

Electric Auto Association



CURRENT EVENTS

April 2018 Promoting the use of electric vehicles since 1967 Vol. 50 No. 4

2019 Hyundai Kona Electric US Debut



Photo: Hyundai

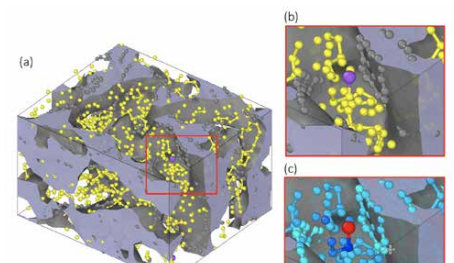
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The EAA has put most of its issues from 2001 to 2018 on its website.

Please visit

<http://electricauto.org/> and from the home page, click on "Documents" in the top navigation bar.

The resulting page has a listing of years (in a folder), which, when selected, will list the issues for each month. In that folder you will be able to download the pdf that contains the issue you choose.



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EAA: Leading the Re-Charge . . .

With over 800,000 EVs having been sold in the U.S., the time is now to bring these EV owners into our association. With our grass-roots network of chapters, our EV Owner/Educators are an asset unlike any other asset in the EV non-profit arena. The power in the 1-1 engagement with car buyers is akin to the power of a new solar adopter in a neighborhood, showing a utility bill of \$10/month to a neighbor. Why wouldn't you adopt solar!

We are the trusted voice, and as such, provide an element of education absolutely vital to combat misinformation and sometimes less than skillful dealer sales associate. Having said that, we will work with dealers, helping them get up to speed. We will work with all kinds of strategic partners to increase public awareness in order to effect the changes in behavior required in car buying choice.

I am honored to be your newly appointed President. Our biggest strengths are in our chapters and our newsletter. Thanks to Ron Freund for his expertise in keeping our EV community updated on all the latest and greatest news in the rapidly changing landscape of EVs. Even as Ron steps away from 17 years of dedicated leadership as Chairman, he will continue to serve as Director on the Board and Editor of Current EVents.

We value our dedicated chapter members and leaders who give so generously of their time, talent and treasure. There will be many new enhancements at EAA, including but not limited to: more chapter news in Current Events, chapter support to guide growth, accounting and IT support, improved website functionality and more.

I welcome your input.



Thank you for all you do for Electric Vehicles!

Raejean,
President

Chapter Liaison Role — Become an Important Link to EAA Leadership!



In the spirit of connecting chapter voices to Board decisions and activities, we are creating a new role called, Chapter Liaison to the Board, to be rotated every year. The Chapter Liaison will be the point person for our approximately 90 chapters to give input, including advising the Board of chapter needs and areas of satisfaction/dissatisfaction. The Chapter Liaison will attend Board meetings (call-in) to report on chapter feedback. The Liaison reports to the President and gives the president on-going guidance about the needs and expectations of the chapter leadership and members.

A new email will be created: ChapterVoices@electricauto.org, where chapter leaders can connect to the Chapter Liaison, who will respond in a timely manner. This is a great place to use your excellent listening and communication skills towards ensuring our organization serves the needs of its chapters.

To apply for this non-voting Board position, please provide your name, email, phone, chapter position, and brief description of your history of chapter involvement and why you are interested in the position to: President@electricauto.org

—o—o—

Tim Hastrup

California EV Pioneer remembered

Tim Hastrup, a long time EV driver and active member of our Sacramento area chapter recently passed away in Denmark. A graduate of Fresno State University, a private pilot, as well as an amateur radio operator, he was well known for his interest in alternative energy.

Tim demonstrated a working knowledge of his electric vehicles as he worked as a manager at HP in Production and R&D at the Roseville site. After his retirement, Tim and his wife Vibeke relocated to Denmark in 2015 to be with their children.

Fellow Chapter member Jack Bowers remembers Tim:

One of my most interesting memories of Tim occurred in August of 2007 at a future Tesla owner's event at Pebble Beach, California. Tim walked up to then-CEO Martin Eberhard and asked what kept him awake at night. Eberhard said it was the Roadster's 2-speed transmission, which had failed qualification tests from two different suppliers (at that point they were working with a third).

Near the end of the event, Tim and I had a second conversation with Eberhard and tried to convince him to dump the transmission, lower the top speed, and live with a 0-60 time in the 5-6 second range. Eberhard heard us out, but he had this very skeptical look on his face (probably because he knew Elon Musk would never accept the tradeoffs we were proposing). *Thank you to Jack Bowers who provided these photos that are credited to Philip Wood.*



Following text are excerpts from an article that ran in the Roseville and Granite Bay Press Tribune [California] that dates from May 12, 2011 by Sena Christian.

Tim Hastrup was a pioneer man. But instead of wrangling cattle he worked as an engineer, and rather than exploring the American frontier, he resides in Granite Bay. But Hastrup and his wife Vibeke are pioneers of an emerging breed of car: the plugin electric vehicle.

The couple has driven converted electric vehicles since the early 1990's but in late 1997, before the first mass-produced hybrid gasoline-electric car (the Toyota Prius) was introduced worldwide in 1999 – they drove a Honda EV Plus.

But Tim Hastrup's interest in zero-emission vehicles dates back nearly four decades. "He remembers 1973 and the long gas lines, Vibeke Hastrup said. That oil crisis occurred shortly after he got his driver's license, so when he learned of electric model's years later he said, 'sign me up.' The family hasn't looked back."

[Ed: They drove several hybrid and full electric cars, including a Chevrolet Volt and Nissan Leaf, charging through a 240-volt station installed in their garage. Tim admitted that "Some folks might be nervous (to drive an EV), but I think it's something to look forward to. It's a better solution."]

This clean air couple made their electric vehicles suitable to their lifestyles.

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
Upfront costs may be steep, but the Hastrups [like other EV owners] recoup their money by not filling up at the pump.

Before purchasing their first Honda OEM electric car in 1997 – the couple bought 887 gallons of gas annually for a cost of \$1,166. Because the local utility rates decrease after midnight, the couple plugs in the cars at night and the vehicles are ready the next morning.

They pay \$25 on their electric bill each month for both cars, for a net savings. “The neat thing is you can fuel them with renewable energy,” he said, pointing to rooftop solar panels on his house. “Besides all that stuff – they’re just great to drive.”



This photo was taken at a Nov 2006 Tesla event at Tesla's original Menlo Park facility.

Tim will be remembered for his enthusiasm, and his long-standing belief that being part of change is fun and painless. 

Tesla to roll out CHAdeMO Adapter

By CE Staff and Tony Williams, Quick Charge Power:

Looking ahead, we understand that Tesla continues work towards a worldwide release of a CHAdeMO adapter which would permit charging their vehicles at those sites normally only serving Nissan LEAFs, Kia Soul EV, Renault Zoe's, Mitsubishi iMiEVs and others [1] with a DC Fast Charge via the CHAdeMO connection. It is for sale in Japan, with limited availability elsewhere.

A Tesla CHAdeMO adaptor has been spotted testing on the Model 3 in Norway, as well as Canada.

CHAdeMO fast charge stations are the only ones that have the same plug on every continent, with over 17,000 available worldwide. With this Tesla / CHAdeMO adaptor on your Model 3, it will charge slower than the Tesla Supercharger, but will allow greater flexibility and convenience in charge locations choices.

- CHAdeMO – 50kW peak, about 3 miles added per minute charging – 45 miles added in 15 minutes, 135 miles added in 45 minutes. Even with a 400kW CHAdeMO station, your charge rate will be limited to 50kW with the adaptor.
- Tesla Supercharger – 117kW peak, up to 125 miles added in the first 15 minutes, and up to 250 miles added in 45

minutes. The Tesla Supercharger maximum output per car is currently 120kW in the US.

- The CHAdeMO specification recently was updated and new hardware is being created, but not yet released.

Reference:

- [1] A CHAdeMO quick charge option promoted by Nissan-Renault has found acceptance with Japanese car manufacturers to allow their electric cars to benefit from the CHAdeMO charger network in Japan. Models supporting CHAdeMO charging include:
 - BMW i3 (Japan)
 - Citroën C-ZERO & Berlingo Electric & E-Berlingo Multispace
 - Honda Fit EV (Japan only)
 - Hyundai Ioniq Electric (-2016)
 - Kia Soul EV
 - Mazda Demio EV
 - Mitsubishi i MiEV & Minicab MiEV, also Outlander P-HEV
 - Nissan LEAF & e-NV200
 - Peugeot iOn & Partner EV
 - Subaru Stella EV
 - Tesla Model S & X (via included adapter in Japan; adapter optional in other countries)
 - Toyota eQ & RAV4 EV Second Generation 2012-2014 (with after-market add-on)
 - Zero Motorcycles (via optional inlet)
 - Vectrix VX-1 Maxi Scooter (via optional inlet)



Porsche opens up about the Electric Mission E, takes jab at Tesla

‘Quick to drive, quick to charge,’ and won’t ‘lower itself to gimmicks’



By Jonathan Ramsey

Stefan Weckbach, the head of electric vehicles at Porsche, devoted an interview to filling in more of the Mission E picture. The guiding principle behind the battery-powered four-door sports sedan with room for four people is to “deliver on the promises customers are familiar with from our conventionally powered vehicles.” The company’s hired more than 1,000 employees to work on combining future powertrains with modern detailing, so the Mission E buyer can expect thought-out details such as recesses built into the battery compartment and the floor to provide more legroom for backseat passengers.



Futuristic elements cannot hide the unmistakable Porsche proportions. (Photo: Porsche)

Adherence to Porsche brand values also means what you see is what you get. Asked whether Porsche might create a simulated ICE sound to satisfy customers who miss the timbre of a flat-six or V-8, Weckbach said, “Porsche is unlikely to lower itself to gimmicks of this kind or use sound effects.” Any

sound the Mission E makes will work to enhance the “emotional factor” of the car, and incorporate “a clear reference to the technology.”

When the interviewer asked Weckbach a question that invited a punch thrown Tesla’s way, Weckbach didn’t hold

back. Referring to some Tesla products being able to run from 0 to 62 miles per hour in under three seconds, the Porsche exec said, “But only twice — the third attempt will fail. The system is throttled.” He added that “Porsche drivers won’t need to worry about

continued next page

that” because the Mission E’s being developed to deliver “reproducible performance and a top speed which can be maintained for long periods.”

We’re not sure about the claim of throttled Tesla acceleration, though. At one time Tesla did restrict the number of consecutive and total Launch Control deployments, as well as “full-pedal acceleration,” in order to save wear and tear on the battery and powertrain. However, Tesla erased the software restriction late last year after voluminous customer complaints. We do know Mission E mission control has a target on the Tesla Model S, because we’ve seen Porsche engineers testing alongside Elon Musk’s vehicular children, and *Porsche has admitted that it wants the Mission E to conquer Model S buyers specifically.*

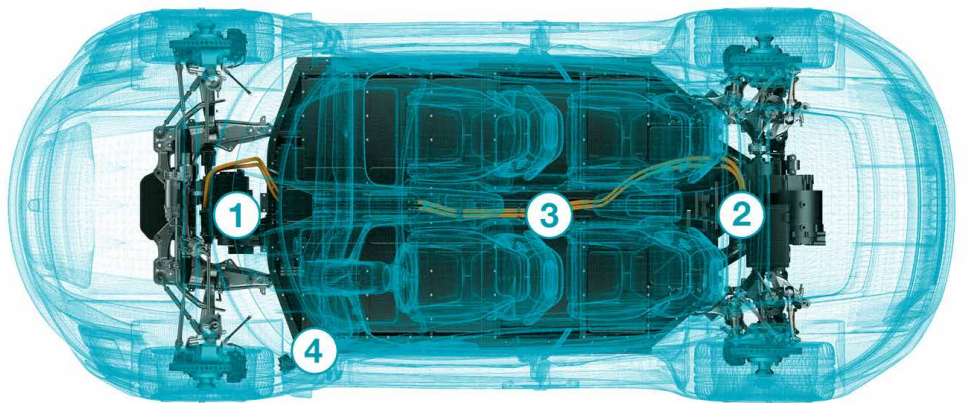
The mantra here is “quick to drive, quick to charge.” The 800-volt electrical architecture means a Mission E owner on a road trip can take a 20-minute coffee break and recharge 250 miles of driving range. We’re not sure how much that owner and his guests can pack, however. The front of the Mission E will contain “Lots of high-tech gear — the electric motor, the power electronics, the cooling system and other high-voltage components.” Weckbach said even with that, there are “still 100 liters of space for luggage.” We’ll hope he’s referring to only the front compartment; a Porsche 911 C4 can hold 125 liters in its frunk.

To make that quick-charging scenario possible, Porsche needs a huge amount of charging infrastructure built in the two years before the Mission E arrives. The Volkswagen Group is working with other OEMs in Europe on a charging network. In the U.S., in addition to placing charging ports at all of Porsche’s 189 dealers, plus the Porsche Experience Centers in Atlanta and Los Angeles, the

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Part of the fender slides open to reveal the charging port. (Photo: Porsche)



The Mission E concept study has two electric motors (1, 2). Its 800-volt powertrain enables short charging times and extended range. The lithium-ion battery (3) is integrated into the underbody, which improves weight distribution and also enables inductive charging. The conventional charging port is located in the front left fender (4). (Photo: Porsche)



Rear-hinged doors open to reveal the Mission E’s high-tech interior. (Photo: Porsche)

Porsche E

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VW-funded Electrify America plans to build nearly 5,000 chargers nationwide. And because 80 percent of EV charging happens at home, it's only a matter of time before Porsche starts showing off a range of domestic solutions geared to carmaker's range of EV and hybrid options.

[The url for this story is at the bottom of this page. The following text is from a Porsche Press Release as are all the photos.]

To cut to the chase: the driver will continue to be Porsche's number one focus in the future. Everything revolves around the driver, including the controls. Should the driver lean to the side, sit up higher, or sink down in the seat, the five OLED round instruments that are virtually displayed on the flat, free-standing panel will follow these movements with what is referred to as a parallax effect. This helps prevent the steering wheel from blocking important information. And there's more.

Thanks to an eye-tracking system, the camera sensors always know which instrument the driver is looking at. Pressing a button on the steering wheel will then activate that instrument. Driving pleasure is guaranteed. So is feedback—the face-tracking system reflects this pleasure by displaying the corresponding emoticon on the instrument; this can be saved and shared along with further data.



Four extremely lightweight individual seats provide excellent lateral support. (Photo: Porsche)



Eye-catcher: A completely new operating concept with an eye-tracking system and gesture control. (Photo: Porsche)

The dashboard is brimming with new ideas as well. Based on the cockpit design of the very first 911, a broad holographic display can be activated with a wave of the hand. The driver or front passenger can then operate the radio, navigation system, climate control, phone, and individual apps in touch-free form. Intuitive gestures, detected by sensors, do the trick. The Mission E can also be configured externally via Porsche Car Connect. Using “Over

the Air and Remote Services” allows owners to modify the car's functions from their smartphone or tablet. A simple update via the integrated high-speed data module is all it takes to save new infotainment features or engine and suspension settings. Yet another way of charging the car.



In accordance with Title 17 U.S.C. Section 107, this material is distributed without profit to those who have expressed a prior interest in receiving the included information for research and educational purposes.

Story: <https://www.autoblog.com/2018/02/28/porsche-ev-mission-e-tesla/#slide-7259357>

Press Release: <https://www.porsche.com/usa/aboutporsche/christophorusmagazine/archive/374/articleoverview/article01/>

2019 Hyundai Kona Electric US debut: 250 miles of range from small electric hatchback

By John Voelker

After a Detroit auto show that was about little except pickup trucks and a new Jeep, followed by a tepid Chicago show, New York proved to be relatively rich in interesting new green cars.

The standout was clearly the 2019 Hyundai Kona Electric, the 250-mile battery-electric small hatchback that will go on sale before the end of the year.

While it hasn't been priced yet, it's the first mass-market competitor that actually beats the 238-mile, \$37,500 Chevrolet Bolt EV on range.



First unveiled at the Geneva auto show, the battery-electric Kona is Hyundai's first long-range electric vehicle but the second in its lineup.

It joins the Hyundai Ioniq Electric, the compact five-door hatchback with 124 miles of range—although that model may get a longer range from a battery-capacity upgrade within a year or two.

The Ioniq comes as a dedicated vehicle with hybrid, plug-in hybrid, or fully electric powertrains only, whereas the bulk of the Kona models will use a standard gasoline engine.

The Kona Electric, however, swaps out the engine and transmission for a liquid-cooled 64-kilowatt-hour lithium-ion battery pack and a 150-kilowatt (201-horsepower) motor producing 291 lb-ft of torque that drives the front wheels.

Hyundai estimates its energy efficiency at 117 MPGe, higher than that of the Nissan Leaf at 112 MPGe though lower than the Tesla Model 3 and Chevy Bolt EV. Miles Per Gallon Equivalent, or MPGe, is a measure of how far a car can travel electrically on the energy contained in 1 gallon of gasoline.

The version launched for the European market includes a model with a smaller battery pack and lower rated range, but the U.S. will get only the higher-capacity battery.

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KONA EV

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Its anticipated 250-mile range, it should be noted, beats the 238-mile rating for the Chevrolet Bolt EV, also a small upright hatchback, which has a slightly smaller 60-kwh battery.

Hyundai says the electric Kona will go on sale in the fourth quarter of this year, with initial distribution in California. It will then be made available in those states that have adopted California's stricter emission limits, the company added, which comes with a zero-emission vehicle sales mandate.

Frontal styling of the Kona Electric replaces the gasoline model's grille with a blanking panel for better airflow around the front of the car, to reduce aerodynamic drag that cuts into battery range.

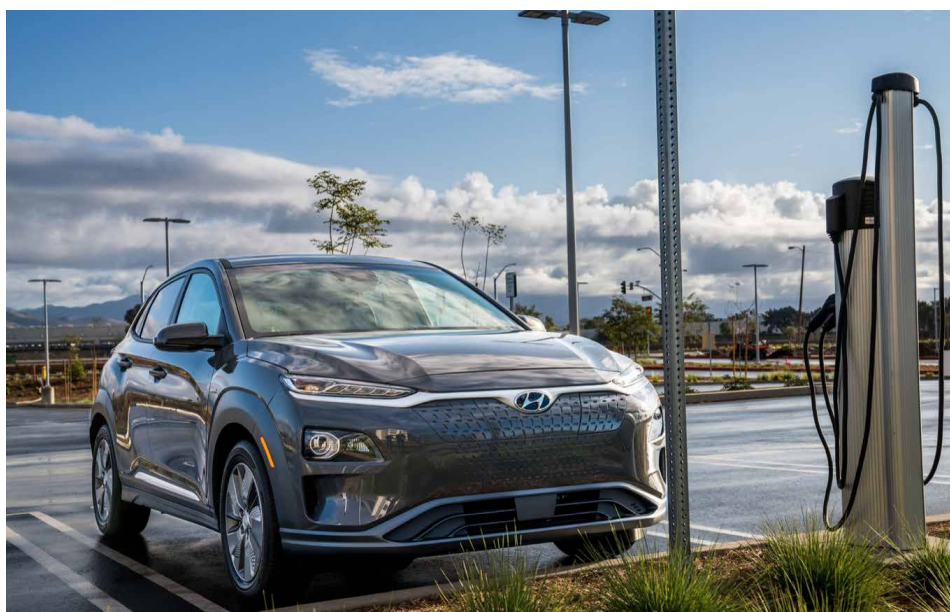
Buyers can choose among "extroverted" colors that include Phantom Black, Galactic Grey, Chalk White, Ceramic Blue, and Pulse Red, with the option of a contrasting white roof if the car is not fitted with a sunroof.

The 2019 Kona Electric dashboard uses a standard "floating" touchscreen for entertainment and vehicle information.

Android Auto and Apple CarPlay are standard, as is the Hyundai Smart Sense suite of active-safety features.

Those include automatic emergency braking with pedestrian detection, active lane control, automatic headlights, and a driver-alertness monitoring system.

Options include built-in navigation with an 8-inch touchscreen, a head-up display, rain-sensing windshield wipers, and a Qi charging pad in the console for wireless devices.



https://www.greencarreports.com/news/1115981_2019-hyundai-kona-electric-us-debut-250-miles-of-range-from-small-electric-hatchback



[The following is from EV staff]

The Kona is a true Bolt competitor in a Compact/Crossover hatchback with 220+ miles of EV Range. 2019 is going to be fun, fun, fun!!!

2019 Hyundai Kona Electric (250 miles?)

2019 Nissan LEAF e+ (225+ miles)

2019 Chevy Bolt EV (238 EPA miles)

2019 Tesla Model 3 Standard Range (220 Miles)

You can bet that it will only be offered in the following states (or heavily promoted in these states, with a lot of smoke and mirrors about other states):

CARB-Zero Emission Vehicle states –California’s ZEV program has now been adopted by the states of Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island, Vermont and Maine. These states, known as the “Section 177 states,” have chosen to adopt California’s air quality standards in lieu of federal requirements as authorized under Section 177 of the federal Clean Air Act (42 U.S.C. sec. 7507).

Additionally, California’s GHG standards are now spelled out federal law. Washington DC and New Jersey are participating with ZEV initiatives, but are not signatory CARB-ZEV states.



Classic Mini Electric puts tomorrow's powertrain in yesterday's body shape

By Loz Blain

A lot of electric cars go to great lengths to cast off traditional design ideas and announce themselves as something totally new and futuristic – take the BMW i3 for example. Mini plans to do things differently. Recognizing customers' fondness for the classic shape, the company is presenting a restored classic Mini Cooper kitted out with a completely electric drivetrain that looks just like it used to on the outside, but packs an electric punch underneath. It's called the classic Mini Electric.

There's no details in terms of range, power, battery location ... In fact the whole thing looks exactly like a nicely restored Cooper were it not for a few strategically placed plug logos around the body and a charge point where the petrol cap would normally go.

Mini also says the electric version honors the go-kart style nailing and zippy driving experience of the original, although that's pretty academic, as nobody will ever get to drive it.

Still, it's a good reminder that the design of electrics is far less bounded by engine and drivetrain technology than the average combustion car – whether that means they're built to look like spaceships, or to emulate resonant designs of past eras. Anything's possible!



All-electric powertrain, totally classic restoration Cooper body. It's Mini's one off classic Mini Electric, preparing to debut at the New York auto show. (All photos: Mini)



<https://newatlas.com/classic-mini-electric-new-york/53984/>

Rimac's new electric hypercar can go 0 - 60 faster than it takes to read this headline

By Andrew J. Hawkins

Let's dispense with the hyperbole: Croatia's Rimac Automobili built a very, very fast car that they'd like to show you. It is an all-electric hypercar called the Concept Two that debuted today at the Geneva Motor Show. It claims to have a 1,914-horsepower engine that enables a 0 to 60 mph acceleration in 1.85 seconds. That would make it one of the quickest cars in existence, quicker than the next-generation Tesla Roadster with its comparatively sluggish 0-60 in 1.9 seconds.



These are crazy sounding specs and you would not be remiss if you read all of this with a healthy degree of skepticism. That said, Rimac's Concept One, circa 2012, fed on 1,073 horsepower from its four electric motors, and could best most supercars on the drag strip. Which is to say, Rimac knows fast.

Rimac says its 120 kWh battery enables over 400 miles of range, which is a lot more than the 200 miles found in most production EVs. And facial recognition technology will both unlock and start the car, which makes this car the perfect distillation of our current moment of technology and hype.



The company claims that it'll get to 100 mph in 4.3 seconds and run a quarter mile in 9.1 seconds. The C Two tops out at 258 mph, but after a certain point these are just numbers on a screen, right? All this speed and horsepower starts to get a little abstract, and that abstraction can be a little dangerous if not handled correctly. Just ask Richard Hammond, who is very lucky to have walked away from the burning wreckage of the Rimac Concept One while shooting his television show *The Grand Tour* last year. [Ed: A technical explanation worth viewing is available here:

<https://www.youtube.com/watch?v=e5FfNB69VwU>

Starting at 1:41, the discussion focuses on the Rimac Concept 1, the company; the details are quite revealing.]



If speed isn't your thing, Rimac says the car comes with Level 4 autonomous capabilities. The sensor suite includes eight cameras, one or two LIDAR, six radar, 12 ultrasonics, and a partridge in a pear tree. Again, Level 4 is an easy claim to make when you don't have the immediate concern of independent verification. In other words, we'll believe it when we see it.

And we probably won't because the chances you or me or anyone we know will ever end up behind the wheel of the Concept Two are exactly zero. The company won't say how much the C Two costs, but you can count on it being seven-figures. Rimac said it will build 150 copies of the Concept Two, which would be a massive output compared to the eight copies it sold of the original.



<https://www.theverge.com/2018/3/6/17086808/rimac-concept-two-electric-hypercar-geneva-motor-show-2018>

Tips for taking your Tesla Model X on a snowboarding trip

By Matt Pressman

What's it like taking a Tesla Model X into the mountains to go skiing or snowboarding? Ryan ZumMallen reports that in order "to find out, Trucks.com drove a \$165,550 Model X P100D on a 430-mile roundtrip journey from Las Vegas to Brian Head, Utah, an elevation of 9,800 feet. It's the second highest town in the U.S. and highest in the state. Much of the trip was in sub-freezing temperatures on icy and snowy roads."

To test the Model X, "We brought along an expert panel of four snowboarders and skiers to help evaluate the vehicle. They pushed it hard... [and] even tried it out on a steep, unpaved climb in the deep snow." Arielle Shipe, an avid outdoor adventurer from Aspen, Colorado said, "I was surprised that it was so capable... when I went up the hill at night when it first started snowing, it was awesome."

This was all part of the Trucks.com Brian Head 2018 Winter Adventure Drive, which evaluated four vehicles: Chevy Tahoe, Ford F-150, Subaru Outback, and the Tesla Model X. And after reviewing the Model X, the team concluded, "Without a doubt, it was the most fun of the four vehicles to drive."

"I was obsessed with the speed, the quickness, the handling," said Samuel Lippke, an expert snowboarder and Long Beach, California. Justin Mayers, an experienced skier from Jackson, Wyoming explained, "Before this trip I associated the Model X with city cars but [after] driving it in the snow, now I categorize it as a trusted mountain car."



The video is titled: "How to Take Your Tesla Model X on a Ski Trip"

<https://youtu.be/akXb-cEYNae>

Were there any valuable takeaways after spending so much time up in the mountains? Absolutely. Driving the all-electric Model X definitely differs from standard gas-powered trucks. To that end, check out these lessons learned in order to help you enjoy your next Model X snowboarding (or ski) trip to the fullest.

1. Be sure to plan your charging

By planning ahead, "The route from Las Vegas [had] required pausing at the Tesla Supercharger in St. George, Utah. In 35 minutes of charging the Model X gained 159 miles of range, bringing it to a total of 214 miles. That top off was sufficient to power the crossover up more than 5,000 feet of elevation in rapidly dropping temperatures." Lippke added, "It didn't feel like the battery usage was that much of a pain — charging with the Supercharger is pretty quick, and I was surprised."

2. Turn on and pre-heat

It's reported that, "During both days

on the mountain, our morning ritual included using the Tesla mobile app to remotely turn on the Model X. This process is what Tesla calls 'preconditioning.' It warms the cabin and battery so when you're ready to start driving, range is preserved. Without preconditioning, sub-freezing temperatures could reduce the range."

3. Use the hitch mounted snowboard rack

Of course, "The most notable design feature on the Model X is its falcon wing doors that open upward. While visually appealing, the doors eliminate any ability to mount rooftop racks or cargo boxes. We used a hitch-mounted ski rack, built by Yakima with Tesla branding... [but there's] potential trade-offs: the ski rack increases drag, which affects efficiency. It also extends the length of the crossover, which can make parking in tight spaces difficult."



<https://evannex.com/blogs/news/tesla-tips-taking-your-model-x-on-a-snowboarding-trip-video>

Volvo FL Electric truck packs up to 186 miles of range

You'll never hear it coming, which will be great for urban areas once electric trucks hit the mainstream.

Photo: Volvo

By Andrew Krok

Volvo Trucks is one of the largest manufacturers of heavy commercial vehicles in the world, and the Swedish company is about to widen its expertise with its first all-electric truck, the FL Electric.

Using technology honed in sister company Volvo Buses' efforts, this new electric truck will leave the factory with road-proven components when manufacturing and sales kick off in 2019. [Ed: The purpose of going electric is to reduce fueling costs, as well as to have a positive impact on emissions.]

The powertrain consists of an electric motor putting out 175 horsepower (up to 248 hp in short bursts) and 313 pound-feet of torque. It carries between two and six lithium-ion batteries for a net capacity of 100 to 300 kWh. With all six batteries, it has a range of up to 186 miles, which should suffice for around-town deliveries and the like.

It'll take a couple hours to charge a depleted 300-kWh battery pack via 150-kilowatt DC fast charging. If it's plugged into 22-kW AC power, expect the charge to take an entire evening, about 10 hours or so.

<https://www.cnet.com/roadshow/news/volvo-fl-electric-truck/>



Sure, it might not be as cushy as the XC90, but it's probably better than what it's meant to replace.

The first two examples of the Volvo FL Electric will be put to use in Volvo's hometown of Gothenburg, Sweden. One will go to garbage and recycling collector Renova, and the other will go to hauler TGM. It's an electric delivery truck — I hope you weren't expecting it to go to Jean-Claude Van Damme's house or anything like that.



World's first electric road that charges moving vehicles debuts in Sweden

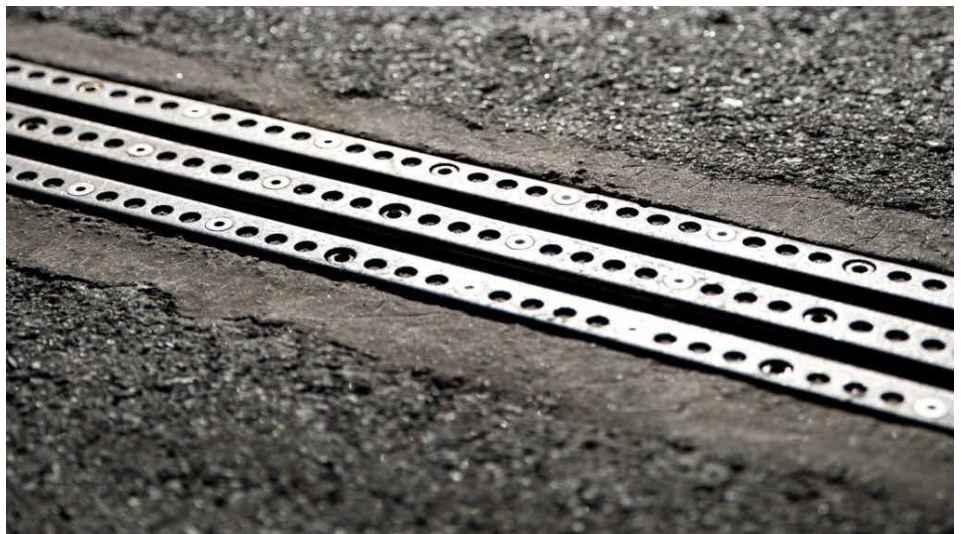


Workers install the electric rail underneath the road.

By Greg Beach

The first electrified road capable of charging EVs as they drive across it is now open outside of Stockholm, Sweden. While the road — which links Stockholm Arlanda airport to a nearby logistics site — is only two kilometers long, it is a significant step forward in Sweden's strategic plan for energy and climate change. The country aims to become independent of fossil fuels by 2030 — a task that will require a 70 percent reduction in emissions from the transportation sector. Once expanded, the electric roadways and highways

continued next page



A close-up of the electric rail on the road surface.

in Sweden will make it convenient to charge electric vehicles and ease the country's transition from traditional combustion engine vehicles.

The system works by transferring electricity from the installed underground rail to the vehicle above through a flexible arm that attaches to the charging vehicle. "There is no electricity on the surface," Hans Säll, chief executive of eRoadArlanda, explained to the Guardian. "There are two tracks, just like an outlet in the wall. Five or six centimeters down is where the electricity is. But if you flood the road with salt water, then we have found that the electricity level at the surface is just one volt. You could walk on it barefoot."

It currently costs one million euros to construct one kilometer of electrified road, but this is still 50 times less than the cost of installing an equivalent distance of an overhead tram line. At the moment, Sweden maintains about half a million kilometers of roadways, of which 20,000 are highways. "If we electrify 20,000 kilometers of highways that will definitely be enough," Säll said. "The distance between two highways is never more than 45 kilometers, and electric cars can already travel that distance without needing to be recharged. Some believe it would be enough to electrify 5,000 kilometers." Sweden and Germany are in discussion to eventually construct a network of electrified roads to encourage a Europe-wide adoption of electric vehicles.

Images via Erik Mårtensson/
eRoadArlanda



An electric truck drives down a snow-covered electrified road that charges the vehicle as it drives.



The first electrified road capable of charging electric vehicles as they drive [on] it is now open outside of Stockholm, Sweden. This photo: Jonathan Nackstrand via Getty Images

<https://inhabitat.com/worlds-first-electric-road-that-charges-moving-vehicles-debuts-in-sweden/>

[Ed: The following url is another article for your interest that covers this project]:

<http://www.thedrive.com/tech/20103/sweden-modified-road-to-charge-electric-vehicles-on-the-go>

From GAS to GRID

[Some may recall having parents talk about getting dividend income from stable companies such as utilities, which typically make long term investments. One could expect a steady income stream for years. That impression is now getting eroded as more and more renewable resources come on-line, as more nighttime streetlight load is shed using LEDs, etc. Their saving grace may be the rise of EVs as a useful stabilizing load, that utilities are going to embrace. Our cars are a growing load (albeit at night, mainly) and we are a potential energy storage sink for them. That will help them load shift and get away from needing peaker plants, which are not only expensive to run but take a long time to plan for, build and install. Read this fascinating and well written glimpse into the future, which is now rapidly becoming clear.]

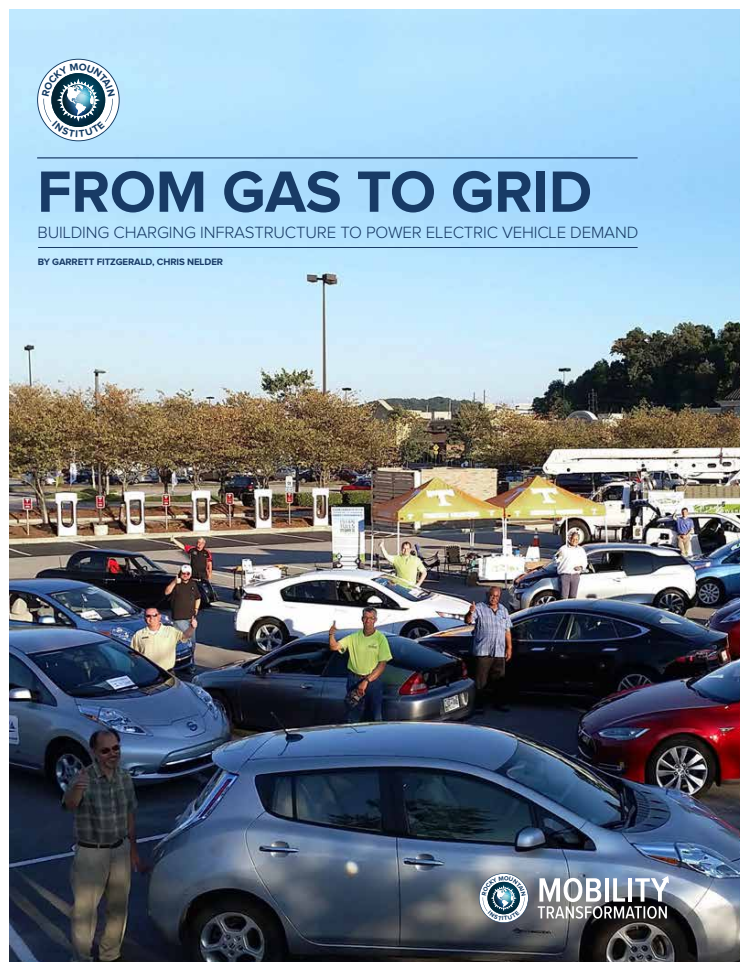
[The following is a short excerpt taken from the Executive Summary of the pdf pictured and offered online.]

EXECUTIVE SUMMARY

With electric vehicles (EVs) coming on fast thanks to undeniable advantages in the cost of ownership and the driving experience itself, it's time to move on from the old debates about when the EV revolution will arrive. It's here. We should not allow the fact that EV sales in 2016 were only about 1% of total light duty vehicle sales in the U.S. to lull us into a false sense of complacency. Under some reasonable assumptions, there could be 2.9 million EVs on the road in the U.S. within five years, bringing over 11,000 GWh of load to the U.S. power grid, or about \$1.5 billion in annual electricity sales.

That would constitute a nontrivial load that utilities would need to accommodate well within their current planning horizons, and would almost certainly be the largest growth sector in the U.S. electricity market for the foreseeable future.

There is no benefit to further delay, or to waffling over whether investing in charging infrastructure is a good idea. And the chicken-and-egg problem that has stymied the electric vehicle revolution thus far—no one wanted to build EV charging infrastructure until there were more vehicles, but nobody wanted to buy EVs until there was more charging infrastructure—will be swept away by a fast-growing fleet of increasingly affordable EVs that consumers love.



Sticker prices, model options, and range anxiety have long been impediments to electric vehicle adoption, but those barriers are set to fall within a few years. EVs are already cheaper to refuel, and in some cases, such as with high-usage fleet vehicles, they are cheaper to own than conventional internal combustion engine (ICE) vehicles. EVs are on track to sport lower sticker prices than ICEs in Europe by next year, in China by 2023, and in the U.S. by 2025, without incentives or subsidies. By 2020, there will be 44 models of EVs available in North America, and several best-selling models can already go more than 200 miles on a single charge.

These trends, combined with emerging municipal and state targets for EV adoption and charging infrastructure deployment, indicate that the electric vehicle revolution has already begun.

[Read the rest of this compelling document at the url below.]



<https://www.rmi.org/wp-content/uploads/2017/10/RMI-From-Gas-To-Grid.pdf>

Don't Be Fooled: Annual Fees on Electric Vehicle Drivers Are Not "Fair"

By Mary Lunetta

In 2015, only a handful of states had fees on electric vehicles (EVs). Today, there are 17 states with newly adopted annual registration fees [<https://www.cnbc.com/2017/07/03/states-yank-electric-car-aid-add-new-fees-to-pay-for-infrastructure.html>] and nine additional states are considering them — but don't be fooled: These fees are unfairly punitive for drivers, while barely making a dent in state coffers.

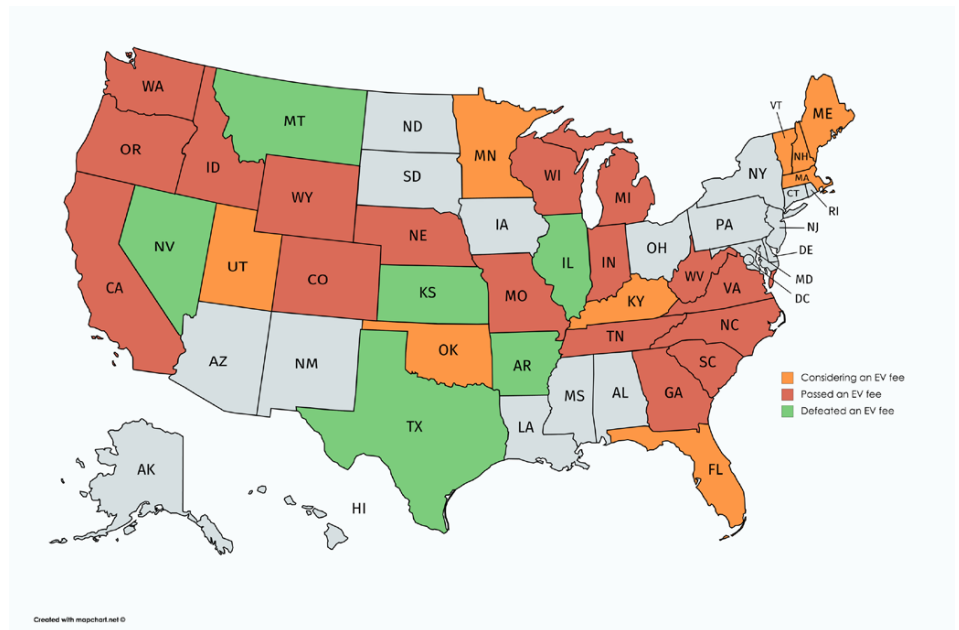
To cover up their own failure to act, some states are trying to create punitive fees for families that drive electric vehicles. This isn't a solution. It's punishing people and families who are seeking to reduce their carbon footprint and drive some of the most efficient and fun cars out there. States must act to care for our roads, highways, bridges, and their maintenance, but not on the backs of families who choose to drive electric vehicles.

IS IT FAIR?

Right now, states are trying to impose fees that would charge drivers anywhere from \$50 for plug-in hybrids to \$200 for fully electric cars. This would be, on average, charging these families \$23 more than everyone else. Turns out, EV fees aren't so fair.

Recent analysis by Drive Electric Minnesota looked at the combination of taxes paid by all vehicles and found that EV owners usually pay just as much or more in state vehicle taxes as their fossil fuel counterparts.

Vehicle ownership and operation contribute to multiple state-revenue streams, not just the gas tax. EVs



currently contribute more in excise tax and state sales tax than gas-fueled vehicles, as those taxes are based on a car's retail value, which is generally higher for EVs than other cars. For example, the fully electric Nissan Leaf S sells for \$30,680, and a basic Tesla S goes for \$68,000.

Beyond traditional transportation taxes and fees, EV drivers also contribute to electricity sales taxes. Our friends at Acadia Center recently released a policy paper that digs into that and related topics.

Additionally, drivers of gas-fueled cars are not charged a fee on the public costs of the pollution they create, including to our climate and our public health. It is rather disingenuous to claim seeking "fairness" for the costs of road usage but then not to seek fairness for the costs of unhealthy air that harms everyone.

The gag is up. So much for creating a "fair" system.

EV FEES FAIL TO CLOSE BUDGET GAPS

Perhaps most important is that these proposed taxes *won't even make a dent* in the budgets that these legislators are claiming they would fix. Maine has an annual \$159 million funding gap for roads and bridges, and the proposed fees (the highest in the country) would raise only \$2.9 million in 2020 — recovering *only a tiny percentage* of its budget deficit. Utah has fewer than 5,000 registered EVs. If its proposed budget passes, it would bring in an additional \$400,000 in revenue — only *.02 percent of a \$2 billion* dollar budget shortfall.

Even in California, the new EV fee is expected to generate only about \$200 million *over the next decade*.

In 2017, the Oklahoma Supreme Court struck down its state's EV fee, ruling the tax *unconstitutional and unjustified*. Had H.B. 1449 passed, the fee would *continued on page 21*

U.S. Utilities Look to Electric Cars as Their Savior Amid Decline in Demand



By Samantha Raphaelson

The U.S. electricity sector is eyeing the developing electric car market as a remedy for an unprecedented decline in demand for electricity.

After decades of rising electricity demand, experts say the utility industry grossly underestimated the impact of cheap renewable energy and the surge of natural gas production. **For the first time ever, the Tennessee Valley Authority is projecting a 13 percent drop in demand across the region it serves in seven states, which is the first persistent decline in the federally owned agency's 85-year history.**

Electric vehicles (EVs) only make up 1 percent of the U.S. car market, but utility companies are taking advantage of their growing popularity

by investing in charging infrastructure and partnering with carmakers to offer rebates, says Quartz reporter Michael J. Coren. A report by the Rocky Mountain Institute, a non-profit clean energy research group, projects there could be almost 2.9 million electric cars on the road in the next five years.

"I think everyone's been actually quite surprised at how fast EVs are selling," he tells Here & Now's Jeremy Hobson. "Electric carmakers are realizing that electric cars ... will essentially be cars in the next 10 to 20 years."

Bloomberg estimates that if all existing U.S. cars and non-commercial trucks were converted to electric, it would add about 774 terawatt hours of electricity demand, which is almost equal to the amount generated by entire U.S.

industrial sector. EVs are also projected to make up about 5 percent of global electricity consumption by 2040.

Utility companies are seeking to get ahead of this expected growth. A group of 36 companies wrote a letter to Congress earlier this month lobbying for the removal of the cap on EV tax credits. Currently, Americans who purchase an electric car receive a federal tax credit of \$7,500. But the government plans to phase out those credits after each auto company sells 200,000 vehicles.

Tesla will likely see their tax credits disappear this year, with GM and Nissan right behind. This means that people will be less likely to buy electric cars right when power companies need them. Many automakers are divided

continued next page

over whether lifting the threshold indefinitely will drive sales.

“In fact, the incentives give us a relative disadvantage,” says Tesla CEO Elon Musk because Tesla customers soon won’t get any tax credits. “Tesla’s competitive advantage improves as the incentive goes away.”

The task of preparing for the surge in electric car ownership will likely cost the electricity industry hundreds of billions of dollars. Aging energy infrastructure won’t be able to accommodate new cars plugging into the grid, resulting in many blown transformers, Coren says.

“They have plenty of capacity to take all the EVs on if they need to, but not if they plug them in at the same time,” he says. “So there has to be essentially what’s called a managed charging system for the grid to handle all the new load.”

At the same time, utility companies will be forced to adapt their business model in order to combat falling revenues.

“Efficiency cuts utilities’ revenues and not their costs, and this is a big problem,” Amory Lovins, chief scientist and co-founder of the Rocky Mountain Institute, told Bloomberg. “The whole business model is upside down.”

Currently, utility make money through investment in power plants and other infrastructure as monopoly regulations prevent companies from selling electricity. Coren explains utility companies must develop strategies to make money through services, not hardware.

“We’re going to have to stop thinking of the utility as sort of the main source of electricity, and think of it more as a reliability network and start paying for that,” he says.

Even if you’re getting energy from solar panels on your roof and other renewable sources, you will still need power from the grid sometimes — for instance, if it’s a cloudy day with high winds — and “you need to move that around the state or even around a region as a backup,” Coren adds.

While utilities will be forced to undergo a transformation, the decline in demand is actually a good thing. That’s why in their pitch to Congress to lift caps on EV tax credits, utilities argued that investment in the EV market will help move the energy industry forward.

“Eliminating the manufacturers’ cap will provide certainty to both automakers and consumers,” the letter states. “It will also allow the utility industry to enable an electrified transportation future that creates and sustains more American jobs, reduces our reliance on foreign oil, makes our air cleaner, and our communities more sustainable.”



<https://www.npr.org/2018/03/29/598032288/u-s-utilities-look-to-electric-cars-as-their-savior-amid-decline-in-demand>

Sierra club on fees

continued from page 19

have only brought in a million dollars annually to fill a \$900 million deficit — helping offset a mere one percent of the deficit. Despite last years’ defeat, Oklahoma lawmakers are giving the proposed fee another go in the 2018 legislative session.

MANY OF THESE EV FEE POLICIES ARE CRAFTED BY BIG OIL

It’s no coincidence that this attack comes at a time when EVs are just starting to take off within the larger auto industry. Reportedly, Koch Industries has spent nearly \$10 million dollars annually on a campaign to boost petro-

leum-based transportation fuels and attack government support for electric vehicles because of the risk EVs pose for the fossil fuel industry. The American Legislative Exchange Council (ALEC), a right-wing state-legislation machine funded by the Koch brothers and several other multinational corporations, introduced a resolution to discourage states from providing subsidies for EVs at its States and Nation Policy Summit.

When oil tycoons consider a rise in EV drivers to be a threat to their wallets, you know EVs are taking off.

The truth is that the EV fees popping up around the nation are neither fair nor effective at closing budget deficits. They are, however, likely to affect EV

adoption and slow their benefits from being enjoyed by all when the need to incentivize and accelerate the switch to cleaner cars is strongest.

These fees function as a “gas ceiling,” a systemic barrier faced by people who can’t or don’t want to afford punitive fees. People with lower income are disproportionately impacted by air pollution, which includes women, people of color, and the physically disabled. All people deserve to get from point A to point B without suffering from harmful exposure to dirty air — not just the people who can afford the extra costs of emission-free driving.

[Read the rest of this article at the url below.]



<https://www.sierraclub.org/compass/2018/04/don-t-be-fooled-annual-fees-electric-vehicle-drivers-are-not-fair>

Boeing CEO Dennis Muilenburg hails the air taxi as an idea whose time is coming ... fast

By Alan Boyle

Aerospace company Boeing aims to It's not exactly a revelation that the Boeing Co. is interested in autonomous flight, including robo-planes that can fly people. But in a Bloomberg News interview, Boeing's CEO says air taxis could be coming sooner than expected.

"I think it will happen faster than any of us understand," Dennis Muilenburg, who also serves as Boeing's president and chairman, told Bloomberg in last week's interview. "Real prototype vehicles are being built right now. So the technology is very doable."

The timetable for technology adoption will depend on how quickly regulators work out the "rules of the road" for autonomous flight, he said.

Fleets of air taxis could well become commonplace within a decade, Muilenburg said, but he cautioned that "it won't be all turned on in one day."

Boeing has plenty of dials it can use to turn on the technology gradually:

For years, a Boeing subsidiary called In-situ has been providing winged drones for military applications, wildfire monitoring and emergency response.

Last year, Boeing acquired Aurora Flight Sciences, a Virginia-based company that's working with Uber to develop a new type of electric-powered autonomous aircraft for passenger transport. Aurora's air taxis could begin demonstration flights as early as 2020. (Muilenburg's forecast of regular air-taxi flights within a decade echoes the outlook from Uber CEO Dara Khosrowshahi.)

Also last year, Boeing unveiled a prototype autonomous plane that's designed to refuel fighter jets in midflight. It's one of the offerings being considered in competition for a U.S. Navy contract.

Boeing's HorizonX venture capital arm has invested in a couple of startups that could play a role in the air-taxi market, including Kirkland, Wash.-based Zunum Aero, which is developing a regional-class, electric-powered jet; and Pittsburgh-based Near Earth Autonomy, which is working on navigation systems for autonomous flight.

Boeing executives say the company is well into developing the technologies that could smooth the way toward autonomous passenger flight. Boeing's ecoDemonstrator program, for example, is working toward a series of fly-by-wire tests next year.

"You could imagine auto-takeoff, auto-taxi, things like that nature on a 787 – not, obviously, in a certified environment, but with an experimental ticket," Mike Sinnett, vice president of product development at Boeing Commercial Airplanes, told journalists last June.

Boeing is by no means the only aerospace company pushing toward autonomous flight: Its European archrival, Airbus, is also pursuing several initiatives in the field – including, most notably, its investment a Silicon Valley venture called Vahana.

Other flying car ventures include Joby Aviation (which just reported a \$100 million investment round), Bell Helicopter (which, like Aurora, is an Uber technology partner), Terrafugia, VerdeGo Aero, Kitty Hawk, China's EHang, Switzerland's Passenger Drone, Germany's Volocopter and Lilium, Slovakia's AeroMobil and Japan's Cartivator Project.

Not everyone is gung-ho about air taxis: Elon Musk, the billionaire CEO of SpaceX and Tesla, has repeatedly questioned whether they'd be safe enough for passenger transport.

So it sounds as if flying cars could be another agenda item for a Musk-vs.-Muilenburg debate, adding to the argument over whose rocket will get to Mars first.



(Aurora Flight Sciences/Image via Bloomberg)

<https://archpaper.com/2018/03/boeing-sells-flying-taxis-next-decade/>

FedEx Places order for 20 Tesla Semi Electric Trucks



By Simon Alvarez

FedEx Corp. has joined the likes of UPS, PepsiCo, and Anheuser-Busch as the Tesla Semi's latest customer. In a press release, the American multinational courier delivery services company announced that it had placed a reservation for 20 electric trucks from Tesla, as part of its initiative to push green technologies into its operations.

[In a press release, it was] noted that the 20 Tesla Semis would be deployed and operated by FedEx Freight, the company's less-than-truckload (LTL) service, which covers the transportation of relatively small cargo. According to FedEx Freight president and CEO Mike Ducker, the company's investment and commitment to the Tesla Semi stands as its latest statement on its continuing efforts to incorporate sustainability into its day-to-day systems.

"FedEx has a long history of innovation and incorporating sustainability efforts throughout its global network. Our investment in these trucks is part of our commitment to improving road safety while also reducing our environmental impact," the FedEx Freight CEO said.

In the company's press release about the purchase of the Class 8 electric trucks, FedEx asserted that it had been actively engaged in green initiatives for the past decade. According to FedEx, the company has saved approximately 158 million gallons of fuel since 2008, thanks to its adoption of vehicles that employ fuel cells, natural gas, hybrid engines, and electric drivetrains. The company also noted that it is in a continuous process to replace its legacy fleet with more efficient and environmentally friendly vehicles, such as the Tesla Semi.

The Tesla Semi features four Model 3-derived electric motors, making it completely emissions-free. The instant torque provided by its electric motors also enables the long-hauler to pull its load with speeds that are far beyond the industry standard. During its unveiling, Tesla CEO Elon Musk announced that the Semi is capable of going from 0-60 mph while pulling a full 80,000 load in as little as 20 seconds. Without cargo, the electric truck is even faster, showing tire-shredding acceleration, as could be seen in a previous sighting of the vehicle.

Over the past couple of weeks, Tesla appears to be deploying its long-range silver Semi prototype to some of its biggest reservation holders. Two weeks ago, the electric truck was spotted in Anheuser-Busch's brewery in St. Louis, MO. The truck was parked in the brewery for a few hours, and was later seen parked at a Supercharger in St. Charles, roughly 24 miles away from the Anheuser-Busch facility.

Last week, the Tesla Semi was spotted in a Dallas, TX Service Center, before being sighted at the Reunion Tower the following day, where Tesla and PepsiCo reportedly held a demo for the electric truck. Ryan O'Donnell, a member of the Tesla community who lives in the area, was able to enter the demo event, snapping some close-up pictures of the electric truck. O'Donnell also noted that a PepsiCo employee stated that the company's 100 orders for the Tesla Semi were just a "drop in the bucket" for how many units the beverage and snack company is planning to order in the future.



<https://forums.teslarati.com/threads/fedex-places-order-for-20-tesla-semi-electric-trucks.6117/>

UPS to Deploy First Electric Truck to Rival Cost of Conventional Fuel Vehicles

Collaboration With Workhorse Group on New, Zero Emission Vehicles is Industry First



UPS recently announced its plans to deploy 50 plug-in electric delivery trucks that will be comparable in acquisition cost to conventional-fueled trucks without any subsidies – an industry first that is breaking a key barrier to large scale fleet adoption. The company is collaborating with Workhorse Group, Inc. to design the vehicles from the ground up, with zero tailpipe emissions.

“Electric vehicle technology is rapidly improving with battery, charging and smart grid advances that allow us to specify our delivery vehicles to eliminate emissions, noise and dependence on diesel and gasoline,” said Carlton Rose, President, Global Fleet Maintenance and Engineering for UPS.

“With our scale and real-world duty cycles, these new electric trucks will be a quantum leap forward for the purpose-built UPS® delivery fleet. The all electric trucks will deliver by day and re-charge overnight. We are uniquely positioned to work with our partners, communities and customers to transform freight transportation.”

Workhorse claims these vehicles provide nearly 400% fuel efficiency improvement as well as optimum energy efficiency, vehicle performance and a better driver experience. Each truck will have a range of approximately 100 miles between charges, ideal for delivery routes in and around cities.

The class 5, zero emission delivery trucks will rely on a cab forward design, which optimizes the driver compartment and cargo area, increasing efficiency and reducing vehicle weight. The new trucks will join the company’s Rolling Lab, a growing fleet of more than 9,000 alternative fuel and advanced technology vehicles.

“This innovation is the result of Workhorse working closely with UPS over the last four years refining our electric vehicles with hard fought lessons from millions of road miles and thousands of packages delivered,” said Steve Burns, CEO of Workhorse Group. “Our goal is to make it easy for UPS and others to go electric by

continued next page

removing prior roadblocks to large scale acceptance, such as cost.”

UPS will test the vehicles primarily on urban routes across the country, including Atlanta, Dallas and Los Angeles. With zero emissions and lower noise, the electric delivery trucks will help UPS make its fleet cleaner and quieter, a significant benefit in urban areas.

Following real-world test deployments, UPS and Workhorse will fine-tune the design in time to deploy a larger fleet in 2019 and beyond. Since most of the maintenance costs of a vehicle are associated with the engine and related components, UPS expects the operating cost of the new plug-in electric vehicle to be less than a similarly equipped diesel or gasoline vehicle.

UPS’s goal is to make the new electric vehicles a standard selection, where appropriate, in its fleet of the future. UPS has approximately 35,000 diesel or gasoline trucks in its fleet that are comparable in size and are used in routes with duty cycles, or daily miles traveled similar to the new electric vehicles.

UPS has more than 300 electric vehicles deployed in Europe and the U.S., and nearly 700 hybrid electric vehicles. The company recently ordered 125 new fully-electric Semi tractors to be built by Tesla in 2019, the largest pre-order to date. Additionally, last September, UPS announced it will become the first commercial customer in the U.S. to start using three medium-duty electric trucks from Daimler Trucks Fuso brand, called the eCanter.

The initiative will help UPS attain its goal of one in four new vehicles purchased by 2020 being an alternative fuel or advanced technology vehicle.

continued on page 26



Walker Electric Package Car 1935

REQUEST FOR APPROPRIATION

Location New York Date Nov. 2, 1933.

An appropriation must be obtained for all Capital and Extraordinary Expenditures amounting to more than \$50.00. Capital Expenditures cover automobiles, equipment, furniture and fixtures, or any additions to our automobile or plant accounts. Extraordinary Expenditures include major repairs or alterations to plants, or unusual expenses such as an advertising campaign.

An appropriation is requested authorizing expenditures to purchase the following equipment or perform the following work:

Enter description, cost, and reason why needed -

Description	Cash Required	
	Month	Amount
Three Gould Batteries for two-ton Walker Electric Trucks. The batteries in these trucks are very old and almost useless. As we intend to use these trucks for several years the batteries will be a good investment.	December	\$20.50
	December	\$20.50

If more space is required, attach additional sheets.

Requested by W.D. Bilgey

We approve the above request and recommend the appropriation be granted.

W.D. Bilgey
Member of Functional Board

T.R. Johnson
Member of Functional Board

Appropriation approved for Thomas A. Edison
Financial Manager

12/26/33 V# 113240
Thos. A. Edison Inc.
\$ 3792.36

180

Nov. 1933 Appropriations Request for New Batteries for Walker Electric Trucks - [Note the famous name at the bottom right: Thomas Edison]

UPS EV Vans

continued from page 25

The company also has pledged to obtain 25 percent of the electricity it consumes from renewable energy sources by 2025 and replace 40 percent of all ground fuel with sources other than conventional gasoline and diesel, an increase from 19.6 percent in 2016.

UPS operates one of the largest private alternative fuel and advanced technology fleets in the U.S. This includes all-electric, hybrid electric, hydraulic hybrid, ethanol, compressed natural gas (CNG), liquefied natural gas (LNG) and propane.

For more information on UPS's sustainability initiatives, please visit <http://www.ups.com/sustainability>.



Artistic rendering of plug-in electric delivery truck

All photos are courtesy of UPS and may be seen larger at the url below.



Walker Electric Package Car in NYC 1940



1936 Electric Truck getting Plugged In (Los Angeles)

<https://www.pressroom.ups.com/pressroom/ContentDetailsViewer.page?ConceptType=PressReleases&id=1519225541368-230>

JCB sparks huge interest with launch of its first electric digger

By Stephen Brown

JCB has developed its first ever electric digger in response to customer demands for a zero emissions machine which can work indoors, underground and close to people in urban areas.

The 1.9 ton mini excavator can be charged by simply plugging it into a standard 230 volt domestic electricity supply. Once fully charged, it is ready to put in a full normal working day on the building site – digging with the same speed and power as its diesel counterpart. Super-fast charging will also be available at launch, slashing the charging time in half.

The innovative product goes on sale at the end of year after being developed at the company's Staffordshire HQ. Its development has been spearheaded by company Chairman Lord Bamford who today heralded its arrival as a “real breakthrough” for the construction sector.

Lord Bamford commented:

“JCB has been at the forefront of developing innovative, low emission diesel powered construction equipment for decades. In fact, thanks to our clean diesel technology, typical JCB machines will be pretty close to zero emissions by next year.

However with urbanisation, machines are operating more closely to people as well as digging underground, indoors, near hospitals and in food production environments. As a result, there is a new zero emissions sector emerging and it's emerging very quickly. It's for this reason we have put ourselves at the forefront of alternative power technologies and developed the first ever electric JCB digger.”

The new machine – known as the 19C-1 E-Tec is equipped with three lithium-ion battery packs delivering a total of 15 kWh. Being pure electric means it will also be the quietest in the JCB range. This means contractors can work after normal hours in urban streets, around



JCB Chairman Lord Bamford stands proudly with the electric digger.



The new machine – known as the 19C-1 E-Tec.

hospitals and close to schools without disturbing people. The machine also has a retractable undercarriage to enable it to negotiate tight spaces.

<http://driveev.net/2018/03/26/jcb-sparks-huge-interest-launch-first-electric-digger/#.WsUBE4jwa1t>

First new Tesla Customers to Configure Model 3



Photo: Electrek

By Chris Randall

For the first time, new customers who have reserved a Model 3 in the USA will be able to configure it. Until now, Tesla had only invited prior customers to set up their EV online. This indicates Model 3 production may be getting underway as planned.

The news was reported by a *Reddit* user, who confirmed their customization option, after having ordered the Model 3 on the first day it became available. A number of additional users also confirmed that the new roll-out is taking place across different regions.

Furthermore, many new customers will be receiving their vehicles in the next three to six weeks. Currently, production and customization are a fairly simple matter for Tesla, since the options are still quite limited. Despite this, European Tesla drivers will still have to wait until 2019 for the delivery



Photo: Electrive

of new Model 3s. Previously, there had been talk of delivery in the second half of 2018.

New orders will be slow to be delivered as well, considering that Tesla is still holding preference for recurring customers, and new buyers are added to the bottom of the list. In the same thread, *Reddit* user netjack reports having ordered a new Tesla Model 3 on 01.04.2016, but still had not received a configuration invitation. His father, who owns a Model X, allowed him to make another reservation under his name, which resulted in a configuration invitation only days later.

<https://www.electrive.com/2018/02/23/first-new-tesla-customers-configure-model-3/>

<https://electrek.co/2018/02/22/tesla-model-3-orders-non-owners/>

New Kia Soul EV to Ride on Kona Platform, Expected 186 Miles per Charge



South Korean media reports that the third generation Kia Soul is coming this year and that includes an electric version that goes at least 186 miles per charge.

By Mark Kane

The new Kia Soul EV will be based on the common platform that was developed for the Hyundai Kona Electric and Kia Niro EV Concept.

That means some 186 miles (300 km) of range will be offered! Will it get the Kona's base 39.2 kWh battery? Seems likely, but will the even bigger 64 kWh pack from the range-topping Kona be made available too? We can hope.

Even the 39.2 kWh battery would be a major upgrade compared to the 111



miles after the most recent update to a 30 kWh battery for the current Soul EV.

South Korean Etnews.com reports that the third generation Soul will be launched in the second half of 2018. Whether it means that the electric version will go on sale soon after is unclear right now.

[Ed: Pure speculation follows]
We expect that together with moving to a new platform, Kia will also abandon CHAdeMO and offer CCS Combo fast charging inlet.



<https://insideevs.com/new-kia-soul-ev-to-ride-on-kona-platform-go-over-186-miles-per-charge/>

PlugShare – EV Charging Station Map find a place to charge your car!

Find a place to plug in your electric car (EV) with PlugShare's database of over 50,000 charging stations! Map nearby Superchargers for the Tesla Model S, Quick Charge (CHAdeMO) for the Nissan LEAF, and map nearby charging stations for the Chevy Volt, BMW i3, and all other electric vehicles. It's Solar powered, features multiple plug types for all the EVs and a live webcam! Check it out – people can be seen walking nearby <http://roulezelectrique.com/webcam/> With about 47 panels visible (actually more around the corner to the upper left, visible only on their webcam) – that certainly helps offset grid usage. If only more sites were equipped like this...

PlugShare was impressed by this Québec location: <https://www.plugshare.com/location/67814>

The screenshot shows the PlugShare app interface. On the left, a sidebar displays the station details for 'Roulez Électrique' at 519 rue des Volontaires, Trois-Rivières, Québec G9A 2E7 Canada. The details include contact information, pricing, parking status, and amenities. The main area shows a map of the location with several other charging stations marked with green icons. A pop-up window provides more details about the selected station.

PlugShare Login Register

Roulez Électrique

VOIXWAGON E-GOLF

Veuillez utiliser notre autre BRCC

située sous l'abri-solaire

(juste à côté de la porte d'entrée)

10 Roulez Électrique

CCS/SAE, CHAdeMO, J-1772, Tesla

Tesla Destination, Circuit Électrique, FLO

Check In

BOOKMARK ADD PHOTO DIRECTIONS EDIT

519 rue des Volontaires, Trois-Rivières, Québec G9A 2E7 Canada

(855) 519-3032

10\$/heure - BRCC – 1\$/heure - Normale

Parking - Free

Restrooms, EV Parking, WiFi, Dining, Park, Shopping

Open 24/7 - Heures d'ouverture de la Station 6/7 (du lundi au samedi de 9h00 à 17h00).

BRCC 480V 125A (Flo/ Circuit Électrique).
3 bornes FLO et EVduty (30A @ 240V) publique accessible 24/7. SVP laisser 1\$ de l'heure dans la fente de l'entrée principale. Toute contribution est la bienvenue, aidez à l'amélioration de la Station Roulez Électrique!
1 borne FLO / Circuit Électrique 30A /240V (1\$ / hre nécessite un compte Flo ou Circuit Électrique)
La borne Tesla (80A @240V) est accessible 24/7

19 Charging Locations Traffic

Map Terrain Satellite



These are two photos taken at the web cam in Quebec. See the url above the map



Pennsylvania Electric Utilities Develop Policies for Charging Cars

“The Pennsylvania Public Utility Commission took steps recently to clarify rules that had been seen as a potential barrier to companies that want to open public charging stations for electric vehicles. Statewide regulations generally forbid utility customers from purchasing electricity and reselling it to others at higher prices. But those rules, which were meant to protect tenants from being overcharged for electricity by their landlords, don’t apply to vehicle charging stations, according to a new policy statement that commission Chairman Gladys Brown proposed.

By Anya Litvak

Pennsylvania regulators are not strangers to what happens when new technology meets old regulations.

Uber, anyone?

This time, it’s electric vehicle charging stations, an emerging industry trying to find its footing and an economic model in Pennsylvania.

In an effort to encourage the growth of the industry, at least one utility — Pittsburgh-based Duquesne Light — is allowing charging station operators to resell its electricity, sometimes at a substantial markup.

The Pennsylvania Public Utility Commission announced this week that it is exploring how electric utilities should treat these charging stations, which pull electricity from the grid and redistribute it to a number of clients. One thing the agency wants to know is if the model developed by Duquesne Light should serve as a model for a state standard.

While gasoline stations have about a century’s head start, the electric car charging stations are just moving from people’s garages to more commercial spaces in Pennsylvania. It may be a while before signs pop up on the corner advertising a price per kilowatt hour.

The Pittsburgh utility is the only one in Pennsylvania that has a specific policy for electric vehicle charging stations — it excuses them from regulations that say a customer can’t resell or redistribute the utility’s product. Those prohibitions were designed to prevent situations like a landlord charging tenants different rates than what a utility would charge.

But a few years ago, when a company called the Blink Network wanted to put an electric vehicle charging station into the Oakmont service plaza on the Pennsylvania Turnpike, Duquesne Light had to make a decision — would it allow this company to not only redistribute its product but also charge more for per kilowatt hour of its customers than what it pays the utility?

The utility was hesitant at first, recalled Rick Price, executive director of the nonprofit Pittsburgh Region Clean Cities, an organization that promotes alternative fuel transportation.

He called up Duquesne Light and argued that it would be in the utility’s interest to clear the roadblocks for customers that would then use more electricity.

“Hey, they’re promoting this stuff,” he said.

In the end, Duquesne Light agreed. In 2014, several years before the utility would announce its plan to boost electric vehicles and related infrastructure in an effort to expand and accommodate its customer base, Duquesne Light changed its tariff to roll out the red carpet for charging stations.

It’s a balancing act, said Jamie Davis, director of rates at Duquesne Light.

“As a utility, we don’t want other people redistributing power,” he said. But, “It is something that our customers are asking us for. It’s certainly good for the environment. And we just want to make sure we’re ready for new technology.”

What might make the situation easier to swallow for utilities, at least for the time being, is that most of the 120 or so electric vehicle charging stations in southwestern Pennsylvania today don’t actually charge for their service, Mr. Price said.

Many are installed at commercial buildings or parking garages and allow free access.

[Read the rest of this article and see the photo reference as well as other resources at the url below.]



<http://www.post-gazette.com/powersource/consumers-powersource/2017/05/20/Pennsylvania-electric-utilities-develop-policies-for-charging-cars/stories/201705200040>

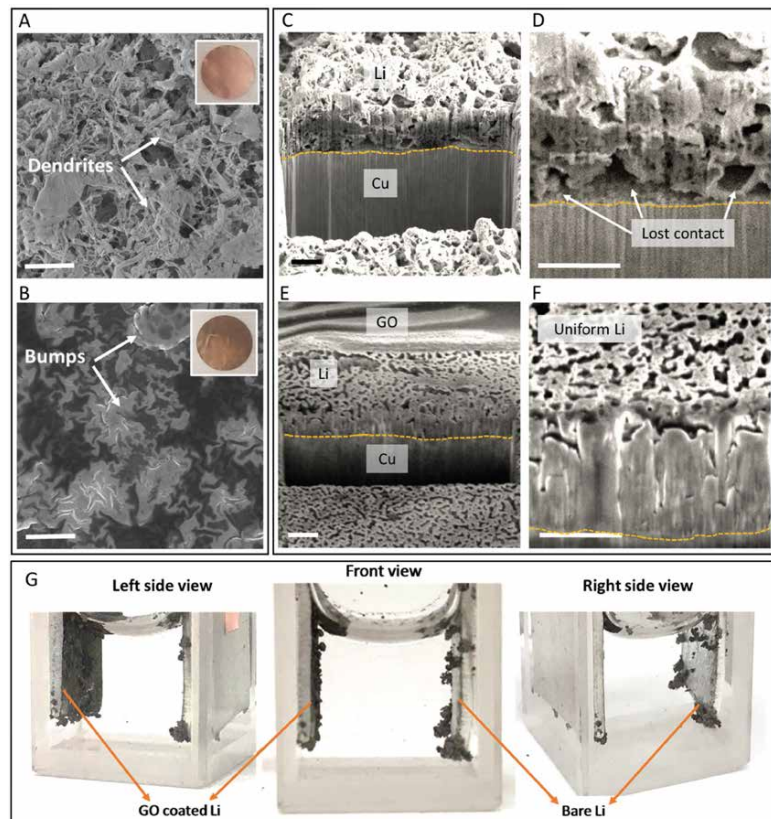
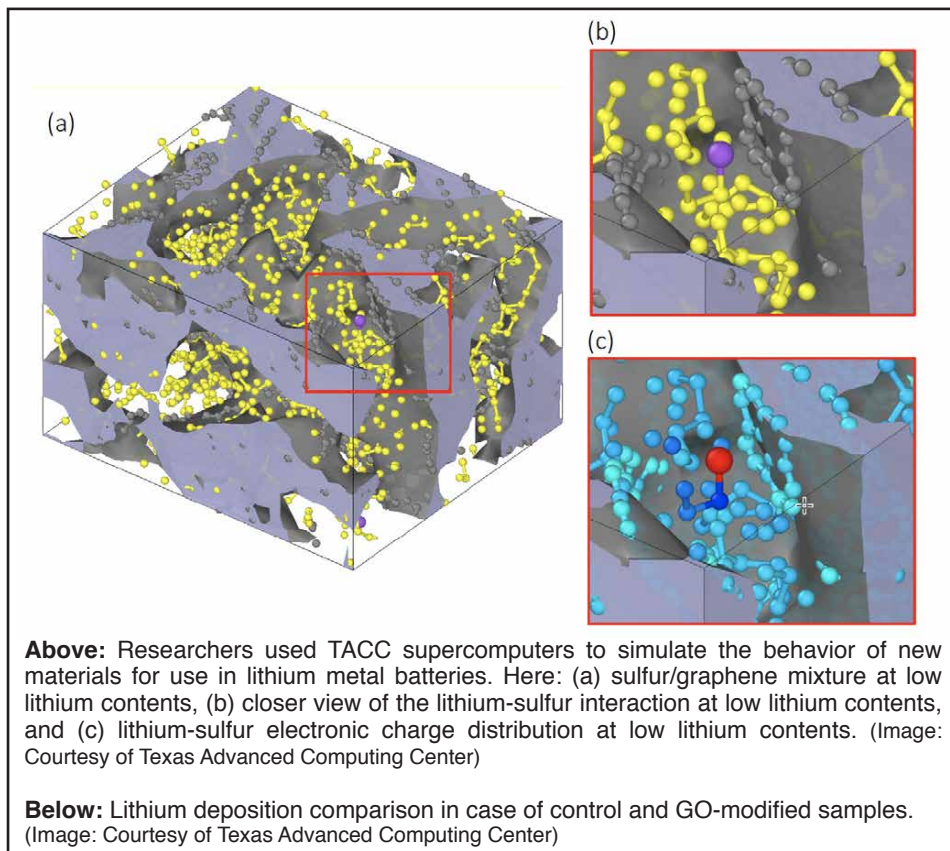
Overcoming a Battery's Fatal Flaw

By Aaron Dubrow, by Texas Advanced Computing Center

As renewable energy grows as a power source around the world, one key component still eludes the industry: large-scale, stable, efficient and affordable batteries.

Lithium-ion batteries have proven successful for consumer electronics, but electric vehicles, wind turbines or smart grids require batteries with far greater energy capacity. A leading contender is the lithium-metal battery, which differs from lithium ion technology in that it contains lithium metal electrodes.

First conceived in 1912, lithium-metal batteries have the potential for huge amounts of energy storage at a low cost, but they suffer from a fatal flaw: dendrites — sharp needles made of clumps of lithium atoms that can cause batteries to heat up and occasionally short-circuit and catch fire.



However, the promise of the technology has kept researchers and companies working on ways to overcome this problem.

“Lithium-metal batteries are basically the dream batteries since they provide an extremely high energy density,” said [Reza Shahbazian-Yassar](#), associate professor of mechanical and industrial engineering at the University of Illinois at Chicago (UIC). “However, we have not been able to build commercially viable lithium-metal batteries with organic liquid electrolytes due to heterogeneous lithium metal plating that leads to dendrites under extended battery cycling.”

Recently, teams of researchers, including Shahbazian-Yassar at UIC and [Perla Balbuena](#) at Texas A&M University, have been inching closer to finding a solution, in part by applying the power of supercomputers to understand the core chemistry and physics at work in dendrite formation and to engineer new materials that can mitigate dendrite growth.

continued next page

Writing in *Advanced Functional Materials* in February 2018, the researchers presented the results of studies into a new material that may solve the long-standing dendrite problem.

“The idea was to develop a coating material that can protect the lithium metal and make the ion deposition much smoother,” said Balbuena, professor of Chemical Engineering at Texas A&M and co-author on the paper.

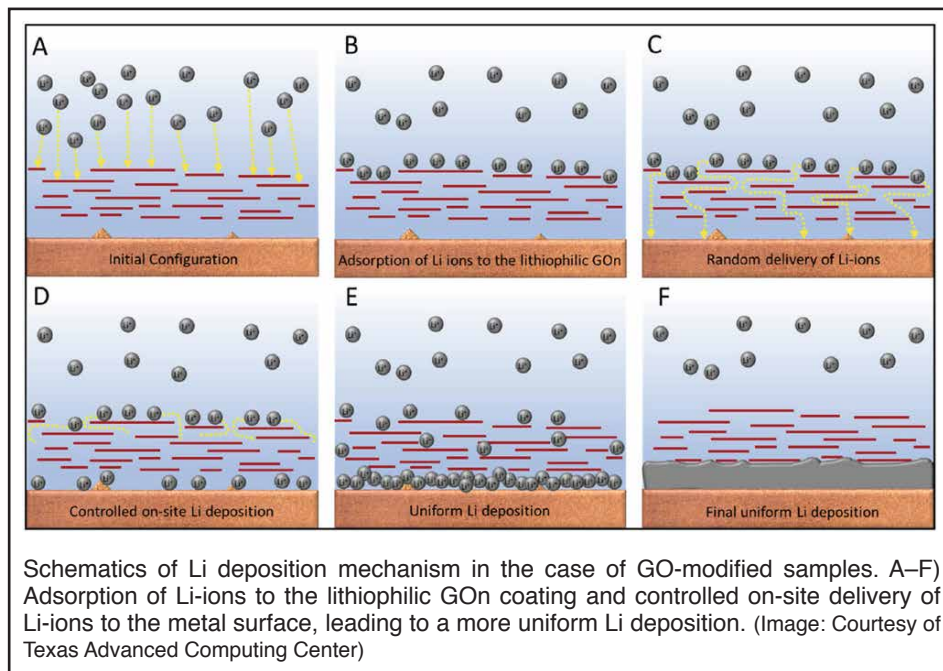
The investigations relied on the Stampede and Lonestar supercomputers at the Texas Advanced Computing Center (TACC) — among the most powerful in the world.

ION PACHINKO

In the paper, the researchers described a graphene oxide nanosheet that can be sprayed onto a glass fiber separator which is then inserted into the battery. The material allows lithium ions to pass through it, but slows down and controls how the ions combine with electrons from the surface to become neutral atoms. Instead of forming needles, the deposited atoms form smooth, flat surfaces at the bottom of the sheet.

The researchers used computer models and simulations in tandem with physical experiments and microscopic imaging to reveal how and why the material effectively controls lithium deposition. They showed that the lithium ions form a thin film on the surface of the graphene oxide and then diffuse through defect sites — essentially gaps in the layers of the material — before settling below the bottom layer of the graphene oxide. The material acts like the pegs in a pachinko game, slowing and directing the metal balls as they fall.

“Our contribution was to conduct molecular dynamics simulations where we follow the trajectory of the electrons and atoms in time and observe what’s going on at the atomistic level,”



Balbuena said. “We were interested in elucidating how the lithium ions were diffusing through the system and becoming atoms when the deposition ends in lithium plating.”

The graphene-oxide-doped batteries show an enhanced cycle life and exhibit stability up to 160 cycles, whereas an unmodified battery rapidly loses its efficiency after 120 cycles. The oxide can be applied simply and affordably with a spray coating gun.

How the spray is layered on the nanosheets was another focus of the research. “When you do the experiment, it’s not clear at the microscopic level where the coating will sit,” said Balbuena. “It’s very thin, so locating these coatings with precision is not trivial.”

Their computer model explored whether it would be more favorable if the oxide were oriented parallel or perpendicular to the current collector. Both can be effective, they found, but if deposited in parallel, the material requires a certain number of defects so ions can slip through.

“The simulations gave our collaborators ideas about the mechanism of ion transfer through the coating,” Balbuena said. “It’s possible that some of the future directions may involve different thickness or chemical composition based on the phenomenon that we observed.”

EXPLORING ALTERNATIVE CATHODE MATERIALS

In separate research, published in *ChemSusChem* in February 2018, Balbuena and graduate student Saul Perez Beltran described a battery design that uses graphene sheets to improve the performance of carbon-sulfur cathodes for lithium-sulfur batteries, another potential high-capacity storage system.

Besides sulfur’s natural abundance, non-toxicity and low-cost, a sulfur-based cathode is theoretically capable of delivering storage up to 10 times greater than the commonly-used lithium-cobalt oxide cathodes in conventional lithium ion batteries.

continued on page 34

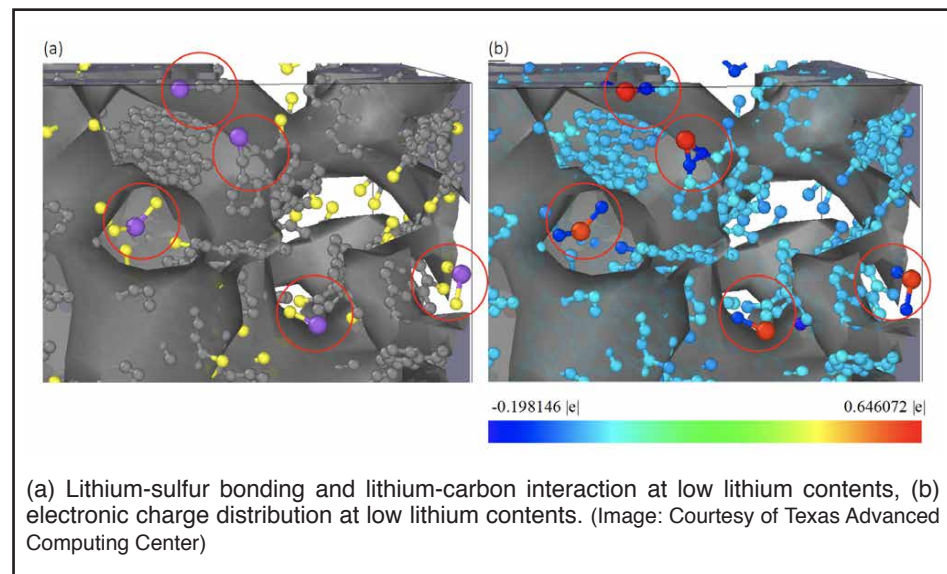
Battery Flaw

continued from page 33

However, chemical reactions in the battery lead to the formation of lithium polysulfides, chemical compounds containing chains of sulfur atoms. Long-chain polysulfides are soluble in the liquid electrolyte and migrate to the lithium metal anode where they decompose, an unwanted effect. On the other hand, short-chain polysulfides are insoluble and remain at the sulfur-based cathode. The researchers investigated how the cathode microstructure may affect this chemistry.

They addressed the problem of uncontrolled polysulfide formation by creating a sulfur/graphene composite material that avoids the formation of the soluble long-chain polysulfides. They found that the graphene sheets bring stability to the cathode and improve its ion trapping capabilities.

Balbuena's research is supported by the Department of Energy as part the Battery Materials Research and Battery 500 Seedling programs, both of which are aimed at creating smaller, safer, lighter-weight and less expensive



battery packs to make electric vehicles more affordable.

Stampede and its follow-on Stampede2 are supported by grants from the National Science Foundation and allow tens of thousands of researchers from across the nation to explore problems that could not otherwise we addressed.

"These are very extensive computations, that's why we need high performance computers," Balbuena said. "We are heavy users of TACC resources and

we are very thankful to The University of Texas for allowing us to use these facilities."

For Balbuena, supercomputer-powered fundamental research into next-generation batteries is a perfect synthesis of her interests.

"The research is a combination of chemistry, physics and engineering, all enabled by computing, this theoretical microscope that can visualize things through theory."

<https://www.tacc.utexas.edu/-/overcoming-a-battery-s-fatal-flaw>

The Reborn Light



This is a significant development by a leader in the field of electrification of our transportation system. Nissan has delivered on their former CEO's promise in January of 2010 to "reduce, recycle and redeploy their batteries after they come out of service in their automotive products" [1].

In conjunction with 4R Energy, they are taking the battery modules from the Nissan LEAF and Renault Zoe and redeploying them in a different application. [2] No more deep discharge and high current draws from these units. They are not useless.

Repurposing batteries is better than recycling them into raw materials. Remote sparsely inhabited areas where no power generation is possible would welcome this development. For example, a solar backed-up source of power for low energy LED street lighting just one application they can address easily. These batteries can serve as power sources which become available only after daylight ends, while during daylight hours, they get replenished. Even in areas receiving diffused sunlight due to cloud cover, the possibilities for enhanced lighting are real.

Deploying such technology beyond the Arctic Circle, however, may represent a special challenge. Not only are there few hours of daylight at some times of the year, but the cold presents a significant influence. Nevertheless, a commercial product to be delivered worldwide bodes well for our lives, making things better by lowering our carbon footprint.

References:

[1] Carlos Ghosn speaking at the Churchhill Club in Palo Alto, CA., in January 2010.

[2] Announced in 2015

[Caution: This is a Japanese language video but with English subtitles ...]

<https://youtu.be/19Wg65BTmWI>

Nissan & 4R Energy partner with Green Charge Networks for commercial energy storage featuring second-life EV batteries

Partnership enables commercial use of second-life lithium-ion vehicle batteries

Nissan Motor Company and Green Charge Networks, the largest provider of commercial energy storage, have joined forces to deploy second-life lithium-ion vehicle batteries for stationary commercial energy storage in the U.S. and international markets.

With more than 178,000 sales since its launch in late 2010, Nissan LEAF is the world's top-selling electric vehicle. As part of the company's commitment to sustainability and reducing greenhouse gas emissions, Nissan has conducted multiple research projects in Japan, the U.S. and Europe to use LEAF batteries outside the vehicle through 4R Energy, a joint-venture with Sumitomo Corp. formed in 2010.

In a new stationary storage application powered by Green Charge's intelligent software and Power Efficiency Agreement™, the second-life energy storage unit has a cost advantage over traditional units, opening up new markets where incentive programs are currently not offered.

Engineering teams from both companies have worked together for more than a year to ensure safety, reliability and performance of this offering for commercial customers.

The first combined storage unit will be installed at a Nissan facility this summer, where multiple Nissan LEAF batteries will be configured to offset peak electricity demand, creating savings while also benefiting the utility grid. Systems like this also can be paired

with renewable energy sources such as wind or solar to further reduce a facility's environmental footprint and enhance energy savings.

"A lithium-ion battery from a Nissan LEAF still holds a great deal of value as energy storage, even after it is removed from the vehicle, so Nissan expects to be able to reuse a majority of LEAF battery packs in non-automotive applications," said Brad Smith, director of Nissan's 4R Energy business in the US. "Nissan looks forward to working with Green Charge Networks to get second-life vehicle batteries into the hands of customers who can



2015 Leaf Battery Pack

realize benefits that include improved sustainability and lower energy costs."

"This partnership's extremely important to the distributed energy storage industry," said Vic Shao, CEO of Green Charge. "... [it's] ultimately about power efficiency – reducing our carbon footprint, stress on the grid and energy costs."



Employees of 4R Energy Corp, a joint venture between Nissan Motor Co and Sumitomo Corp., inspect used lithium-ion batteries which will be reassembled into battery replacement packs for the Nissan Leaf at a new plant in Namie town, Fukushima Prefecture, Japan, on March 26, 2018. Picture taken March 26, 2018. REUTERS/Naomi Tajitsu - url below.

<https://www.reuters.com/article/us-nissan-battery/nissan-spins-up-new-plant-to-give-second-life-to-ev-batteries-idUSKBN1H30DD>

[The URL below dates from 2015 but illustrates the goal of the partnership.]

<http://nissannews.com/en-US/nissan/usa/releases/nissan-and-4r-energy-partner-with-green-charge-networks-for-commercial-energy-storage-featuring-second-life-electric-vehicle-batteries?>

Keep Up on all Auto Shows & EV Related Conferences US and International Events

MUENSTER, GERMANY
CONFERENCE ADVANCED BATTERY
POWER 2018 4/9/2018 - 4/11/2018

BERLIN, GERMANY
FUTURE MOBILITY SUMMIT
4/8/2018 - 4/12/2018

BERLIN, GERMANY
ELECTRIC VEHICLES: EVERYTHING IS
CHANGING 4/11/2018

EDMONTON MOTOR SHOW
4/12/2018 - 4/15/2018

BIRMINGHAM
ALABAMA INTERNATIONAL AUTO SHOW
4/12/2018 - 4/15/2018

ROME, ITALY
FORMULA E: ROME E-PRIX - 4/14/2018

VIENNA, AUSTRIA
TRANSPORT RESEARCH ARENA 2018
4/16/2018 - 4/19/2018

TULSA AUTO SHOW
4/13/2018 - 4/15/2018

HONOLULU
FIRST HAWAIIAN INTERNATIONAL
AUTO SHOW
4/13/2018 - 4/15/2018

ALBUQUERQUE
NEW MEXICO INTERNATIONAL AUTO
SHOW 4/13/2018 - 4/15/2018

AUSTIN, TEXAS AUTO SHOW
4/20/2018 - 4/22/2018

PARIS, FRANCE INTERMAT
4/23/2018 - 4/28/2018

BERLIN, GERMANY
INTERNATIONAL CONFERENCE
E-MOBILITY CHARGING IN EUROPE
4/24/2018 - 4/26/2018

BANGKOK, THAILAND
BATTERY, EV & STORAGE APAC
4/25/2018 - 4/26/2018

PARIS, FRANCE
QATAR AIRWAYS PARIS E-PRIX -
4/28/2018

WOLFSBURG, GERMANY
AUTOMOTIVE TREND FORUM
5/2/2018 - 5/3/2018

HANNOVER, GERMANY
THE BATTERY SHOW EUROPE 2018
5/15/2018 - 5/17/2018

HANNOVER, GERMANY
ELECTRIC & HYBRID VEHICLE
TECHNOLOGY EXPO EUROPE
5/15/2018 - 5/17/2018

GENEVA, SWITZERLAND
WORLD FLYING ELECTRIC VEHICLE
SUMMIT 7/2/2018

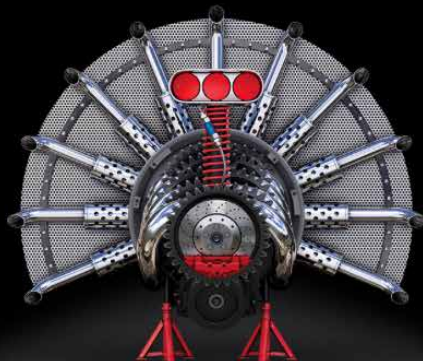


The 5th Annual 2018 SOUND OF SILENCE TESLA RALLY May 18-20, 2018

Mt. Rushmore / Black Hills Of South Dakota, USA

Yes, you can drive your Model 3 from any place in North America to get there.
Or drive your Roadster, Model S, X there. In 2016 there were 59 cars and 105 drivers, friends, and
spouses attending. This year could top that substantially!

<http://teslasoundofsilence.com/>



ARIZONA INT'L AUTO SHOW
THANKSGIVING WEEKEND

PHOENIX CONVENTION CENTER · NOV. 22-25

<http://autoshowphoenix>

<http://autoshowphoenix>

continued next page

Save the Date...

ITEC2018

COMPONENTS, SYSTEMS, AND POWER ELECTRONICS-
FROM TECHNOLOGY TO BUSINESS AND PUBLIC POLICY
JUNE 13 TO 15, 2018



Save The Date! ITEC 2018 will be held at the Long Beach Convention Center in Long Beach, CA.
The Conference will be held from June 13-15th, 2018. <http://itec-conf.com/>

EVS 31
& EVTeC 2018

KOBE Convention Center JAPAN

Sept.30-Oct.3,2018

Leading a Smart Society
with New Mobility



EVS 31 & EVTeC 2018

The 31st International Electric Vehicle Symposium & Exhibition &
International Electric Vehicle Technology Conference 2018

<http://www.evs31.org>



APRIL 13-15, 2018
HAWAII CONVENTION CENTER
AUTOSHOWHAWAII.COM

<http://autoshowhawaii.com>

Don't Miss These...

From time to time there are articles and videos we would like to bring to your attention but are not able to reproduce in this newsletter. The Electric Vehicle is continuing to be newsworthy on many different levels so when we find interesting items we will share them with you.

Videos & Articles of Interest

A HUD for your Model 3! | Model 3 Owners Club



Model 3 reservation holders have long wondered if Tesla would include a Heads Up Display (HUD) since there is no center instrument cluster on that car. Decades of conditioning may have created reactions by people that either love or hate this change delivered in the Model 3. Here the moderator of the "Model 3 Owners Club" YouTube channel evaluates this particular product so as to understand what is being offered by this vendor, Navdy.

<https://www.youtube.com/watch?v=rjaSyC30hTM>

TOP 5 BEST Car HUDs 2017 (BEST HEAD-UP DISPLAYS)



This is a second video overviewing (again) the Navdy, but also iScout, Hudify, Exploride, and Carloudy. Of course, making a selection which to buy is left to the consumer!

<https://www.youtube.com/watch?v=JOyXT8vgrsY>

Tesla Model 3 Review after 3 weeks



Now that deliveries of the long awaited Tesla Model 3 are underway in all states, and production is ramping up — if you're still anxiously awaiting yours, here is a short but informative overview of what this creator has to say about the car. His ownership record includes both American and foreign cars. Now he's back to the newest in 21st century transportation.

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

Geneva Motor Show 2018 Part 1 Fully Charged



This is the Geneva Auto Show reviewed on Fully Charged. The EV has made a huge impact on traditional (as well as new) automakers. One notable exception (Ford) is a disappointment! This short video is unveiling some concepts, and some real products which will be available in the very short term (one year out, to past 2021). Volvo's offshoot (the Polestar 1) can be seen at about 9:00 minute.

Hyundai electric SUV starts at 12:10 and a sleek sporty offering at 12:36. This segment ends with the new Rimac Concept 2 is at 18:50, with its stunning specs!

<https://www.youtube.com/watch?v=HfWOTMz5HUI&feature=youtu.be>

Part 2 of these videos is on page 41

Don't Miss These Videos & Articles of Interest (cont.)

Tesla electric-car tax credits may begin phasing out soon

By Stephen Edelstein

Tesla expects to sell its 200,000th electric car in the United States this year. That sounds like good news, but in reality it presents a problem for the world's most watched automaker. That's because the \$7,500 federal tax credit for electric cars begins to phase out after a company hits 200,000 sales.

In a document filed with the Securities and Exchange Commission, Tesla said it expects its 200,000th qualifying sale to "occur at some point during 2018." Tesla does not break down its quarterly sales by country, and does not list monthly sales, so it's difficult to say exactly how many cars it has sold in the U.S., and when the company will hit the 200,000-unit mark.

What happens when Tesla delivers that 200,000th electric car? The tax credit will remain intact for the rest of that calendar quarter and the following quarter. For the next two quarters, the credit will decrease by 50 percent, to \$3,750. For the next two quarters after that, the credit will be reduced again, to \$1,875, before disappearing entirely.

Loss of the tax credit likely won't impact Model S and Model X sales, since those vehicles cater to wealthier buyers. But the ticking tax-credit clock



emphasizes why Tesla needs to ramp up production of the Model 3 as quickly as possible. The Model 3 is supposed to be Tesla's mass-market electric car, and the tax credit will likely matter more to Model 3 buyers.

After delays in ramping up Model 3 production, Tesla's latest estimates are that production will reach 2,500 cars per week by the end of the first quarter, and 5,000 cars per week by the end of the second quarter. In addition to getting as many Model 3s out the door as possible before the tax credit expires, Tesla needs to fill a backlog of orders, and meet CEO Elon Musk's

goal of producing 500,000 cars a year by the end of this year.

After Tesla, General Motors will likely be the next automaker to reach the tax-credit limit, followed by Nissan, according to Green Car Reports. Electric-car sales for both companies are expected to grow in 2018 now that GM's Chevrolet Bolt EV is available in all 50 states, and the redesigned second-generation Nissan Leaf is hitting U.S. showrooms in large numbers.

Source: From finance.yahoo.com



SPEED VENTURES

REFUEL Clean Power Performance Driving Event and Time Trial

The 10th Annual REFUEL Clean Power Motorsports Event welcomes Electric Cars and Motorcycles to world famous MAZDA Raceway Laguna Seca to celebrate the evolution of EV technology in a motorsports setting.

Sunday, July 1, 2018

All experience levels welcome to
MAZDA Raceway Laguna Seca (Salinas, CA)

Full Course CCW on Sunday

AMB Timing & Transponders are available.
See the url below for all details.

2018 REFUEL Clean Power Motorsports Event at Mazda Raceway Laguna Seca.

<http://www.speedventures.com/events/eventdetail.aspx?id=680>



Electric Auto Association (EAA) Membership Application Form

Our online database **requires** a **User Name** and **Password**; New members will receive and email to set up user name and password for access to the system. You will be able to edit all user information. **Please write clearly!!!**

☐ **New** ☐ **Renewal**

Name:		Email:	
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Don't Miss These (cont.)

Geneva Motor Show 2018 Part 2 Fully Charged



It starts with the tiny single door narrow track copy of the old BMW Isetta at 0:45, made by Microlino. If you want to build a car, the Erod at 18:05 car is available in kit form! Jaguar's formula E and race-prepped iPace e-trophy follows immediately afterwards, for the championship class race. Finally at 15:20 is the Porsche Mission E, much closer to the production version, with 2 motors... Again, the electric SUV is the main theme in Geneva this year.

https://www.youtube.com/watch?v=PaSG4Wxu_HU



I Ignored Tesla Autopilot Warnings... I Got Put in Autopilot Jail!



With news of the tragedy of a recent Tesla driver fatality – here is a video made by two gentlemen demonstrating ‘naughty behavior’ (ignoring the warnings repeatedly). They use a “several pictures within a picture” video capturing approach to document their Tesla Model S with Autopilot 2.0 with NOT the latest software to date, in this case version 2018.10.5. A newer release is out as we go to print: 2018.12. This video helps risk-averse newcomers who have not experienced Autopilot to understand the consequences.

<https://www.youtube.com/watch?v=0s1fNng72Dk>



Clean Transportation Show, Custer, WI June 15-17, 2018

Learn all about energy-efficient travel options at The Clean Transportation Show!

The Show features alternative and fuel efficient vehicles from around the Midwest. From homebrew cars that run on moonshine, to DIY electric bikes, to the latest offerings from Tesla Motors, the Clean Transportation Show holds a multitude of lean-clean-green driving machines.

<https://www.theenergyfair.org/clean-transportation-show/>



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Energy storage breakthrough could boost EV range and slash charge time

Researchers have developed a material more energy-dense than lithium-ion.

By Rachel England

Electric cars could soon have as much range as petrol and diesel cars — and recharge in a matter of minutes — thanks to what researchers are calling a “breakthrough” in energy storage technology. Teams from Bristol University and Surrey University have created a new material for supercapacitors, which store electric charge, that could see EVs recharge in as little as 10 minutes compared to the eight hours it can take for EVs with lithium-ion batteries. And according to the researchers, it boasts enough energy density to see EVs surpass even the top range of current leading models, such as Teslas. Elon Musk himself has previously said a breakthrough in EV technology would likely come from supercapacitors, rather than batteries.



The technology was originally being developed for mobile devices — researchers wanted to create a transparent polymer for Google Glass-like applications — but once the team discovered the energy storage potential of the material it refocused its efforts. Now it believes the polymer could be more energy-dense than lithium ion, holding 180 watt-hours per kilogram, while lithium ion holds around 100-120 watt-hours per kilogram.

However, the technology has some drawbacks. Its capacity to charge quickly means it loses charge relatively rapidly, too. Leaving a supercapacitor car on your driveway for a month would see it lose most of its charge, for example. So it's likely the first cars offering this tech would come with a small conventional battery, too. Nonetheless, while it may still be early days, this technology has the potential to eradicate some of the biggest barriers to EV take-up. According to Dr. Donald Highgate, research director for company Superdielectrics, which worked with the universities on the project, “It could have a seismic effect on energy, but it's not a done deal.”



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If you are interested the research that is mentioned in the article above read on in the article at this url:

<https://www.challenge.org/knowledgeitems/uci-scientists-make-infinite-energy-storage-breakthrough/>

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