.investopedia.com/top-electric-car-stocks-for-q4-2020-5080568>

Publisher: investopedia.com

- While some traditional automakers also produce electric vehicles, this article focuses on companies considered to be largely pure-play electric vehicle manufacturers.
- The company designs and develops smart electric sport utility vehicles.
- Kandi Technologies Group is a China-based company primarily focused on the development and production of electric vehicle products, parts, and off-road vehicles.

### **Renault-Nissan-Mitsubishi Alliance- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Renault%E2%80%93Nissan%E2%80%93Mitsubishi\\_Alliance](https://en.wikipedia.org/wiki/Renault%E2%80%93Nissan%E2%80%93Mitsubishi_Alliance)

Publisher: en.wikipedia.org

- , the Alliance is one of the world's leading electric vehicle manufacturing groups, with global sales of over 800,000 electric vehicles since 2010.

### **Nissan electric vehicles- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Nissan\\_electric\\_vehicles](https://en.wikipedia.org/wiki/Nissan_electric_vehicles)

Publisher: en.wikipedia.org

- Nissan electric vehicles
- In 1946, Prince introduced an electric vehicle, called the Tama, and it was sold in limited numbers.
- By mid 2015, the Alliance ranked as the world's leading electric vehicle manufacturer with global sales of over 250,000 units delivered since December 2010.

### **Ford Makes\$29 Billion Commitment to EVs and Self-Driving Cars**

URL: <https://www.caranddriver.com/news/a35432253/ford-ev-commitment-announced/>

Publisher: caranddriver.com

- In the future, the majority of Ford vehicles will be electric, while traditional gasoline powertrains will be augmented with hybrid and plug-in hybrid powertrains.
- Ford is joining GM and others in heavily investing in electric and autonomous vehicles to compete with
- The electric-vehicle stake is an increase over the\$ 10 billion already pledged to help Ford compete in the race to bring electric vehicles into the mainstream.

### **General Electric to Build Massive Flotilla of Electric Cars**

URL: <https://www.greentechmedia.com/articles/read/general-electric-to-build-massive-flotilla-of-electric-cars>

Publisher: greentechmedia.com

- General Electric to Build Massive Flotilla of Electric Cars
- General Electric is giving them one.
- GE's global car fleet right now is 30,000 cars, so electrics will come to predominate.

### **Future EVs: Every Electric Vehicle Coming Soon**

URL: <https://www.caranddriver.com/news/g29994375/future-electric-cars-trucks/>

Publisher: caranddriver.com

- BMW i4
- BMW has already announced that the i4 will have 530 hp and an 80.0-kWh battery pack, with a range of up to 300 miles.
- The iX is slated to go on sale by early 2022.

### **Exclusive: Up Close With the 2022 Nissan Ariya EV Crossover**

URL: <https://www.automobilemag.com/news/2022-nissan-ariya-walkaround-up-close/>

Publisher: automobilemag.com

- We'll make no bones about it-the 2022 Nissan Ariya is one of the most significant Nissans of the past 25 years, or maybe even longer.

- As we knew before, the Ariya offers two levels of battery with either a single motor and front-wheel drive or the 'e-4ORCE' dual-motor all-wheel-drive system, which we sampled earlier this year in a prototype mule built from a Nissan Leaf.
- With the lion's share of mechanical gubbins left on the shelf, the 2022 Nissan Ariya makes strong use of the flat-floor design to maximize passenger comfort.

### **Warren Buffett-backed BYD sells more electric cars March vs Nio Xpeng**

URL: <https://www.cnbc.com/2021/04/07/warren-buffett-backed-byd-sells-more-electric-cars-march-vs-nio-xpeng.html>

Publisher: cnbc.com

- That's more than double Nio's deliveries in March of 7,257 cars.
- Electric car market leader Tesla said last week it delivered 184,800 cars worldwide in the first quarter.

### **New Hybrids, Electric Vehicles(EVs)& Plug-Ins**

URL: <https://www.ford.com/new-hybrids-evs/>

Publisher: ford.com

- 2020 Ford Explorer Hybrid RWD is projected to have an EPA-estimated range of at least 500 miles per tank.
- See an EV certified authorized Ford dealer for details.

### **NIO Inc.(NIO) Stock Price, News, Quote& History- Yahoo Finance**

URL: <https://finance.yahoo.com/quote/NIO/>

Publisher: finance.yahoo.com

- Trade prices are not sourced from all markets

### **2022 BMW i4: What We Know So Far**

URL: <https://www.caranddriver.com/bmw/i4>

Publisher: caranddriver.com

- BMW is no stranger to electrified models, and the 2022 i4 sedan looks to further bolster the brand's EV portfolio.
- BMW currently offers a competitive warranty that includes one of the better complimentary maintenance periods.
- BMW claims that the i4 will boast a driving range of 300 miles as well as a full complement of high-tech equipment when it goes on sale sometime in 2021.

### **NIO- Home**

URL: <https://www.nio.com/>

Publisher: nio.com

- NIO BaaS Launch Event
- NIO 100 kWh Battery



## 2021 Chevy Bolt EV: Affordable Electric Car| Chevrolet

URL: <https://www.chevrolet.com/electric/bolt-ev>

Publisher: chevrolet.com

- : Affordable Electric Car| Chevrolet
- Simple, convenient charging and less maintenance make Bolt EV easy to own.

## Renault Nissan Mitsubishi

URL: <https://global.nissannews.com/en/channels/renault-nissan-mitsubishi>

Publisher: global.nissannews.com

- Jean-Dominique Senard will act as Chairman of this new operating board of the Alliance, with the CEOs of Nissan, Renault, and Mitsubishi Motors also joining the board.
- Renault-Nissan-Mitsubishi, the world's leading automotive alliance, held its monthly Alliance Operating Board Meeting in Boulogne-Billancourt, France, attended by Jean-Dominique Senard, Chairman of the Alliance Operating Board and Renault, Makoto Uchida
- Renault-Nissan-Mitsubishi, the world's leading automotive alliance, today announced the production release of the Alliance Intelligent Cloud, a new platform that is enabling Renault, Nissan and Mitsubishi Motors to deliver connected services in vehicles so

## 2021 Ford® Mustang Mach-E SUV| All-Electric& Exhilarating

URL: <https://www.ford.com/suvs/mach-e/>

Publisher: ford.com

- 2021 Ford ® Mustang Mach-E SUV
- This model is home to one truly iconic design paired with luxurious materials and standard driver-assist technologies like Ford Co-Pilot360™ 2.0.

## ZERO EMISSION| Zero-Emissions| Electric Vehicle(EV)- NISSAN

URL: <https://www.nissan-global.com/EN/ZEROEMISSION/STORYBOARD/EV/>

Publisher: nissan-global.com

- -LRB- Later in 2010, certified as Mechanical Engineering Heritage by the Japan Society of Mechanical Engineers-RRB- Nissan enhanced its effort to develop EVs in the 1960's and the oil crisis gave Nissan a pressing mission to make a commercially-viable EV.
- In 1992, Nissan started research and development of lithium-ion battery and in 1996, "Prairie Joy EV", the world's first lithium-ion battery EV was released.
- Nissan LEAF was first introduced in Japan and North America and expanded to Europe and other markets globally.

## GM's Path to an All-Electric Future| General Motors

URL: <https://www.gm.com/electric-vehicles.html>

Publisher: gm.com

- Our joint venture with LG Energy Solution to develop and mass produce battery cells is expected to bring EVs closer to price-parity with gas-powered vehicles.
- There are already more than 25,000 public places across the US and Canada where our customers can charge their Chevrolet Bolt EV on Level 2 or Fast chargers.
- is a self-driving EV with modular design developed for a million miles of 24-hour service.

## **Tesla Q4 2020 Vehicle Production& Deliveries**

URL: <https://ir.tesla.com/press-release/tesla-q4-2020-vehicle-production-deliveries>

Publisher: ir.tesla.com

- Tesla Q4 2020 Vehicle Production& Deliveries
- Tesla vehicle deliveries represent only one measure of the company's financial performance and should not be relied on as an indicator of quarterly financial results, which depend on a variety of factors, including the cost of sales, foreign exchange movements and mix of directly leased vehicles.

## **12 Nissan cars that showed the way to an electric future**

URL: <https://global.nissanstories.com/en/releases/nissan-ev-history>

Publisher: global.nissanstories.com

- To celebrate the 10th anniversary of the Nissan LEAF, our first mass-produced, 100% electric car, we're taking a drive down memory lane to revisit 12 groundbreaking models from Nissan's history of electric vehicle development.
- Electric vehicles are n't a new idea.
- : an urban commuter vehicle built for two.

## **Renault-Nissan-Mitsubishi Alliance can drive down electric vehicle prices- GlobalData**

URL: <https://www.globaldata.com/renault-nissan-mitsubishi-alliance-can-drive-electric-vehicle-prices/>

Publisher: globaldata.com

- Renault-Nissan-Mitsubishi Alliance can drive down electric vehicle prices
- 25 Sep 2020 Renault-Nissan-Mitsubishi Alliance can drive down electric vehicle prices
- Prices of electric vehicles are significantly higher than conventional combustion engine powered vehicles.

## **2022 BMW i4 All-Electric Four-Door Coupe| BMW USA**

URL: <https://www.bmwusa.com/future-vehicles/i4-all-electric-vehicle.html>

Publisher: bmwusa.com

- The First-Ever BMW i4 combines the pinnacle of automotive engineering with the power and efficiency of an all-electric vehicle.
- The First-Ever BMW i4 sets new benchmarks for power and acceleration in the BMW electric vehicle lineup.

## **BMW aims to double fully-electric vehicle sales in 2021| Reuters**

URL: <https://www.reuters.com/article/us-autos-bmw-electric/bmw-aims-to-double-fully-electric-vehicle-sales-in-2021-idUSKBN29K1CI>

Publisher: reuters.com

- BMW aims to double fully-electric vehicle sales in 2021
- As well as emissions targets, a growing number of countries will ban the sale of new fossil-fuel vehicles starting in 2030, adding pressure on carmakers to develop electric vehicles.

## **Category:Electric vehicle manufacturers- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Category:Electric\\_vehicle\\_manufacturers](https://en.wikipedia.org/wiki/Category:Electric_vehicle_manufacturers)

Publisher: en.wikipedia.org

- : Electric vehicle manufacturers

## **Electric Vehicles& Charging**

URL: <https://portlandgeneral.com/energy-choices/electric-vehicles-charging/>

Publisher: portlandgeneral.com

- Switching to electric vehicles could make a huge dent in Oregon's emissions.
- We're trying to do everything we can to make that switch an easy one.
- We're not only helping to build an electric vehicle charging infrastructure, we're supporting electrification of school buses and public transportation across the state.

## **GM's EV plans begin to take shape with new lower-priced Chevy Bolts**

URL: <https://www.cnbc.com/2021/03/01/gms-ev-plans-begin-to-take-shape-with-new-lower-priced-chevy-bolts.html>

Publisher: cnbc.com

- DETROIT-- General Motors' pivot to become an all-electric vehicle company by 2035 is starting to take shape as the automaker prepares to release two Chevrolet Bolt models this summer ahead of a flagship\$ 113,000 GMC Hummer EV pickup later in the year.
- They are the beginning of what GM hopes will eventually be a full lineup of`affordable'' EVs as the company builds scale to reduce costs of its next-generation electric vehicles such as the Hummer with new battery systems and platforms.
- All three vehicles are part of the automaker's plan to launch 30 new or redesigned EVs through 2025 under a\$ 27 billion investment plan in electric and autonomous vehicles.

## **Chevrolet Brings All-Electric Vehicle Technology from the Moon to Earth**

URL:

<https://media.chevrolet.com/media/us/en/chevrolet/home.detail.html/content/Pages/news/us/en/2017/jul/0920-chevrolet-lunar.html>

Publisher: media.chevrolet.com

- Chevrolet Brings All-Electric Vehicle Technology from the Moon to Earth
- Almost 50 years after the project, Pavlics still remembers the innovation and commitment required to build an electric vehicle with unprecedented performance.
- Pavlics sees a connective thread between his work then and Chevrolet's contemporary electric vehicles.

## **Governor Mills and Efficiency Maine Announce Initiatives To Expand Electric Vehicle Use Across Maine**

URL: <https://www.maine.gov/governor/mills/news/governor-mills-and-efficiency-maine-announce-initiatives-expand-electric-vehicle-use-across>

Publisher: maine.gov

- Governor Mills and Efficiency Maine Announce Initiatives To Expand Electric Vehicle Use Across Maine
- Governor Janet Mills and Efficiency Maine Trust announced today a set of initiatives that will expand the use of electric vehicles across Maine in an effort to reduce the state's carbon footprint and reliance on fossil fuels.

- “The funds from the state's settlement with Volkswagen are to be used to benefit Maine's environment, and this electric vehicle initiative will do just that.”

### **Rivian Announces \$500 Million Investment from Ford; Partnership to Deliver All-New Ford Battery Electric Vehicle**

URL: <https://media.ford.com/content/fordmedia/fna/us/en/news/2019/04/24/rivian-500-million-investment-ford.html>

Publisher: media.ford.com

- ; Partnership to Deliver All-New Ford Battery Electric Vehicle
- Ford to build all-new battery electric vehicle using Rivian's flexible skateboard platform
- “Ford has a long-standing commitment to sustainability, with Bill Ford being one of the industry's earliest advocates, and we are excited to use our technology to get more electric vehicles on the road.”

### **Chevrolet Grows EV Lineup with 2022 Bolt EUV and Bolt EV**

URL:

<https://media.chevrolet.com/media/us/en/chevrolet/news.detail.html/content/Pages/news/us/en/2021/feb/0214-bolteuv-bolteuv.html>

Publisher: media.chevrolet.com

- Chevrolet Grows EV Lineup with 2022 Bolt EUV and Bolt EV
- Along with broadening the brand's electric vehicle lineup, the Bolt EUV will also be the first Chevrolet vehicle to offer Super Cruise
- DETROIT-- Today, Chevrolet expanded its electric vehicle portfolio with the introduction of the new, all-electric 2022 Bolt EUV, alongside the redesigned 2022 Bolt EV.

### **New Generation Electric Vehicles**

URL: <https://corporate.ford.com/articles/sustainability/new-generation-electric-vehicles.html>

Publisher: corporate.ford.com

- I was asked to lead product development for a brand-new team, Ford Team Edison, focusing exclusively on electrified vehicles for both Ford and Lincoln.
- There is n't a ton of historical data to look at for electric vehicles-- meaning you ca n't just look back at what happened before and use that as inspiration for what to do next.
- For example, on a recent trip to Shanghai, we looked at how extended families use their vehicles.

### **Apple's Electric-Vehicle Talks With Hyundai Break Down- WSJ**

URL: <https://www.wsj.com/articles/apples-talks-with-hyundai-break-down-11612750704>

Publisher: wsj.com

- Apple's Electric-Vehicle Talks With Hyundai Break Down
- The two auto makers have fielded multiple requests from other firms to jointly develop autonomous electric vehicles, though no initial steps have been determined, according to the regulatory filings.

## **Electric Vehicles & Charging**

URL: <https://portlandgeneral.com/energy-choices/electric-vehicles-charging/>

Publisher: portlandgeneral.com

- Switching to electric vehicles could make a huge dent in Oregon's emissions.
- We're trying to do everything we can to make that switch an easy one.
- We're not only helping to build an electric vehicle charging infrastructure, we're supporting electrification of school buses and public transportation across the state.

## **G.M. Announcement Shakes Up U.S. Automakers' Transition to Electric Cars- The New York Times**

URL: <https://www.nytimes.com/2021/01/29/business/general-motors-electric-cars.html>

Publisher: nytimes.com

- G.M. has already committed to spending \$ 27 billion to introduce 30 electric vehicle models by 2025, and is building a plant in Ohio to make batteries for those cars and trucks.
- "To be ready for 2035, I need to build battery plants, I need to do battery development, I need to develop electric vehicles," he said.
- And China's decision late last year to require that most vehicles sold there be electric by 2035 is also critical because G.M. sells more cars in that country through its joint ventures than in the United States.

## **Ford® All-Electric Vehicles| Say Goodbye to Gas**

URL: <https://www.ford.com/powertrains/battery-electric-vehicles/>

Publisher: ford.com

- New all-electric vehicles from Ford offer an efficient and exhilarating driving experience.
- Get to know your all-electric vehicle with these tips for fast and convenient charging.
- Electric vehicles have fewer moving parts, which could potentially lower scheduled maintenance costs.

## **GM unveils a new electric vehicle platform and battery in bid to take on Tesla- The Verge**

URL: <https://www.theverge.com/2020/3/4/21164513/gm-ev-platform-architecture-battery-ultium-tesla>

Publisher: theverge.com

- GM unveils a new electric vehicle platform and battery in bid to take on Tesla
- In addition to showing off some of its upcoming vehicles, GM revealed an all-new modular electric vehicle platform with an improved battery pack called Ultium.
- General Motors laid out its electric vehicle strategy on Wednesday, showcasing roughly a dozen products as part of a broader attempt to convey to investors how serious it is about embracing its electric future.

## **2021 Hyundai Ioniq Electric| EV Hatchback| Hyundai USA**

URL: <https://www.hyundaiusa.com/us/en/vehicles/ioniq-electric>

Publisher: hyundaiusa.com

- On participating dealership websites, you can purchase your new Hyundai quickly and easily.
- HCM services are only available at authorized Hyundai servicing dealers.
- Government incentives and benefits are not within Hyundai's control and are subject to change or expire without notice.

### **2022 Chevrolet Bolt EV: What We Know So Far**

URL: <https://www.caranddriver.com/chevrolet/bolt-ev>

Publisher: caranddriver.com

- That gives it a slight advantage over the excellent Hyundai Kona Electric, but it still falls far short of the Tesla Model 3.
- That matches the EPA rating for the previous model year, and it's competitive with other similarly priced EVs such as the Hyundai Kona Electric.
- Responses are less immediate at highway speeds, but the new electric Chevy should still make passing and merging on the highway a cinch.

### **2022 Hyundai Ioniq 5: What We Know So Far**

URL: <https://www.caranddriver.com/hyundai/ioniq-5>

Publisher: caranddriver.com

- The 2022 Hyundai Ioniq 5 is a new all-electric compact crossover with advanced technology, futuristic styling, and a versatile interior.
- While not as artsy as the cabin teased by the Hyundai 45 Concept, the Ioniq 5's interior boasts a tech-savvy space with a digitized dashboard and a heavy dose of eco-friendly materials.
- With 800 volts of operating voltage, the Ioniq 5 has the same type of advanced electrical architecture as the Audi e-tron GT and Porsche Taycan.

### **NIO (car company)- Wikipedia**

URL: [https://en.wikipedia.org/wiki/NIO\\_\(car\\_company\)](https://en.wikipedia.org/wiki/NIO_(car_company))

Publisher: en.wikipedia.org

- China
- It launched with the introduction of NIO's ES8 model.
- Several over the updates throughout 2018 and 2019 has enhanced NIO Pilot with features such as lane keeping, adaptive cruise control, lane departure warning, automatic emergency braking, highway pilot, traffic Jam pilot, auto lane change and more.

### **Hyundai Motor to replace battery systems in\$900 million electric car recall**

URL: <https://www.reuters.com/article/us-hyundai-motor-electric-recall/hyundai-motor-to-replace-battery-systems-in-900-million-electric-car-recall-idUSKBN2AO0JS>

Publisher: reuters.com

- Hyundai Motor to replace battery systems in\$ 900 million electric car recall
- LG Energy Solution, a division of LG Chem Ltd which manufactures the batteries, was quick to deflect criticism.

- It said in a statement that Hyundai misapplied LG's suggestions for fast-charging logic in the battery management system, adding the battery cell should not be seen as the direct cause of the fire risks.

### **2021 Nissan LEAF EV| Nissan USA**

URL: <https://www.nissanusa.com/vehicles/electric-cars/leaf.html>

Publisher: nissanusa.com

- Sleek lines, a unique V-Motion grille, and a distinctive "floating" roof design are just a few of the reasons why the Nissan LEAF stands apart on the road.
- The new Nissan LEAF comes with a \$250 charging credit for eligible customers in select markets.
- Even last year's LEAF is thrilling

### **Hyundai Ioniq 5 Launch- Has Hyundai taken Electric Cars to the next level?**

URL: [https://www.youtube.com/watch?v=Den\\_4COV1zk](https://www.youtube.com/watch?v=Den_4COV1zk)

Publisher: youtube.com

- Hyundai Ioniq 5 Launch

### **Exclusive: Chinese smartphone maker Xiaomi to make EVs using Great Wall's plant- sources**

URL: <https://www.reuters.com/article/us-xiaomi-electric-great-wall-motor-excl/exclusive-chinese-smartphone-maker-xiaomi-to-make-evs-using-great-walls-plant-sources-idUSKBN2BI05P>

Publisher: reuters.com

- China's Xiaomi Corp plans to make electric vehicles using Great Wall Motor Co Ltd's factory, said three people with direct knowledge of the matter, making it the latest tech firm to join the smart mobility race.
- Baoding-based Great Wall, China's biggest pickup truck maker, this year launched a standalone brand for electric and smart vehicles.

### **Governor Cuomo Announces "Make-Ready" Program for Electric Vehicles**

URL: <https://www.governor.ny.gov/news/governor-cuomo-announces-make-ready-program-electric-vehicles>

Publisher: governor.ny.gov

- Governor Andrew M. Cuomo today announced that the New York State Department of Public Service issued a report recommending the establishment of a statewide utility-supported "Make-Ready" Program to promote responsible electric vehicle charging station deployment.
- In his 2020 State of the State address Governor Cuomo underscored New York's commitment to further encourage electric vehicle, or EV, ownership.
- An EV charging infrastructure forecast would require electric utilities to identify locations suitable for electric vehicle supply equipment and infrastructure siting, and to proactively educate developers on synergistic cost-saving opportunities.

### **Chevy Electric Cars Lineup: Electric Vehicle, Plug In Hybrid**

URL: <https://www.chevrolet.com/electric>



Publisher: chevrolet.com

- The Manufacturer's Suggested Retail Price excludes destination freight charge, tax, title, license, dealer fees and optional equipment.
- The Manufacturer's Suggested Retail Price excludes destination freight charge, tax, title, license, dealer fees and optional equipment.

### **2021 Audi e-tron| The first purely electric SUV from Audi| Audi USA**

URL: <https://www.audiusa.com/us/web/en/models/e-tron/e-tron/2021/overview.html>

Publisher: audiusa.com

- Five years in the making, the e-tron ® represents a new era of the electric vehicle

### **Road to Clean Air- Electric Vehicle Report**

URL: <https://www.lung.org/clean-air/electric-vehicle-report>

Publisher: lung.org

- With nearly half of Americans living with unhealthy air, and climate change making it harder to protect public health today, `` The Road to Clean Air'' report highlights the potential for major public health and climate change benefits through a robust nationwide transition to electric vehicles.
- The report found that a shift to electric vehicles would result in significant air quality and climate benefits.
- In fact, when factoring in a cleaner energy future, the report found some pollutants dropped by 100% or more when compared with the `` Business As Usual'' scenario emissions.

### **A warning sound for electric cars- Easy Electric Life**

URL: <https://easyelectriclife.groupe.renault.com/en/outlook/technology/electric-vehicles-are-making-noise-warning-sound/>

Publisher: easyelectriclife.groupe.renault.com

- Outlook> Technology> Electric vehicles are making noise!
- Electric vehicles are making noise!
- From July 1st 2019, electric vehicles are required to make noise!

### **Electric car battery pack prices fell 89% in just 10 years- Roadshow**

URL: <https://www.cnet.com/roadshow/news/electric-car-battery-pack-prices-outlook/>

Publisher: cnet.com

- In real dollars and cents, the battery pack makes up 21% of an electric car's price tag.

### **Best electric cars 2021| Top Gear**

URL: <https://www.topgear.com/car-news/electric/these-are-the-top-ten-everyday-electric-cars-you-need-to-know-about>

Publisher: topgear.com

- `` This is an electric car that does n't seek to blur boundaries or act radical, but simply persuade regular SUV buyers to make the jump.
- `` The Mini Electric is a very complete little EV.



## **ChargePoint: EVSE| Electric Vehicle(EV) Charging Stations**

URL: <http://www.chargepoint.com/>

Publisher: chargepoint.com

- After more than a decade and millions of charges delivered, we're still pioneering new ways to make electric mobility the easy choice.

## **Electric Cars**

URL: <https://www.pse.com/en/pages/electric-cars>

Publisher: pse.com

- With dozens of makes and models now on the market, it's getting easier to choose an electric car for your next vehicle purchase.
- PSE is making it easier to go electric with reliable charging where you work, live and drive.

## **Edmunds Tested: Electric Car Range and Consumption| Edmunds**

URL: <https://www.edmunds.com/car-news/electric-car-range-and-consumption-epa-vs-edmunds.html>

Publisher: edmunds.com

- The 2021 Tesla Model 3 Long Range tops our leaderboard with an Edmunds EV Range of 345 miles
- Every Tesla we've tested has failed to hit its EPA range estimate
- Range tested at maximum battery charge to align with EPA estimates.

## **Hyundai Electric Vehicle Recall**

URL: <https://www.consumerreports.org/car-recalls-defects/hyundai-to-recall-electric-vehicles-to-replace-batteries/>

Publisher: consumerreports.org

- Hyundai Electric Vehicle Recall

## **EVs Could Soon Cost Same as Gas Cars as Battery Costs Drop**

URL: <https://www.caranddriver.com/news/a34992832/battery-price-drop-2023/>

Publisher: caranddriver.com

- This issue is especially important since vehicles from Tesla and GM have exceeded their allotment of electric vehicles eligible to receive the tax credit, meaning that people buying those vehicles are paying sticker price.

## **Ample opens 5 EV battery swapping stations for Bay Area Uber drivers**

URL: <https://www.cnbc.com/2021/03/03/ample-opens-5-ev-battery-swapping-stations-for-bay-area-uber-drivers.html>

Publisher: cnbc.com

- A San Francisco start-up called Ample wants to make electric vehicle battery swapping work in the United States following a history of failure by others in the space.
- Like most companies in the emerging field, Ample is looking to reduce the environmental impact of energy generation for the onslaught of electric vehicles in the U.S. and abroad.

- These energy businesses are facing disruption as governments push for wider adoption of electric vehicles.

### **Electric Vehicle Batteries: Materials, Cost, Lifespan**

URL: <https://www.ucsusa.org/resources/ev-batteries>

Publisher: ucsusa.org

- What materials are used to make EV batteries?
- How much do batteries cost?
- How long do they last?

### **How Long Should An Electric Car's Battery Last?**

URL: <https://www.myelectric.com/research/ev-101/how-long-should-an-electric-cars-battery-last>

Publisher: myelectric.com

- As mentioned above, while an electric vehicle's battery pack will tend to degrade slightly with each charge and discharge cycle, it's an extremely gradual process.

### **Electric Cars: Benefits and Disadvantages- Autotrader**

URL: <https://www.autotrader.com/car-tips/electric-cars-benefits-and-disadvantages-208155>

Publisher: autotrader.com

- So we've listed some of the pros and cons of electric vehicle ownership to help you make an informed decision before you sign the papers for your next car.
- Electric vehicles are n't just less costly to own, they're often inexpensive to buy, too.
- These are mostly because of batteries mounted in modern electric vehicles.

### **Here's why transparency is key to winning the EV race**

URL: <https://thenextweb.com/shift/2020/11/17/heres-why-transparency-is-key-to-winning-the-ev-race/>

Publisher: thenextweb.com

- At present, there is no universal standard of measuring environmental impacts of vehicles, and companies are not required to make any LCAs they conduct public.

### **10 Longest-Range Electric Cars of 2021| Kelley Blue Book**

URL: <https://www.kbb.com/best-cars/top-10-longest-range-electric-cars/>

Publisher: kbb.com

- Tesla continues to enjoy top-dog status on this list.
- For 2021, Tesla is offering a Model 3 Long Range, claiming up to 412 miles of range.
- The Model 3, Tesla's least expensive vehicle, is a lower-cost alternative to the larger, more premium Model S. Like the rest of Tesla's lineup, the Model 3's interior is minimalist.

### **Chart: Can Falling Battery Prices Power EV Breakthrough?| Statista**

URL: <https://www.statista.com/chart/7713/electric-car-battery-prices/>

Publisher: statista.com

- To achieve that, Tesla counts on its own ability to dramatically cut the costs of battery packs, which are still the main driver behind the relatively high prices for electric vehicles.

- Should battery prices continue to drop over the next few years, it would go a long way in helping electric vehicles reach broader adoption.

### **Range Anxiety Is Very Real, New J.D. Power EVs Survey Finds- Forbes Wheels**

URL: <https://www.forbes.com/wheels/news/range-anxiety-very-real-jd-power-evs-survey/>

Publisher: forbes.com

- Niro EV scored highest among mainstream EVs on the inaugural J.D. Power Electric Vehicle Experience.
- It's one of three EV-focused surveys coming from Power this winter.
- The Electric Vehicle Experience Ownership Study released today summarizes the attitudes of almost 10,000 electric-car owners, from model years 2015 through 2021, who are part of the PlugInsights panel.

### **State of Charge| Union of Concerned Scientists**

URL: <https://www.ucsusa.org/resources/state-charge>

Publisher: ucsusa.org

- Electric vehicles burn no gasoline and have no tailpipe emissions, but producing the electricity used to charge them does generate global warming emissions.
- For example, coal-fired power plants produce nearly twice the global warming emissions of natural gas-fired power plants, while renewable sources like wind and solar power produce virtually no emissions at all.
- Another third live in "better" areas where EVs produce emissions comparable to the best gasoline hybrid vehicles.

### **The True Cost of Powering an Electric Car| Edmunds**

URL: <https://www.edmunds.com/fuel-economy/the-true-cost-of-powering-an-electric-car.html>

Publisher: edmunds.com

- But it's getting easier all the time to find the electric vehicle supply equipment and rate plan that make ownership of a plug-in car as easy as flipping a light switch.

### **How Tesla, GM And Others Will Fix Electric Vehicle Range Anxiety- YouTube**

URL: <https://www.youtube.com/watch?v=OpTOKKKGWV8>

Publisher: youtube.com

- How Tesla, GM And Others Will Fix Electric Vehicle Range Anxiety

### **Study: Electric Vehicles Can Dramatically Reduce Carbon Pollution from Transportation, and Improve Air Quality**

URL: <https://www.nrdc.org/experts/luke-tonachel/study-electric-vehicles-can-dramatically-reduce-carbon-pollution>

Publisher: nrdc.org

- Producing the electricity to power electric vehicles can generate emissions.

## **Automotive semiconductor supply constraints expected to resolve by second half of 2021**

URL: <https://ihsmarkit.com/research-analysis/automotive-semiconductor-supply-constraints-expected-to-resolve.html>

Publisher: ihsmarkit.com

- This was confirmed by the China Association of Automobile Manufacturers, which has suggested a "relatively big impact" in some automotive production at first three months of 2021 owing to the shortage.
- The increase in production of new smartphones leveraging 5G capabilities and the recent introduction of new gaming platforms, including Sony's PlayStation 5 and Microsoft's Xbox Series X, resulted in these segments consuming the front-end capacity available due to earlier cancellations by automotive manufacturers while demand was low and the prospects for recovery were unknown.

## **Americans Cite Range Anxiety, Cost as Largest Barriers for New EV Purchases: Study**

URL: <https://www.thedrive.com/news/26637/americans-cite-range-anxiety-cost-as-largest-barriers-for-new-ev-purchases-study>

Publisher: thedrive.com

- Manufacturers, alongside consumers, strongly believe that EVs are the future.
- As with any switch, consumers may be afraid to take the jump at first, especially when a technology is still in its infancy with many manufacturers.
- As an example, consumers looking at purchasing the lowest-cost Tesla Model 3 will find themselves paying \$42,900 out of pocket, nearly 19 percent higher the national average of a new car in the United States hovers at \$36,115.

## **5 EV facts to eliminate your range anxiety**

URL: <https://blog.evbox.com/eliminate-range-anxiety>

Publisher: blog.evbox.com

- In 2014, the Nissan Leaf had a battery range of 84 miles.
- Today, the 2017 Leaf can go 107 miles.
- In 2018, the Nissan Leaf will be able to go 150 miles.

## **The Dark Side of Electric Cars: Exploitative Labor Practices**

URL: <https://www.amnesty.org/en/latest/news/2017/09/the-dark-side-of-electric-cars-exploitative-labor-practices/>

Publisher: amnesty.org

- But some electric cars are not, currently, as ethically "clean" as manufacturers would have us believe.
- We have contacted many of the largest companies and, not a single car manufacturer told us they had actually done this.
- But as electric car manufacturers move to the forefront of the market, they need to drastically improve their practices and take steps to ensure that their role in the energy revolution is truly clean and fair.

## **Hyundai to replace 82,000 electric-vehicle batteries over fire risk- BBC News**

URL: <https://www.bbc.com/news/technology-56156801>

Publisher: bbc.com

- Hyundai to replace 82,000 electric-vehicle batteries over fire risk
- While official data shows that tens of thousands of Kona vehicles have been registered in the UK, not all are electric vehicles.

## **Electric Vehicles are Too Damn Expensive**

URL: <https://www.automobilemag.com/news/electric-vehicle-price-every-ev-for-sale-in-america/>

Publisher: automobilemag.com

- The average Josephine on the street ca n't afford to step into most electric vehicles on sale in the U.S. today, Tesla CEO Elon Musk has admitted.

## **Types of Batteries Used for Electric Vehicles**

URL: <http://large.stanford.edu/courses/2016/ph240/mok2/>

Publisher: large.stanford.edu

- Also, these vehicles run on electricity, which can be generated through more renewable and environmentally friendly means.
- Furthermore, there have been legal controversy regarding large format NiMH batteries, which has affected the use of NiMH batteries in battery electric vehicles.
- For example, it has excellent specific energy and energy density, making it ideal for battery electric vehicles.

## **Why Do Electric Vehicles Need To Make Sound?**

URL:

[https://www.matfoundrygroup.com/News%20and%20Blog/Why\\_Do\\_Electric\\_Vehicles\\_Need\\_To\\_Make\\_Sound](https://www.matfoundrygroup.com/News%20and%20Blog/Why_Do_Electric_Vehicles_Need_To_Make_Sound)

Publisher: matfoundrygroup.com

- Why Do Electric Vehicles Need To Make Sound?
- Similarly, vehicles weighing more than 10,000 pounds will give organic prior warning without this added feature.

## **Can we quit cobalt batteries fast enough to make electric cars viable?**

URL: <https://www.newscientist.com/article/2234567-can-we-quit-cobalt-batteries-fast-enough-to-make-electric-cars-viable/>

Publisher: newscientist.com

- Can we quit cobalt batteries fast enough to make electric cars viable?
- If other electric car manufacturers follow internationally, we may be able to reduce our dependency on a dwindling mineral resource.
- For short-range cars made and sold in China, Reuters says Tesla will instead use lithium-iron-phosphate batteries, which are much cheaper and do n't have the same environmental problems as those needing cobalt.

## **How much is a replacement Chevy Bolt EV electric-car battery?**

URL: [https://www.greencarreports.com/news/1110881\\_how-much-is-a-replacement-chevy-bolt-ev-electric-car-battery](https://www.greencarreports.com/news/1110881_how-much-is-a-replacement-chevy-bolt-ev-electric-car-battery)

Publisher: [greencarreports.com](https://www.greencarreports.com)

- We've known the answer to that question for the original 2011-2014 Nissan Leaf electric car with its 24-kilowatt-hour battery pack
- Thus far, based on first-generation Chevrolet Volt range-extended electric cars now in service for more than six years, degradation in the capacity of GM battery packs has yet to prove a significant issue.
- We reached out to Chevy, and got the following response from Fred Ligouri of Chevrolet Communications.

## **Battery costs fall, make electric vehicles cheaper-BMI| Reuters**

URL: <https://www.reuters.com/article/electric-batteries-costs/battery-costs-fall-make-electric-vehicles-cheaper-bmi-idUSL1N2II222>

Publisher: [reuters.com](https://www.reuters.com)

- Battery costs fall, make electric vehicles cheaper
- "The holy grail to make electric vehicles cheaper than ICE vehicles is deemed to be battery cells costing \$100 kWh," said BMI Managing Director Simon Moores.

## **Cheapest Electric Cars- Most Affordable EVs for 2020| Edmunds**

URL: <https://www.edmunds.com/electric-car/articles/cheapest-electric-cars/>

Publisher: [edmunds.com](https://www.edmunds.com)

- Not surprisingly, Tesla dominates the top of this list with expensive cars that have large batteries to cover long distances.
- For many buyers, an electric car makes perfect sense.

## **2021 Toyota Mirai Fuel Cell Vehicle| Innovation is Power**

URL: <https://www.toyota.com/mirai/>

Publisher: [toyota.com](https://www.toyota.com)

## **Demand for raw materials for electric car batteries set to rise further**

URL: <https://unctad.org/news/demand-raw-materials-electric-car-batteries-set-rise-further>

Publisher: [unctad.org](https://unctad.org)

- The demand for raw materials used to manufacture rechargeable batteries will grow rapidly as the importance of oil as a source of energy recedes, as highlighted recently by the collapse of prices due to oversupply and weak demand resulting from COVID-19, according to a new UNCTAD report.
- The report indicates that the bulk of value added to raw materials used in making rechargeable batteries is generated outside the countries that produce the materials.
- : Special issue on strategic battery raw materials, documents the growing importance of electric mobility and the main materials used to make rechargeable car batteries.

## **Fuel cell vehicle- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Fuel\\_cell\\_vehicle](https://en.wikipedia.org/wiki/Fuel_cell_vehicle)

Publisher: en.wikipedia.org

- Vehicle that uses a fuel cell to power its electric motor
- Fuel cells in vehicles generate electricity generally using oxygen from the air and compressed hydrogen.

### **Ban on gasoline-only vehicles could jump-start Japan's EV bid**

URL: <https://www.autonews.com/mobility-report/ban-gasoline-only-vehicles-could-jump-start-japans-ev-bid>

Publisher: autonews.com

- And Nissan and Mitsubishi were industry pioneers in mass-producing full-electric vehicles.
- On one hand, it could be a boon to hybrid leaders such as Toyota Motor Corp. and help jump-start the moribund full-electric vehicle ambitions of Nissan Motor Co..
- Mitsubishi, meanwhile, targets electrified vehicles for half its worldwide sales in 2030.

### **Tesla to make EV battery cathodes without cobalt- The Verge**

URL: <https://www.theverge.com/2020/9/22/21451670/tesla-cobalt-free-cathodes-mining-battery-nickel-ev-cost>

Publisher: theverge.com

- Tesla will make electric vehicle batteries with cobalt-free cathodes, it announced during its Battery Day event today.
- Cobalt is the most expensive material used in batteries, so eliminating it from the mix was expected help to electric vehicles become as affordable as those that run on gas.

### **Nickel in batteries | Nickel Institute**

URL: <https://nickelinstitute.org/about-nickel/nickel-in-batteries/>

Publisher: nickelinstitute.org

- Nickel is making a vital contribution to the lithium-ion batteries that power much of the electric vehicle revolution.

### **Rechargeable battery- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Rechargeable\\_battery](https://en.wikipedia.org/wiki/Rechargeable_battery)

Publisher: en.wikipedia.org

- They are used in distributed electricity generation and in stand-alone power systems.

### **Sodium Nickel Chloride- an overview| ScienceDirect Topics**

URL: <https://www.sciencedirect.com/topics/engineering/sodium-nickel-chloride>

Publisher: sciencedirect.com

- They are currently produced by one single manufacturer under the commercial name Zebra.

### **Nickel-metal hydride battery- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Nickel%E2%80%93metal\\_hydride\\_battery](https://en.wikipedia.org/wiki/Nickel%E2%80%93metal_hydride_battery)

Publisher: en.wikipedia.org

- In 2008, more than two million hybrid cars worldwide were manufactured with NiMH batteries.



- This percentage has fallen over time due to the increase in manufacture of lithium-ion batteries

### **Alternative Range Extender for Electric Cars-Zinc Air Batteries**

URL: [https://link.springer.com/chapter/10.1007/978-3-658-01141-3\\_1](https://link.springer.com/chapter/10.1007/978-3-658-01141-3_1)

Publisher: link.springer.com

- Utilizing the zinc-air technology as RE makes a fully electric car with zero emission feasible.

### **Electric cars rise to record 54% market share in Norway in 2020**

URL: <https://www.reuters.com/article/us-autos-electric-norway/electric-cars-rise-to-record-54-market-share-in-norway-in-2020-idUSKBN29A0ZT>

Publisher: reuters.com

- Volkswagen's Audi brand topped the 2020 leaderboard with its e-tron sports utility and sportsback vehicles as the most sold new passenger cars in Norway last year, while Tesla's mid-sized Model 3, the 2019 winner, was relegated to second place.

### **France Plans to Lower Electric-Car Subsidies in Coming Years- Bloomberg**

URL: <https://www.bloomberg.com/news/articles/2020-09-28/france-maps-out-lower-electric-car-subsidies-in-coming-years>

Publisher: bloomberg.com

- "To make the bonus-malus system a true instrument for the environmental transition, the bonus should also progress, otherwise the malus becomes just a disguised new tax," Marc Mortureux, PFA's director general, said in a statement.
- Before it's here, it's on the Bloomberg Terminal.

### **Hyundai Motor to recall Kona EV in South Korea over concern of fire risk**

URL: <https://www.reuters.com/article/hyundai-motor-ev-battery/hyundai-motor-to-recall-kona-ev-in-south-korea-over-concern-of-fire-risk-idUSKBN26T0ZL>

Publisher: reuters.com

- Hyundai Motor Co will voluntarily recall its Kona electric vehicles as a possible short circuit due to what may be faulty manufacturing of its high-voltage battery cells could pose a fire risk, South Korea's transport ministry said on Thursday.

### **Hyundai Motor to launch dedicated EV platform in major push into electric cars**

URL: <https://www.reuters.com/article/us-hyundai-motor-electric/hyundai-motor-to-launch-dedicated-ev-platform-in-major-push-into-electric-cars-idUSKBN28C0EI>

Publisher: reuters.com

- An electric vehicle based on E-GMP will offer a driving range of 500 kms or more on a single charge, an improvement of at least 23% from the Kona EV, the longest driving range model among Hyundai's EV lineups.

### **Chinese £3,200 budget electric car takes on Tesla- BBC News**

URL: <https://www.bbc.com/news/business-56178802>

Publisher: bbc.com



- A budget electric vehicle selling in China for\$ 4,500 is now outselling Tesla's more upmarket cars.
- But high-end electric vehicles have still been performing well with Tesla more than doubling its sales volume in China last year.

### **France's new\$13,000 EV incentive is the most generous in Europe**

URL: <https://europe.autonews.com/automakers/frances-new-13000-ev-incentive-most-generous-europe>

Publisher: europe.autonews.com

- PARIS-- The French government has announced plans to offer some of the most generous incentives of any country to buy an electric vehicle.
- The incentives will bring down the price of a battery-electric vehicle by nearly 40 percent in some cases.

### **Germany Becomes Europe's Biggest Electric Car Market**

URL: <https://www.ttnews.com/articles/germany-edges-out-norway-europes-biggest-electric-car-market>

Publisher: ttnews.com

- The Nordic country has sold the most electric cars of any in Europe each year since at least 2010, when the Nissan Leaf, the first mass-market battery-powered car, made its debut.
- The numbers offer fresh evidence that the technology is becoming more mainstream in Europe's car-making heartland, where Germany's Volkswagen AG, BMW AG and Daimler AG are preparing for a major battery-car push.
- Across Europe, sales of electrically chargeable cars made up just 3.1% of new registrations in the third quarter, according to the European Automobile Manufacturers Association.

### **Hyundai Motor to replace battery systems in\$900 million electric car recall**

URL: <https://www.reuters.com/article/us-hyundai-motor-electric-recall-idUKKBN2AO0JS>

Publisher: reuters.com

- Hyundai Motor to replace battery systems in\$ 900 million electric car recall
- Hyundai declined to comment on LG Energy's statement or provide details on when it will work out costs, saying only it will first wait for the results of the transport ministry's probe.
- Hyundai did not comment on the cause of the fires.

### **Norway and the A-ha moment that made electric cars the answer**

URL: <https://www.theguardian.com/environment/2020/apr/19/norway-and-the-a-ha-moment-that-made-electric-cars-the-answer>

Publisher: theguardian.com

- Soon after, electric vehicles were exempted from road tolls, one of a large raft of incentives that have, over the years, helped make Norway the country with the world's highest per capita electric vehicle ownership.
- `` This was an important step," Bu said.

- But overall, said Bu, the combination of a big one-off saving when you buy the car, plus the substantially lower costs-- fuel, tolls, parking, maintenance-- of actually driving it, still adds up to a very powerful financial argument.

### **Ford invests \$1 billion in German electric vehicle plant**

URL: <https://www.cnn.com/2021/02/17/ford-invests-1-billion-in-german-electric-vehicle-plant.html>

Publisher: cnn.com

- Ford is targeting a "completely all-electric" offering for passenger vehicles by 2030.
- Ford is investing \$1 billion in an electric vehicle production facility in Cologne, Germany, with the European arm of the automotive giant committing to go "all-in" on electric vehicles in the years ahead.
- In plans announced Wednesday morning, Ford said its entire passenger vehicle range in Europe would be "zero-emissions capable, all-electric or plug-in hybrid" by the middle of 2026, with a "completely all-electric" offering by 2030.

### **France set to ban sale of petrol and diesel vehicles by 2040- BBC News**

URL: <https://www.bbc.com/news/world-europe-40518293>

Publisher: bbc.com

- Hybrid cars make up about 3.5% of the French market, with pure electric vehicles accounting for just 1.2%.
- Norway, which is the leader in the use of electric cars in Europe, wants to move to electric-only vehicles by 2025, as does the Netherlands.

### **The Netherlands- Policies and Legislation| IEA-HEV**

URL: <http://www.ieahev.org/by-country/the-netherlands-policy-and-legislation/>

Publisher: ieahev.org

- The central objective of this leading plan is to make the Netherlands a guide and international laboratory for electric driving in 2009-- 2011.

### **Renewable energy holds the key to making electric vehicles truly zero-emission**

URL: <https://www.climateweeknyc.org/renewable-energy-holds-key-making-electric-vehicles-truly-zero-emission>

Publisher: climateweeknyc.org

- Renewable energy holds the key to making electric vehicles truly zero-emission
- This includes an accelerated phase-out of fossil fuel-dependent vehicles, alongside continued growth in renewable energy sources to ensure electric vehicles run on the cleanest power.

### **The 7 Top EV Stocks and Battery Companies**

URL: <https://money.usnews.com/investing/stock-market-news/slideshows/top-ev-stocks-and-battery-companies>

Publisher: money.usnews.com

- The future of electric vehicles is predicated on battery power-- whoever can make the longest-lasting, furthest-driving, cheapest battery will eventually dominate the market.
- It's no wonder then that competition in the EV market has grown extremely heated in the last year, with companies old and new joining the race to build the perfect battery.
- Tesla practically dragged the rest of the auto industry into the electric vehicles business, growing so large so fast that it became impossible to ignore.

### **France introduces electric car package- electrive.com**

URL: <https://www.electrive.com/2020/05/27/france-presents-electric-car-package/>

Publisher: electrive.com

- Since the government is a shareholder of the two major French manufacturers, Macron has also weighed in to obtain guarantees of the location of future French electric vehicle production.
- In total, one million electric, hybrid or plug-in hybrid vehicles should be manufactured in France in 2025.
- This means that Renault is obliged to have future electric vehicles of the Renault-Nissan-Mitsubishi Alliance manufactured at the Normandy engine factory in Cléon rather than in China, and quadruple the assembly of electric vehicles in France by 2024.

### **EV Turning Point: Momentum Builds for U.S. Electric Vehicle Transition- Yale E360**

URL: <https://e360.yale.edu/features/ev-turning-point-momentum-builds-for-u.s.-electric-vehicle-transition>

Publisher: e360.yale.edu

- But if the private sector and federal and state governments make a commitment to electric vehicles we think that within two decades a majority of new automobiles sold in the U.S. will be electric.
- But as technology steadily advances, with consumers installing solar panels on their roofs and batteries in their garages, the EV transition will hold tremendous appeal as a decentralized, empowering system where individuals can rely on self-generated electricity for their homes and cars, while also selling surplus power back to the grid.
- Biden's plan could meet more than half of U.S. charging demand by 2030 and "spark the sale of as many as 25 million electric vehicles," according to Inside EVs.

### **How can the chemical industry maximize the benefit of COVID-19 stimulus funds?**

URL: <https://www.weforum.org/agenda/2020/09/chemical-and-materials-industry-impact-stimulus-packages/>

Publisher: weforum.org

- This makes governments around the globe the most powerful consumption engines in their economies.
- To make this happen, chemical leaders can partner with start-ups to tap into new sources of innovation.
- The industry already provides a range of solutions that make transport more energy efficient.

## **BMW USA: Luxury SUVs, Sedans, Coupes, Convertibles& Crossovers**

URL: <https://www.bmwusa.com/>

Publisher: bmwusa.com

- BMW i
- THE 2021 BMW 5 SERIES SEDAN

## **Electric Cars: Why Little Norway Leads The World In EV Usage**

URL: <https://www.forbes.com/sites/davidnikel/2019/06/18/electric-cars-why-little-norway-leads-the-world-in-ev-usage/>

Publisher: forbes.com

- Although unit sales in China and the U.S. are far higher, it's Norway that remains the poster child of the EV revolution.
- That's because there are far more EVs on Norwegian roads as a proportion of total vehicles than anywhere else in the world.
- `` Electric cars can make or break the grid.

## **MGE Solar Projects- Madison Gas and Electric- Madison, Wisconsin**

URL: <https://www.mge.com/our-environment/green-power/solar-power/mge-solar-projects>

Publisher: mge.com

- The solar array is expected to begin generating electricity in 2021.

## **Biden proposal seeks billions of dollars to advance climate change agenda**

URL: <https://www.reuters.com/article/us-usa-biden-infrastructure-climate-chan-idUSKBN2BN136>

Publisher: reuters.com

- That makes the \$ 2 trillion infrastructure blueprint one of the administration's biggest steps to date in achieving its agenda to decarbonize the U.S. economy by 2050 and restore the nation's leadership in addressing global warming.

## **8 Battery Stocks That Electric Vehicle Companies Rely On**

URL: <https://investorplace.com/2020/12/8-battery-stocks-that-electric-vehicle-companies-rely-on/>

Publisher: investorplace.com

- EV stocks are making huge gains, while traditional oil and gas companies are taking it on the chin.
- This makes EnerSys a battery company worth watching.
- FMC is a long-time chemical manufacturer.

## **Opinion: Electric grid can support an EV future| Energy News Network**

URL: <https://energynews.us/2021/03/10/commentary-yes-our-electricity-grid-can-support-an-electric-vehicle-future/>

Publisher: energynews.us

- In fact, if managed strategically, electric vehicles can make our grid more robust and resilient.
- What's more, electric vehicles can help make our grid more stable by storing power and functioning as a backup power source when necessary.

- Research from the Pacific Northwest National Laboratory found that the western grid can easily handle up to 24 million electric vehicles without requiring any additional power plants.

### **Electric Last Mile Solutions is Bringing Electrification to E-Commerce Delivery- Green Fleet-Automotive Fleet**

URL: <https://www.automotive-fleet.com/10133556/electric-last-mile-solutions-is-bringing-electrification-to-e-commerce-delivery>

Publisher: automotive-fleet.com

- Electric Last Mile Solutions is an electric vehicle startup entering the commercial fleet space as a new manufacturer of EV urban delivery vans with a focus on creating products aimed at the booming e-commerce industry as well as growing corporate sustainability initiatives.
- "One of the reasons that electric vehicles are such a premium is because of the size of the battery," said Taylor.
- Other EV pricing pain points will be further alleviated by the \$7,500 federal tax credit for electric vehicles, Taylor added.

### **Can a Big Western Road Trip Be Done in an Electric Car?**

URL: <https://www.outsideonline.com/2411292/tesla-electric-car-road-trip-test>

Publisher: outsideonline.com

- : electric car sales in the U.S. topped 300,000 between 2018 and 2019, driven largely by the rise of the Tesla Model 3, Elon Musk's long-promised \$35,000 electric car, which remains the best "affordable" electric vehicle on the market.
- Then, for the week between Christmas and New Year's, we decided to put the Tesla to the ultimate test, taking it on a 1,000-plus-mile mission to Utah, to find out whether an electric vehicle could tackle the state's handful of national parks

### **Electric Transportation | Southern Company**

URL: <http://www.southerncompany.com/innovation/sustainable-technologies/electric-transportation.html>

Publisher: southerncompany.com

- We work with national organizations such as the Electric Power Research Institute, vehicle manufacturers, other utilities, and charging companies to produce the next generation of electric vehicles.
- We are also working with university labs to test new technologies that may maximize range from battery packs and wireless charging equipment that can charge vehicles with no cord and, one day, potentially charge your EV while you drive.
- Electric vehicles come in many forms.

### **Volvo to make only electric vehicles by 2030 and require online purchase- MarketWatch**

URL: <https://www.marketwatch.com/story/volvo-to-make-only-electric-vehicles-by-2030-and-require-online-purchase-01614781512>

Publisher: marketwatch.com

- Volvo to make only electric vehicles by 2030 and require online purchase

- Volvo also said that, while its all-electric vehicles will be sold exclusively online, dealerships will remain a crucial part of the customer experience and will continue to be responsible for a variety of important services such as selling, preparing, delivering and servicing cars."
- About 2.5 million electric vehicles were sold worldwide last year and industry analyst IHS Markit forecasts that to increase by 70% in 2021.

### **Why last mile leads charge for EV adoption(with video)- FreightWaves**

URL: <https://www.freightwaves.com/news/why-last-mile-leads-charge-for-ev-adoption-with-video>

Publisher: freightwaves.com

- Despite the hype surrounding the Tesla Semi truck, the future for electric vehicles in the transportation and logistics industry seems to be coming sooner and on a larger scale for fleets serving the last mile.
- "It just makes so much sense for an electric vehicle with that stop-and-go application and that high idle time, inner-city traffic kind of environments," said Chris Nordh, senior director of Advanced Vehicle Technology and Energy Products for Fleet Management Solutions at Ryder System.
- "Most of the focus is on the last mile," Nordh said of its customers' interest in electric vehicles.

### **Leaving the niche: Seven steps for a successful go-to-market model for electric vehicles**

URL: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/leaving-the-niche-seven-steps-for-a-successful-go-to-market-model-for-electric-vehicles>

Publisher: mckinsey.com

- If they have recently experienced clean air in cities, will that make them lean toward EVs?
- Yet the increased public focus on climate change, shifting environmental regulations, and technological advances are making the case for a green-mobility transition and thus for EVs.
- In partnership with Centrica, for example, Ford offers home-charging installations and electrified-vehicle tariffs from British Gas.

### **The potential impact of electric vehicles on global energy systems**

URL: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-potential-impact-of-electric-vehicles-on-global-energy-systems>

Publisher: mckinsey.com

- McKinsey analysis suggests the projected growth in e-mobility will not drive substantial increases in total electrical-grid power demand in the near to midterm, thus limiting the need for new electricity-generation capacity during that period.
- To realize these benefits, energy players must make some up-front investments in smart-charging infrastructure and work to achieve effective collaboration with other stakeholders.

### **Solar Power, Electric Vehicles& Renewables| Reliant Energy**

URL: <https://www.reliant.com/en/residential/electricity/renewable-energy/index.jsp>

Publisher: reliant.com

- Traditional methods are making way for more wind and, especially, for much more solar.

- We make it easy for you to receive credit for the surplus electricity you return to the grid.
- For a limited time, we're upgrading our Truly Free Flex Days, Weekends and Nights plans to Make It Solar at no additional cost to you.

### **Ford®- New Hybrid& Electric Vehicles, SUVs, Crossovers, Trucks, Vans& Cars**

URL: <https://www.ford.com/>

Publisher: ford.com

- What's Happening at Ford
- A/X/Z Plan pricing, including A/X/Z Plan option pricing, is exclusively for eligible Ford Motor Company employees, friends and family members of eligible employees, and Ford Motor Company eligible partners.
- See your Ford or Lincoln Dealer for complete details and qualifications.

### **Cuyahoga County Builds Solar Farm At Brooklyn Landfill, Buys Electric Cars**

URL: <https://www.ideastream.org/news/cuyahoga-county-builds-solar-farm-at-brooklyn-landfill-buys-electric-cars>

Publisher: ideastream.org

- The county also announced Tuesday it's buying electric cars through the Climate Mayors Electric Vehicle Purchasing Collaborative, one of 20 cities or counties in the U.S. to make that commitment.

### **General Motors launches electric vehicle unit for first and last mile logistics**

URL: <https://www.dcvelocity.com/articles/49161-general-motors-launches-electric-vehicle-unit-for-first-and-last-mile-logistics>

Publisher: dcvelocity.com

- General Motors launches electric vehicle unit for first and last mile logistics
- " General Motors launches electric vehicle unit for first and last mile logistics

### **List of electric-vehicle-battery manufacturers- Wikipedia**

URL: [https://en.wikipedia.org/wiki/List\\_of\\_electric-vehicle-battery\\_manufacturers](https://en.wikipedia.org/wiki/List_of_electric-vehicle-battery_manufacturers)

Publisher: en.wikipedia.org

- " List of electric-vehicle-battery manufacturers"-- news · newspapers · books · scholar · JSTOR
- We engineer, develop, and manufacture high-quality lithium-ion batteries and battery systems to serve the growing demands in electric vehicles, electrified transportation, motive, industrial, and commercial markets.
- ACC intends to build two large scale production facilities for battery cell in France and Germany to supply electric vehicles

### **U.S. Utilities Look To Electric Cars As Their Savior Amid Decline In Demand: NPR**

URL: <https://www.npr.org/2018/03/29/598032288/u-s-utilities-look-to-electric-cars-as-their-savior-amid-decline-in-demand>

Publisher: npr.org



- A Tesla Model S electric vehicle is charged at a car dealership in Shanghai, China, in March 2015.

### **The Global leader in automotive logistics and the World's largest Roll-On Roll-Off ocean carrier- NYK RORO**

URL: <https://www.nykroro.com/>

Publisher: nykroro.com

- NYK recently carried the first consignment of BMW iX3

### **REVE News of the wind sector in Spain and in the world**

URL: <https://www.evwind.es/>

Publisher: evwind.es

- For many years, Mississippi was considered to lack enough consistent and strong winds to generate electricity from wind turbines.

### **Extended Range Electric Vehicle- an overview| ScienceDirect Topics**

URL: <https://www.sciencedirect.com/topics/engineering/extended-range-electric-vehicle>

Publisher: sciencedirect.com

- The extended-range electric vehicle is effectively an all-electric vehicle, with all the motive power provided by an electric motor, but with a small ICE present to generate additional electric power.
- Alternatively, it may be viewed as a series hybrid with a much larger battery, namely, 10-- 20 kWh
- The vehicle begins its journey with the battery SoC close to 100%.

### **The(surprisingly long) history of electric vehicles| National Grid Group**

URL: <https://www.nationalgrid.com/stories/journey-to-net-zero-stories/surprisingly-long-history-electric-vehicles>

Publisher: nationalgrid.com

- Back in the 1950s it was Henry Ford's cars that won mass appeal and it's taken more than 60 years, and the rise of affordable renewable energy, for EVs to be back in the race.

### **Used Cars with Electric For Sale Online| Carvana**

URL: <https://www.carvana.com/cars/electric>

Publisher: carvana.com

- I had been assured that my 2017 Nissan Leaf 100% electric car would be fully charged when I came to pick it up at 1 pm at the Atlanta Carvana.
- But the Leaf is working out good, for a local day trip vehicle, pollution-free with our TVA water generated electricity, and regaining over 50% of the charge required going up a mountain, when coming down the mountain using regenerative braking.

### **The ultimate guide to road tripping with an electric car**

URL: <https://thepointsguy.com/guide/electric-car-road-trip-guide/>

Publisher: thepointsguy.com



- This, combined with the car being a hatchback, makes it the ultimate road trip vehicle for those living in a major city like New York.
- That said, these vehicles do n't have a fully electric driving experience and do n't generally offer fast charging options.
- On the other hand, range-extended electric cars are fully electric vehicles with a small gas motor.

### **Electric aircraft- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_aircraft](https://en.wikipedia.org/wiki/Electric_aircraft)

Publisher: en.wikipedia.org

- The potential of electric and hybrid-electric propulsion remains limited for general aviation, according to Textron Aviation, as the specific energy of electricity storage is still 2% of aviation fuel.
- An electrical power cable may be connected to a ground-based supply, such as an electric generator.

### **How last-mile delivery could be reshaped by technology| McKinsey**

URL: <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/technology-delivered-implications-for-cost-customers-and-competition-in-the-last-mile-ecosystem>

Publisher: mckinsey.com

- At every stage of development-from concept through testing to rollout-last-mile technology is making rapid gains.
- First, while incumbents have dense delivery networks that bring a strong competitive advantage in the traditional business, the volumes in same-day and instant delivery are still low, making it easier for new players to enter and compete at comparable cost.
- The value will likely be redistributed across CEP players, autonomous-vehicle manufacturers, IT operators, and customers.

### **Tesla Has a Design for a Submarine, Says Elon Musk**

URL: <https://www.caranddriver.com/news/a28004087/tesla-submarine-elon-musk/>

Publisher: caranddriver.com

- Tesla Has a Design for a Submarine, Says Elon Musk
- At this week's shareholder meeting, for example, Musk revealed that Tesla has a design for a personal submarine.
- Tesla founder Elon Musk often fires off surprising and controversial remarks that leave followers of the electric automaker scratching their heads.

### **Range extender- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Range\\_extender](https://en.wikipedia.org/wiki/Range_extender)

Publisher: en.wikipedia.org

- A range extender is a fuel-based auxiliary power unit that extends the range of a battery electric vehicle by driving an electric generator that charges the vehicle's battery.

- Range autonomy is one of the main barriers for the commercial success of electric vehicles, and extending the vehicle's range when the battery is depleted helps alleviate range anxiety.
- Range extender vehicles are also referred to as extended-range electric vehicles, range-extended electric vehicles, and range-extended battery-electric vehicle by the California Air Resources Board.

### **World's Second-Largest Ferry Operator Switching From Diesel to Batteries**

URL: <https://www.greentechmedia.com/articles/read/worlds-second-largest-ferry-operator-switching-from-diesel-to-batteries>

Publisher: greentechmedia.com

- The government-owned ferry operator's annual fuel consumption is on par with that of a "midsize airline," he said, making it the state's biggest diesel polluter.

### **The Future of Seattle's Ferries Is Electric| NRDC**

URL: <https://www.nrdc.org/stories/future-seattles-ferries-electric>

Publisher: nrdc.org

- Some of the biggest boats in the fleet-whose 23 vessels make it the country's largest ferry fleet, considered part of the state highway system-will be going electric beginning in 2021.
- By 2023, Norway's entire ferry fleet will be all-electric, and other countries, including China, are looking to make the same changes to their cargo ships, too.
- Engine sounds, like those produced by large ferries, can make echolocation more difficult for animals that use sound to locate food.

### **Zin Boats reinvents the electric speedboat in a bid to become the Tesla of the sea - TechCrunch**

URL: <https://techcrunch.com/2020/08/11/zin-boats-reinvents-the-electric-speedboat-in-a-bid-to-become-the-tesla-of-the-sea/>

Publisher: techcrunch.com

- Zin Boats reinvents the electric speedboat in a bid to become the Tesla of the sea-- TechCrunch
- Piotr Zin, the company's namesake, has been designing racing sailboats for 20 years, while working in industrial design at BMW, GM and other major companies.
- Just as Tesla's consumer sedans compete with Lamborghinis in 0-60 times, the instantaneous response is almost frightening.

### **Tesla has a design for an electric submarine car, but don't hold your breath- Electrek**

URL: <https://electrek.co/2019/06/11/tesla-electric-submarine-car/>

Publisher: electrek.co

- Tesla has a design for an electric submarine car, but do n't hold your breath
- Is this going to change for a Tesla submarine car?
- While it's common in the auto industry to build show vehicles that never go into production, Tesla has not been participating in this trend.

### **Electric propulsion engine accelerates spacecraft**

URL: <https://www.electricvehiclesresearch.com/articles/6124/electric-propulsion-engine-accelerates-spacecraft>

Publisher: electricvehiclesresearch.com

- What makes this milestone truly amazing is how little fuel it used.

### **Sailing soon: an Orca-friendly, all-electric car ferry | Crosscut**

URL: <https://crosscut.com/2017/08/washingtons-ferry-future-orca-friendly-low-emission-electric-vessels>

Publisher: crosscut.com

- That would make the run between Anacortes and the island the nation's first all-electric car ferry operating with batteries, and one of the first in the world.
- Many state ferries already have electric motors, but that electricity is generated by a diesel engine.
- Electric-powered ferries would not only make the air cleaner for people, but could also make the waters quieter for the region's struggling Southern Resident killer whale, or Orca, population.

### **BNSF leads the charge on testing battery electric locomotive| Rail Talk**

URL: <https://www.bnsf.com/news-media/railtalk/service/battery-electric-locomotive.html>

Publisher: bnsf.com

- In 2018, BNSF and Wabtec joined forces to begin developing a 100-percent battery-electric road locomotive prototype that works with conventional diesel locomotives to make a battery-electric hybrid consist.
- -LRB- Dynamic braking is where the kinetic energy of a moving train is used to generate electric current at the locomotive's traction motors.-RRB-

### **Electric scooters and bicycles and other...- New York DMV**

URL: <https://dmv.ny.gov/registration/electric-scooters-and-bicycles-and-other-unregistered-vehicles>

Publisher: dmv.ny.gov

- its maximum performance speed must be certified by the manufacturer

### **Electric boat- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_boat](https://en.wikipedia.org/wiki/Electric_boat)

Publisher: en.wikipedia.org

- If an electric boat has sails as well, and will be used in deep water, then a towed generator can help build up battery charge while sailing-LRB- there is no point in trailing such a generator while under electric propulsion as the extra
- Large enough wind generators could produce a completely wind-powered electric boat.
- Some electric power systems use the free-wheeling drive propeller to generate charge through the drive motor when sailing, but this system, including the design of the propeller and any gearing, can not be optimised for both functions.

### **Researchers Propose Floating Microgrids Made up of Electric Boats**

URL: <https://microgridknowledge.com/floating-microgrids-electric-boats/>

Publisher: microgridknowledge.com

- Using a towed generator or a free-wheeling drive propeller, electric boats could provide power to the grid when they return to port.

### **An Operation Control Strategy for the Connected Maglev Trains Based on Vehicle-Borne Battery Condition Monitoring**

URL: <https://www.hindawi.com/journals/wcmc/2018/5698910/>

Publisher: hindawi.com

- ; the Vehicle Electrical Grid is supplied by the vehicle-borne linear generator because of high power-generating efficiency at high speed.

### **Diesel-electric transmission- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Diesel%E2%80%93electric\\_transmission](https://en.wikipedia.org/wiki/Diesel%E2%80%93electric_transmission)

Publisher: en.wikipedia.org

- The traction motors may be powered directly or via rechargeable batteries, making the vehicle a type of hybrid electric vehicle.
- In the automobile industry, diesel engines in combination with electric transmissions and battery power are being developed for future vehicle drive systems.

### **Every Plug-In-Hybrid Vehicle For Sale in the U.S. Today**

URL: <https://www.caranddriver.com/features/g15377500/plug-in-hybrid-car-suv-vehicles/>

Publisher: caranddriver.com

- This powertrain achieved an EPA-estimated 54 MPGe, which is exactly where the rival BMW 745e sits in terms of efficiency.
- It's a step in the right direction but not quite far enough.
- The BMW 745e is suffering from an identity crisis.

### **Electric-Car Pioneer Elon Musk Charges Head-On at Detroit- WSJ**

URL: <https://www.wsj.com/articles/electric-car-pioneer-elon-musk-charges-head-on-at-detroit-1421033527>

Publisher: wsj.com

- Tesla Motors CEO Elon Musk, shown last year, is pushing hard to sell 500,000 vehicles a year by 2020.
- When Elon Musk, who loudly disdains the traditional auto industry, makes his first public appearance in Detroit in two years on Tuesday, it will be easy to see how much has changed since then.

### **Electric locomotive- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_locomotive](https://en.wikipedia.org/wiki/Electric_locomotive)

Publisher: en.wikipedia.org

- Electric locomotives with on-board fueled prime movers, such as diesel engines or gas turbines, are classed as diesel-electric or gas turbine-electric and not as electric

locomotives, because the electric generator/motor combination serves only as a power transmission system.

- Because railroad infrastructure is privately owned in the U.S., railroads are unwilling to make the necessary investments for electrification.
- This makes possible the large investments required for the technically and, in the long-term, also economically advantageous electrification.

### **eMotive - Motorcycles, Scooters, Autocycles - Electric Vehicles for Everyone**

URL: <https://emotivevehicles.com/>

Publisher: [emotivevehicles.com](https://emotivevehicles.com/)

Finally, an electric sport bike with real performance at a price that makes sense.

### **Veo- Shared& Personal Electric Vehicles- Apps on Google Play**

URL: [https://play.google.com/store/apps/details?id=com.pgt.veoride&hl=en\\_US&gl=US](https://play.google.com/store/apps/details?id=com.pgt.veoride&hl=en_US&gl=US)

Publisher: [play.google.com](https://play.google.com/store/apps/details?id=com.pgt.veoride&hl=en_US&gl=US)

- Veo makes your daily commute easier and faster.

### **All-Electric Car Ferry- Corvus Energy**

URL: <https://corvusenergy.com/all-electric-car-ferry/>

Publisher: [corvusenergy.com](https://corvusenergy.com/all-electric-car-ferry/)

- But the ferries make the crossing 34 times during 17 hours of operation each day, 365 days a year, pausing for only 10 minutes at the quay.

### **Electric Ferry Under Development in California's Bay Area**

URL: <https://www.govtech.com/transportation/Electric-Ferry-Under-Development-in-Californias-Bay-Area.html>

Publisher: [govtech.com](https://www.govtech.com/transportation/Electric-Ferry-Under-Development-in-Californias-Bay-Area.html)

- The nation's first hydrogen fuel cell-powered ferry is set to be launched in the Bay Area within the next year, continuing a transportation trend to make high-occupancy and other vehicles emissions-free.

### **Electric airplanes are getting close to a commercial breakthrough – Quartz**

URL: <https://qz.com/1943592/electric-airplanes-are-getting-close-to-a-commercial-breakthrough/>

Publisher: [qz.com](https://qz.com/1943592/electric-airplanes-are-getting-close-to-a-commercial-breakthrough/)

- For airlines, this makes entirely new routes now covered by car and train possible thanks to lower fuel, maintenance, and labor costs.
- That's likely to make 2021 the year of the hybrid.

### **Electrification of U.S. Railways: Pie in the Sky, or Realistic Goal?**

URL: <https://www.eesi.org/articles/view/electrification-of-u.s.-railways-pie-in-the-sky-or-realistic-goal>

Publisher: [eesi.org](https://www.eesi.org/articles/view/electrification-of-u.s.-railways-pie-in-the-sky-or-realistic-goal)

- A cleaner, more robust railroad system could replace substantial amounts of truck traffic, while making inter-city passenger service more reliable and competitive with highways and aviation.

### **Fuel-cells power German super-stealth submarine**

URL: <https://www.printedelectronicsworld.com/articles/3235/fuel-cells-power-german-super-stealth-submarine>

Publisher: [printedelectronicsworld.com](https://www.printedelectronicsworld.com)

- In 1994 German naval manufacturer Howaldtswerke-Deutsche Werft began developing technology for a non-nuclear, super-stealth, hybrid electric submarine.

### **Leading The Charge: Battery-Electric Locomotives Will Be Pushing US Freight Trains Further**

URL: <https://www.ge.com/news/reports/leading-charge-battery-electric-locomotives-pushing-us-freight-trains>

Publisher: [ge.com](https://www.ge.com)

- They use a powerful diesel engine to generate the electricity that drives the electric motors that spin the wheels.
- To build the demonstration model, workers will strip out the engine and cooling systems from a diesel locomotive to make way for the battery under the hood.
- The rail operator can input data about the train's journey into the system to allow the computer to make decisions about the best way to use the battery before the train even pulls away.

### **How Does Electric Propulsion Work, and Why Does it Matter?**

URL: <https://blog.maxar.com/space-infrastructure/2020/how-does-electric-propulsion-work-and-why-does-it-matter>

Publisher: [blog.maxar.com](https://blog.maxar.com)

- The gasoline car runs on a chemical fuel that is combusted inside the engine to release energy that makes the car's wheels move.
- The Maxar-built Psyche spacecraft will travel to an all-metal asteroid using Maxar's next-generation electric propulsion system.
- Psyche's EP system is much more efficient than a traditional chemical propulsion system, making the Psyche spacecraft lighter and easier to launch from Earth.

### **State and Federal Electric Vehicle Incentives**

URL: <https://cleanvehiclerebate.org/eng/ev/incentives/state-and-federal>

Publisher: [cleanvehiclerebate.org](https://cleanvehiclerebate.org)

- Learn more about the incentives that make electric vehicles more affordable
- Incentives that give you greater buying power!
- Provides savings directly to purchasers and lessees of fuel cell, battery electric and plug-in hybrid electric vehicles.

### **Factbox: Electric vehicle subsidies under pressure in some Tesla core markets**

URL: <https://www.reuters.com/article/us-tesla-results-subsidies-factbox/factbox-electric-vehicle-subsidies-under-pressure-in-some-tesla-core-markets-idUSKBN1ZS1H9>

Publisher: reuters.com

- Electric vehicle subsidies under pressure in some Tesla core markets
- Tesla Inc's has steadily increased the sale of its electric vehicles, boosted by demand for its mass-produced Model 3 sedans as overseas sales pick up, and delivering more than 360,000 vehicles last year.
- But analysts say demand for electric vehicles may sour as some governments around the world dial back subsidies.

### **Every Electric Pickup Truck Currently on the Horizon**

URL: <https://www.caranddriver.com/news/a29890843/full-electric-pickup-trucks/>

Publisher: caranddriver.com

- We rounded up all the electric trucks on the horizon from Tesla's new
- Nonetheless, GM has accelerated its electrification plans and its timeline for new electric vehicles, so the Chevy EV pickup could come before 2023 along with the 20 other EVs GM said it will debut by that year.
- Ford has already boasted about its capability, executing a stunt where an electric F-150 prototype towed a massive freight train filled with 42 F-150 pickups that weighed one million pounds.

### **Cycling is ten times more important than electric cars for reaching net-zero cities**

URL: <https://theconversation.com/cycling-is-ten-times-more-important-than-electric-cars-for-reaching-net-zero-cities-157163>

Publisher: theconversation.com

- When we compared the life cycle of each travel mode, taking into account the carbon generated by making the vehicle, fuelling it and disposing of it, we found that emissions from cycling can be more than 30 times lower for each trip than driving a fossil fuel car, and about ten times lower than driving an electric one.

### **Elon Musk Explains Why "Submarines Are Just Underwater EVs"**

URL: <https://www.tesmanian.com/blogs/tesmanian-blog/elon-musk-explains-teslas-flood-resistance>

Publisher: tesmanian.com

- "A Tesla works as a boat for short periods of time, as an electric car has no intake or exhaust to block& battery/motor/electronics are water-sealed," explained Musk on Twitter.
- Tesla appears to be designing its vehicles to be safe for floods, if any.
- A Tesla works as a boat for short periods of time, as an electric car has no air intake or exhaust to block& battery/motor/electronics are water-sealed.

### **17 Best Hybrid and Electric Cars for 2021 | U.S. News & World Report**

URL: <https://cars.usnews.com/cars-trucks/rankings/hybrid-cars>

Publisher: cars.usnews.com

- It has a long driving range and swift... read more"



- While it offers good fuel economy and a... read more"
- The 2021 Hyundai Ioniq ranks in the lower half of the hybrid and electric car class.

### **NJDEP Climate and Environmental Management**

URL: <https://www.nj.gov/dep/cleanvehicles/>

Publisher: nj.gov

- When you purchase a new vehicle, you can make a choice that improves our air quality and global climate.
- The "Clean Vehicle List" contains the makes and models of vehicles that are considered the cleanest for each model year, along with information on their fuel types, total range, fuel economy, size class, and federal Environmental Protection Agency air pollution and greenhouse gas scores.
- As more people make informed decisions when selecting a new vehicle, all of us will breathe cleaner air.

### **Moon exploration, facts and information**

URL: <https://www.nationalgeographic.com/science/article/moon-exploration>

Publisher: nationalgeographic.com

- Later in 1959, Luna 2 became the first spacecraft to make contact with the moon's surface when it crashed in the Mare Imbrium basin near the Aristides, Archimedes, and Autolycus craters.

### **Volkswagen's EV platform will set sail to help create solar-electric boats- Roadshow**

URL: <https://www.cnet.com/roadshow/news/volkswagen-ev-platform-solar-electric-boats/>

Publisher: cnet.com

- While development occurs, additional VW EV parts will make their way to the Austrian company's vessels.

### **Elon Musk's Tesla Roadster Isn't The First Electric Car In Space**

URL: <https://www.forbes.com/sites/kionasmith/2018/02/12/elon-musks-tesla-roadster-isnt-the-first-electric-car-in-space/>

Publisher: forbes.com

- Elon Musk's Tesla Roadster Is n't The First Electric Car In Space
- Of course, the Tesla Roadster wo n't do all of that, but it could give spaceflight a nice public-relations boost.
- Musk's Tesla certainly grabbed the public's interest, and the Apollo moon buggies had a similar effect in their day.

### **Exclusive: Targeting Tesla, China's Geely to launch new premium EV brand- sources**

URL: <https://www.reuters.com/article/us-geely-electric-exclusive/exclusive-targeting-tesla-chinas-geely-to-launch-new-premium-ev-brand-sources-idUSKBN2BB058>

Publisher: reuters.com

- China's Geely plans to roll out electric vehicles under a new marque with different branding and sales strategies, people familiar with the matter said, as the Volvo owner looks to take



on its main EV rival Tesla with higher-end vehicles.

# ADDITIONAL ARTICLES: BATTERY TECHNOLOGY

*The full set of articles discovered by Gyan based on your research question can be found in this section.*

## **GE Demonstrates "Electric Bus of the Future"| GE News**

URL: <https://www.ge.com/news/press-releases/ge-demonstrates-electric-bus-future>

Publisher: ge.com

- GE is actively exploring partnership opportunities across the electric vehicle value chain through its Licensing business to commercialize its dual battery technology.
- GE also is developing new technologies and products to support the integration of plug-in hybrid electric vehicles and electric vehicles into the electric grid.
- In September, GE established a technology and financing partnership with Better Place to accelerate the global deployment of an electrical vehicle infrastructure through collaboration in four key areas

## **Contribution of Li-Ion Batteries to the Environmental Impact of Electric Vehicles**

URL: <https://pubs.acs.org/doi/10.1021/es903729a>

Publisher: pubs.acs.org

- Contribution of Li-Ion Batteries to the Environmental Impact of Electric Vehicles
- This study analyzes the use of lithium-ion batteries in electric vehicles as an environmentally viable option and evaluates whether the burdens related to the battery are likely to offset the benefits related to the electric drivetrain.
- For this end it is necessary to model electric mobility including the vehicle's production, use and disposal with a strong focus on the Li-ion battery.

## **Explaining Electric & Plug-In Hybrid Electric Vehicles**

URL: <https://www.epa.gov/greenvehicles/explaining-electric-plug-hybrid-electric-vehicles>

Publisher: epa.gov

- Electric vehicles have a battery instead of a gasoline tank, and an electric motor instead of an internal combustion engine.
- Plug-in hybrid electric vehicles are a combination of gasoline and electric vehicles, so they have a battery, an electric motor, a gasoline tank, and an internal combustion engine.
- Compare different vehicles to get yearly fuel costs customized to your commute, frequency of travel, and charger access.

## **Electric Vehicles- City Light | seattle.gov**

URL: <https://www.seattle.gov/city-light/residential-services/home-energy-solutions/electric-vehicles>

Publisher: seattle.gov

- Electric vehicles are available with the same features and accessories as gas-powered cars but use electric motors with rechargeable batteries freeing your drive from fossil fuels.
- They are a critical step toward reducing carbon emissions and are particularly popular in the Seattle area because EV owners benefit from City Light's clean, affordable electricity.
- They are cheaper to drive and operate.

### **The Hidden Problems Within the Electric Vehicle Battery Supply Chain**

URL: <https://blog.ballard.com/electric-vehicle-battery-supply-chain>

Publisher: blog.ballard.com

- The Hidden Problems Within the Electric Vehicle Battery Supply Chain
- The production of current leading batteries for electric vehicles uses certain rare earth metals, which I often refer to as "battery precious metals".
- These include lithium, nickel, manganese, and cobalt.

### **Electric vehicle battery- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_vehicle\\_battery](https://en.wikipedia.org/wiki/Electric_vehicle_battery)

Publisher: en.wikipedia.org

- An electric-vehicle battery-LRB- also known as a traction battery-RRB- is a battery used to power the electric motors of a battery electric vehicle or hybrid electric vehicle.
- Electric-vehicle batteries differ from starting, lighting, and ignition batteries as they are designed to give power over sustained periods of time and are deep-cycle batteries.
- Batteries for electric vehicles are characterized by their relatively high power-to-weight ratio, specific energy and energy density

### **Do Electric Cars Work in Cold Weather? Get the Facts...- Union of Concerned Scientists**

URL: <https://blog.ucsusa.org/dave-reichmuth/electric-cars-cold-weather-temperatures>

Publisher: blog.ucsusa.org

- All cars have lower fuel efficiencies at colder temperatures, decreasing how far the vehicle can travel without refueling.
- Electric vehicles are also getting better at cold temperature performance.
- However, because some electric vehicles have a lower range than the typical gasoline car, these efficiency losses can be an important consideration when choosing an EV in places that have cold winters.

### **New startup Recurrent brings transparency to EV batteries, reducing risk in used car shopping- GeekWire**

URL: <https://www.geekwire.com/2020/new-startup-recurrent-brings-transparency-ev-batteries-reducing-risk-used-car-shopping/>

Publisher: geekwire.com

- "When the battery goes bad, that's the whole thing," said Scott Case, CEO and co-founder of Recurrent.

- "Electric vehicles are where all the growth in the retail auto industry is," said Galgon in a statement.

### **Why are electric cars expensive? The cost of making and buying an EV explained**

URL: <https://auto.hindustantimes.com/auto/news/why-are-electric-cars-expensive-the-cost-of-making-and-buying-an-ev-explained-41603419957680.html>

Publisher: auto.hindustantimes.com

- At current rates and pack sizes, the average battery cost for a typical electric vehicle works out to about\$ 7,350.
- But the average pack price of\$ 156 per kilowatt hour is still above the\$ 100 threshold at which the cost of an electric vehicle should match a car with an internal-combustion engine.

### **What is Range Anxiety with Electric Vehicles?**

URL: <https://www.jdpower.com/cars/shopping-guides/what-is-range-anxiety-with-electric-vehicles>

Publisher: jdpower.com

- Range anxiety is what an electric vehicle driver feels when the battery charge is low, and the usual sources of electricity are unavailable.
- A tsunami of electric vehicles is coming soon, whether consumers want them or not.
- If you're going to dive into the deep end of the electric vehicle pool, know that while EVs can occasionally prove aggravating when it comes to recharging, the majority of the time, they are not.

### **Full system nickel-metal hydride battery packs for hybrid electric vehicle applications**

URL: <https://ieeexplore.ieee.org/document/986409>

Publisher: ieeexplore.ieee.org

- Full system nickel-metal hydride battery packs for hybrid electric vehicle applications

### **How Do Hydrogen Fuel Cell Vehicles Work?**

URL: <https://www.ucsusa.org/resources/how-do-hydrogen-fuel-cell-vehicles-work>

Publisher: ucsusa.org

- Fuel cell vehicles use hydrogen gas to power an electric motor.
- Since they're powered entirely by electricity, fuel cell vehicles are considered electric vehicles
- Though cleaner than conventional cars and trucks, non-plug-in hybrids derive all their power from gasoline and diesel, and are n't considered electric vehicles.

### **Large Format Rechargeable Batteries for Electric Vehicles(EVs)- Epsilor**

URL: <https://www.epsilor.com/content/EV/>

Publisher: epsilor.com

- Large Format Rechargeable Batteries for Electric Vehicles Large format rechargeable lithium batteries are the technology of choice for electric vehicles.
- The batteries are employed in commercial EVs, quiet military vehicles, robots and underwater and unmanned air vehicles.

- Epsilon works closely with its customers to develop advanced energy storage systems that meet both stringent electric vehicle and military specifications.

### **Global Electric Vehicle Battery Market Outlook Report 2019-2020& 2027- Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities**

URL: <https://www.globenewswire.com/news-release/2020/11/12/2125374/0/en/Global-Electric-Vehicle-Battery-Market-Outlook-Report-2019-2020-2027-Drivers-Constraints-Opportunities-Threats-Challenges-Investment-Opportunities.html>

Publisher: globenewswire.com

- Dublin, Nov. 12, 2020-- The "Electric Vehicle Battery- Global Market Outlook" report has been added to
- What the report offers
- However, stringent lead pollution norms in electric vehicle battery, high import taxes on EV batteries and instability in raw material prices are restraining the market growth.

### **Traction Batteries for EV and HEV applications**

URL: <https://www.mpoweruk.com/traction.htm>

Publisher: mpoweruk.com

- In particular, the use of light weight Nickel Metal Hydride and Lithium batteries instead of the heavy and bulky Lead Acid batteries has made practical electric vehicles and hybrid electric vehicles possible for the first time.
- However, because the energy requirement is shared with an internal combustion engine the battery capacity required is much smaller.
- It goes without saying that low cost, long life, low self discharge rates and low maintenance are basic requirements for all applications.

### **Five emerging battery technologies for electric vehicles**

URL: <https://www.brookings.edu/blog/techtank/2015/09/15/five-emerging-battery-technologies-for-electric-vehicles/>

Publisher: brookings.edu

- Five emerging battery technologies for electric vehicles
- As the 2016 suite of new car models makes evident, electric vehicles are finally gaining real traction in the market.
- Electric vehicles will undoubtedly become more commonplace as batteries are improved.

### **The Future of Cobalt-Free Batteries for Electric Vehicles**

URL: <https://www.azom.com/article.aspx?ArticleID=19915>

Publisher: azom.com

- The Future of Cobalt-Free Batteries for Electric Vehicles

### **Traction Battery Review | Engineers Edge**

URL: [https://www.engineersedge.com/battery/traction\\_battery.htm](https://www.engineersedge.com/battery/traction_battery.htm)

Publisher: engineersedge.com

- Traction batteries, also called electric vehicle battery are used to provide motive power for electric or hybrid vehicles.
- Batteries for electric vehicles are characterized by their relatively high power-to-weight ratio, energy to weight ratio and energy density
- and this often impacts the maximum all-electric range of the vehicles.

### **Energies**

URL: <https://www.mdpi.com/1996-1073/12/6/1074>

Publisher: mdpi.com

- Current Li-Ion Battery Technologies in Electric Vehicles and Opportunities for Advancements

### **High-temperature sodium nickel chloride battery for electric vehicles- UNT Digital Library**

URL: <https://digital.library.unt.edu/ark:/67531/metadc682165/>

Publisher: digital.library.unt.edu

- High-temperature sodium nickel chloride battery for electric vehicles

### **A nickel metal hydride battery for electric vehicles**

URL: <https://pubmed.ncbi.nlm.nih.gov/17807176/>

Publisher: pubmed.ncbi.nlm.nih.gov

- A nickel metal hydride battery for electric vehicles
- Widespread use of electric vehicles can have significant impact on urban air quality, national energy independence, and international balance of trade.
- An efficient battery is the key technological element to the development of practical electric vehicles.

### **The Challenges of Zinc Air Batteries | designnews.com**

URL: <https://www.designnews.com/electronics-test/challenges-zinc-air-batteries>

Publisher: designnews.com

- Mechanical recharging of zinc air batteries has been suggested as a way to rapidly recharge electric vehicles.
- But for now, it is easier to supply electricity from the grid through a charging station to a lithium ion battery-the technology that seems destined to dominate electric vehicles, at least in the short term.

### **Battery electric vehicle- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Battery\\_electric\\_vehicle](https://en.wikipedia.org/wiki/Battery_electric_vehicle)

Publisher: en.wikipedia.org

- A battery electric vehicle, pure electric vehicle, only-electric vehicle or all-electric vehicle is a type of electric vehicle that exclusively uses chemical energy stored in rechargeable battery packs, with no secondary source of propulsion.
- Cumulative global sales of highway-capable light-duty pure electric car vehicles passed the one million unit milestone in September 2016.

- First introduced in 1889, battery vehicle milk floats expanded in 1931 and by 1967 gave Britain the largest electric vehicle fleet in the world.

### **Musk calls hydrogen fuel cells 'stupid,' but tech may threaten Tesla**

URL: <https://www.cnn.com/2019/02/21/musk-calls-hydrogen-fuel-cells-stupid-but-tech-may-threaten-tesla.html>

Publisher: cnn.com

- Fuel cell electric vehicles combine hydrogen stored in a tank with oxygen from the air to produce electricity, with water vapor as the by-product.
- Unlike more common battery-powered electric vehicles, fuel cell vehicles do n't need to be plugged in, and current models all exceed 300 miles of range on a full tank.
- As of Feb. 1, just over 6,000 fuel cell electric vehicles had been sold and leased in the U.S., double Japan, the next biggest market.

### **Nickel mining: the hidden environmental cost of electric cars**

URL: <https://www.theguardian.com/sustainable-business/2017/aug/24/nickel-mining-hidden-environmental-cost-electric-cars-batteries>

Publisher: theguardian.com

- As countries the world over legislate to phase out petrol and diesel cars, attention is turning to the environmental impact of mining the materials needed for electric vehicle batteries.
- Miners struggling with low nickel prices have welcomed rising demand from an industry that the International Energy Agency estimates will deploy up to 70m electric vehicles by 2025.
- Carey Smith, a senior analyst at Alto Capital, says BHP Billiton has deep enough pockets to hold on for the electric vehicle boom, but notes it is only doing so after failing to sell its unprofitable Nickel West business due to an estimated A\$ 1bn in environmental clean-up liabilities.

### **Energy and environmental assessment of a traction lithium-ion battery pack for plug-in hybrid electric vehicles- PubMed**

URL: <https://pubmed.ncbi.nlm.nih.gov/31007414/>

Publisher: pubmed.ncbi.nlm.nih.gov

- Energy and environmental assessment of a traction lithium-ion battery pack for plug-in hybrid electric vehicles
- This article presents an environmental assessment of a lithium-ion traction battery for plug-in hybrid electric vehicles, characterized by a composite cathode material of lithium manganese oxide-LRB- LiMn

### **Batteries**

URL: <https://www.mdpi.com/2313-0105/5/1/23>

Publisher: mdpi.com

- Eco-Efficiency of a Lithium-Ion Battery for Electric Vehicles
- Lithium-ion battery packs inside electric vehicles represents a high share of the final price.

## **The top battery tech you can expect in tomorrow's EVs - Driving.ca**

URL: <https://driving.ca/features/feature-story/motor-mouth-the-top-battery-tech-you-can-expect-in-tomorrows-evs>

Publisher: driving.ca

- Nonetheless, we'll no doubt see some faster-charging batteries in electric vehicles within the next three to five years, at least in part due to silicon and other anode enhancements like niobium oxide.
- The biggest issue for electric vehicles is all the weight they have to lug around.
- While early adopters have proven willing to put up with long waits for recharging, most experts make plain that even the 20 to 30 minutes a long-range electric vehicle would need from a current state-of-the-art 35 kW charging station is n't quick enough for mass adoption.

## **What's Up With the Cobalt Used in EV Batteries? | Fresh Energy**

URL: <https://fresh-energy.org/whats-up-with-the-cobalt-used-in-ev-batteries/>

Publisher: fresh-energy.org

- The use of cobalt in electric vehicle batteries has been raised as a concern, given the worker exploitation in mining locations such as the Congo.
- Electric vehicle manufacturers are transitioning away from cobalt.
- ; the Walz Administration's Clean Cars Minnesota initiative is a critical step to ensure that Minnesotans have access to newer electric vehicle models as they become available.

## **How Do Fuel Cell Electric Vehicles...- Alternative Fuels Data Center**

URL: <https://afdc.energy.gov/vehicles/how-do-fuel-cell-electric-cars-work>

Publisher: afdc.energy.gov

- : How Do Fuel Cell Electric Vehicles Work Using Hydrogen?
- How Do Fuel Cell Electric Vehicles Work Using Hydrogen?
- Like all-electric vehicles, fuel cell electric vehicles use electricity to power an electric motor.

## **A novel zinc-air battery for electric vehicles**

URL: <http://ieeexplore.ieee.org/document/398494/>

Publisher: ieeexplore.ieee.org

- A novel zinc-air battery for electric vehicles

## **Fuel Cell Electric Vehicle Basics | NREL**

URL: <https://www.nrel.gov/research/transportation-fuel-cells.html>

Publisher: nrel.gov

- Fuel cell electric vehicles use fuel cell stacks to convert onboard gaseous hydrogen to electricity, which is then stored in a battery to power the vehicle's electric motor.
- As with other electric vehicles, fuel cell electric vehicles are equipped with regenerative braking systems to capture the kinetic energy normally lost during breaking and store it in the battery.
- Fuel cell electric vehicles are more efficient than conventional vehicles and produce no tailpipe emissions-they emit only water vapor and warm air.



## **Top electric vehicle markets dominate lithium-ion battery capacity growth**

URL: <https://www.spglobal.com/marketintelligence/en/news-insights/blog/top-electric-vehicle-markets-dominate-lithium-ion-battery-capacity-growth>

Publisher: spglobal.com

- Top electric vehicle markets dominate lithium-ion battery capacity growth
- Plug-in electric vehicle sales
- We forecast U.S. PEV sales to increase from 0.28 million units to 1.05 million units between 2020 and 2025, led by the 12 states that have adopted the zero-emissions electric vehicle program, and from the upside potential of President Joe Biden fulfilling election promises of reaching carbon neutrality by 2035, replacing the government's fleet with electric vehicles and investing in 500,000 EV charging stations, all of which could increase PEV production and uptake.

## **A Zinc/Air Fuel Cell for Electric Vehicles**

URL: <https://www.osti.gov/servlets/purl/5769>

Publisher: osti.gov

- Zinc/air fuel cell for electric vehicles

## **What is a Sodium-nickel chloride Na-NiCl<sub>2</sub> battery?- News about Energy Storage, Batteries, Climate Change and the Environment**

URL: <https://www.upsbatterycenter.com/blog/sodium-nickel-chloride-na-nicl2-battery/>

Publisher: upsbatterycenter.com

- What is a Sodium-nickel chloride Na-NiCl<sub>2</sub> battery?
- The sodium-nickel chloride battery contains NiCl

## **Sodium Nickel Chloride batteries in transportation applications**

URL: <https://ieeexplore.ieee.org/document/7101491>

Publisher: ieeexplore.ieee.org

- Sodium Nickel Chloride batteries in transportation applications

## **Rechargeable Batteries | Cobalt Institute**

URL: <https://www.cobaltinstitute.org/rechargeable-batteries.html>

Publisher: cobaltinstitute.org

- Rechargeable batteries are electro-chemical devices that convert chemical energy into electrical energy
- The battery is recharged by replenishing the anode with electrons to its reduced state, as well as removing the electrons from the cathode returning it to its oxidised state.
- The lithium-ion battery is the most commonly used type of battery with cobalt being found in the cathode.

## **Performance evaluation of lithium polymer batteries for use in electric vehicles**

URL: <https://ieeexplore.ieee.org/document/4677513/>

Publisher: ieeexplore.ieee.org

- Performance evaluation of lithium polymer batteries for use in electric vehicles

### **Booming electric vehicle sales drive surge in cobalt prices| Reuters**

URL: <https://www.reuters.com/article/us-cobalt-prices-graphic/booming-electric-vehicle-sales-drive-surge-in-cobalt-prices-idUSKBN2B41YB>

Publisher: reuters.com

- Booming electric vehicle sales drive surge in cobalt prices

### **Electric vehicle models expected to triple in 4 years as declining battery costs boost adoption**

URL: <https://www.utilitydive.com/news/electric-vehicle-models-expected-to-triple-in-4-years-as-declining-battery/592061/>

Publisher: utilitydive.com

- Electric vehicle models expected to triple in 4 years as declining battery costs boost adoption
- The number of electric vehicle models available to consumers is expected to more than triple in the next three years, from roughly 40 to 127 in the United States, as battery prices fall, charging infrastructure spreads and adoption rises, according to Dan Bowermaster, senior program manager for electric transportation at the Electric Power Research Institute.
- Battery costs represent a major factor in how electric vehicles stack up against internal combustion engines.

### **Current State of Electric Vehicle Battery Technology| Arrow.com**

URL: <https://www.arrow.com/en/research-and-events/articles/current-state-of-electric-vehicle-battery-technology>

Publisher: arrow.com

- Over the last two decades, lithium-ion battery technology has worked its way to the forefront of the automotive market.
- But electric vehicle battery technology continually pushes the bounds of lithium-ion batteries' ability to provide ample power, longevity and safety.
- We'll highlight some of the current EV battery technology on the market today and analyze the varying battery cell sizes at work in different EV systems.

### **Capacity Fade Estimation in Electric Vehicle Li-Ion Batteries Using Artificial Neural Networks**

URL: <https://ieeexplore.ieee.org/document/6937156>

Publisher: ieeexplore.ieee.org

- Capacity Fade Estimation in Electric Vehicle Li-Ion Batteries Using Artificial Neural Networks

### **Life Cycle Assessment of Silicon-Nanotube-Based Lithium Ion Battery for Electric Vehicles**

URL: <https://pubs.acs.org/doi/10.1021/acssuschemeng.8b04136>

Publisher: pubs.acs.org

- Life Cycle Assessment of Silicon-Nanotube-Based Lithium Ion Battery for Electric Vehicles

## **The Lead-Acid Battery's Demise Has Been Greatly Exaggerated**

URL: <https://www.forbes.com/sites/rpapier/2019/10/27/the-lead-acid-batterys-demise-has-been-greatly-exaggerated/>

Publisher: forbes.com

- In terms of the electric vehicle revolution, lead batteries remain key to the transition with virtually all vehicles containing a lead battery.

## **Gold Is Hot But Nickel Is Hotter As Demand Grows For Batteries In Electric Vehicles**

URL: <https://www.forbes.com/sites/timtreadgold/2019/08/11/gold-is-hot-but-nickel-is-hotter-as-demand-grows-for-batteries-in-electric-vehicles/>

Publisher: forbes.com

- Gold Is Hot But Nickel Is Hotter As Demand Grows For Batteries In Electric Vehicles

## **Applied Sciences**

URL: <https://www.mdpi.com/2076-3417/11/3/1160>

Publisher: mdpi.com

- Life Cycle Assessment of an NMC Battery for Application to Electric Light-Duty Commercial Vehicles and Comparison with a Sodium-Nickel-Chloride Battery
- This paper presents the results of an environmental assessment of a Nickel-Manganese-Cobalt Lithium-ion traction battery for Battery Electric Light-Duty Commercial Vehicles used for urban and regional freight haulage.

## **Topology analysis of electric vehicles, with a focus on the traction battery**

URL: <https://link.springer.com/article/10.1007/s10010-020-00422-1>

Publisher: link.springer.com

- Topology analysis of electric vehicles, with a focus on the traction battery
- Over recent years, the number of battery electric vehicles has drastically increased due to new European Union regulations.
- : in Germany, the number of licensed electric vehicles has risen from 514 in 2010 to 36,062 in 2018-LSB- 1-RSB- as shown in Fig. 1.

## **Hydrogen fuel cell cars: what you need to know| BMW.com**

URL: <https://www.bmw.com/en/innovation/how-hydrogen-fuel-cell-cars-work.html>

Publisher: bmw.com

- The technology in question is the hydrogen engine, also known as the fuel cell electric vehicle, or FCEV.
- station and battery capacity, fully electric vehicles currently require between 30 minutes and several hours for a full charge.
- The common abbreviation is FCEV, short for "Fuel Cell Electric Vehicle," in contrast to a BEV or "Battery Electric Vehicle."

## **Lithium polymer battery development for electric vehicle application- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/S0378775397026463>

Publisher: sciencedirect.com

- Lithium polymer battery development for electric vehicle application
- Power tests, thermal modelling and specific energy projections based on the same electrochemical performances confirm the interest of the lithium polymer battery for electric vehicle application.

### **It's time to get serious about recycling lithium-ion batteries**

URL: <https://cen.acs.org/materials/energy-storage/time-serious-recycling-lithium/97/i28>

Publisher: cen.acs.org

- Another long-term financial concern for companies considering stepping into battery recycling is whether a different type of battery, such as Li air, or a different vehicle propulsion system, like hydrogen-powered fuel cells, will gain a major foothold on the electric-vehicle market in coming years, lowering the demand for recycling Li-ion batteries.
- Large battery packs that power electric vehicles may contain several thousand cells grouped in modules.

### **Toyota's Solid-State Battery Prototype Could Be an EV Game Changer**

URL: <https://www.motortrend.com/news/toyota-solid-state-battery-ev-2021/>

Publisher: motortrend.com

- The race to develop a solid-state battery for electric vehicles is on, and if Toyota's plans to produce a running prototype in 2021 come to fruition, then we could very well be looking at the dominant automotive technology of the future within the next year.

### **Fuel Cell Electric Vehicles- Alternative Fuels Data Center**

URL: [https://afdc.energy.gov/vehicles/fuel\\_cell.html](https://afdc.energy.gov/vehicles/fuel_cell.html)

Publisher: afdc.energy.gov

- What is a fuel cell electric vehicle?
- FCEVs use a propulsion system similar to that of electric vehicles, where energy stored as hydrogen is converted to electricity by the fuel cell.

### **High energy Li-Ion battery is safer for electric vehicles**

URL: <https://news.psu.edu/story/610880/2020/03/04/research/high-energy-li-ion-battery-safer-electric-vehicles>

Publisher: news.psu.edu

- Electric vehicle batteries typically require a tradeoff between safety and energy density.

### **best top racing car rechargeable list and get free shipping- a364**

URL: <https://sites.google.com/a/z.dailynewspapere.com/a364/ToysHobbies/racing-car-rechargeable>

Publisher: sites.google.com

- best top racing car rechargeable list and get free shipping
- 7.4 V/11.1 V 850MAH/1000MAH 45C 2S Lipo Battery XT30/JST Plug Rechargeable for RC Racing Drone Helicopter Car Boat Model

### **What can we learn from Japan about EV adoption?**

URL: <https://www.fleetcarma.com/can-learn-japan-ev-adoption/>

Publisher: fleetcarma.com

- Predictably enough, more and more lithium-ion batteries from electric vehicles are hitting the retirement age.

### **Biden win boosts South Korean EV battery makers- Nikkei Asia**

URL: <https://asia.nikkei.com/Business/Automobiles/Biden-win-boosts-South-Korean-EV-battery-makers>

Publisher: asia.nikkei.com

- SEOUL-- Joe Biden's win in the U.S. presidential election is giving a lift to South Korean electric vehicle battery makers as investors bet his green policy will help them expand in the American market.
- LG Chem has decided to spin off its battery unit this December in an attempt to capitalize on growing interest in the sector amid rising global demand for electric vehicles.

### **The 2040 outlook for EV battery manufacturing| McKinsey**

URL: <https://www.mckinsey.com/industries/oil-and-gas/our-insights/recharging-economies-the-ev-battery-manufacturing-outlook-for-europe>

Publisher: mckinsey.com

- Electric-vehicle-battery-production paradox in Europe

### **The Worlds Highest Energy Density from Romeo Power**

URL: <https://romeopower.com/>

Publisher: romeopower.com

- Advanced batteries for electric vehicles with the highest energy density.

### **Power play: How governments are spurring the electric vehicle industry**

URL: <https://theicct.org/publications/global-electric-vehicle-industry>

Publisher: theicct.org

- This white paper provides a detailed assessment of light-duty electric vehicle sales and manufacturing, including the associated battery production and its suppliers.
- We analyze where electric vehicle models are being assembled and where their battery cells are being produced, and compare that to where the consumer markets are developing.
- Electric vehicle promotion policy.

### **Why Japan's carmaking heavyweights could be facing an electric shock**

URL: <https://www.theguardian.com/environment/2021/mar/18/why-japans-carmaking-heavyweights-could-be-facing-an-electric-shock>

Publisher: theguardian.com

- Japan's traditional carmaking giants need to raise their game in the race to develop pure, battery-driven electric vehicles or risk being left behind by Chinese, American and European producers, analysts have warned.
- Tesla topped the table for worldwide sales of plug-in electric vehicles last year, according to Statista, with more than 500,000 cars.
- Last year, fewer than 15,000 battery electric vehicles were sold in Japan, or less than 1% of overall car sales.

### **Solar energy farms could offer second life for electric vehicle batteries**

URL: <https://news.mit.edu/2020/solar-energy-farms-electric-vehicle-batteries-life-0522>

Publisher: news.mit.edu

- Solar energy farms could offer second life for electric vehicle batteries
- As electric vehicles rapidly grow in popularity worldwide, there will soon be a wave of used batteries whose performance is no longer sufficient for vehicles that need reliable acceleration and range.
- Many electric vehicle manufacturers are already beginning to do such pilot studies.

### **Batteries, Charging, and Electric Vehicles| Department of Energy**

URL: <https://www.energy.gov/eere/vehicles/batteries-charging-and-electric-vehicles>

Publisher: energy.gov

- Reduce the cost of electric vehicle batteries to less than\$ 100/kWh-ultimately\$ 80/kWh

### **Transportation& Logistics| Costco**

URL: <https://www.costco.com/sustainability-transportation-logistics.html>

Publisher: costco.com

- Finally, recharging stations are available in three locations at our corporate offices for employees who drive electric vehicles.
- Costco continues to increase available electric vehicle charging stations and now has 16 locations, supporting 48 charging stations.

### **Rail News- BNSF, Wabtec begin testing battery-electric locomotive. For Railroad Career Professionals**

URL: <https://www.progressiverailroading.com/mechanical/news/BNSF-Wabtec-begin-testing-battery-electric-locomotive--62366>

Publisher: progressiverailroading.com

- As BNSF seeks ways to further reduce its environmental impact, the advancement of battery technology offers some possible solutions, BNSF officials said in a press release.

### **Federal Tax Credits for All-Electric and Plug-in Hybrid Vehicles**

URL: <https://www.fueleconomy.gov/feg/taxevb.shtml>

Publisher: fueleconomy.gov

- The credit amount will vary based on the capacity of the battery used to power the vehicle.
- Small neighborhood electric vehicles do not qualify for this credit, but they may qualify for another credit.

### **BNSF and Wabtec commence battery-electric locomotive pilot test in California- Green Car Congress**

URL: <https://www.greencarcongress.com/2021/01/20210105-bnsf.html>

Publisher: greencarcongress.com

- BNSF Railway Company and Wabtec began testing battery-electric locomotive technology in revenue service between Barstow and Stockton, California.

### **Plug-in electric vehicle- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Plug-in\\_electric\\_vehicle](https://en.wikipedia.org/wiki/Plug-in_electric_vehicle)

Publisher: en.wikipedia.org

- A plug-in electric vehicle is any road vehicle that can be recharged from an external source of electricity, such as wall sockets, and the electricity stored in the rechargeable battery packs drives or contributes to drive the wheels.
- A plug-in electric vehicle is any motor vehicle with rechargeable battery packs that can be charged from the electric grid, and the electricity stored on board drives or contributes to drive the wheels for propulsion.
- In China, plug-in electric vehicles are classified as new energy vehicles.

### **All About Drivetrains| Union of Concerned Scientists**

URL: <https://www.ucsusa.org/resources/all-about-drivetrains>

Publisher: ucsusa.org

- Since battery-electric and hydrogen fuel cell vehicles do n't have internal combustion engines, they utilize different drivetrain assemblies.

### **Electric Bikes, Vehicles,& Infrastructure| Arcata, CA**

URL: <https://www.cityofarcata.org/813/Electric-Vehicles-Infrastructure>

Publisher: cityofarcata.org

- An electric vehicle is a car that is propelled by one or more electric motors, using energy typically stored in rechargeable batteries.
- A battery electric vehicle operates entirely on electricity and needs to be plugged in to be recharged.
- They derive all power from battery packs and have no internal combustion engine or fuel tank.

### **JAXA and Toyota Reach Agreement on Consideration Toward International Space Exploration**

URL: <https://global.toyota/en/newsroom/corporate/27059582.html>

Publisher: global.toyota

- “ Fuel cell electric vehicles have the ability to emit reduced amounts of harmful substances, such as particulate matter, that are found in the air they take in.
- We want to further improve on this characteristic.
- Fuel cell electric vehicles reduce particulate matter in the air they take in by way of a filter, and supply the resulting cleaner air to their fuel cell batteries, emitting only water and surplus air.

### **Bill Gates-backed EV battery supplier to go public through SPAC deal**

URL: <https://www.cnbc.com/2020/09/03/bill-gates-backed-ev-battery-supplier-to-go-public-through-spac-deal.html>

Publisher: cnbc.com

- An electric vehicle battery supplier backed by Microsoft co-founder Bill Gates and Volkswagen is the newest automotive company to announce plans to go public through a special purpose acquisition company.
- It's the latest SPAC deal for an automotive company following electric vehicle company Nikola's IPO in early June.
- Many believe the batteries are the next best power source for future electric vehicles.

**Bill Gates-backed electric car battery startup is on the cusp of changing the industry**

URL: <https://sports.yahoo.com/bill-gatesbacked-electric-car-battery-startup-is-on-the-cusp-of-changing-the-industry-184517860.html>

Publisher: sports.yahoo.com

- First, QuantumScape may have developed the battery that addresses some of the biggest problems with electric vehicles



# ADDITIONAL ARTICLES: GOVERNMENT INCENTIVES

*The full set of articles discovered by Gyan based on your research question can be found in this section.*

## **Investor Relations | NIO Inc.**

URL: <https://ir.nio.com/overview>

Publisher: [ir.nio.com](https://ir.nio.com)

- Our mission is to shape a joyful lifestyle by offering premium smart electric vehicles and being the best user enterprise.
- NIO Inc. is a pioneer in China's premium electric vehicle market.
- We design, jointly manufacture, and sell smart and connected premium electric vehicles, driving innovations in next generation technologies in connectivity, autonomous driving and artificial intelligence.

## **10 questions on EVs for the CEO of Portland General Electric**

URL: <https://www.greenbiz.com/article/10-questions-evs-ceo-portland-general-electric>

Publisher: [greenbiz.com](https://www.greenbiz.com)

- If you're in Portland and in Oregon, you can elect to use an all-electric green vehicle on your Lyft app and that vehicle was undoubtedly charged at one of our charging stations, and we've made it really easy for them to deal with billing and payment information and made it a seamless, frictionless process for our customers.
- Many of our single passenger vehicles are electric already, and what we've really looked at is how do we get deeper penetration into our work vehicles?

## **Time for a Serious US Electric Vehicle Manufacturing Strategy**

URL: <https://www.industryweek.com/the-economy/public-policy/article/21147767/time-for-a-serious-us-electric-vehicle-manufacturing-strategy>

Publisher: [industryweek.com](https://www.industryweek.com)

- The service requires full cookie support in order to view this website.

## **Xcel Energy**

URL: <https://ev.xcelenergy.com/>

Publisher: [ev.xcelenergy.com](https://ev.xcelenergy.com)

- Discover Incentives and Rebates

## **Electric Vehicles| Burlington Electric Department**

URL: <https://burlingtonelectric.com/ev>

Publisher: [burlingtonelectric.com](https://burlingtonelectric.com)

- Electric vehicles are less expensive to operate than conventional vehicles, emit no greenhouse gases or air pollution, and can be purchased with the help of several customer incentives.
- We are now offering incentives totaling 20% of the installed cost of a workplace EV charging station up to a maximum of \$1,000 per eligible station.
- EV Charging Station Incentives

### **Electric Vehicle Free Parking- Environment& Sustainability**

URL: <https://www.cincinnati-oh.gov/oes/get-involved/electric-vehicle-free-parking/>

Publisher: [cincinnati-oh.gov](https://www.cincinnati-oh.gov)

- The All-Electric Vehicle Incentive Program offers free parking to all-electric vehicles at
- This free parking program is for all-electric cars only and
- Parking in the designated City-owned garage will be on a first-come, first-served basis with no overnight privileges.

### **Electric Vehicles- Tampa Electric**

URL: <https://www.tampaelectric.com/company/electricvehicles/>

Publisher: [tampaelectric.com](https://www.tampaelectric.com)

- If you're a business customer interested in hosting a plug-in electric vehicle charging station at your location, we encourage you to share your email address so we can contact you to submit an application once the pilot program and online application receives final approval from the Florida Public Service Commission.
- We expect this to occur before the end of May 2021.

### **Electric Vehicles| San Diego Gas& Electric**

URL: <https://www.sdge.com/residential/lovelectric>

Publisher: [sdge.com](https://www.sdge.com)

- With tax credits, rebates and HOV access, there are many ways EVs help you save money and time.

### **Driving into 2025: The Future of Electric Vehicles**

URL: <https://www.jpmorgan.com/insights/research/electric-vehicles>

Publisher: [jpmorgan.com](https://www.jpmorgan.com)

- % of global auto sales came from plug-in electric vehicles.<sup>1</sup>
- In Europe, plug-in electric vehicles will rise from roughly a 2% share of total new sales in 20

### **Electric Vehicles | City of Glendale, CA**

URL: <https://www.glendaleca.gov/government/departments/glendale-water-and-power/electric-vehicles>

Publisher: [glendaleca.gov](https://www.glendaleca.gov)

- As more of our residents are entering into the Electric Vehicle market, Glendale Water& Power has launched a new program that expands the electric vehicle charging infrastructure, making it easier for residents to charge their EV's.

- Clean Air Vehicle Decals The California Department of Motor Vehicles issues Clean Air Vehicle decals that allow vehicles meeting specified emissions standards single occupancy use of High Occupancy Vehicle lanes.
- Electric vehicle charging station, installed by a qualified electrician.

### **Why Agencies Aren't Buying More Electric Vehicles- Nextgov**

URL: <https://www.nextgov.com/emerging-tech/2019/08/why-agencies-arent-buying-more-electric-vehicles/159574/>

Publisher: nextgov.com

- Federal agencies were under a mandate to purchase more alternative-fuel vehicles by 2017 in order to reduce emissions, but costs, lack of supporting infrastructure and low availability of larger vehicles have kept the government's electric vehicle fleet small.
- Agencies were not purchasing as many electric vehicles in the runup to the 2017 deadline, though most were able to meet the requirements`` by changing the mix of vehicles acquired and improving fleet management," according to GAO.

### **Electric vehicles are becoming unaffordable| Newsday**

URL: <https://www.newsday.com/opinion/commentary/electric-vehicles-environment-cost-expensive-1.34462235>

Publisher: newsday.com

- Will electric vehicles ever be affordable?
- These include`` zero emissions" vehicle mandates that amount to electric car quotas that must be filled

### **ELECTRIC VEHICLES: GM's all-EV plan could shake the energy industry-- Friday, January 29, 2021-- www.eenews.net**

URL: <https://www.eenews.net/stories/1063723879>

Publisher: eenews.net

- and the electric grid, which would need dramatic changes to fuel the onrush of electric vehicles.
- The news arrived in a head-spinning week for electric vehicles and corporate carbon accountability.
- Those standards have played a key role in developing electric vehicles, including decades of early models from GM.

### **'Utility Accountability' Centerpiece of Pritzker's Clean Energy Outline - NBC Chicago**

URL: <https://www.nbcchicago.com/news/local/chicago-politics/utility-accountability-centerpiece-of-pritzkers-clean-energy-outline/2326318/>

Publisher: nbcchicago.com

- To put 750,000 electric vehicles on the road by 2030, for example, there's about\$ 70 million in the Democratic governor's`` Rebuild Illinois" infrastructure program for installing more charging stations, which are relatively scarce now.

### **AEP- American Electric Power- CSWire**

URL: <https://www.cswire.com/members/17432-american-electric-power>

Publisher: cswire.com

- The strategy includes new carbon dioxide emission reduction goals and investments in renewable resources and advanced technologies to enhance the efficiency of the power grid.

### **Battery Charger for Electric Vehicle Traction Battery Switch Station**

URL: <https://ieeexplore.ieee.org/document/6380611>

Publisher: ieeexplore.ieee.org

- Battery Charger for Electric Vehicle Traction Battery Switch Station

### **Electric vehicles| Minnesota Pollution Control Agency**

URL: <https://www.pca.state.mn.us/air/electric-vehicles>

Publisher: pca.state.mn.us

- Electric vehicles support Minnesota's transition away from fossil fuels and towards cleaner renewable sources of energy.
- Electric vehicles mean lower emissions of greenhouse gases and other air pollutants, and lower cost of vehicle ownership.
- They can also support increased renewable energy and the modernization of our electric power grid.

### **Sodium Based**

URL: <https://www.eurobat.org/batteries-contribution/battery-technologies/sodium-based>

Publisher: eurobat.org

- For these reasons they can be found in application in energy grid storage, such as storing energy from intermittent energy sources such as wind

### **Steps to Commercialization: Nickel Metal Hydride Batteries**

URL: <https://www.energy.gov/articles/steps-commercialization-nickel-metal-hydride-batteries-0>

Publisher: energy.gov

- Starting in 1976, DOE-funded scientists formed a broad foundation for advances in battery and ultracapacitor technologies, leading to the development of Nickel Metal Hydride batteries, used in Hybrid Electric Vehicles.
- Longer lived and lower cost batteries are crucial for creating cost-competitive hybrid vehicles.
- The Energy Department funded collaborative efforts to improve the power and life of NiMH batteries, starting in the 1990s.

### **'Instantly rechargeable' battery could change the future of electric and hybrid automobiles- Purdue University News**

URL: <https://www.purdue.edu/newsroom/releases/2017/Q2/instantly-rechargeable-battery-could-change-the-future-of-electric-and-hybrid-automobiles.html>

Publisher: purdue.edu

- WEST LAFAYETTE, Ind.-- A technology developed by Purdue researchers could provide an "instantly rechargeable" method that is safe, affordable and environmentally friendly for recharging electric and hybrid vehicle batteries through a quick and easy process similar to refueling a car at a gas station.
- "If battery is developing an energy storage system that would enable drivers to fill up their electric or hybrid vehicles with fluid electrolytes to re-energize spent battery fluids much like refueling their gas tanks."

### **Molten-salt battery- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Molten-salt\\_battery](https://en.wikipedia.org/wiki/Molten-salt_battery)

Publisher: en.wikipedia.org

- Rechargeable liquid-metal batteries are used for industrial power backup, special electric vehicles and for grid energy storage, to balance out intermittent renewable power sources such as solar panels and wind turbines.
- variant of Molten-salt batteries was the development of the ZEBRA battery in 1985, originally developed for electric vehicle applications.
- It is also used in special electric vehicles used in mining.

### **The Guardian Electric cars rise to record 54% market share in Norway**

URL: <https://www.theguardian.com/environment/2021/jan/05/electric-cars-record-market-share-norway>

Publisher: theguardian.com

- Seeking to become the first nation to end the sale of petrol and diesel cars by 2025, oil-producing Norway exempts fully electric vehicles from taxes imposed on those relying on fossil fuels.
- Electric vehicle sales are expected to continue to soar in 2021, according to industry analysts and car distributors, as more models are brought to the market.
- Tesla's mid-sized sports utility vehicle, the Model Y, is due to reach the Norwegian market this year, as are the first electric SUVs from Ford, BMW and Volkswagen.

### **Inside Clean Energy: How Norway Shot to No. 1 in EVs- Inside Climate News**

URL: <https://insideclimatenews.org/news/11022021/inside-clean-energy-norway-electric-vehicles/>

Publisher: insideclimatenews.org

- In addition to a lack of electric vehicles for sale, the country also had few charging stations.
- While General Motors and Ford look to emphasize electric vehicles, the companies' home state has a long way to go to become a leader in clean vehicle policy.

### **The Netherlands goes for EV purchase subsidies- electrive.com**

URL: <https://www.electrive.com/2020/03/05/the-netherlands-goes-for-ev-purchase-subsidies/>

Publisher: electrive.com

- Those wanting to purchase an electric vehicle in the Netherlands will now be beckoned by a subsidy of 4,000 euros for the purchase of new electric cars with a list price of between 12,000 and 45,000 euros and a minimum range of 120 kilometres.

### **Dutch charging station company looks to plug in to U.S. electric vehicle growth**

URL: <https://energynews.us/2020/07/08/dutch-charging-station-company-looks-to-plug-in-to-u-s-electric-vehicle-growth/>

Publisher: energynews.us

- Dutch charging station company looks to plug in to U.S. electric vehicle growth
- The company is expanding its presence in the U.S. to take advantage of a growing electric vehicle market.
- Electric transportation advocates note the move is particularly timely given recent advancement of electric vehicle policy in Illinois.

### **China rolls back the electric-vehicle subsidies that fueled its EV sales boom**

URL: <https://fortune.com/2021/01/05/china-electric-vehicle-subsidies-sales-tesla/>

Publisher: fortune.com

- China rolls back the electric-vehicle subsidies that fueled its EV sales boom

### **Plug-in electric vehicles in the United States- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Plug-in\\_electric\\_vehicles\\_in\\_the\\_United\\_States](https://en.wikipedia.org/wiki/Plug-in_electric_vehicles_in_the_United_States)

Publisher: en.wikipedia.org

- The adoption of plug-in electric vehicles in the United States is supported by the American federal government, and several states and local governments.
- The Energy Improvement and Extension Act of 2008 granted federal tax credits for new qualified plug-in electric vehicles, which is worth between US\$ 2,500 and US\$ 7,500 depending on battery capacity.
- The American Recovery and Reinvestment Act of 2009 also authorized federal tax credits for converted plug-ins, though the credit is lower than for new plug-in electric vehicle.

### **Electric Vehicles| Guide to Chinese Climate Policy**

URL: <https://chineseclimatepolicy.energypolicy.columbia.edu/en/electric-vehicles>

Publisher: chineseclimatepolicy.energypolicy.columbia.edu

- That figure was in part due to the June 26 subsidy cuts for electric vehicles, leading some buyers to advance their purchases.
- As of the end of June 2019, more than 3.5 million electric vehicles were on the roads in China.
- Roughly 5 million low-speed electric vehicles are in use in China.

### **Electric cars in Germany: registrations 2008-2020| Statista**

URL: <https://www.statista.com/statistics/646075/total-number-electric-cars-germany/>

Publisher: statista.com

- You can only download this statistic as a Premium user.

- As a Premium user you get access to the detailed source references and background information about this statistic.

### **Everybody In With Norway| General Motors**

URL: <https://www.gm.com/our-stories/no-way-norway.html>

Publisher: gm.com

- `Everybody In' demonstrates our intent to lead, while inviting others-- policymakers, partners, individuals-- to play an active role in moving society forward, whether that's helping to expand infrastructure, advocating for progress in their communities, learning about the benefits of EV ownership or simply taking a test drive to experience how fun they are.

### **New electric car registrations in Germany 2003-2021| Statista**

URL: <https://www.statista.com/statistics/1166572/new-electric-car-registrations-number-germany/>

Publisher: statista.com

- You can only download this statistic as a Premium user.
- As a Premium user you get access to the detailed source references and background information about this statistic.

### **In Germany, electric cars struggle to get into gear**

URL: <https://www.dw.com/en/in-germany-electric-cars-struggle-to-get-into-gear/a-56033892>

Publisher: dw.com

- Buyers of new electric vehicles in Germany are being offered premiums, but the technology still faces challenges
- Electric vehicles are expensive, and battery technology and charging infrastructure are far from being where they need to be.
- ; only 223,000 are fully battery electric vehicles.

### **How electric car incentives around the world work**

URL: <https://www.volkswagenag.com/en/news/stories/2019/05/how-electric-car-incentives-around-the-world-work.html>

Publisher: volkswagenag.com

- New car buyers in Norway-- the country with the highest sales penetration of electric cars in the world-- benefit from 25 percent savings for an electric vehicle from day one, as electric cars are exempt from VAT for regularly fueled vehicles.
- Almost every third vehicle sold in Norway in 2018 was electric.
- In the first quarter of 2019, almost every second vehicle registered was an electric car.

### **Policy Incentives for the Adoption of Electric Vehicles across Countries**

URL: <https://www.mdpi.com/2071-1050/6/11/8056>

Publisher: mdpi.com

- Policy Incentives for the Adoption of Electric Vehicles across Countries

## France decreases electric vehicle subsidies as sales rise- electrive.com

URL: <https://www.electrive.com/2020/09/29/france-decreases-ev-subsidies-as-sales-rise140521/>

Publisher: electrive.com

- France decreases electric vehicle subsidies as sales rise
- The only thing that remains untouched is a separate incentive to switch to electric vehicles for low-income households amounting to 3,000 euros.
- , electric vehicles accounted for 6.1 per cent of registrations in the French market in the first eight months of the year-- compared to only 1.9 per cent in 2019.

## EVOLVE

URL: <https://blog.wallbox.com/en-usa/>

Publisher: blog.wallbox.com

- Charging Station with the power cable plugged in.Technology car.
- While there's no doubt that the ongoing COVID-19 pandemic has set back the automotive industry in what was to be a crucial year for...

## EV competition gets tougher in Korea

URL: <http://www.koreaherald.com/view.php?ud=20200924000937>

Publisher: koreaherald.com

- The electric vehicle competition in South Korea is becoming fiercer with more local and foreign automotive brands launching their new electric cars in line with government support and the global environmental trends.
- In the first half of this year, 22,267 electric vehicles were sold here, up 23 percent from the same period last year, according to the Korea Automobile Manufacturers Association, although sales of EV passenger cars among them slightly declined 2.7 percent.
- Porsche is also planning to release its first electric vehicle, Taycan, in Korea in November.

## Electric Vehicle Transportation Center

URL: <http://evtc.fsec.ucf.edu/>

Publisher: evtc.fsec.ucf.edu

- The Electric Vehicle Transportation Center is a University Transportation Center funded by the U.S. Department of Transportation and is a research and education effort to help create the nation's electric-vehicle transportation network.
- The EVTC's research, education and its associated projects are conducted to prepare the U.S. transportation system for the future influx of electric vehicles into a sustainable transportation network while at the same time, seizing the opportunity these vehicles present to enhance electric grid modernization efforts.
- The Electric Vehicle Transportation Center is a comprised of transportation and energy experts from the University of Central Florida, University of Hawaii, and Tuskegee University.

## Promoting electric vehicles in Korea

URL: <https://theicct.org/blogs/staff/promoting-electric-vehicles-in-korea>

Publisher: theicct.org



- When we published this study last year on fiscal policy incentives for electric vehicles offered in various vehicle markets around the world, we were not able to include information on South Korea.
- Korea electric vehicle and passenger car sales, 2012-- 2014.
- BEV= battery electric vehicle

### **Electric Vehicle Grid Integration**

URL: <https://www.nrel.gov/transportation/project-ev-grid-integration.html>

Publisher: nrel.gov

- Electric Vehicle Grid Integration
- NREL researchers publish journal articles, conference papers, and reports about electric vehicle grid integration.
- NREL's nationally unique Electric Vehicle Research Infrastructure evaluation platform enables researchers as well as industry and utility stakeholders to study and develop optimal strategies for coordinating EVs with buildings, the grid, and other energy systems.

### **Using Electric Vehicle Batteries for Solar Energy Farms- Tech Briefs**

URL: <https://www.techbriefs.com/component/content/article/tb/supplements/bt/briefs/38470>

Publisher: techbriefs.com

- Electric vehicle batteries could have a useful and profitable second life as backup storage for grid-scale solar photovoltaic installations.
- As electric vehicles rapidly grow in popularity, there soon will be a wave of used batteries whose performance is no longer sufficient for vehicles that need reliable acceleration and range.
- New research shows that these batteries could still have a useful and profitable second life as backup storage for grid-scale solar photovoltaic installations, where they could perform for more than a decade in this less demanding role.

### **Applied Sciences**

URL: <https://www.mdpi.com/2076-3417/10/16/5654>

Publisher: mdpi.com

- Wind turbine analysis using two years of wind speed data shows that the application of direct wind-to-EV is able to provide sufficient constant power to supply the large-scale charging stations.

### **Electric Cars Will Challenge State Power Grids**

URL: <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2020/01/09/electric-cars-will-challenge-state-power-grids>

Publisher: pewtrusts.org

- When Seattle City Light unveiled five new electric vehicle charging stations last month in an industrial neighborhood south of downtown, the electric utility was n't just offering a new spot for drivers to fuel up.
- The average electric vehicle requires 30 kilowatt-hours to travel 100 miles
- About 150,000 electric vehicles were sold in California in 2018

### **VEHICLE-TO-GRID SECURITY- Neetesh Saxena**

URL: <https://sites.google.com/site/neeteshsaxena/cyber-and-critical-infrastructure-security-cycis-lab/research/vehicle-to-grid-security>

Publisher: sites.google.com

- Since electric vehicles need to provide their private information to aggregators/servers when charging/discharging at different charging stations, privacy of the vehicle owners can be compromised if the information is misused, traced, or revealed.

### **Impact analysis of vehicle-to-grid technology and charging strategies of electric vehicles on distribution networks - A review- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/S0378775314020370>

Publisher: sciencedirect.com

- Impact analysis of vehicle-to-grid technology and charging strategies of electric vehicles on distribution networks-- A review
- Impact of Electric Vehicles on Distribution Networks.
- This paper presents a detailed review of a vehicle-to-grid technology, in conjunction with various charging strategies of electric vehicles, and analyzes their impacts on power distribution networks.

### **Virtual State Policy Summit: Electric Vehicle Grid Integration- National Governors Association**

URL: <https://www.nga.org/center/meetings/2020-electric-vehicle-grid-integration/>

Publisher: nga.org

- This three-day summit on electric vehicle grid integration allowed for governors' policy staff to hear from experts and one another on the latest solutions, engage in peer-to-peer sharing, and discuss regional challenges and strategies in breakouts.
- The National Governors Association hosted a virtual summit to explore state policy and regulatory strategies to integrate higher volumes of electric vehicles and charging infrastructure into the power grid.
- States are in initial stages for transitioning to a system where electric vehicles are integrated with the grid.

### **California looks to electric vehicles for grid stability**

URL: <https://energynews.us/2021/03/23/california-looks-to-electric-vehicles-for-grid-stability/>

Publisher: energynews.us

- California looks to electric vehicles for grid stability

### **8 electric truck and van companies to watch in 2020| Greenbiz**

URL: <https://www.greenbiz.com/article/8-electric-truck-and-van-companies-watch-2020>

Publisher: greenbiz.com

- There's also the challenge of building an interstate network of electric vehicle charging stations capable of keeping the next generation of long-haul trucks on the road.
- Despite the potholes and growing pains that lie ahead, over the next 10 years, we can expect to see more electric vehicles driving alongside or even replacing the diesel

- Given that the company, best known for its Mercedes-Benz brand, has a 40 percent share in North America's approximately \$39 billion heavy-duty truck market, it'll be interesting to watch whether Daimler will be a leader or a laggard in the race to all-electric delivery vehicles.

### **With the help of location technology, last mile delivery can go electric**

URL: <https://360.here.com/electric-delivery-vehicles>

Publisher: 360.here.com

- "In my mind, it is feasible to electrify an entire fleet for a city and provide each vehicle with its own charging station."
- "Fleet managers still have a lot of concerns about the disadvantages of electric vehicles."

### **Electric Cars Are Coming, and Fast. Is the Nation's Grid Up to It?- The New York Times**

URL: <https://www.nytimes.com/2021/01/29/climate/gm-electric-cars-power-grid.html>

Publisher: nytimes.com

- Is the nation's power grid ready to handle this surge of new electric vehicles?
- In 2018, researchers at the University of Texas at Austin's Energy Institute looked at what a shift to electric vehicles would mean for the power grid in every state.
- For electric vehicles to go mainstream, charging will need to be widely accessible and convenient.

### **Electric Vehicle Trips- Travel Oregon**

URL: <https://traveloregon.com/things-to-do/trip-ideas/electric-vehicle-trips/>

Publisher: traveloregon.com

- Oregon is home to one of the largest and most robust networks of electric vehicle fast-charging stations in the U.S. And in between the many EV charging stations are scenic routes dotted with environmentally friendly...
- I traded in my gas-powered car for an electric vehicle and...
- We've got a lot of trip ideas within Electric Vehicle Trips you can explore.

### **Travel Behavior and Transportation Systems Analysis of Electric Vehicles**

URL: <https://www.hindawi.com/journals/jat/2018/7284026/>

Publisher: hindawi.com

- The topics of these accepted papers are so diverse, ranging from electricity consumption to range anxiety evaluations, from vehicle market penetration to electricity charge demand forecasting, and from planning charging infrastructure locations to analyzing charging station usage, covering both electric cars and bicycles.
- K. Hu et al. conducted an empirical study on energy efficiency of electric vehicles.
- W. Jing et al. formulated and solved a problem for optimally locating charging stations for electric vehicles in a traffic network.

### **Last Mile Delivery Service GoFor Commits to EVs| IndustryWeek**

URL: <https://www.industryweek.com/technology-and-iiot/article/21152574/last-mile-delivery-service-gofor-commits-to-evs>

Publisher: industryweek.com

- The service requires full cookie support in order to view this website.

### **Institute for Sustainable Transportation and Logistics- University at Buffalo**

URL: <http://www.buffalo.edu/istl.html>

Publisher: buffalo.edu

- Stephen gave \$4 million to support the Stephen Still Institute for Sustainable Transportation and Logistics.

### **Electric Vehicles, E-Commerce Deliveries, & Diesel Innovations: CEO's of UPS, dynaCERT, Workhorse Group, and Caterpillar Discuss Keeping The World Moving**

URL: <https://www.globenewswire.com/news-release/2020/09/22/2097328/0/en/Electric-Vehicles-E-Commerce-Deliveries-Diesel-Innovations-CEO-s-of-UPS-dynaCERT-Workhorse-Group-and-Caterpillar-Discuss-Keeping-The-World-Moving.html>

Publisher: globenewswire.com

- We continue to expect our strong financial position to support our dividend."

### **Electric car- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Electric\\_car](https://en.wikipedia.org/wiki/Electric_car)

Publisher: en.wikipedia.org

- Several countries have established government incentives for plug-in electric vehicles, tax credits, subsidies, and other non-monetary incentives.
- Several countries have established a phase-out of fossil fuel vehicles, and California, which is one of the largest vehicle markets,
- Unlike gasoline-powered vehicles, the electric ones were less noisy, and did not require gear changes.

### **Plug-in and sail: Meet the electric ferry pioneers- BBC News**

URL: <https://www.bbc.com/news/business-50233206>

Publisher: bbc.com

- It's part of an EU-backed project to develop green ferries for longer routes.
- After a 70 minute voyage, Ellen arrives at the harbour in Søby and moors alongside the charging station.

### **Best Hybrid/EV Buying Guide- Consumer Reports**

URL: <https://www.consumerreports.org/cro/cars/hybrids-evs/buying-guide/index.htm>

Publisher: consumerreports.org

- many states now offer buyers incentives to switch to electric vehicles, such as direct rebates, tax credits, and discounted registration fees that can save buyers thousands of dollars off the sticker price.

### **UPS using range-extended electric vehicles in United Kingdom**

URL: <https://www.fleetowner.com/running-green/article/21704250/ups-using-rangeextended-electric-vehicles-in-united-kingdom>

Publisher: fleetowner.com

- The service requires full cookie support in order to view this website.

### **Got an Electric Car Great Where Do You Plug It In**

URL: <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2020/01/02/got-an-electric-car-great-where-do-you-plug-it-in>

Publisher: [pewtrusts.org](https://www.pewtrusts.org)

- Darshan Brahmbhatt charges his electric vehicle at a charging station in Sacramento, California.
- Electric vehicles used for short commutes can be plugged in at home daily
- But in New Jersey, there are about 35 vehicles to every public charger, and drivers on longer trips might worry that they won't find an available place to plug in.

### **The Apollo Lunar Roving Vehicle**

URL: [https://nssdc.gsfc.nasa.gov/planetary/lunar/apollo\\_lrv.html](https://nssdc.gsfc.nasa.gov/planetary/lunar/apollo_lrv.html)

Publisher: [nssdc.gsfc.nasa.gov](https://nssdc.gsfc.nasa.gov)

- After switching on all the electronics the vehicle was ready to back away from the LM.

### **Electric Vehicle Tax Credits: What You Need to Know| Edmunds**

URL: <https://www.edmunds.com/fuel-economy/the-ins-and-outs-of-electric-vehicle-tax-credits.html>

Publisher: [edmunds.com](https://www.edmunds.com)

- What You Need to Know
- Are you confused about which electric vehicles qualify for federal tax credits?
- It answers some crucial questions you might have about these incentives.

### **Shift to electric cars will need 'Herculean' effort, says industry- BBC News**

URL: <https://www.bbc.com/news/business-54977010>

Publisher: [bbc.com](https://www.bbc.com)

- The RAC said the UK's charging network would need to grow "exponentially" to cope as electric vehicle sales surged.
- "Some of these problems will disappear as the average range of electric vehicles increases, but it's vital that the government continues to invest in developing a fast, reliable and widely available network of chargers that support electric vehicle owners no matter what their circumstances or travel plans."
- "Tariffs of around 10% will be applied to cars coming into the UK, so the cost of electric vehicles could be as much as 30% more than what consumers are used to spending on petrol or diesel cars today."

### **What Is an Electric Vehicle Tax Credit?**

URL: <https://www.caranddriver.com/research/a31267893/electric-vehicle-tax-credit/>

Publisher: [caranddriver.com](https://www.caranddriver.com)

- What Is an Electric Vehicle Tax Credit?
- An electric vehicle tax credit is an incentive given by the U.S. government to consumers who buy electric cars.

- This credit is meant to help offset the higher cost of fully electric vehicles and encourage more people to buy them and therefore help improve the environment.

### **The basics of electric-vehicle charging infrastructure| McKinsey**

URL: <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/charging-ahead-electric-vehicle-infrastructure-demand>

Publisher: mckinsey.com

- The basics of electric-vehicle charging infrastructure

### **Uber announces cash bonuses for Sacramento electric vehicle drivers**

URL: <https://www.sacbee.com/news/local/transportation/article213402324.html>

Publisher: sacbee.com

- Uber announces cash bonuses for Sacramento electric vehicle drivers
- Sacramento is one of seven North American cities selected to participate in a pilot program offering incentives to Uber drivers who use electric vehicles, the ride-sharing company announced Tuesday.
- : a notification indicating that the matched driver is operating an electric vehicle.

### **Pilot allows electric vehicles to use bus lanes in UK cities**

URL: <https://evconnectors.com/news/pilot-schemes-launched-to-allow-electric-vehicles-to-use-bus-lanes/>

Publisher: evconnectors.com

- Pilot allows electric vehicles to use bus lanes in UK cities

### **World's First Electric Car Ferry Recharges in 10 Minutes| WIRED**

URL: <https://www.wired.com/2013/02/electric-ferry/>

Publisher: wired.com

- That only gives Norled about 10 minutes to get the batteries fully charged, which would require too much of the electrical grids in either Lavik or Oppedal.

### **Biden's Infrastructure Plan Would Push For Electric Vehicles: NPR**

URL: <https://www.npr.org/2021/04/01/983576326/bidens-infrastructure-plan-would-push-for-electric-vehicles>

Publisher: npr.org

- Biden's Infrastructure Plan Would Push For Electric Vehicles
- President Biden's infrastructure plan, which he announced Wednesday, would promote electric vehicle manufacturing, sales and advancement of charging stations.
- : OK, so what exactly does Biden's plan propose to do for electric vehicles?

### **US8138715B2- Network-controlled charging system for electric vehicles through use of a remote server- Google Patents**

URL: <https://patents.google.com/patent/US8138715B2/en>

Publisher: patents.google.com

- Network-controlled charging system for electric vehicles through use of a remote server
- ; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS-LSB- XRACs-RSB- AND DIGESTS Y02-TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE Y02T-CLIMATE CHANGE MITIGATION TECHNOLOGIES RELATED TO TRANSPORTATION Y02T90/00-Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation Y02T90/10-Technologies relating to charging of electric vehicles Y02T90/12-Electric charging stations Y-GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS
- ; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS-LSB- XRACs-RSB- AND DIGESTS Y02-TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE Y02T-CLIMATE CHANGE MITIGATION TECHNOLOGIES RELATED TO TRANSPORTATION Y02T90/00-Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation Y02T90/10-Technologies relating to charging of electric vehicles Y02T90/14-Plug-in electric vehicles Y-GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS

### **Charging station- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Charging\\_station](https://en.wikipedia.org/wiki/Charging_station)

Publisher: en.wikipedia.org

- A charging station, also called electric vehicle charging station, electric recharging point, charging point, charge point, electronic charging station, and electric vehicle supply equipment, is a machine that supplies electric energy to charge plug-in electric vehicles-including cars, neighborhood electric vehicles, trucks, buses and others.
- Some electric vehicles have on-board converters that plug into a standard electrical outlet or a higher voltage outlet.
- The usable battery capacity of a first-generation electric vehicle, such as the original Nissan Leaf, is about 20 kWh, giving it a range of about 100 mi.

### **Developing Infrastructure to Charge...- Alternative Fuels Data Center**

URL: [https://afdc.energy.gov/fuels/electricity\\_infrastructure.html](https://afdc.energy.gov/fuels/electricity_infrastructure.html)

Publisher: afdc.energy.gov

- Developing Infrastructure to Charge Plug-In Electric Vehicles
- Consumers and fleets considering plug-in electric vehicles need access to charging stations, also known as EVSE.
- All Tesla vehicles come with a J1772 adapter which allows them to use non-Tesla charging equipment.

**[1909.00907] Energy Demand Prediction with Federated Learning for Electric Vehicle Networks**

**URL: <https://arxiv.org/abs/1909.00907>**

Publisher: arxiv.org

**Government incentives for plug-in electric vehicles- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Government\\_incentives\\_for\\_plug-in\\_electric\\_vehicles](https://en.wikipedia.org/wiki/Government_incentives_for_plug-in_electric_vehicles)

Publisher: en.wikipedia.org

- Government incentives for plug-in electric vehicles have been established around the world to support policy-driven adoption of plug-in electric vehicles.
- Some countries extend the benefits to fuel cell vehicles, and electric vehicle conversions.
- For example, Norway set a national goal that all new car sales by 2025 should be zero emission vehicles.



# ADDITIONAL ARTICLES: INDUSTRY CONSTRAINTS

*The full set of articles discovered by Gyan based on your research question can be found in this section.*

## **2022 Hyundai Kona Electric Review, Pricing, and Specs**

URL: <https://www.caranddriver.com/hyundai/kona-electric>

Publisher: caranddriver.com

- That's key because an EV's range number is the most important factor in the revved-up electric vehicle marketplace.

## **Plug-in hybrid and other electric vehicles| BMW.com**

URL: <https://www.bmw.com/en/innovation/Plug-in-hybrid-and-other-kinds-of-electric-cars.html>

Publisher: bmw.com

- At the moment, electric vehicles are more expensive than conventional ones.
- Fully electric vehicles are ideal for people who can charge their battery at home or at work.
- Mild hybrid vehicles-- also known as 48-volt hybrids or MHEVs-- have an electric motor that assists the combustion engine.

## **Introducing the GMC HUMMER EVs| Electric Truck& SUV**

URL: <https://www.gmc.com/electric/hummer-ev>

Publisher: gmc.com

- Actual range will vary based on several factors, including temperature, terrain, battery age, and vehicle loading, use and maintenance.
- Your actual range may vary based on several factors, including temperature, terrain, battery age, and how you use and maintain your vehicle.

## **Redesigned 2022 Bolt EV: Electric Vehicle| Chevrolet**

URL: <https://www.chevrolet.com/upcoming-vehicles/2022-bolt-ev>

Publisher: chevrolet.com

- Actual range will vary based on several factors, including temperature, terrain, battery age, and vehicle loading, use and maintenance.

## **Electric Vehicles| Con Edison**

URL: <https://coned.com/electricvehicles>

Publisher: coned.com

- We recently updated My Account and the customer login experience.

## **Inexpensive battery charges rapidly for electric vehicles, reduces range anxiety**

URL: <https://news.psu.edu/story/643897/2021/01/18/research/inexpensive-battery-charges-rapidly-electric-vehicles-reduces-range>

Publisher: news.psu.edu

- Range anxiety, the fear of running out of power before being able to recharge an electric vehicle, may be a thing of the past, according to a team of Penn State engineers who are looking at lithium iron phosphate batteries that have a range of 250 miles with the ability to charge in 10 minutes.
- An electric vehicle with this battery could go from zero to 60 miles per hour in 3 seconds and would drive like a Porsche, he said.

### **Best Electric Cars of 2021 and 2022- Expert Reviews and Rankings**

URL: <https://www.edmunds.com/electric-car/>

Publisher: edmunds.com

- It does n't offer as much range or as much power or as much acceleration as the truck.
- You also get the same nifty crab walk mode, where the rear wheels can turn in phase with the front wheels, allowing SUV or truck to move diagonally in what's called a crab walk.
- It just looks super cool and might help with maneuvering in tight areas.

### **Electric Vehicles**

URL: <https://www.midamericanenergy.com/electric-vehicles>

Publisher: midamericanenergy.com

- and automakers announce a wider range of vehicle types, plus nearly all models now have a range of 150 miles or more per charge.

### **Best New EVs and Hybrids of 2021**

URL: <https://www.caranddriver.com/features/g27271118/best-hybrid-electric-cars/>

Publisher: caranddriver.com

- The electric revolution has n't arrived with the ferocity predicted by futurists the world over, but we're still seeing some pretty big leaps in range, performance, and style with the introduction of each new electric vehicle.
- To compete with the growing number of electric vehicles hitting the market, Hyundai has swapped the Kona SUV's gasoline engine for an electric motor and battery pack to create the 2021 Kona Electric.

### **2021 Subaru Crosstrek- Hybrid | Subaru**

URL: <https://www.subaru.com/vehicles/crosstrek/hybrid.html>

Publisher: subaru.com

- Technology to combine the efficiency of a plug-in electric vehicle for city commuting with the long-range capability of a SUBARU BOXER

### **Consequential life cycle air emissions externalities for plug-in electric vehicles in the PJM interconnection- IOPscience**

URL: <https://iopscience.iop.org/article/10.1088/1748-9326/11/2/024009>

Publisher: iopscience.iop.org

- Consequential life cycle air emissions externalities for plug-in electric vehicles in the PJM interconnection

- Plug-in electric vehicle technologies, including plug-in hybrid electric vehicles and battery electric vehicles, have the potential to reduce environmental impacts from the transportation system by reducing or eliminating tailpipe emissions.
- -RSB- average results from ORNL's analysis of marginal emissions for electric vehicles using a dispatch model and different vehicle charging patterns-LSB- 1

### **Electric Vehicle Charging: Types, Time, Cost and Savings**

URL: <https://www.ucsusa.org/resources/electric-vehicle-charging-types-time-cost-and-savings>

Publisher: ucsusa.org

- Plug-in hybrid vehicles often have an electric range of 20-50 miles, so recharging even a fully depleted battery can be done in eight hours.
- These chargers can fully recharge most long-range battery electric vehicles during an eight-hour charge.

### **Boston Improves Accountability, Fleet Visibility with Telematics- Telematics- Government Fleet**

URL: <https://www.government-fleet.com/352343/boston-improves-accountability-fleet-visibility-with-telematics>

Publisher: government-fleet.com

### **Why are they so expensive, how long does the battery last and other FAQ about electric vehicles**

URL: <https://www.denverpost.com/2021/02/27/faq-electric-car-vehicles-mileage-charging-cost/>

Publisher: denverpost.com

- Why are they so expensive, how long does the battery last and other FAQ about electric vehicles
- Here are answers to some commonly asked questions about electric vehicles, or EVs
- President Joe Biden has said action to address climate warming must be the nation's top priority, favoring a shift from gas to electric vehicles.

### **Battery Pack Prices Cited Below\$100/kWh for the First Time in 2020, While Market Average Sits at\$137/kWh**

URL: <https://about.bnef.com/blog/battery-pack-prices-cited-below-100-kwh-for-the-first-time-in-2020-while-market-average-sits-at-137-kwh/>

Publisher: about.bnef.com

- Battery electric vehicle pack prices are\$ 126/kWh on a volume-weighted average basis.

### **Electric Vehicle Range Explained: Everything You Need to Know**

URL: <https://www.caranddriver.com/shopping-advice/a32603216/ev-range-explained/>

Publisher: caranddriver.com

- So, a higher vehicle speed means the electric motor is spinning at a faster and less-efficient point.

### **Efficiency of electric vehicle interior heating systems at low ambient temperatures**

URL: <https://www.degruyter.com/document/doi/10.1515/eng-2021-0052/html>

Publisher: degruyter.com

- Efficiency of electric vehicle interior heating systems at low ambient temperatures
- Based on the research, the authors of the paper could draw conclusions on how to heat the interior in the electric vehicle under test, as well as check whether the efficiency of such a system for individual places in the car is sufficient to obtain the set temperature.
- According to ACEA, in 2019, 549,387 full electric passenger vehicles, hybrid plug-ins and hydrogen vehicles were registered in the European Union.

### **Samsara adds transparency to EV fleet management| Global Fleet**

URL: <https://www.globalfleet.com/en/technology-and-innovation/global/features/samsara-adds-transparency-ev-fleet-management>

Publisher: globalfleet.com

- Samsara adds transparency to EV fleet management

### **Transparent heater with meshed amorphous oxide/metal/amorphous oxide for electric vehicle applications**

URL: <https://www.nature.com/articles/s41598-020-66514-8>

Publisher: nature.com

- Transparent heater with meshed amorphous oxide/metal/amorphous oxide for electric vehicle applications
- r pure electric vehicles.
- In the context of rapid development of Internet of Things and 5 G communications, the gas-free electric vehicle is once again became a main topic of recent research.

### **Why Are Tesla Cars So Expensive?**

URL: <https://www.investopedia.com/articles/personal-finance/032415/why-are-tesla-cars-so-expensive.asp>

Publisher: investopedia.com

- In addition to high demand, the other reason for Tesla cars' high price is the high cost of the electric battery packs that supply the vehicles with power.
- One reason traditional automakers hesitated to undertake electric vehicle production was that the costs were so high that the cars would end up being prohibitively expensive.
- The other main reason for Tesla cars' high sticker price is the very high cost of the electric battery packs that supply these vehicles with power.

### **Range anxiety- Wikipedia**

URL: [https://en.wikipedia.org/wiki/Range\\_anxiety](https://en.wikipedia.org/wiki/Range_anxiety)

Publisher: en.wikipedia.org

- Range anxiety is the fear that a vehicle has insufficient range to reach its destination and would thus strand the vehicle's occupants.
- Range anxiety may be exaggerated, as recent studies have concluded that most daily trips can be accomplished within the range of an inexpensive electric vehicle.
- Electric vehicle manufacturers have sought to quell range anxiety concerns through increased battery capacities to extend the vehicle's range.

## **Development of Approaching Vehicle Sound for Pedestrians(VSP) for Quiet Electric Vehicles**

URL: <https://www.sae.org/publications/technical-papers/content/2011-01-0928/?PC=DL2BUY>

Publisher: sae.org

- Vehicles with electric powertrains emit less noise than internal combustion engine vehicles.
- The primary concern is related to when electric vehicles are travelling at low speeds where tire noise and aerodynamic noise is minimal.

## **How much does a Tesla Model 3 Battery Replacement Cost?**

URL: <https://www.currentautomotive.com/how-much-does-a-tesla-model-3-battery-replacement-cost/>

Publisher: currentautomotive.com

- It's historically been hard to get an idea as to what exactly a battery replacement might cost on most electric vehicles, as automakers do n't always publish the costs of their parts- especially for big-ticket items like engines and batteries.
- Electric vehicle battery packs are n't just one single battery cell scaled up to gigantic size.
- When electric vehicle adoption has reached a point where home mechanics are tackling battery replacement jobs, packs could become subject to a core charge.

## **Ever-Cheaper Batteries Bring Cost Of Electric Cars Closer To Gas Guzzlers**

URL: <https://www.forbes.com/sites/mikescott/2020/12/18/ever-cheaper-batteries-bring-cost-of-electric-cars-closer-to-gas-guzzlers/>

Publisher: forbes.com

- Prices in 2020 were 13% lower than in 2019, thanks to increasing order sizes, the growth in electric vehicle sales and the introduction of new battery pack designs, according to BNEF's 2020 Battery Price Survey, which considers passenger EVs, e-buses and commercial EVs as well as stationary storage.

## **Range of full electric vehicles cheatsheet- EV Database**

URL: <https://ev-database.org/cheatsheet/range-electric-car>

Publisher: ev-database.org

- Range of full electric vehicles cheatsheet

## **Interior Heating for Hybrid and Electric Vehicles| SpringerLink**

URL: <https://link.springer.com/article/10.1365/s38311-011-0054-z>

Publisher: link.springer.com

- This is a preview of subscription content, access via your institution.

## **The Cheapest Electric Cars in 2021| U.S. News& World Report**

URL: <https://cars.usnews.com/cars-trucks/cheapest-electric-cars>

Publisher: cars.usnews.com

- The electric vehicles of the past were often polarizing, short on range, and lacking in performance.

- To top it off, electric vehicles are cheaper to own over time due to better efficiency, reasonable prices for electricity, and minimal maintenance.
- We've searched through our rankings to find every battery-electric car with a starting price under\$ 50,000.

### **Materials science aspects of zinc-air batteries: a review| SpringerLink**

URL: <https://link.springer.com/article/10.1007/s40243-014-0028-3>

Publisher: link.springer.com

- Even if the technology of lithium ion batteries is well established for portable applications such as mobile telephones, digital cameras, etc., their energy density is still not entirely satisfactory for electric vehicles applications and driving ranges comparable to those typically obtained with fossil fuels.
- Nevertheless, electric vehicles totally based on Li-ion technology are commercially available with a full charge autonomy up to c.a. 200 km, such as
- Batteries for electric drive vehicles.

### **The Race for a Better EV Battery| EE Times**

URL: <https://www.eetimes.com/the-race-for-a-better-ev-battery/>

Publisher: eetimes.com

- Nearly all of that capacity is focused on lithium-ion technology, but other approaches are emerging that promise to change the battery technology landscape to extend the range of electric vehicles.
- Other approaches are emerging that might eventually allow electric vehicles to recharge on the go.
- For example, the U.S. Energy Department's Oak Ridge National Laboratory announced in October that researchers have demonstrated a 120-W wireless recharging system for electric vehicles.

### **The cheapest electric vehicles on sale under\$35,000 in 2021**

URL: <https://www.businessinsider.com/best-cheap-affordable-evs-electric-vehicles-tesla-nissan-ford-mustang-2021-2>

Publisher: businessinsider.com

- Electric vehicles are n't quite cheap yet, but they're less expensive than ever before.
- Tesla quietly raised the prices of several of its models on Thursday, but there are still more inexpensive electric vehicles on the market than ever before.

### **Life Cycle Environmental Assessment of Lithium-Ion and Nickel Metal Hydride Batteries for Plug-In Hybrid and Battery Electric Vehicles**

URL: <https://pubs.acs.org/doi/10.1021/es103607c>

Publisher: pubs.acs.org

- A transparent life cycle inventory was compiled in a component-wise manner for nickel metal hydride, nickel cobalt manganese lithium-ion, and iron phosphate lithium-ion batteries.

### **Range-extending Zinc-air battery for electric vehicle**

URL: <https://www.aimspress.com/article/id/1806>

Publisher: aimspress.com

- Range-extending Zinc-air battery for electric vehicle
- Li W, Long R, Chen H, et al. A review of factors influencing consumer intentions to adopt battery electric vehicles.
- Stewart SG, Kohn SI, Kelty KR, et al. Electric vehicle extended range hybrid battery pack system

### **Rechargeable Zinc-Air Batteries**

URL: <https://arpa-e.energy.gov/technologies/projects/rechargeable-zinc-air-batteries>

Publisher: arpa-e.energy.gov

- Currently, most Electric Vehicle mounted Li-Ion batteries have a driving range limited to 100 miles on a single charge and account for nearly 65% of the total cost of EVs.

### **Norway's electric car drive belies national reliance on fossil fuels**

URL: <https://www.theguardian.com/business/2021/jan/09/norways-electric-car-drive-belies-national-reliance-on-fossil-fuels>

Publisher: theguardian.com

- Norway became the first country to sell more electric cars than petrol, hybrid and diesel engines put together last year, new data shows, with battery electric vehicles accounting for two-thirds of sales in the final months of 2020.
- This goes some way to explain why the introduction of electric vehicles has been such a winner
- There are 2.8 m vehicles on Norway's roads and more than 260,000 are fully electric, nearly 9% of the total car stock.

### **Electric cars hit record 54% of sales in Norway as VW overtakes Tesla- CNN**

URL: <https://www.cnn.com/2021/01/05/business/norway-electric-cars-vw-tesla/index.html>

Publisher: cnn.com

- Battery electric vehicles accounted for more than half of all cars sold in Norway last year, putting the country way out in front in efforts to kill off the internal combustion engine.
- Record electric vehicle sales in 2020 means the country is now ahead of schedule, according to Oyvind Solberg Thorsen, CEO of the Norwegian Road Federation.

### **Volvo to sell all its cars online, in latest example of how the pandemic has reshaped the auto industry**

URL: <https://www.nbcnews.com/business/autos/volvo-sell-all-its-cars-online-latest-example-how-pandemic-n1259337>

Publisher: nbcnews.com

- On Tuesday, Volvo rolled out the C40 Recharge, its second long-range battery-electric vehicle.
- The automaker plans to offer only battery-electric vehicles and plug-in hybrids by 2025, then pare down to pure electric vehicles by 2030.

### **Which countries sell the most electric cars?| World Economic Forum**

URL: <https://www.weforum.org/agenda/2021/02/electric-vehicles-europe-percentage-sales/>

Publisher: weforum.org

- Electric vehicles accounted for 4.2% of light vehicle sales in 2020, almost double 2019's 2.5%.
- Despite difficult circumstances and the pandemic's negative impact on the the automotive industry, electric vehicles made a giant leap forward in many countries in 2020.
- According to estimates from industry tracker EV-Volumes, plug-in electric vehicles accounted for 4.2 percent of global light vehicle sales last year, up from 2.5 percent in 2019.

### **Fact-Checking President Trump's Assessment of Wind Power and Electric Vehicles**

URL: <https://www.greentechmedia.com/articles/read/fact-checking-president-trumps-assessment-of-wind-and-electric-vehicles>

Publisher: greentechmedia.com

- Like many consumers, the president has electric vehicle range anxiety and perhaps a minor misconception on the range of modern electric vehicles.

### **GM debuts all-electric van in battle to capture 'last mile' e-commerce deliveries**

URL: <https://www.nbcnews.com/business/autos/gm-debuts-all-electric-van-battle-capture-last-mile-e-n1253883>

Publisher: nbcnews.com

- BrightDrop will launch with the EV600 but expects to introduce a range of electric cargo vehicles going forward, Fletcher said.

### **GM Launches BrightDrop Company to Make Electric Delivery Vehicles**

URL: <https://www.caranddriver.com/news/a35183211/gm-brightdrop-electric-delivery-vehicles-announced/>

Publisher: caranddriver.com

- Its upcoming on-road electric vehicle, the EV600, will have a target range of 250 miles and have 600 cubic feet of cargo space.
- GM won't be alone in the electric-delivery-vehicle business.

### **Electric Vehicles Cause Greater Air Pollution Through Power Plant Emissions- Tepper School of Business- Carnegie Mellon University**

URL: <https://www.cmu.edu/tepper/news/stories/2018/october/muller-research.html>

Publisher: cmu.edu

- The U.S. government currently offers subsidies to individuals for the purchase of electric vehicles, in an effort to reduce emissions caused by traditional gasoline vehicles.
- However, ongoing research by Nicholas Muller, Lester and Judith Lave Associate Professor of Economics, Engineering and Public Policy, demonstrates that the environmental benefits of electric vehicles often are outweighed by the damages caused by the increased emissions from power plants.



- In one study, Muller and colleagues found that an electric vehicle can cause up to \$ 5,000 more damage than an equivalent gasoline vehicle when driven in the Midwest, where coal-fired power plants are common.

### **5 Ways Electric Boats Will Impact Marinas – Swell Advantage**

URL: <https://www.swelladvantage.com/blog/2019/7/15/5-ways-electric-boats-will-impact-marinas>

Publisher: [swelladvantage.com](https://www.swelladvantage.com)

- As with electric land vehicles like cars and motorcycles, range is the biggest issue holding back the mass adoption of electric boats.

### **Application of Micro Gas Turbine in Range-Extended Electric Vehicles**

URL: <https://www.sciencedirect.com/science/article/pii/S0360544218300628>

Publisher: [sciencedirect.com](https://www.sciencedirect.com)

- Application of Micro Gas Turbine in Range-Extended Electric Vehicles
- A parametric study of MGT applications for Range-Extended Electric Vehicles.
- In particular, a Micro Gas Turbine can be considered as an alternative to the internal combustion engine as a range extender for electric vehicles.

### **Electric Cars on Earth and Mars: How They Stack Up| Space**

URL: <https://www.space.com/21204-electric-cars-mars-rovers.html>

Publisher: [space.com](https://www.space.com)

- Because they're so slow and steady, Mars rovers also can't compete with terrestrial electrical vehicles in terms of range.
- the first mass-produced electric vehicle of the modern era, which General Motors manufactured in the late 1990s.

### **Now Making Electric Bikes: Car and Motorcycle Companies- The New York Times**

URL: <https://www.nytimes.com/2021/03/04/business/electric-ebikes-pandemic.html>

Publisher: [nytimes.com](https://www.nytimes.com)

- Mr. Iacocca's design, typical for the time, was hampered by a lead-acid battery with a 15-mile range and a top speed of 15 miles an hour.
- "High-performance road bikes and e-bikes provide a great way to showcase such technologies into a range of consumer products," said Damian Cook, a spokesman.
- E-bikes may be more expensive than bicycles, but are cheaper than cars or motorcycles.

### **Electric Boats and Ships 2017-2027: IDTechEx**

URL: <https://www.idtechex.com/en/research-report/electric-boats-and-ships-2017-2027/509>

Publisher: [idtechex.com](https://www.idtechex.com)

- The report is therefore essential reading for all in the marine craft supply chain plus legislators and investors seeking latest infograms, forecasts and data in easily grasped form

### **Fuel Cell as Range Extender in Battery Electric Vehicles for Supply Chain Fleets**

URL: <https://www.intechopen.com/books/sustainable-supply-chain-management/fuel-cell-as-range-extender-in-battery-electric-vehicles-for-supply-chain-fleets>

Publisher: [intechopen.com](https://www.intechopen.com)

- Fuel Cell as Range Extender in Battery Electric Vehicles for Supply Chain Fleets
- Classification of electric vehicles
- A typical classification of the electric vehicles is illustrated in

### **What Are Extended Range Electric Vehicles?**

URL: <https://www.samsara.com/guides/what-are-extended-range-electric-vehicles>

Publisher: samsara.com

- "Range anxiety" is one of the biggest factors that prevent fleet managers from adopting an electric vehicle fleet.
- These are the most popular abbreviations of principally the same function
- Below are six of the more popular electric vehicle models on the market today.

### **Humidified Micro Gas Turbine for Range Extended Electric Vehicles: Thermodynamic Performance Assessment**

URL:

<https://asmedigitalcollection.asme.org/GT/proceedings/GT2019/58608/V003T06A016/1066656>

Publisher: asmedigitalcollection.asme.org

- Although micro Gas Turbines are not adequate for continuous change of load, as would be the case when used as direct power source, operating them as range extender offers large potential, especially given their higher power-to-weight ratio than ICEs, but also due to their lower emissions, vibration levels and maintenance requirements.

### **Electric Vehicle Range Extender Market To Witness 10.2% CAGR By 2025 Owing To Rising Usage of Commercial& Fully Electric Passenger Vehicles To Lower CO2 Emissions**

URL: <https://www.prnewswire.com/news-releases/electric-vehicle-range-extender-market-to-witness-10-2-cagr-by-2025-owing-to-rising-usage-of-commercial--fully-electric-passenger-vehicles-to-lower-co2-emissions--million-insights-301220939.html>

Publisher: prnewswire.com

- Electric Vehicle Range Extender Market To Witness 10.2% CAGR By 2025 Owing To Rising Usage of Commercial& Fully Electric Passenger Vehicles To Lower CO2 Emissions
- High growth in the use of commercial and fully electric passenger vehicles to lower CO2 emissions along with superior performance abilities and expandable range is anticipated to stimulate industry growth.
- The global pore strips market is projected to reach USD 4.13 billion by 2025.

### **Range Rover- Plug-In Hybrid Electric SUV| Land Rover USA**

URL: <https://www.landroverusa.com/vehicles/phev/phev-vehicles/range-rover.html>

Publisher: landroverusa.com

- The PHEV P400e is fully capable of managing most short commutes in full Electric Vehicle mode, with a range of 19 miles.
- It takes as little as 2 hours and 45 minutes to recharge the vehicle depending on your local power supply using a home charging cable.
- PHEV vehicles enjoy the same levels of refinement as every other Range Rover.

### **Phooltas Transrail- Railway Maintenance Equipment**

URL: <https://www.railway-technology.com/contractors/track/phooltas/>

Publisher: railway-technology.com

- An eight-wheeler diesel-electric traction vehicle supplied for overhead electrical installation, inspection and maintenance, equipped with a lifting and swivelling platform, earthing and measuring pantograph, and drum stands.
- We offer a four-wheeler hydrodynamic traction vehicle for overheard electrical installation, inspection and maintenance, equipped with a lifting and swivelling platform, earthing and measuring pantograph, drum stands, etc..
- Our range includes an eight-wheeler diesel hydraulic drive vehicle for overheard electrical installation, inspection and maintenance, equipped with a lifting and swivelling platform earthing and measuring pantograph and crane.

### **A Novel Range-Extended Strategy for Fuel Cell/Battery Electric Vehicles**

URL: <https://www.hindawi.com/journals/tswj/2015/363094/>

Publisher: hindawi.com

- The range-extended electric vehicle is proposed to improve the range anxiety drivers have of electric vehicles.
- In these next-generation automobiles, the fully electric motor vehicles have pollution-free benefits, which drive further research and development-LSB-
- The range-extended electric vehicle is presented to mitigate the range anxiety of electric vehicles.

### **Submarine- Wikipedia**

URL: <https://en.wikipedia.org/wiki/Submarine>

Publisher: en.wikipedia.org

- Submarines have one of the widest ranges of types and capabilities of any vessel.
- They range from small autonomous examples and one

### **How Having an Electric Car Affects Your Auto Insurance Rates- ValuePenguin**

URL: <https://www.valuepenguin.com/how-having-electric-car-affects-your-auto-insurance-rates>

Publisher: valuepenguin.com

- car insurance for an electric vehicle is about 23% more expensive than the cost for the equivalent combustion model.
- We compared four types of electric cars to their gas counterparts to see how your insurance quotes may go up when you opt for an electric car.
- Electric vehicles tend to be filled with cutting-edge technology like high-capacity batteries, sophisticated sensors, and more.

### **Electric Vehicle Charging Rewards| Con Edison**

URL: <https://www.coned.com/en/save-money/rebates-incentives-tax-credits/rebates-incentives-tax-credits-for-residential-customers/electric-vehicle-rewards>

Publisher: coned.com

- We recently updated My Account and the customer login experience.

- Join the community of electric-vehicle drivers who are earning rewards for charging at\* off-peak times.

### **Electric Vehicle Routing Problem with Industry Constraints: Trends and Insights for Future Research- ScienceDirect**

URL: <https://www.sciencedirect.com/science/article/pii/S2352146514001896>

Publisher: sciencedirect.com

- In addition, recent trends for the EVRP are analyzed producing valuable insights for future research regarding extra operational constraints, real-life data sets and solution frameworks that embody approximation algorithms for an efficient and effective search of the solution space.