

Electric Auto Association



CURRENT EVENTS

November 2017 Promoting the use of electric vehicles since 1967 Vol. 49 No. 11

THE ALL-NEW 2018 NISSAN LEAF®



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Photo: Nissan



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Contributors:

E-mail: contact@electricauto.org
 Bob Oldham, Ron Freund, Marc Geller, Forbes Bagatelle-Black, Earl Killian, JB Straubel, Doug Korthof, Jerry Pohorsky, Linda Nicholes, Lee Galbraith, Daniel Davids, Jim Bohorquez, Felix Kramer, Paul Scott, Monte Gisborne, Doug Brentlinger, Darell Dickey, Thomas Sidle, Bill Hammons, Tim Wong, Chelsea Sexton, David Turock, Olaf Ungerer, Jack Rickard, Jack Ashcraft, Irwin Dawid, Tom Dowling, Oliver Perry, Jack Bowers, Eric Burns, John McEwan, Michael Bianchi, Jory Squibb, Dave Kodama, David Hrivnak, Tom Moloughney, Charles Hall, Charlton Jones, Mark Larsen, David Herron, Prof Eckhard Elmers, Ruediger Hild, Tom Saxton, Stephen Johnsen, Noel Adams, Richard Lane, Charles Whalen, Anatoly Lobtsov, Carol Cole, Jon Ando, George Stuckert, Dave Oliveria, Tim Goodrich, Jason Jungreis, Paul H. Kydd, Julia Sirotina, Brandon Hollinger, Chris Sheridan, Gary Bulmer, Peder Norby, Tim Catellier, Corbin Dunn, Dave Hall, Jeff Finn, Bob Vahsholtz, Gert Gelhaar, James Billmaier, Adam Eberhardt, John Palmerlee, Alan Soule, Chad Schwitters, Guy Hall, Don Gerhardt, Bill Brinsmead, Bob Tregilus, Nick Butcher, Dave Erb, Kim Rogers, Peter Eckhoff, Lee Gasper-Galvin, Rich Burns, Carolyn Amon, Carl Vogel, Michael Thwaite, William (Coty) Keller, Bryan Murtha, Jessie Spruel, Anton Wahlman, Chris Neff, Patrick Connor, Donald R. Davidson, Victor Wowk, Rick Beebe, Bill Palmer, Doug Manowitz, Stephen Noctor, Bryan McCarthy, Bob Bruninga, Jukka Kukkonen, Borisoff Family, Don Christian, Rafael de Mestre, Aaron Rouland, Peter Mackin, Terry Hershner, Alan Arrison, Carl Grunwald, Jim Natale, Gint Federas, Dave Hrivnak

Board Chairman, CE Publication – Ron Freund
Associate Editor – Guy Hall
Managing Editor – Dorothy Foglia
Book Reviewers – Warren Winovich, Jack Swartz, Earl Killian, Stan Hanel, Oliver Perry

Article Submissions:

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National EAA:

Web Site: www.electricauto.org or electricauto.org
Mailing: CE Comments
 847 Haight Street
 San Francisco, CA 94117-3216 USA

Membership/Address Changes:

E-mail: membership@electricauto.org
Mailing: EAA Membership
 323 Los Altos Drive, Aptos, CA 95003-5248 USA
 If you have comments, please send them to ceeditor@electricauto.org.

<http://electricauto.org>



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Chairman, CE Publication: **Ron Freund**
chairman@electricauto.org

Co-Chairman, Plug In America:
Marc Geller

Guy Hall, secretary@electricauto.org

Chris Neff
marketing@electricauto.org

Treasurer: **Gint Federas**
treasurer@electricauto.org

CE Advertising Manager: **Carl Vogel**
ceadvertise@electricauto.org

Terry Hershner

Board Appointees

Marina Cerin-Stith

Jack Brown

Membership: **Will Beckett**
membership@electricauto.org

Jay Friedland
Education Grant Manager

Historian: **Darryl McMahon**
historian@electricauto.org

EAA Board Contact:
board@electricauto.org 415-861-7278



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Current EVents Back Issues on the Web

The EAA has put most of its -issues from 2001 to 2017 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. There is a downloadable pdf file which averages five MB.



A few days ago in Washington, an early draft tax bill was released by the U.S. House Ways and Means Committee. It would eliminate our "sacred" \$7500 EV tax credit by the end of December 2017. The bill would further chop the permanent 10 percent Investment Tax Credit for solar and geothermal power, plus reduce (by more than a third), the Production Tax Credit for wind power. Just as we see the nascent EV industry beginning to produce affordable cars — the current administration wants to cease this subsidy for Americans.

There is a small hope that the conditions could be altered — that instead of a production volume threshold beginning a phase out — we might have a sunset in 2023 or even 2025. Unfortunately, the bill has a few powerful winners—the very wealthiest Americans and corporations—but it would leave millions of us would-be future EV drivers worse off. Even a few large automakers are alarmed and unhappy. Nissan, GM and Tesla to name a few.

The EAA feels it's a mistake for House leaders to target EVs in this tax bill. The details reveal that the bill's authors have little regard for its real-world consequences.

The potentially disruptive new EV industry has needed a purchase incentive as a vital part to gaining a foothold in the petroleum dominated

transportation world. These incentives should be kept in place so drivers in all 50 states can take advantage of the many benefits EVs offer. Weakening the production credits will reduce the penetration that wind and solar projects are increasingly seeing in the US. We have seen amazing progress in shifting to cleaner sources of electricity. They are cost competitive, take less time to build and when combined with grid level storage — a whole new concept is born: the microgrid. Yes, it challenges "the way it's always been done," because it is simply better!

Planning these kinds of clean energy projects can take several years. So by taking away the inflation adjustment and commencing construction provisions, we say goodbye to jobs, investments, and tax revenues in rural communities all across America. We are already hearing the dismay inside the admission "there goes my model 3 purchase."

We should fight climate change and create clean energy jobs, but as it stands in early November, this tax plan is a "bad deal for most Americans." Will it be done, as promised, before Thanksgiving? Will the EV credits survive when the two houses do their reconciliation? Watch the news, write to your representative and get involved with your friends at Plug In America, our sister organization.





2018 Nissan LEAF Test Drive

By Tom Saxton, SEVA

At the National Drive Electric Week event in Seattle, Cathy and I saw the newly-announced but not yet available 2018 Nissan LEAF. At that event, we signed up for a test drive.

On October 23, 2017, Jose pulled up in front of our house in a beautiful blue Nissan LEAF for our test drive. We spent about an hour going over the vehicle and then out for a drive. Jose was enthusiastic and very knowledgeable about the car. We have a 2011 LEAF, so I'm familiar with that but haven't driven any of the newer LEAFs, so that's my perspective.



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Back Seat

The LEAF claims to be a 5-passenger vehicle, but the middle back seat has no head rest, so no neck protection in a rear-end collision. We often have 5 adults in the car, so that matters to us. I've been especially aware of this since we were rear-ended this summer. Fortunately, it was just the two of us in the car at the time, and neither of us were injured. My head hit the head rest pretty hard, so I'm glad it was there. I can't understand why Nissan doesn't protect the middle seat passenger.

Charge Cord

The SV and SL packages include a dual Level 1 (120V)/Level 2 (240V) charge cord. The standard 120V plug comes off to reveal a NEMA 14-50 240V plug. (Photo bottom right).

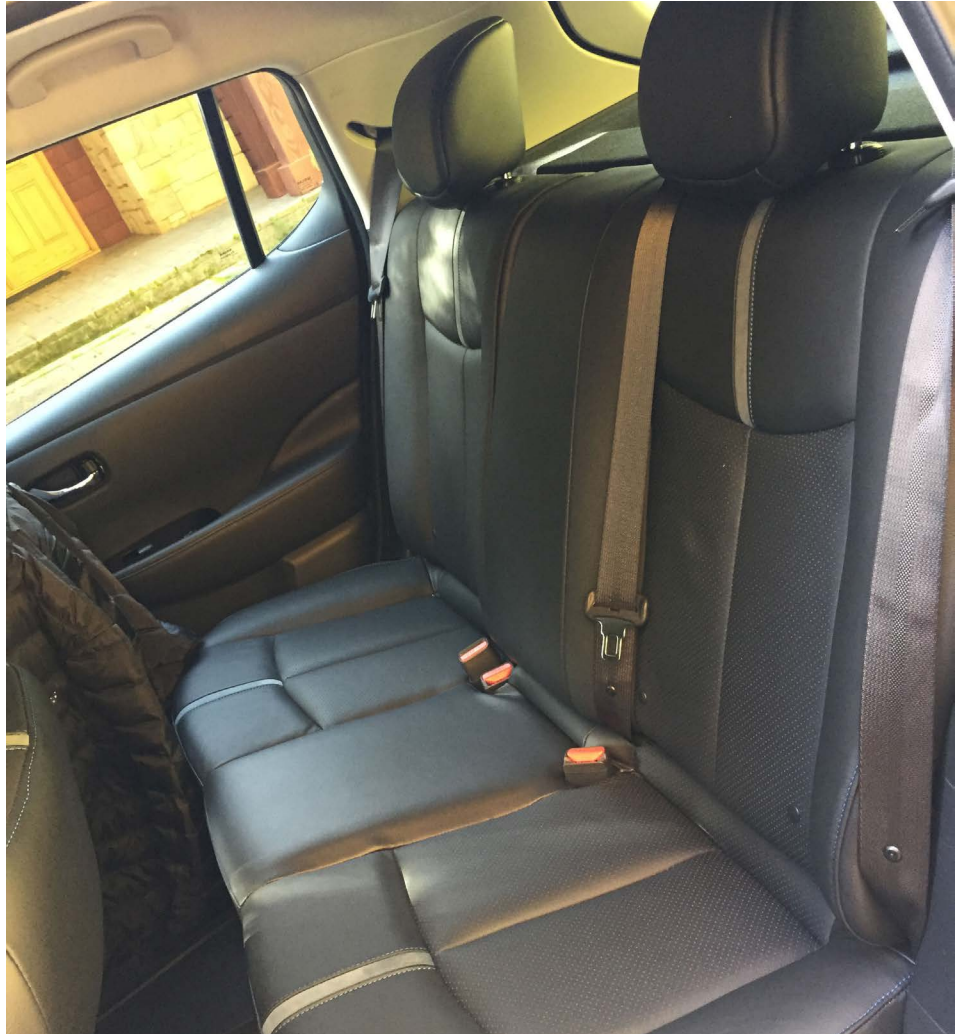
With so much public charging available now, there's not much need for Level 2 charging away from home, but the dual mode cord means an owner can upgrade their home charging to 240V by just installing a NEMA 15-40 outlet.

Quiet Ride

When we started the test drive, right away I noticed how quiet it is. I'm told it has the same pedestrian warning sound as the 2011 model, but I couldn't hear it or the inverter whine which are pretty apparent in the 2011. I used to think our LEAF was quiet, but the 2018 is amazingly quiet. There was just the barest hint of a sound at low speeds in the driveway, maybe the pedestrian warning or the electronics, but much quieter. Likewise for road noise at freeway speeds, much quieter than our old LEAF.

One Pedal Driving

One of the best things about the electric driving experience is one pedal driving. It's so natural: push the accelerator pedal to go faster, let up to go slower. With regenerative braking, an EV can



be much smoother and natural than a gas car, can slow down on a steep hill without using the brakes, and cruise control can hold you at a steady speed

up and down hills. Automakers seem to be afraid of taking full advantage of this feature for fear it will be unfamiliar
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LEAF Test Drive

continued from page 5

to gas car drivers, but Nissan has fully embraced it in the new LEAF. In the 2018, I was able to bring the car to a full stop on the steepest part of our driveway. Amazing! At the bottom of our drive, I brought it to a full stop, nudged it forward to look around our mailbox for traffic, then eased onto the road, all using just the accelerator pedal.

Nissan calls this feature ePedal. It can be turned on and off, and can be set to on or off by default. So, gas car drivers can test drive the car without it, then turn it on when they are ready to try driving a car with a superior drivetrain. For most people, once you get used to one-pedal driving, you'll find a gas car feels outdated and you'll never want to go back.

Analog Speedometer

The 2018 LEAF drops the large, easy-to-read digital speedometer for a boring analog speedometer. Jose tells me that Nissan thinks people don't like the digital speedometer, that it doesn't provide feedback on acceleration the way an analog speedometer does. I like the digital speedometer and find that having my back pressed into the seat is all the feedback I need on acceleration. (Photo at the top of the next column)

ProPilot

Nissan did a demo of autoparking at the worldwide announcement, but that feature is only available in Japan, not the United States. Jose gave me the lame company line that US drivers don't use the autoparking feature; maybe we'll get it later. I don't know what the real story is, but that's nonsense.

We got on the freeway and I engaged the ProPilot cruise control feature. As with any cruise control, you get to the

speed you want then hit a button. The car will keep you at that speed when it can, but responds to traffic and slows down when there's a slower car in front of you, then speeds back up when the road is clear. It also detects the lane lines on the road and keeps the car centered in the lane. Despite being a nice, sunny afternoon with clearly visible lines on the freeway, the car lost the vision lock a few times and I had to take control. It did slow down when a slower car got in front of us.

It seemed to me like the car was keeping us to the left of center in the lane. Maybe its sensors are better than mine, but I found it a little unnerving when we had a giant semi slowly pass us on the left. I didn't like being so close and took control to put us more center-right in the lane.

When we exited the freeway, I left the ProPilot cruise control on which arguably isn't how it's intended to be used. The exit peels off very gradually for a pretty long, straight stretch. That was working fine, the ProPilot was slowing down to match the car in front of us. As the lane made a gradual curve to the right, the car in front of us was no longer directly ahead, so the LEAF tried to resume full speed. It clearly didn't understand that the lane was curving and that slow car was still in front of us. I disabled the ProPilot at that point.

Maybe it would be cool on a long freeway run, but I found the ProPilot to be too unreliable to really relax and let it drive.



Even when the ProPilot isn't engaged, it watches the road and warns you if you drift in the lane. That happened twice to me, once when I was a little off center and again when the road was curving and I thought I was in the right place.

All-Around Camera

When we got back to the house, I tried out the all-around camera (SL package only). When you pop the LEAF into reverse, the center console screen shows both the backup camera and a simulated overhead view that displays the car's full surroundings. I know the LEAF has had a feature like this available for a few years, but it was super cool to see it in action. It was just like there was a camera over the car looking down to show the car's position in the driveway. It's done with four side camera and math, a very nice effect. (Photo top of next page).

Bluetooth Audio

I paired my iPhone 6 up to the car to play some music. That works great, with plenty of volume. The Tesla Model S fails the "enough volume" test when playing Bluetooth from an iPhone. So that was nice.

Premium Bose Sound System

The test drive vehicle was a top-of-the-line SL with all the bells and whistles, including a super-duper Bose sound system which eats up a small slice of the hatch with amplifiers. When I had my iPhone hooked up, I played some Led Zeppelin and found the sound underwhelming. Our Tesla Roadster has a good sound system, with an

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Alpine headunit we installed. Those Zeppelin tunes sound great there, one of the pleasures of driving the Roadster. Not so much in the LEAF.

Heated Seats

We put in a very early order for our 2011, but then postponed it until they came out with the cold weather package late in the 2011 model year. Heated seats are a big win in an electric vehicle because they are more energy efficient than cabin heating, and the heated steering wheel is a guilty pleasure we love. The 2018 offers heated seats and steering wheel with the all-weather package, but it doesn't heat the rear seats. We use our LEAF in the winter and don't want to leave our rear-seat passengers in the cold. With the bigger battery, using

the less efficient cabin heater is less of an issue, but we like offering heated seats to our rear-seat passengers.

Summary

Overall, the 2018 is a huge upgrade from our 2011. Not only the increased range from 84 miles to 150 miles (EPA rated range), but amazing one-pedal driving, nicely improved sound insulation and plenty of cool tech available in the higher package levels. Unfortunately, the lack of a fifth headrest makes us less interested in upgrading to a new LEAF.



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EVS ARE NOT JUST CARS



By Sean Szymkowski

In the coming years, the world's auto industry will continue to shift its product mix to electric and electrified vehicles to meet growing concerns over carbon emissions and stringent fuel-economy regulations across the globe.

However, the passenger-car segment isn't the only area that will see electric powertrains implemented.

A new study suggests the market for electric trucks—light, medium, and heavy-duty commercial trucks—is on the verge of booming.

Released by *McKinsey Energy Insights*, the study looked at three key factors that will influence the adoption of electric trucks.

The most important drivers of adoption, it said, will be cost parity between electric trucks and diesel-powered trucks, electrification readiness, and a supportive electric-vehicle environment.

With those three factors in mind, the study projected electric trucks' upcoming boom in the marketplace; by 2030, the electric models could account for 15 percent of total truck sales.

The sales figures will vary by area, since each of the three major markets the study studied—China, Europe, and the US—has unique characteristics.

McKinsey Energy Insights pins Europe as the earliest adopter of electric trucks, thanks to higher fuel prices and a supportive environment for electric vehicles in general.

Specifically, it projects light-duty trucks will reach cost parity between now and 2021, while heavy-duty trucks will achieve parity in Europe by 2027.

In the United States, the study paints a very different picture.

Thanks to lower price differentials between diesel and electricity, the U.S. isn't likely to embrace electric trucks as quickly as Europe.

The U.S. is also a vastly different landscape, and batteries will be tasked with going longer distances—boosting costs and perhaps requiring additional technology and other improvements.

While Europe reaches cost parity by 2021, neither the U.S. nor China will likely achieve parity until 2030 or later, the study says.

China faces similar hurdles to those in the U.S.: range, battery technology, and distances covered.

The supply of electric trucks will likely outweigh a sufficient charging in-

continued next page

infrastructure in the U.S. and China for some time, per the study.

Regulatory forces make up the final facet of electric truck adoption rates.

A few European countries have already announced various bans on fossil fuel-powered vehicles in the coming decades, and China has just rolled out its first EV-car quotas to begin in 2019.

These regulations will increasingly shape the electric truck market as they materialize.



Above: Cummins Urban Hauler Tractor Concept
Right: Chanje medium-duty electric truck

Excerpted from the story at:

http://www.greencarreports.com/news/1113045_electric-trucks-to-grow-fast-from-now-through-2030-report?

Additional White Paper for reference:

http://www.theicct.org/sites/default/files/publications/ICCT_SuperTruck-program_20140610.pdf



Tesla electric Semi's price is surprisingly competitive

Starting at \$150,000, it's not much more than a regular semi and will cost less to run.

By Steve Dent

When Tesla unveiled its Semi electric truck last week, everyone agreed that it looked cool, but some actual truckers weren't necessarily sold on its functionality. Most observers will be impressed with the pricing if it holds, though. Tesla has listed estimated price on its Semi website for the 300- and 500-mile versions of \$150,000 and \$180,000 respectively, less than some pundits predicted. The fancier Founders Series, with the top specs, will cost \$200,000.

Looking at the \$180,000 model, it's still around \$60,000 more than a diesel-powered semi truck. However, the Semi could cost around 20 percent less to run, Tesla estimates, putting savings over a million miles at around \$250,000.



The Tesla Semi will improve the trucker experience with an Enhanced Autopilot (automatic emergency braking, automatic lane keeping and lane departure warning) that will improve safety for drivers and other vehicles. It also features

jackknife protection, sensors and cameras meant to reduce blind spots. For a truck it'll also have crazy acceleration, which could be useful for hill-climbing and other chores. Read the rest of the article at the url below.



<https://www.engadget.com/2017/11/23/tesla-semi-electric-truck-price/>

Tesla reveals insanely fast next-gen Roadster



The new Roadster will have 620 miles of highway range. “The point of doing this is just to give a hardcore smackdown to gasoline cars,” Musk quipped (Credit: Tesla)

By Paul Ridden

At the Tesla launch event, a surprise popped out of its upcoming electric semi-truck as Elon Musk announced the resurrection of the car that started it all – the Tesla Roadster. Based on prototype performance, the next generation Roadster is on track to zoom from 0-60 mph in under 2 seconds, have a top speed of 250+ mph and a single charge range of 620 miles.

Tesla’s Roadster first broke cover in July 2006, and was rolled out two years later. The electric sports car was rated by the EPA as being good for 244 miles (393 km) per charge, it could accelerate from 0 to 60 mph (0-97 km/h) in under 4 seconds and had a top speed of 125 mph (200 km/h).

During the reveal, Musk said that the new “base model” Roadster will go from 0-60 mph in 1.9 seconds, 0-100 mph in 4.2 seconds and rock the quarter mile in 8.9 seconds (the official specs state 8.8 seconds). He was a little cagey about the top speed, but reckoned it to be above 250 mph.

The new model will have a 200 kWh battery pack for 620 miles of range, which he said would get drivers from LA to San Francisco and back – at highway speeds – on a single charge. “The point of doing this is just to give a hardcore smackdown to gasoline cars,” Musk quipped.



Tesla says the new Roadster will go into production in 2020 (Credit: Tesla)

There will be three motors, two at the rear and one at the front, and the new all-wheel drive Roadster will be capable of a ludicrous 10,000 Nm of torque. It’ll be a four seater too, but Musk admitted that “giant people” simply wouldn’t fit in the rear. The removable glass roof can be stored in the trunk during open air driving.

The second generation Roadster is due for release in 2020, and the base model price is going to be US\$200,000. Details of non-standard configurations will follow at some point before the first production model hits the highway.

<https://newatlas.com/tesla-2020-roadster/52242/>

The Tesla Semi electric truck exceeds the hype



When fully laden and travelling at 65 mph, the Tesla Semi can cover an astonishing 500 miles on a single charge. (Credit: Tesla)

By Mike Murphy

The much-awaited reveal of the Tesla Semi electric truck took place in Hawthorne, California, in typical Elon Musk style. Speculation prior to the presentation was substantially exceeded with its claimed range well beyond the 300 miles (500 km) expected and acceleration figures that place the unladen tractor unit in sports car territory.

After the two Tesla 18-wheel Semis swung into position, Elon Musk stepped out of the high-roof model to begin his presentation. The first statistic presented was the Semi's acceleration to 60 mph (97km/h) from standstill which, he said it does in 5.0 seconds when empty. That is sports car territory. Perhaps even more impressive was the claim of reaching 60 mph fully laden to the maximum permissible total of 80,000 lb (36,288 kg) in 20 seconds. Also remarkable is the claim that the Semi can maintain 65 mph (105 km/h) fully laden up a 5 percent grade.

As to the all-important range figure. When fully laden and travelling at 65 mph, the Tesla Semi can cover an astonishing 500 miles (805 km) on a single charge according to Musk. For

those who might quickly compare that to the average range of a diesel truck, which can approach twice that, he added that 80 percent of long-haul routes are less than 250 miles (400 km) one-way, so the Semi can complete most round trips on a single charge. If not, 30 minutes on a Tesla fast charger will enable a topped-up range of 400 miles (644 km). To deflect concerns about the 30-minute wait, Musk pointed out that it takes 15 to 20 minutes to refuel a diesel truck and added that drivers must take rest breaks providing an ideal time to recharge.

When the trucks first pulled into the presentation site, they made a large U-turn in front of the audience before being parked and the snug fit between the back of the cab and the trailer could be seen to open with what looked like hydraulic rams creating room for the cab to turn. The gap immediately closed again as the rig straightened up, eliminating the gap that creates significant aerodynamic drag on conventional rigs.

That innovative feature on the Semi is entirely in keeping with its streamlined cab and surely contributes to the claimed coefficient of drag (cD) of

only 0.36. As Musk pointed out, the \$2.7 million Bugatti Veyron supercar has a higher cD of 0.38. Also adding to the vehicle's efficiency is the use of four independent wheel motors on the two rear axles of the cab. This avoids the mechanical losses of driving the wheels from a single motor and enables electronic traction control.

Inside the cab the driver's seat is in the centre and placed well forward, leaving room below and to the rear for what is surely a massive battery pack, and while it appears to be large enough to accommodate a sleeper, it is a day cab configuration. In place of the usual collection of levers and switches there are two touch screens mounted either side of the steering wheel.

Unsurprisingly, the electronic systems include advanced driver assistance features such as lane keeping assistance and automatic emergency braking, and extend to autonomous functions such as platooning capability. As part of the data input required for automated driving, two cameras mounted under the large, exterior mirrors, also display images of the side of the rig on the two interior screens.

More article & photos at the url below.

<https://newatlas.com/tesla-semi-truck/52249/>

Artificial Intelligence and Electric Cars Shine at 2017 Tokyo Motor Show



Japan's car makers reveal latest tech

By James Mills

When it comes to giving drivers a glimpse of the future, the Tokyo motor show is the event to follow. The biennial event gives the engineers and designers of Japan's leading car makers, renowned for innovation and sitting industry trends, a chance to reveal the secret projects they have been developing for the past two years.

Taking place this week and next, it brings out the brightest – and, occasionally, daftest – ideas from the likes of Honda, Mazda, Nissan and Toyota.

In addition to the usual crop of arresting-looking concept cars, much of the buzz around this year's Tokyo motor show concerned artificial intelligence, and its use in driverless vehicles.

Japan's car makers are competing with rival manufacturers from Europe and America, not to mention technology

companies including Apple, Intel and Waymo (owned by Google's parent company, Alphabet), in the race to develop and make the most effective (and cost-effective) hardware and

computer brainpower that will enable truly driverless cars.

Here are the cars that are creating a stir at the 2017 Tokyo motor show.

HONDA SPORTS EV CONCEPT



When Mazda wanted to reinvent the sports car, it recreated the affordable British roadster in the shape of the successful MX-5 – reviewed here by Jeremy Clarkson. Now Honda is having a turn, imagining how the electrically-powered sports car of the future might look.

continued next page

Called the Sports EV Concept, it follows in the tyre tracks of the funky looking Urban EV Concept, which Honda says will go on sale in 2020, and gives hope that not all electric cars need be boring.

The two-seat model is said to “realise the joy of driving the user can feel with a sense of unity with the car” but Honda doesn’t elaborate on what part a driver might play in a car that is electrically powered and uses artificial intelligence to adapt and improve its autonomous driving mode.

If Honda were to put the Sports EV Concept into production, it would use the same platform and electric drivetrain as Urban EV, which would suggest a driving range of around 150 miles.

LEXUS LS+ CONCEPT



In Japan, schoolchildren have walking buddies and designated walking routes to get them to school or home safely. Taking a leaf out of this approach, Lexus plans to introduce Highway Teammate, a semi-autonomous driving package, to its flagship LS saloon, when a new version is launched in 2020.

Previewed on the LS+ concept, which was revealed at this year’s Tokyo motor show, Highway Teammate will be available on cars sold in Japan and America. It combines a range of systems that allow the car to recognise when it is joining or leaving a motorway.

It means that the car can steer itself to keep it in lane, merge with other traffic or overtake with driver input, and will maintain a safe distance from traffic ahead.

Audi, Mercedes and Tesla have already launched cars with similar levels of driverless technology. However, Yoshihiro Sawa, Lexus President, has said its technology breaks new ground, and should also be able to operate in urban areas in the early 2020s – assuming the law allows this level of automation by then.

Meanwhile, the exterior design of the LS+ concept gives an indication of how the new LS luxury saloon will look, as the company strives to maintain a point of difference to Audi, BMW and Mercedes.

MAZDA KAI CONCEPT



Within the global motor industry, Mazda is considered a minnow. Yet judged on the critical acclaim for its latest range of cars, being a comparatively small, independent car company brings its advantages. Now the company is previewing how the next Mazda 3 family hatchback could look, in the guise of the Kai concept.

The rival to the VW Golf will reach showrooms in 2019. It doesn’t just look good; there is new technology under the bonnet that Mazda believes will make petrol engines as fuel efficient as a diesel.

Known as Skyactiv-X, the new petrol engine acts like a diesel in most driving conditions, using compression to ignite the fuel in the combustion chamber. However, it can switch to ignition by spark plugs, like a traditional petrol unit,

The company promises a 40% improvement in fuel economy. When the Kai goes on sale in 2019, British drivers will be able to scrutinise the innovation for themselves.

MAZDA VISION CONCEPT



Could Mazda be poised to launch a luxury GT that would rival the likes of the Audi A7 and Mercedes CLS?

continued on page 14

Tokyo EV Review

continued from page 13

The Japanese car maker says it is assessing the reaction to its new Vision Coupé, a four-door GT that shows Mazda's design department is on a role. Its elegant exterior looks impressive, and the interior is equally minimalist. Mazda says the cabin reflects the Japanese concept of "ma", which uses space to create atmosphere.

Also at the Tokyo motor show, Mitsuo Hitomi, Mazda's head of engine development, suggested that the Japanese company still planned to feature rotary engines in its range of cars. Hitomi suggested that because it is so quiet, the engine could be used as a range-extender to give electric cars a greater driving range, which suits the quiet running characteristics of EVs.

MITSUBISHI E-EVOLUTION



The transformation of Mitsubishi, from a manufacturer of utilitarian pick-up trucks for farmers and specialist rally-bred saloons for boy-racers, into the darling of suburbia's middle classes, shows that the company's gamble to bet on plug-in hybrid vehicles (PHEVs) paid off. Its pioneering Outlander PHEV is still Britain's best-selling PHEV.

So it comes as little surprise that the company is forging ahead with plans to sell electric cars. At the Tokyo motor show, it revealed the e-Evolution, a pure-electric crossover that has four-wheel drive.

Like Honda's Sports EV concept, it uses artificial intelligence to monitor the driver's behaviour at the wheel and offer advice to improve their technique, to improve safety and maximize energy efficiency. The company hasn't said whether or not the e-Evolution will go into production.

NISSAN IMX CONCEPT



Following the success of the Qashqai family car, Nissan is looking for its next big thing. The IMx concept gives a glimpse of the direction the company could take.

An electric crossover, the concept is based on the same platform as the new Nissan Leaf, but comes with a beefed-up battery that offers the potential to drive 370 miles between charges.

It has four-wheel drive and 429bhp, but the car could well do most of the driving. It features a retractable steering wheel and a ProPILOT driver assistance system, which gives autonomous driving capability. Nissan says the technology means the car could drop a family at the airport, then drive itself to a car park and connect to a dedicated recharging source.

SUBARU VIZIV



Alfa Romeo offers the Giulia Quadrifoglio, BMW has the M3, Mercedes-AMG offers keen drivers the C63; could Subaru soon have a place alongside such desirable sports saloons

continued next page

At the 2017 Tokyo motor show, Subaru showed the Viziv – ‘vision for innovation’ – which is a vision for a compact sports saloon of the future. Whether that will be part of Subaru’s future remains unanswered. Other than the car’s dimensions, precious few meaningful details were shared about the Viziv.

SUZUKI E-SURVIVOR



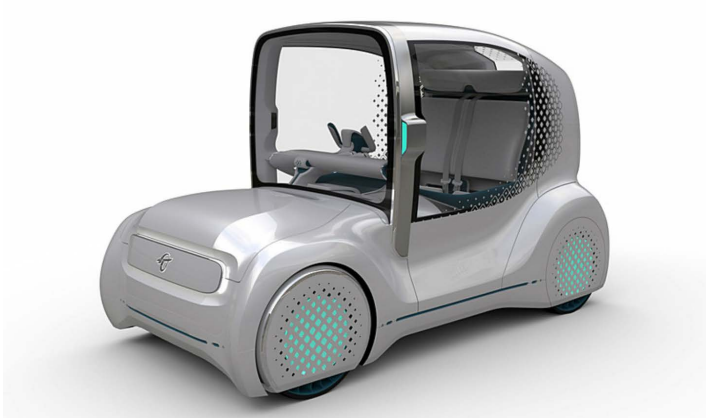
It looks like a giant-size Airfix kit but could preview a replacement for one of Suzuki’s most endearing models, the Jimny.

Called the e-Survivor, it is a roofless, high-riding compact 4×4, with four in-wheel electric motors and some autonomous driving technology. Will it be made? Who knows. Would we

like an actual-size Airfix kit of it to play assemble ourselves? Yes please.

“It feels incredibly good-humoured. Farting is still funny — and so is this car.” James May reviews the Suzuki Ignis

TOYOTA AUTO BODY WONDER-CAPSULE CONCEPT



Brace yourselves, Deliveroo riders and drivers: this is the sort of driverless “car” that could soon be putting you out of a job, thanks to the engineers at Toyota. It could also be used as an autonomous taxi. However, at this stage, no one from Toyota Auto Body – the commercial division of the car maker – is saying exactly what it could be used for. Watch this space.



Mercedes brings yacht style to the Maybach 6 Cabriolet concept

Excerpts from Mike Foley, Designfax

Recently displayed at Monterey Car Week in California, the 750-hp (550-kW) electric hard-top convertible is luxurious, pretentious, exaggerated, and a real head turner — but it’s full of clever and impressive design details too.

Mercedes says the nearly 20-ft-long, art-deco-inspired two-seater “pays homage to the glorious automotive haute couture of hand-finished, exclusive cabriolets” and combines “intelligent beauty with classic, aesthetic proportions and a reduced, technoid appearance.” Back in the day we simply called a car this long a “boat,” but it’s a sexy boat at that. Its official dimensions are 18.7 x 6.9 x 4.4 ft.

Thanks to its four compact permanent magnet synchronous electric motors, the Vision Mercedes-Maybach 6 features all-wheel drive. It will do 0 to 60 mph in under 4 seconds, so hold on to your hat, Lovey! The single-charge range bests 250 miles. The flat battery sits in the underbody. Probably one of the most practical design features is the quick-charge function. Using DC charging based on the CCS standard, the system allows a charging capacity up to 350 kW. In just 5 minutes, enough power can be charged to achieve an additional range of more than 60 miles.

So it’s nice to know you have some options, and you won’t get stranded if you run low on juice — at least not for long. Without them you’d just be sitting there and dreaming of making headway in a fabulous vehicle, like Thurston Howell III.



The Vision Mercedes-Maybach 6 Cabriolet concept at Pebble Beach. [Image: Daimler AG/Mercedes-Benz]

Read the rest of the article and see more photos at the url below:

<http://www.designfax.net/cms/dfx/opens/article-view-dfx.php?nid=4&bid=716&et=featurearticle&pn=04>

BMW Will Present Five Electric Models at LA Auto Show



By Mark Kane

BMW has announced that it will present five all-electric vehicles including one “World Premiere” vehicle at the Los Angeles Auto Show which begins at the end of this month (at least to the press...public days begin December 1st).

In total, the BMW Group intends to have 25 electrified models by 2025, including specific 12 electrics – a distinction between electrified (that also includes plug-in hybrids) and electric (all battery-electric) encourages us that the new model is a BEV, alongside the premier of the new plug-in hybrid BMW i8 Roadster.

In teasing the event, BMW mentions three electric North American Premieres:

- **BMW i Vision Dynamics**
- **MINI Electric Concept**
- **BMW i3s**

We believe that the fourth is the standard, but refreshed BMW i3, and the fifth to be all-new all-electric model.

The other plug-ins are:

- **BMW C-Evolution Scooter**
- **BMW X7 iPerformance Concept**



MINI Electric concept IAA 2017 (InsideEVs/Tom Moloughney)

About the plug-ins:

“The BMW i Vision Dynamics is an all-electric, emission-free four-door Gran Coupe that accelerates from 0-60 mph in 4.0 seconds, has a top speed of 120 mph with a range of 373 miles. The BMW i Vision Dynamics combines electric mobility with the core values of BMW – dynamism and elegance – and demonstrates how the product range and design language of BMW i can be further incorporated into other models. The new characterization of BMW i’s iconic

continued next page

window profile is a standout feature of the BMW i Vision Dynamics, offering all passengers equally striking views out of the vehicle to lend a shared driving experience – a factor that will become increasingly relevant as semi- and autonomous driving become closer to commonplace.

Fully electric vehicles will run across the BMW Group portfolio and MINI will showcase its take on future personal mobility in the city with the North American premiere of the MINI Electric Concept. Designed for use in urban areas, this MINI Electric Concept vehicle offers a window into how pure-electric day-to-day mobility might look in the years ahead. The concept vehicle brings the iconic design, city-dwelling heritage and customary go-kart feeling of the MINI brand into the electric mobility age. MINI will then present an all-electric series-production model in 2019.

The new BMW i3s is a sportier and more powerful variant of the BMW i3, the best-selling compact battery-electric vehicle in the premium compact segment worldwide since it launched in 2014. The first ever BMW i3s provides an even sportier interpretation of silent mobility with zero emissions and features a high output 184 hp electric motor that generates peak torque of 199 lb-ft. The BMW i3s accelerates from 0-60 mph in 6.8 seconds and has a top speed of 100 mph. The BMW i3s uses a lithium-ion high-voltage battery developed by the BMW Group with a cell capacity of 94-ampere hours (Ah). Like the BMW i3, the BMW i3s applies the concept of sustainability throughout the interior and exterior of the vehicle, incorporating recycled plastics, renewable raw materials, natural fibers, and open-pored, unbleached eucalyptus wood in the design. The new BMW i3s will be available in U.S. showrooms in November, 2017. Pricing will be announced closer to market launch.”

“Following BMW Group’s sustainability strategy and parallel to BMW i in the automobile sector, BMW Motorrad presents the BMW C-Evolution Scooter. The electrically powered maxi-scooter efficiently combines sustainability, dynamics, control and agility. The powerful, completely electric engine guarantees immediate torque and a riding range of up to 99 miles. The C-Evolution scooter has a top speed of 80 mph and travels from 0 to 31 mph in a mere 2.8 seconds. The BMW C-Evolution Scooter will be available in California showrooms in Spring 2018 with an MSRP of \$13,750.”

“The BMW X7 iPerformance Concept introduces a new model concept for the premium segment that utilizes BMW eDrive technology with a BMW TwinPower Turbo petrol engine creating an exceptionally efficient and



2018 BMW i3s from the 2017 IAA



BMW X7 iPerformance



The BMW i8 Roadster is in its final testing phase.

dynamic plug-in hybrid powertrain that excels in all driving situations, including running with zero local emissions. With a generously-sized, six-person interior, the BMW X7 iPerformance Concept offers an interior with a state-of-the-art infotainment system brimming with connectivity that provide an unmatched experience by any BMW past or present. As a result of the interplay between precise, pared-down forms and an open sense of space, the driver and passengers are immersed in a unique, modern setting.”



It's official: The VW Bus is back, and it's electric



Designed to recall the original Type 2 Microbus without mimicking it, the I.D. Buzz concept has won several awards in the months since it was revealed at the Detroit Auto Show. The front V in the bodywork calls back to the two-tone predecessor on the original Bus, but in the I.D. Buzz carries a light strip that surrounds the vehicle and gives it a unique visual signature. The LED headlights have hexagonal segments that act as “eyes” to communicate the vehicle’s status. With near-zero body overhangs and 22-inch wheels, the I.D. Buzz manages to look modern and timeless, one of the hallmarks of Volkswagen brand design.

Driven by popular demand, Volkswagen announced today it is planning on selling a production version of the award-winning I.D. Buzz concept electric vehicle in 2022 for the United States, Europe and China.

“For me, the I.D. Buzz concept is the most beautiful and most exciting electric car in the world,” said Dr. Herbert Diess, Chairman of the Board of Management for the Volkswagen brand, in Pebble Beach, Calif.

“Our goal is clear: we want to make the fully electric, fully connected car a bestseller around the world. The iconic car of the electric age must be a Volkswagen.”

The I.D. Buzz is the second EV concept that VW has revealed for production, along with the original I.D. concept slated to enter production around 2019 as a 2020 model, while the I.D. Crozz concept has shown how an electric VW SUV could look. All three use VW’s Modular Electric Drive kit (or



MEB, for its German acronym), a group of components and chassis parts engineered to maximize the potential of electric drive and future technology.

“These cars will offer everything – and even more – than you have seen from other electric carmakers,” says Diess. “And they will be much more affordable.”

The first VW Bus sold in the United States in 1950 had all of 30 hp. The I.D. Buzz concept sports 369 hp from electric motors on each axle that also provide all wheel drive and the 111 kWh battery pack in the floor of the MEB chassis provide nearly 300 miles of estimated range. Using a VW fast-charge system, it can recharge about 80 percent of its energy capacity in 30 minutes at 150 kW.

continued next page



But just like the original Microbus, the design and engineering of the I.D. Buzz concept and MEB platform provides ample space for passengers or cargo, with an expansive view of the surroundings. There's even a front trunk, just like the original VW Beetle.

The I.D. Buzz concept also offers a preview of the type of autonomous technology that VW will develop for future models – namely its fully automated “I.D. Pilot” mode that could go into production by 2025. From the fold-away steering wheel and pop-up laser scanners in the roof to a heads-up display that integrates augmented reality, the I.D. Buzz does not lack for innovation.

“The I.D. Buzz stands for the new Volkswagen,” says Diess. “We are fully committed to the future of mobility, and we want to reignite America’s love for VW.”

Standing beside Diess at the Pebble Beach announcement was Ben Pon Jr. His father, Ben Pon Sr., was the first VW importer for the American market and a major initiator of the original VW “Microbus” concept. He sketched the rough outline on a napkin during lunch one day in 1947. Thanks to Volkswagen designers and engineers, the rest is history.

Today that napkin is on display in a museum in Amsterdam, and the vehicle itself went on to even greater fame.



With its compact exterior, spacious interior, and a design that seemed to put a smile on every face that saw it, the VW bus became “one of our most beloved cars,” says Diess.

That was especially true in the United States in the 1960s and ‘70s, where a VW Bus represented freedom.

“It took you everywhere with your friends, it was a car but also a home on wheels, it was both reliable and unconventional, it was highly emotional,” says Diess. “It was and still is a wonderful car.”

The new I.D. Buzz will be the seventh generation of the bus. Over time, the vehicle evolved in style but always

retained its character, versatility, and ability to draw or carry a crowd. Still, the original version — affectionately called the “splitty” by aficionados for its split front windshield — remained the most iconic design.

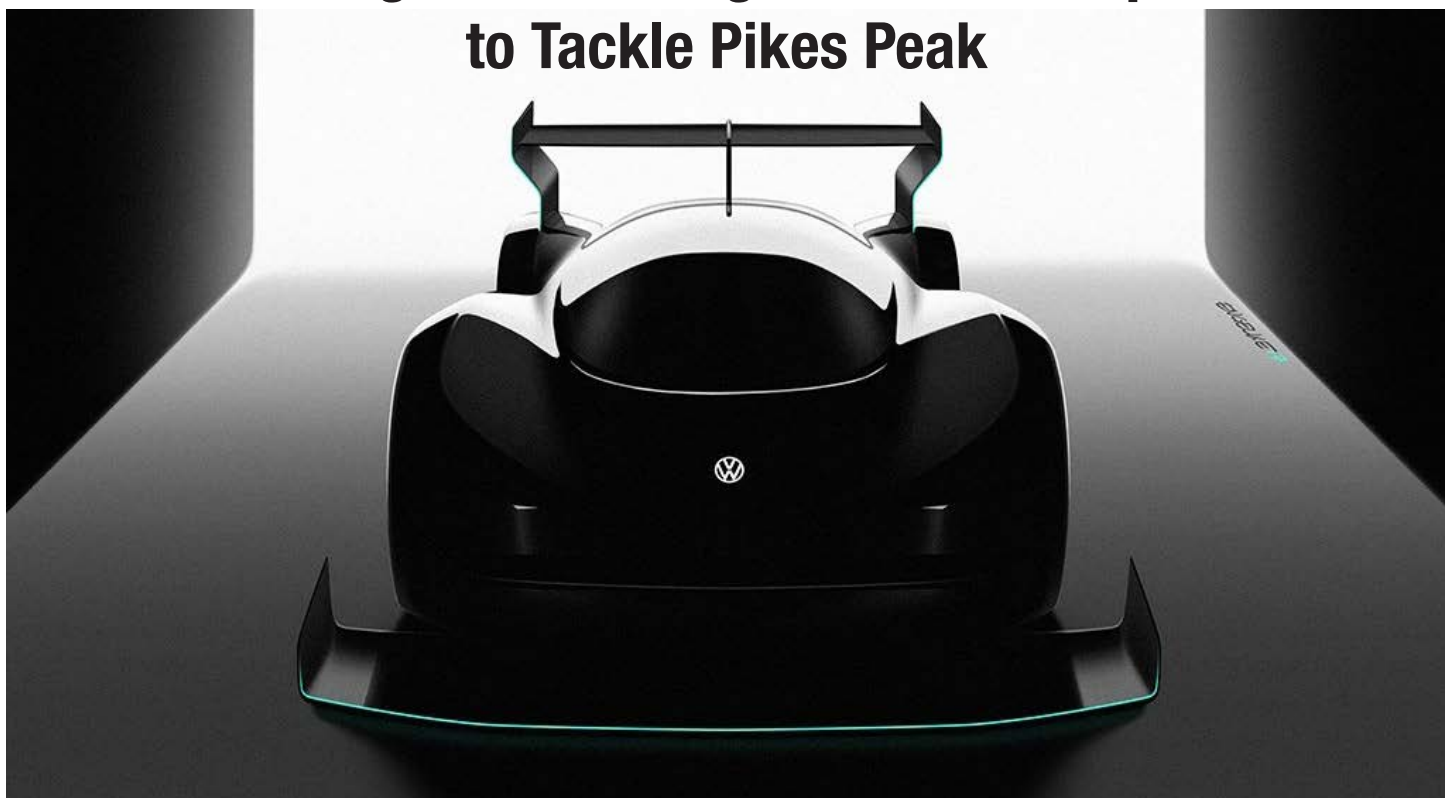
The exterior I.D. Buzz harkens to that first generation. It sports a two-tone V-nose, rectangular windows, a hint of a windshield sunshade, and a gesture at the rear side air vents that characterized the original.

At Pebble beach, Diess asked Pon Jr. what he’d like to see in the newest generation of the bus.

“I saw it already,” Pon replied. “It looks absolutely great and I’m sure you will be very successful with it!”

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Volkswagen Is Building An Electric Supercar to Tackle Pikes Peak



Their all-wheel-drive car will face the world's most renowned mountain race.

By David Lumb, @OutOnALumb

Last month, Volkswagen laid out a roadmap for its EV rollout, promising 300 zero-emissions vehicles by 2030. While it's certainly good PR to move the company beyond its lingering diesel scandal, it also follows other automakers that recently committed to electric vehicle fleets. But to really seal the deal, VW has a new stunt in the works: It's creating an all-electric sportscar for next June's Pikes Peak high-altitude race in Colorado.

Volkswagen is partnering with Technical Development in Wolfsburg to build the all-wheel-drive prototype. The automaker hopes it will break the record for electric racers on the course, which was set at eight minutes 57.118 seconds in 2016. Pikes Peak International Hill Climb is 12.4 miles

long, with a nearly 5,000-foot climb to top out at a maximum elevation of over 14,000 feet above sea level.

"The Pikes Peak hill climb is one of the world's most renowned car races. It poses an enormous challenge and is therefore excellently suited to proving the capabilities of upcoming technolo-

gies," Volkswagen board member Dr Frank Welsch said in a press release. "Our electric race car will be equipped with innovative battery and drive technology. The extreme stress test on Pikes Peak will give us important findings that will benefit future development, and it will showcase our products and their technologies."



<https://www.engadget.com/2017/10/19/volkswagon-is-building-an-electric-supercar-to-tackle-pike-s-pea/>

The Next Volkswagen Beetle Could Go Electric and Rear-Wheel Drive Again

By Patrick George

The case could be made that the original Volkswagen Beetle is the most iconic car ever made. Its modern versions, well... not so much. But as part of its big diesel emissions cheating penance, Volkswagen is making a massive push into electric cars. And that could return the Beetle to its roots in an unexpected way.

The next Beetle in the works should be not only an electric car, but also one that's rear-wheel drive and has its "engine" in the back like the original air-cooled Beetles. This news comes to us from Autocar, which spoke to VW chairman Herbert Diess:

Diess denies that a firm decision on the Beetle's successor has been made. However, he suggests that any direct successor model would be electric. "If we wanted to do a Beetle, electrically it would be much better than today's model, much closer to history, because it could be rear-wheel drive," he adds.

Diess says the MEB platform provides the perfect basis for emotional concepts: "We have a good chance on the electric side. You can do derivatives efficiently. We have a very flexible platform. We can do nice things: rear-wheel drive, front-wheel drive, all-wheel drive."

[...] The rear-mounted electric motor and rear-wheel-drive layout of the ID hatchback mirrors that of the original Beetle in 1939, which used a rear-mounted boxer engine and was rear-wheel drive.



Lately, Volkswagen has been rolling out new electric concepts like the ID Buzz retro-minibus (which has been confirmed for production!) that use batteries mounted in the floor and electric motors on each axle. And VW is planning on rolling out several new electric cars on that platform in the coming years. Thus, in theory, any new electric Beetle could be rear-wheel drive like they used to be.

While this is far from announcing a

definitive plan about the future of the Beetle, it is good news—and plausible news. As Diess notes, one of the most exciting and most untapped things about EVs is that they allow for innovative packaging and design options. When you don't have to worry about where to stick a big internal combustion engine, you have a lot more freedom on how to build and design a car.

Photos are from VW. Read the rest of the article at the url below.



<https://jalopnik.com/the-next-volkswagen-beetle-could-go-electric-and-rear-w-1820371742>

Volvo's Polestar unveils performance electric car, announces new 'Tesla Model 3 competitor'



By Fred Lambert

In a strange move recently, Polestar, Volvo's newly rebranded performance electric car brand, unveiled its first vehicle, a plug-in hybrid 2+2 seat Grand Tourer Coupé (PHEV), and quickly made it somehow outdated by announcing that all future Polestar cars will be all-electric (BEV).

When relaunching the brand earlier this year, Volvo made a big deal of Polestar being a "performance electric car brand".

It looked like they were positioning Polestar to compete with Tesla in the fully-electric space and now pretty much confirmed that's what they want to do – but not with their first car, which is a plug-in hybrid.

Thomas Ingenlath, Chief Executive Officer of Polestar said; "Polestar 1 is the first car to carry the Polestar on the bonnet. A beautiful GT with amazing technology packed into it – a great start for our new Polestar brand. ***All future cars from Polestar will feature a fully electric drivetrain,***

delivering on our brand vision of being the new standalone electric performance brand."

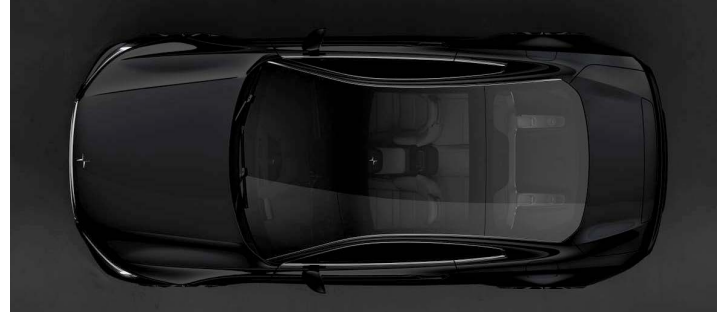
He literally makes it sound like the Polestar 1 is not the "brand vision". It looks like they jumped the gun with the Polestar 1 by making it a plug-in hybrid as they wait for their all-electric pow-

ertrains to be ready. That's further reinforced by the fact that they say that they only plan to produce 500 Polestar 1 vehicles per year.

Though the vehicle could prove interesting nonetheless – especially if it's an indicator of what's to come for the all-electric Polestar vehicles.



continued next page



The vehicle has a carbon fiber body and it is equipped with a double electric rear axle which enables torque vectoring.

Polestar also says that the vehicle will only be available with two or three-year subscription plans with monthly payments.” The flat rate subscription means that having a Polestar car becomes a hassle free experience for the customer. This is facilitated by Phone-As-Key technology. It allows the owner to share a virtual key with a third party, and also enables access to a host of other on-demand features. This concierge service ensures that the customer only needs to focus on the enjoyment of driving.”

They plan to open “Polestar spaces” around the world to see and test the vehicle independently of Volvo’s dealer network.

The Polestar 1 will be built in a new purpose-built Polestar Production Centre in Chengdu, China. The factory is expected to be completed in “mid-2018.”

Now in the same press release of their first vehicle, Polestar hypes their next upcoming vehicles, which again, will all be fully electric – starting with the Polestar 2:

“Polestar 2 will start production later in 2019 and will be the first battery-electric vehicle (BEV) from the Volvo Car Group. It will be a mid-sized BEV, joining the competition around the Tesla Model 3, and with consequently higher volumes than Polestar 1. The initial phase of the Polestar

product roll out will then be completed by the subsequent arrival of a larger SUV-style BEV, the Polestar 3, which will create a modern expression of electric performance and driving dynamics.”

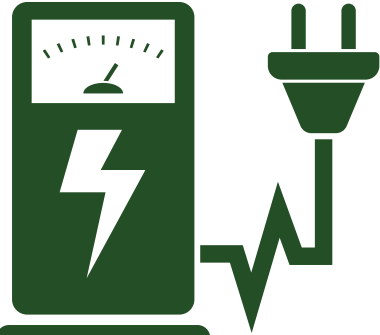
It’s interesting that they mention Tesla’s Model 3 by name, something rare in the industry. The automaker also confirmed that Polestar 3, an upcoming all-electric SUV, will follow Polestar 2. (Photos: Volvo)



Fred is the Editor in Chief and Main Writer at Electrek. He mainly covers electric vehicles, autonomous cars and ride-sharing platforms. You can read his work on Electrek, 9to5mac.com and 9to5google.com

<https://electrek.co/2017/10/17/volvo-polestar-unveils-performance-electric-car-tesla-model-3-competitor/>

CHARGING



NEWS

Early last month an unusual memorandum of understanding between eight western states was signed which is of interest to EVers living there.

The Governors of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming have realized that an improved availability of regional electric vehicle infrastructure will increase access to our highways, promote tourism and recreation in our rural communities, and support our economies. Many Americans vacation in these states yearly, so it is easy to attest to this truism. Such regional collaboration of charging infrastructure will be shown to be a key driver to expand transportation options.

Their non-binding MoU declares the intention of the states to establish a “Regional Electric Vehicle Plan for the West” (REV West Plan) to provide the framework for creating an EV corridor that will make it possible to seamlessly drive an electric vehicle across the major transportation corridors which include the following interstates:

- Interstates 8, 10, 15, 17, 19, 40 in Arizona
- Interstates 25, 70 and 76 in Colorado;
- Interstates 15, 84, 86, and 90 in Idaho;
- Interstates 15, 90 and 94 in Montana;

WESTERN US STATES TO PLAN EV CHARGING CORRIDORS

By CE Staff

- Interstates 15 and 80 in Nevada;
- Interstates 10, 25 and 40 in New Mexico;
- Interstates 15, 70, 80 and 84 in Utah; and
- Interstates 25, 80 and 90 in Wyoming.

Their plan is to undertake the following actions.

1. Create best practices and procedures to enhance EV adoption by promoting EV consumer acceptance and awareness by addressing “range anxiety”; coordinating on EV charging station locations to avoid redundancy and to ensure stations are sited at a frequency and locations so as to optimize utilization and to minimize inconsistencies between charging infrastructure in each state; and leveraging economies of scale;
2. Create voluntary minimum standards for EV charging stations, including standards for administration, interoperability, operations, and management;
3. Identify and develop opportunities to incorporate EV charging station infrastructure into planning and development processes, such as building codes, metering policies, and renewable energy generation projects;
4. Encourage EV manufacturers to stock and market a wide variety of EVs within the Signatory States; and
5. Identify, respond to, and where possible collaborate on funding opportunities to support the development of the REV West Plan.

Other states can join in to include additional interstates within their boundaries as well. In theory, this would cover about the western one-third of the nation. Our plains states have less population density and the challenge of longer distances between population clusters. So driving requirements there differ somewhat.

A week after the ink dried on this MoU, Colorado issued a draft executive order with delivery schedules booked in the next five years for EV corridors within the state on their Colorado EV Fast-Charging Corridors.

Their goal: a 30-50 mile maximum distance between Fast Chargers and by 2020, to identify destinations/gateway communities. That document will be made public in the next few weeks or months. They will also develop a policy for workplace charging for state agencies termed “Adoption of Electric Vehicles”. NREL has released slides on a study recent of EVSE usage and demand estimates available at the first link below.

The second url is the full PDF of the study report on the same. To date, no news from other states efforts has surfaced yet.

<https://www.nrel.gov/news/program/2017/study-estimates-consumer-demand-for-electric-vehicle-charging-stations-in-colorado.html>

<https://raqc.egnyte.com/dl/X38xoZpON2/NRELReport.pdf>

The process they will follow involves selecting senior leadership from each state, meet quarterly where team

continued next page

members will provide updates and input. They will create and maintain a document containing action specifics such as mapping locations. A summary report will be due by April 1, 2018 so that plans can be reviewed by interested parties.

Of course, any state may discontinue participation or reject or deviate from any proposals. So who knows what the actual outcome will be. Economics determines much of the outcome but politics plays a role too.

It is an encouraging first step. Will dealers willingly step up to promote EV sales? Will shovels actually begin to make a dent in these western states which cover a huge area between our northern and southern borders? Stay tuned as this unfolds.

Meanwhile, we drivers wanting to cover longer distances, rely on Plugshare.com and other websites to identify where an opportunity charge can be had.

As the EV charging infrastructure continues to grow, perhaps the jobs that

develop from this effort can be counted towards overall renewable energy and sustainable activities in the western US. Every little bit helps.

SUPERCHARGING EXPANSION CONTINUES

The Tesla Supercharging network now encompasses over 1034 locations worldwide. Recent additions have quickly popped up in some areas, due to the traffic they monitor and the number of cars on the road. Having now produced and delivered over 250,000 cars total since their inception, the need is growing.

One surprisingly large US charging site is in Kettleman City, CA where the company has actually purchased property at the Interstate 5/SR41 junction. It is to have 40 stalls, battery storage plus solar canopies in addition to a lounge, which is to feature a restroom, chairs, tables, and sofas. Some have estimated the solar to produce 3 Mega Watt-hours (MwH) daily to recharge the on-site storage which will help offset the peak charging demands! This site will be a veritable microgrid all by itself!

A link to an early six and a half minute drone flyover video of this location showing construction in progress, from the facebook page of Model X owners follows:

<https://youtu.be/dBznK0r-v2c>

One can see steel pillars to hold the solar canopies are being planted, and much effort is being expended by a large crew. This is a substantial expansion development. Some still photography of this rapid site build-up on this link from the TeslaMotorsClub.com discussion forums follows here:

<https://teslamotorsclub.com/tmc/threads/supercharger-kettleman-city-location-found-construction-started.94032/page-13>

The most recent photos are after the 5th entry by jimmy_d.

This location on a very busy north-south connector roughly halfway between Los Angeles and San Francisco, where there are high concentrations of Tesla vehicles. They are anticipating high usage with the planned release of the Model 3, more affordable sedan whose production volume is currently being ramped.



Priming the U.S. Grid for High-Powered Electric Vehicle Charging



Paul Stith, long time EV driver, is employed by the firm that installs Tesla Superchargers in the US. Download the slides he shares from his recent presentation in Germany at EVS30 <http://bit.ly/BV-EVS30>

He states: "When thinking about high power #EV grid connections: "Businesses that do not electrify will be at a competitive disadvantage..."



DID YOU KNOW?

As of November 2, 2017

hybridcars.com reports total Plugin Electric Vehicle (PEV) sales (pure BEV and plugin hybrids) as

- California cumulative PEV sales: 341,200
- US cumulative sales: 714,709
- CA public charging stations: 13,478 (data from <http://afdc.energy.gov>)
- CA PEV models available: 41



Joint 'ultra-fast' electric car charging network unveiled by BMW, Mercedes, Ford and Volkswagen

By Fred Lambert

Last year, five major automakers, BMW, Daimler, Ford and the Volkswagen Group with Audi and Porsche, announced that they joined forces to deploy 400 ultra-fast (350 kW) charging stations for electric vehicles in Europe.

Today, they unveiled that network, which is now called IONITY, and they elaborated on their plans.

They changed their "ultra-fast" name for the stations, which was to one-up "fast-charging" since their stations are capable of a 350 kW charge rate, while most 'fast-charging' stations, aside from Tesla's, are capable of only 50 kW.

IONITY's stations are now called High-Power Charging (HPC).

Their plan is still to have 400 stations across Europe by 2020, but today they confirmed that they will already have 20 stations by the end of this year.

They also announced new partners for the locations of those stations:

"A total of 20 stations will be opened to the public this year, located on major roads in Germany, Norway and Austria, at intervals of 120 km, through partnerships with "Tank & Rast", "Circle K" and "OMV". Through 2018, the network will expand to more than 100 stations, each one enabling multiple customers, driving different manufacturer cars, to charge their vehicles simultaneously."

The group says that they are using the Combined Charging System (CCS) standard and that the whole network, despite being equally owned by BMW, Daimler, Ford and the Volkswagen Group with Audi and Porsche, is "brand agnostic".

They say that other automakers can join in.

Electrek's Take

This is by far the most significant electric car charging infrastructure effort by any major automaker and a clear move to try to catch up to Tesla's Supercharger network.

The good news is that they are leapfrogging Tesla's current Supercharger charge rate of 145 kW, but they are far behind in term of deployment since Tesla already has over 350 stations in Europe while this new group only plans to beat that by 2020.

At Tesla's planned growth rate for the Supercharger network, the company alone should already have twice that around the same time.

But that doesn't matter because at least now there's some competition and they can drive each other to expand their networks and their charging capacities.

Right now, there's no electric car that can accept this charge rate, but the fact that those automakers are investing in this network shows that they plan to release EVs with the capacity.

It's also a great seal of approval for CCS with 5 major automakers representing a significant percentage of European sales getting behind the charging standard for a joint network.

Now I hope that they replicate the model in other markets. There's no reason why they couldn't do the same in North America unless they simply don't want to, which is not impossible since those automakers are seeing Europe as a more important market for EVs going forward due to governments pushing for the technology and talking about soon banning gas and diesel cars.

On the other hand, the US government is talking about removing EV incentives while they keep subsidizing gas-powered cars.



Fred is the Editor in Chief and Main Writer at Electrek. He mainly covers electric vehicles, autonomous cars and ride-sharing platforms. You can read his work on Electrek, 9to5mac.com and 9to5google.com

<https://electrek.co/2017/11/03/ultra-fast-electric-car-charging-network-unveiled-by-bmw-mercedes-ford-volkswagen/>

ABB to cover Iceland with 15 new fast-charging electric car stations



By Fred Lambert

Iceland is perfect for massive adoption of electric vehicles. The island's electricity generation is already almost 100% renewable, which makes EVs super clean, and being a remote island, petrol is expensive.

With a strong EV charging infrastructure and a few more options for electric car models, Iceland could significantly accelerate EV deployment.

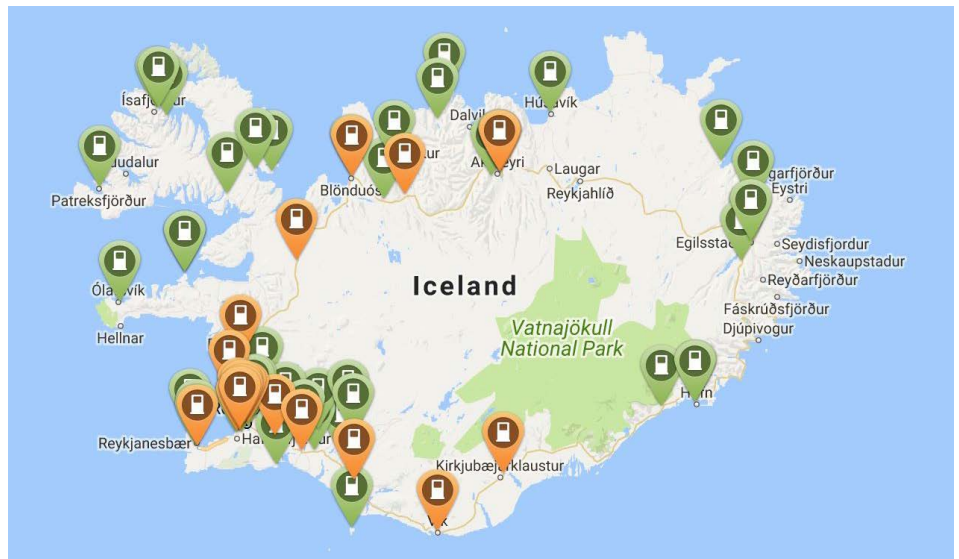
Now they are adding a new network of fast-charging stations.

ABB won a contract from Reykjavik Energy's ON Power, the country's largest electric utility, to install 15 new fast-charging stations across Iceland's main highway.

Frank Muehlon, Head of ABB's Global Business for Electric Vehicle Charging Infrastructure, commented on the project:

"Iceland is a progressive country, which introduces new energy standards and makes use of the country's sustainable energy resources to support its infrastructure. The advantages with this

type of fast charger can be found in the multi-protocol design, which supports cloud-based technology. This gives ON



Power access to real time data for the remote control and proactive control of the operation and technical status of the charging stations. This gives a fully flexible overview of the entire charging network."

They will be deploying ABB's Terra 53 CJG charging stations, which incorporate all CHAdeMO, CCS and Type 2 AC charging connectors into a single charging device.

Those new chargers will add to the country's existing network of charging stations, which already includes over a dozen fast-chargers (see photo at left) and a few dozen public level 2 chargers (see below).

Iceland currently has only just over 1,400 electric vehicles on its roads, but it has been growing fast with the majority of those vehicles having been sold this year.

The Nissan Leaf is the most popular all-electric vehicle, but bigger plug-in hybrids, like the Mitsubishi Outlander PHEV and Volvo XC90, are more

popular due to the rough driving conditions during the winter.

It's also important to consider that Iceland has a fairly small automotive market, which is why that despite those low sale numbers, EV market share (BEVs and PHEVs) hit 10% of the entire new car market in the country.



<https://electrek.co/2017/11/08/abb-iceland-fast-charging-electric-car-stations/>

CARB Revised Scoping Plan

This document is nearly 160 pages long but has some good ideas and provides a direction. It is located in the Low-Carbon Transportation Section here:

<https://www.arb.ca.gov/cc/scopingplan/revised2017spu.pdf>

Here are some excerpts from the document.

On the need for market transformation: “We should not just be planning to put 1.5 million ZEVs on the road by 2025 or 4.2 million on the road by 2030 – but rather, we should be comprehensively facilitating the market-wide transition to electric drive that we need to see materialize as soon as possible.”

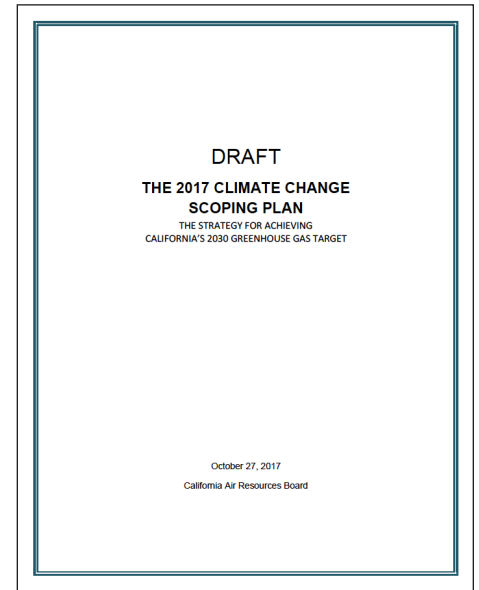
On 100% ZEVs by 2050: “The growing severity of climate impacts, persistent public health impacts and costs from air pollution, and rapid technology progress that supports the expectation that cost parity between some ZEVs and comparable internal combustion vehicles will be attained in a few years, underscores the need for further action on ZEVs. Therefore, CARB is signaling the need for additional policy and technical support on strategies to move toward a goal of achieving 100 percent ZEV sales in the light-duty vehicle sector.”

“Through a strong set of complementary policies—including reliable incentives, significant infrastructure investment, broad education and outreach, and potential regulation—aim to reach 100 percent ZEV sales in the light-duty sector (PHEVs, BEVs, and FCEVs) by 2050.”

On the need to promote charging infrastructure: “Promote transportation fuel system infrastructure for electric, fuel-cell, and other emerging clean technologies that is accessible to the public where possible, and especially in underserved communities, including environmental justice communities.”

Objectives and goals to reduce GHGs in this sector (Note: all bullets below are direct quotes)

- Make significant progress in ZEV penetrations in non-light-duty sectors.
- Deploy ZEVs across all vehicle classes, including rail vehicles, along with the necessary charging infrastructure.
- Deploy low-emission and electrified rail vehicles.
- Accelerate use of clean vehicle and equipment technologies and fuels of freight through targeted introduction of zero emission or near-zero emission (ZE/NZE) technologies, and continued development of renewable fuels.
- Accelerate use of clean vehicle, equipment, and fuels in freight sector through targeted introduction of ZE/NZE technologies, and continued development of renewable fuels. This includes developing policy options that encourage ZE/NZE vehicles on primary freight corridors (e.g., Interstate-710); examples of such policy options include a separated ZE/NZE freight lane, employing market mechanisms such as favorable road pricing for ZE/NZE vehicles, and developing fuel storage and distribution infrastructure along those corridors.
- Per SB 350, implement the recommendations identified in the Barriers Study to accessing ZE/NZE transportation options for low-income customers and recommendations on how to increase access.²⁰¹ And, track progress towards these actions over time to ensure disadvantaged communities are getting equal access and benefits relative to other parts of the State
- Accelerate deployment of alternative fueling infrastructure pursuant to the following:
 - o SB 350 – CPUC to accelerate widespread transportation electrification.
 - o Executive Order B-16-2012 and 2016 ZEV Action Plan – call for infrastructure to support 1 million ZEVs by 2020.
 - o CEC’s Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP).
 - o CPUC’s NRG settlement.
 - o CALGreen Code provisions mandate installation of PEV charging infrastructure in new residential and commercial buildings.
 - o IOU electric vehicle charging infrastructure pilot programs.
 - o Deployment of over 100,000 freight vehicles and equipment capable of zero emission operation, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.



Global Automakers Comments on the Mid-Term Evaluation for the Greenhouse Gas Emissions Standards

These are the comments from the Global Automakers to the EPA on the GHG standards:

Harmonization between the federal and California programs must be maintained. EPA, NHTSA, and California need to work together to maintain the One National Program as all parties committed to at its inception. Additionally, ***full harmonization cannot be realized so long as California and other states continue to enforce the Zero Emission Vehicle mandate***, which forces automakers to use one of the most expensive technologies – electric drive technology – at a greater rate than would be required to meet the GHG regulation alone.

Furthermore, the market has demonstrated that it is not ready to support costly hybrids and electric vehicles at the levels needed for compliance, with today's sales of electric vehicles barely over one percent of the U.S. new light-duty vehicle market. Sales of hybrid electric vehicles peaked in 2013 and now hover around two percent of the market.

<http://globalautomakers.org/media/agency-comments/global-automakers-comments-on-the-mid-term-evaluation-for-the-greenhouse-gas>



Peninsula Advanced Energy Community (PAEC) Task 2.2: Best Practices Report June 2017

Electric vehicle and general data for California and the U.S.

		U.S.	California	California as percent of U.S.
General	Population	321 million	39 million	12%
	Gross domestic product	\$18 trillion	\$2.5 trillion	14%
	Light-duty vehicle sales in 2016	16.5 million	2.0 million	12%
Electric vehicles	New 2016 electric vehicles	151,000	74,000	49%
	2011-2016 electric vehicles	556,000	269,000	48%
Electric vehicle public charging	Level 2 charge points	30,600	9,800	32%
	Fast charge points	4,900	1,300	26%
	Total charge points	36,500	11,000	31%

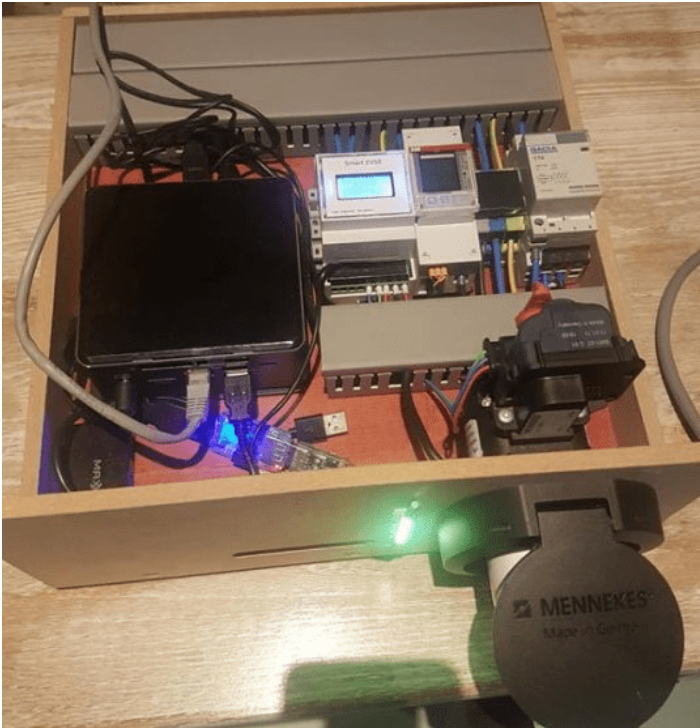
Numbers may not add due to rounding. Population from U.S. Census; income from U.S. Bureau of Economic Analysis; vehicle registrations from IHS Automotive; public charging from Alternative Fuel Data Center.

This table comes from the full report given below at this URL.

http://www.clean-coalition.org/site/wp-content/uploads/2017/06/PAEC-Task-2.2_Final-Best-Practices-Report-06_wb-27-June-17.pdf



IOTA EV charging station taking payments live with IOTA



IOTA is a revolutionary new transactional settlement and data transfer layer for the Internet of Things. It's based on a new distributed ledger, the Tangle, which overcomes the inefficiencies of current Blockchain designs and introduces a new way of reaching consensus in a decentralized peer-to-peer system.

An IOTA EV Charging Station

An electric vehicle charging station taking live payments with IOTA was demoed at the Amsterdam meetup

The above photo is a close up of the demo they used live at the event. It would activate when you plugged in the charging cord and the cell phone app would pay X amount of IOTA per KiloWatt hour and the app will have a search function to find the nearest charging stations. The proof of work is offloaded from the cell phone and would eventually be done by the companies servers to keep the POW fast and light for users.

Oslo2Rome E-Charging Network

Enexis plans on spreading these stations across Europe and will be part of the Oslo2Rome Initiative using electric vehicles to drive across Europe using charging stations.

<https://www.oslo2rome.com>

Video: <https://www.pscp.tv/stormneon/1gqxvYLjXnBJB>
(Presentation Periscoped by Dennis Schouten)

They also told everyone there that this charging station tells the tangle it's state (occupied/free, rate, position etc) that way you can search it for it on your cell phone and know info about it before going to the location to charge up your electric vehicle. The system doesn't use any backend besides IOTA.

About Enexis and ElaadNL



ElaadNL is the knowledge and innovation centre in the field of (smart) charging infrastructure in the Netherlands and is owned by the Dutch grid operators.

The emergence of electric mobility and sustainable charging is a significant development for the electricity grid. Through their mutual involvement via ElaadNL, the grid operators acquire an overview of the measures to be taken to ensure that the network remains reliable and affordable, whilst enabling the development of E-mobility. Innovative solutions are explored that will generate great benefits for society. Optimal use can be made of the existing grid by 'smart charging'.

Follow the discussion on Reddit

IOTA EV charging station by ELaad demoed at the Amsterdam meetup. Taking payments live with IOTA

<http://iotafeed.com/index.php/2017/10/27/iota-ev-charging-station-taking-payments-live-with-iota/>

What Is IOTA? - YouTube

<https://www.youtube.com/watch?v=yYuQn7jnc4c>

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National Plug-In Electric Vehicle Infrastructure Analysis

The National Renewable Energy Lab has produced a report on the EV infrastructure in America today. Per the Executive summary below, it addresses the question of how much charging infrastructure — how many EVSEs are needed in the United States to support both plug-in hybrid and pure battery electric vehicles.

The majority of this report describes an analytic process for estimating PEV non-residential charging requirements within communities (cities, towns, and rural areas) and along Interstate corridors, assuming home charging is the dominant behavior.

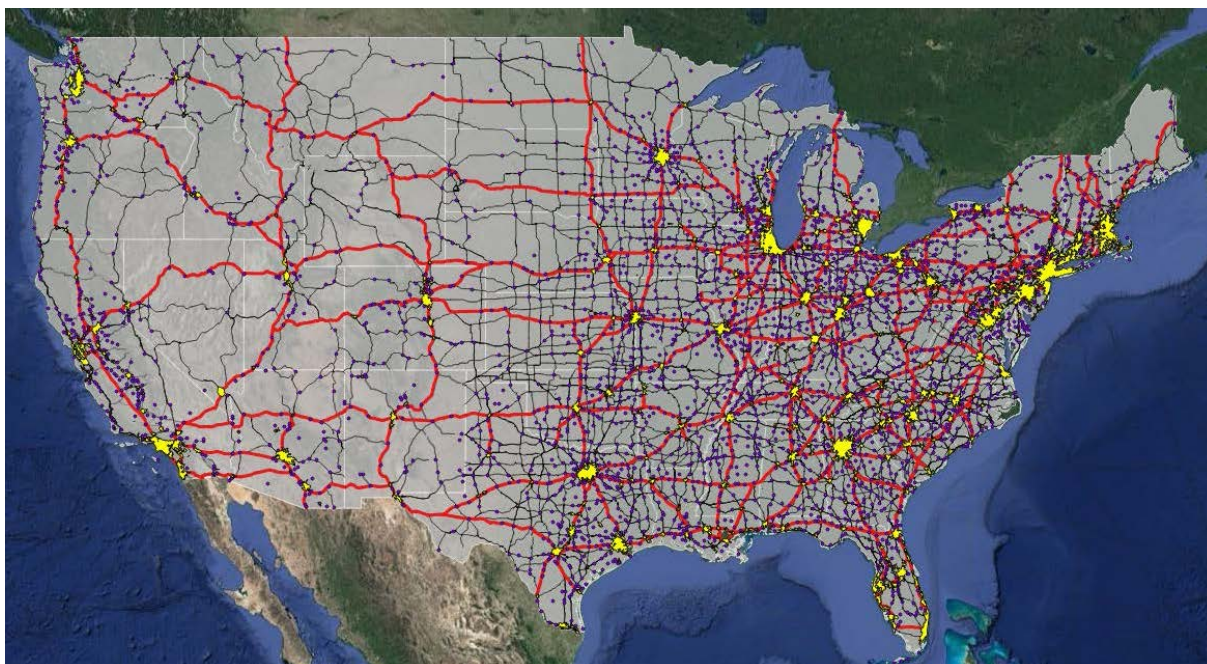
This report addresses the fundamental question of how much plug-in electric vehicle (PEV) charging infrastructure—also known as electric vehicle supply equipment (EVSE)—is needed in the United States to support both plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEVs). It complements ongoing EVSE initiatives by providing a comprehensive analysis of national PEV charging infrastructure requirements. The result is a quantitative estimate for a U.S. network of non-residential (public and workplace) EVSE that would be needed to support broader PEV adoption. The analysis

provides guidance to public and private stakeholders who are seeking to provide nationwide charging coverage, improve the EVSE business case by maximizing station utilization, and promote effective use of private/public infrastructure investments.

The analysis is organized around the non-residential EVSE network required to meet consumer coverage expectations and to satisfy consumer demand in high-PEV-adoption scenarios. Coverage and charging demand estimates needed to serve growing PEV markets are made for the communities

where people live and the highway corridors on which they travel (below), including four specific geographic areas

- Cities (486 Census Urban Areas, population greater than 50,000, 71% of U.S. population)
- Towns (3,087 Census Urban Clusters, population 2,500 to 50,000, 10% of U.S. population)
- Rural Areas (regions not covered by Census Urban Areas/Clusters, 19% of U.S. population)
- Interstate Highway System Corridors (28,530 miles of highway).



Cities (yellow polygons), towns (purple points), and interstates (thick red lines) considered in this analysis.
(Satellite imagery credit: © 2017 Google, Map Data © 2017 Tele Atlas)

While this work is not intended to forecast future PEV markets, scenarios are developed to exercise the infrastructure estimation methodology and highlight sensitivities. The analysis assigns no probabilities to any PEV market or technology scenarios and considers none of the scenarios as most likely. For the full report click on the link below and download the report. <https://www.nrel.gov/docs/fy17osti/69031.pdf>

Making renewable power more viable for the grid

“Air-breathing” battery can store electricity for months, for about a fifth the cost of current technologies.

By Rob Matheson, MIT News Office

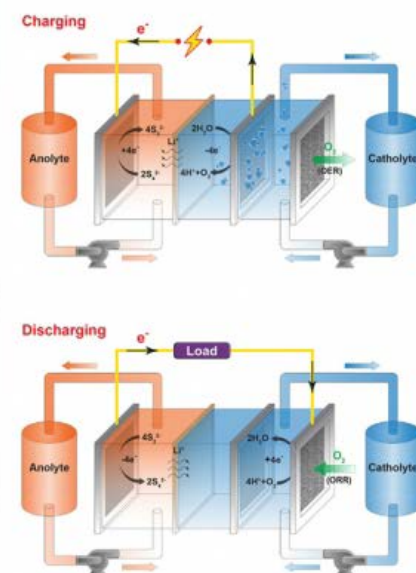
Wind and solar power are increasingly popular sources for renewable energy. But intermittency issues keep them from connecting widely to the U.S. grid: They require energy-storage systems that, at the cheapest, run about \$100 per kilowatt hour and function only in certain locations.

Now MIT researchers have developed an “air-breathing” battery that could store electricity for very long durations for about one-fifth the cost of current technologies, with minimal location restraints and zero emissions. The battery could be used to make sporadic renewable power a more reliable source of electricity for the grid.

For its anode, the rechargeable flow battery uses cheap, abundant sulfur dissolved in water. An aerated liquid salt solution in the cathode continuously takes in and releases oxygen that balances charge as ions shuttle between the electrodes. Oxygen flowing into the cathode causes the anode to discharge electrons to an external circuit. Oxygen flowing out sends electrons back to the anode, recharging the battery.

“This battery literally inhales and exhales air, but it doesn’t exhale carbon dioxide, like humans — it exhales oxygen,” says Yet-Ming Chiang, the Kyocera Professor of Materials Science and Engineering at MIT and co-author of a paper describing the battery. The research appears today in the journal *Joule*.

The battery’s total chemical cost — the combined price of the cathode, anode, and electrolyte materials — is about 1/30th the cost of competing batteries, such as lithium-ion batteries. Scaled-



MIT researchers have developed an “air-breathing” battery that could store electricity for very long durations for about a third the price of current technologies, with minimal location restraints and zero emissions. Courtesy of the researchers. Left photo: Felice Frankel.

up systems could be used to store electricity from wind or solar power, for multiple days to entire seasons, for about \$20 to \$30 per kilowatt hour.

Co-authors with Chiang on the paper are: first author Zheng Li, who was a postdoc at MIT during the research and is now a professor at Virginia Tech; Fikile R. Brushett, the Raymond A. and Helen E. St. Laurent Career Development Professor of Chemical Engineering; research scientist Liang Su; graduate students Menghsuan Pan and Kai Xiang; and undergraduate students Andres Badel, Joseph M. Valle, and Stephanie L. Eiler.

Finding the right balance

Development of the battery began in 2012, when Chiang joined the Department of Energy’s Joint Center for Energy Storage Research, a five-

year project that brought together about 180 researchers to collaborate on energy-saving technologies. Chiang, for his part, focused on developing an efficient battery that could reduce the cost of grid-scale energy storage.

A major issue with batteries over the past several decades, Chiang says, has been a focus on synthesizing materials that offer greater energy density but are very expensive. The most widely used materials in lithium-ion batteries for cellphones, for instance, have a cost of about \$100 for each kilowatt hour of energy stored.

“This meant maybe we weren’t focusing on the right thing, with an ever-increasing chemical cost in pursuit of high energy-density,” Chiang says. He brought the issue to other MIT

continued next page

researchers. “We said, ‘If we want energy storage at the terawatt scale, we have to use truly abundant materials.’”

The researchers first decided the anode needed to be sulfur, a widely available byproduct of natural gas and petroleum refining that’s very energy dense, having the lowest cost per stored charge next to water and air. The challenge then was finding an inexpensive liquid cathode material that remained stable while producing a meaningful charge. That seemed improbable — until a serendipitous discovery in the lab.

On a short list of candidates was a compound called potassium permanganate. If used as a cathode material, that compound is “reduced” — a reaction that draws ions from the anode to the cathode, discharging electricity.

However, the reduction of the permanganate is normally impossible to reverse, meaning the battery wouldn’t be rechargeable.

Still, Li tried. As expected, the reversal failed. However, the battery was, in fact, recharging, due to an unexpected oxygen reaction in the cathode, which was running entirely on air. “I said, ‘Wait, you figured out a rechargeable chemistry using sulfur that does not require a cathode compound?’ That was the ah-ha moment,” Chiang says.

Using that concept, the team of researchers created a type of flow battery, where electrolytes are continuously pumped through electrodes and travel through a reaction cell to create charge or discharge. The battery consists of a liquid anode (anolyte) of polysulfide that contains lithium or sodium ions, and a liquid cathode (catholyte) that consists of an oxygenated dissolved salt, separated by a membrane.

Upon discharging, the anolyte releases electrons into an external circuit and the lithium or sodium ions travel to the cathode. At the same time, to maintain electroneutrality, the catholyte draws in oxygen, creating negatively charged hydroxide ions. When charging, the process is simply reversed. Oxygen is expelled from the catholyte, increasing hydrogen ions, which donate electrons back to the anolyte through the external circuit.

“What this does is create a charge balance by taking oxygen in and out of the system,” Chiang says.

Because the battery uses ultra-low-cost materials, its chemical cost is one of the lowest — if not the lowest — of any rechargeable battery to enable cost-effective long-duration discharge. Its energy density is slightly lower than today’s lithium-ion batteries.

“It’s a creative and interesting new concept that could potentially be an ultra-low-cost solution for grid storage,” says Venkat Viswanathan, an assistant professor of mechanical engineering at Carnegie Mellon University who studies energy-storage systems.

Lithium-sulfur and lithium-air batteries — where sulfur or oxygen are used in the cathode — exist today. But the key innovation of the MIT research, Viswanathan says, is combining the two concepts to create a lower-cost battery with comparable efficiency and energy density. The design could inspire new work in the field, he adds: “It’s something that immediately captures your imagination.”

Making renewables more reliable

The prototype is currently about the size of a coffee cup. But flow batteries

are highly scalable, Chiang says, and cells can be combined into larger systems.

As the battery can discharge over months, the best use may be for storing electricity from notoriously unpredictable wind and solar power sources. “The intermittency for solar is daily, but for wind it’s longer-scale intermittency and not so predictable. When it’s not so predictable you need more reserve — the capability to discharge a battery over a longer period of time — because you don’t know when the wind is going to come back next,” Chiang says. Seasonal storage is important too, he adds, especially with increasing distance north of the equator, where the amount of sunlight varies more widely from summer to winter.

Chiang says this could be the first technology to compete, in cost and energy density, with pumped hydroelectric storage systems, which provide most of the energy storage for renewables around the world but are very restricted by location.

“The energy density of a flow battery like this is more than 500 times higher than pumped hydroelectric storage. It’s also so much more compact, so that you can imagine putting it anywhere you have renewable generation,” Chiang says.

The research was supported by the Department of Energy.



Putting Safety At the Heart Of Transportation: The Drive Toward Zero-Risk Mobility

*By Toral Patel, Principal Consultant
for Technology and Innovation,
PA Consulting Group*

Over the last century there has been a significant increase in demand for travel by all modes. Given all those people crowding onto trains, planes and highways, it is hard to fathom but is highly admirable that the transport industry has in parallel made correspondingly significant improvements in safety. Historically, the big leaps forward in transport safety have been largely reactive, coming in the wake of major accidents and public outcry for increased safety levels.

Being reactive has worked in the past, but it isn't going to work in the future. As safety improves, further improvements become more difficult. The industry and its regulators are going to have to shift towards a more preventative approach, with safety built into transport systems from the start and in a more holistic way.

Some nations are already making the switch. Sweden has adopted a target-based approach known as Vision Zero, that seeks to eliminate highway risk and achieve a 100% safety record in any given year. You read that correctly. Sweden is saying that no loss of life is acceptable, and that notion drives the behaviour and decisions to achieve this. Campaigns like the European Day without a Road Death (EDWARD) initiative aiming to achieve zero fatalities in Europe on a given day are important, while recognising that innovative transport technologies are necessary to attain Vision Zero. Practically, this involves planning, designing and building infrastructure

to increase safety and reduce fatal accidents.

High-speed rail such as the TGV, Shinkansen and Eurostar is generally considered the safest mode of transportation. Safety figures are exceptional; for the Japanese Shinkansen no passenger has ever been injured or killed in an accident since it commenced operations in 1964. The same applies to the Eurostar service between the UK and France, which has operated since 1994. The reason is that these high-speed rail systems are engineered to be extraordinarily safe. The Shinkansen employs automatic train control to decelerate or halt the train automatically based on conditions of the route ahead and distance to preceding trains. The Shinkansen system is also equipped with an earthquake alarm system that automatically brings trains to a rapid halt when seismic activity is detected.

Every new transport infrastructure project under development today is incorporating some kind of best-in-class safety features into its design. Most of the new road and metro systems are making use of intelligent sensors, autonomous control software, and smart infrastructures. Emerging modes of transportation are well positioned to eliminate risk by incorporating safety at the heart of their organisation from inception, making a Vision Zero-like safety record an operating principle.

We have worked on and studied the safety process for dozens of global clients in the transportation sector, and Hyperloop One as a new "fifth mode" of transportation faces some unique and some familiar transport safety challenges. While there may be no

existing precedent for safety available through statistical information and previous data, some first observations on safety risk improvement can be made. People will adopt new technologies only if they perceive them to be safe, both in terms of security of the system and physical safety. People tend to overweigh low-risk probabilities of accident risk and their perception can often differ from reality, notably subjective attitude to objective risk. Communicating the safety risk is a key success factor for Hyperloop, and will need to be managed carefully for all stakeholders from passenger users of the transport mode to those transporting freight and regulators.

In targeting 100% safety, Hyperloop also has some significant advantages over other modes. Being a new mode of transport removes any attachment to legacy systems allowing designers to shape and design safety into the system more effectively by employing the latest advancements in technology. As a new transportation mode, the organisation has the ability to model and control the entire environment as it is a fully enclosed system. Hyperloop is not affected by external factors such as adverse weather conditions or traffic congestion that plague other transport system and networks, neither does it have a negative impact on the environment (greenhouse gases and noise pollution) as it is a closed system. The autonomous nature of operations means that human error is considerably reduced and in effect the uncertainty element is virtually designed out of the system. Nevertheless, an element of human component still exists in designing the system and infrastructure

continued next page

and this must be controlled.

Taking Safety to New Levels

Hyperloop One can make the Hyperloop the safest mode of transport today and in the future. To do this, Hyperloop One is adopting best practices from around the world such as:

Making The Safety Case

The safety case is not just about designing a safe system. To demonstrate and prove that the system is safe, the methodology to create, operate and maintain the system needs to be robust. In the absence of existing safety standards for a new mode of transport, the Hyperloop One Proof of Operations Facility provides an excellent opportunity for regulators to work collaboratively with the technology developers, systems integrators and safety case experts to define the regulatory regime for an entirely new mode of transport. They understand the importance of being able to help develop safety cases in collaboration with the providers and establish new certification processes. Ultimately this will avoid the lengthy processes of legacy safety certification which would not, in any case, be able to address the safety requirements of a new transport mode. These new processes can also pave the way for rapid, efficient and effective safety case delivery. In doing this, it will still be important for the regulator to maintain an arm's length perspective so that design trade-offs are decided in favour of safety rather than cost.

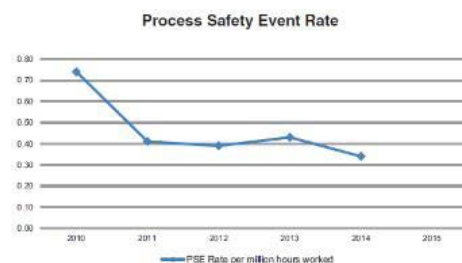
Tackling Public Perception

Managing the public perception of safety risk is potentially a more difficult challenge.

Disruptive innovations and technologies are naturally associated with perceptions of high risk due to the "fear of the unknown." Seventy years ago airplanes were commonly perceived

as "flying tanks of kerosene." Now, despite the fact that the assertion is still factually correct, aviation is considered the safest way to travel. This is because of the stringent requirements the industry has forced manufacturers and operators to meet.

Taking a wider view, lessons can also be learned from high hazard industries such as oil and gas extraction, nuclear energy, renewables, chemical and petrochemicals which are highly regulated. The implementation of very high safety standards in these industries has led to a wealth of experience in the design, build and delivery of solutions to their customers. The levels of safety incidents indicated by the UK Petroleum Industries Association (UKPIA) shows that per million hours worked there are marginal safety incidents.



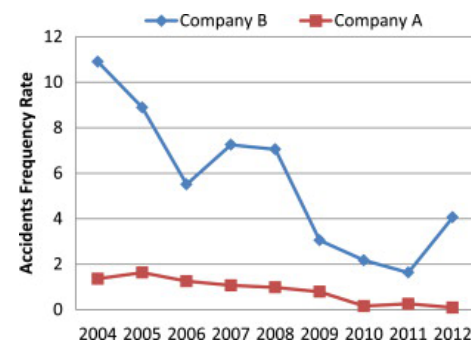
Source: UKPIA

GraphSource: UKPIA Statistical Review 2015

Developing a safety culture

Research findings support the view that a safety culture is associated with fewer accidents compared with organisations that do not take this approach. The rationale is that workers who commit to safety practices, and are rewarded for this as well as other outputs, perform better in reducing occupational accident rates. The comparison below between two petrochemical plants of the same type confirms these results. In the following example managers of Company A, which is distinguished by the maturity

of its safety culture, has significantly higher employee evaluation scores than Company B (Source: Safety Culture Assessment in Petrochemical Industry: A Comparative Study of Two Algerian Plants in Safety and Health at Work 5 (2014) 60-65 (A. Boughaba et al.)



GraphSource: UKPIA Statistical Review 2015

In 2015 Dow Corning was named as the "safest company" due to its commitment to deliver safety beyond traditional safety metrics (occupational injury and illness rate or process incident rate) to ensure overall safety through its organisation. They deconstructed "What good safety looks like" into operational discipline, risk management, and clarity of expectations. Hyperloop One can enforce, build and further strengthen their safety case using experience from similar industries of these types.

Continuously improve from an already excellent baseline

It will not be enough to implement a system that is the safest mode in the world; safety threats, changing customer expectations, and issues with the system itself will emerge over time so the system will need to improve constantly in a controlled manner to meet these shifts. To be the safest mode in the world Hyperloop One will have to scan the horizon to maintain a view on technologies, capabilities and innovations which can enable it to

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SAN FRANCISCO AUTO SHOW
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 TECHNOLOGIES SYMPOSIUM**
SAN DIEGO—MISSION VALLEY, CA
 2/20/2018 - 2/22/2018




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<http://www.sae.org/events/hybridev/>




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See the details at the url below.

<http://www.sfauto show.com/special-attractions/plug-in-electric-vehicle-test-drives-presented-by-experience-electric-in-partnership-with-pge/>




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Hyperloop

continued from page 35

improve their systems further. Our ability to model complex processes realistically in systems is increasing rapidly and has the potential to be a key tool in decision-making. However we will need to establish a means of quality assurance for those simulations.

Transport systems are increasingly software-based, which provides an opportunity to become safer as they capture more information about the operational system which then can be used to develop an on-going “early warning detection system.” On the other hand this could imply a higher exposure to cyber-attacks which will require careful consideration. Regular sanity checks will also be needed to complement this approach.

All in all, Hyperloop One has an extensive opportunity to achieve its goal of building the “safest mode of transportation on earth,” so long as it takes to heart the experience and lessons gained by other modes and industry sectors.

Toral Patel is a transport safety expert specialising in quantification of comparative safety risk, analysing risk perceptions and their impact on modal choice. She also investigates how innovative transport technology solutions can address future challenges for transportation.

<https://hyperloop-one.com/blog/putting-safety-heart-transportation-drive-toward-zero-risk-mobility>

Kansas City airport deploys 4 BYD 30-foot electric buses



Kansas City International Airport has taken delivery of 4 BYD electric 30-foot coach buses, which will serve as parking lot shuttles, bringing passengers to the airport terminals.

BYD built the e-buses at its Lancaster, CA manufacturing facility, and customized them to include luggage racks for passenger use.

BYD offers seven electric coach and bus models, and has delivered over 140 to customers across North America. The company recently completed an expansion of its Lancaster factory, which will eventually give it a capacity of 1,500 e-buses per year.

Source: Green Car Congress

Don't Miss These...

From time to time there are articles and videos that we are not able to reproduce in this newsletter but would like to bring them to your attention. 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

Tesla Time News - In Depth: Tesla Semi Truck



Background on the Tesla Semi unveiling coming Nov. 16th. For those who have no background in these monsters, this short 8 minute video provides some foundation which addresses some rudimentary questions.

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



Jaguar E-Type Zero | Fully Charged



A classic Jaguar E-type without the in-line 6 cylinder (3.8 L) conversion? Yes, and not yet on sale, but... A major OEM is trying to future proof this legendary car with Lithium batteries, and 0-60 in 5.5 seconds, faster than the original! With LED headlights, this may be the beginning the Electric Classic Car Revolution! With a 40 kWh pack, the real world range is estimated to be 170 miles. most interesting, the Coventry UK team worked with Rimac in Croatia for the electrics. As they state: "Electrification absolutely has a fundamental role in the Jaguar LandRover future!" They are talking the all the Mk, XK, XJ-6 and XJ-S series could be retrofitted! What a concept!

<https://www.youtube.com/watch?v=610Amyhpzzk>



Nikola One Hydrogen Powered Semi Truck Unveiling



While this is fairly old, it provides information on the competition that Tesla's Semi may face. Here is a project named Nikola, a hydrogen fuel cell backed electric truck. The introduction is heavy on the hopes and aspirations of the founder and CEO Trevor Milton. It is 40 minutes of background. They too, claim to have many hundreds of pre-orders on the books (>2B USD). Much has been leveraged from other successes on the mobility market, yet the fueling of such large trucks as these remains a big question mark. Check it out here:

<https://www.youtube.com/watch?v=wEU6v256Uo8>



Japanese magnetic discoveries pave way for EVs



This well produced video is easy to understand and covers the developmental history of strong neodymium magnets made from special compounds. Done primarily by the Japanese who have pioneered this area of research, their breakthroughs have led to significant product development. Even the Tesla Model 3 will use Permanent Magnet AC motors.

https://www.youtube.com/watch?v=Khhp_jD1_9M



Videos

First In-Depth look at the Tesla Model 3 | Model 3 Owners Club



Here it is folks! The very first in-depth look at the Tesla Model 3 We hope you enjoy all the details and information.

https://www.youtube.com/watch?v=_DT0vDMWsq4&app=desktop

If you are interested in specific items, the list below will give you the times that they appear in the video.

The timestamps for subjects covered:

Headlights @2:34
Aero Ducts @3:15
Roof Rack Attach Points @3:36
Wipers Detail @4:26
Exterior Door Handles @5:02
Windows, Doors & Trim @5:45
Trunk Details @9:26
Front Trunk Details @16:17
Front License Plate @18:45
Charge Port @19:27
Wheels Detail @20:02

Underside Details @20:45
Interior Tour @21:43
Center Console @26:27
The Dashboard @28:38
Speakers @29:45
Dashcam Mounting @30:12
Overhead Console & Sun
Visors @30:42
HVAC Demo @31:54
Screen Tour @33:32
Windshield Wipers @51:39
Control Stalks @53:48

Unlocking Model 3 @54:38
Keycard & Phone App @55:06
Phone App @55:31
Sundry Items @56:45
New UMC @57:27
The Drive @59:28
Closing Thoughts @1:07:14



Nissan Intelligent Mobility: the Nissan IMx concept



Take a look at the future of Nissan Intelligent Mobility, Nissan's approach to changing how cars are powered, driven and integrated with society. It's designed to strengthen the link between car and driver as a close, reliable partner that delivers a safer, more convenient and more enjoyable drive. It's all-electric, full autonomous concept vehicle to transform the everyday life of drivers. <https://youtu.be/j7VaRWZFz7c>



Cargo space in popular EVs



Number of banana boxes:

BMW i3: 4 in trunk, 14 with seats folded
Hyundai Ioniq: 6 in trunk, 16 with seats folded
Nissan Leaf (2013): 5 in trunk, 18 with seats folded
Kia Soul EV: 6 in trunk, 21 with seats folded
Model X 5 seater: 1+10 in frunk+trunk, 28 with seats folded
Nissan e-NV200: About 48-50

<https://www.youtube.com/watch?v=elH0sCb4leI&feature=youtu.be>



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Why it matters to you

Mazda shows time-tested technology can be repurposed to complement new, state-of-the-art features like electric drivetrains.

Mazda says the rotary is coming back (again), but it's not as a sports car

Mazda's famous rotary engine will return as an EV range extender in 2019

By Andrew Hard and Ronan Glon

We've been getting some mixed messages from Mazda lately about its iconic rotary engine. Though Mazda guarantees its working on new rotary technology, it says it isn't building an RX-7 successor with such an engine.

That would be fine, yet Mazda keeps building rotary-powered sports car concepts. First, there was the RX-Vision, and a new rotary-powered concept — the next evolution of the RX-Vision — displayed at October's Tokyo Motor Show. Despite these teases, Mazda's rotary will likely serve a more pedestrian purpose when it spins its way back into production. Mitsuo Hitomi, the brand's global powertrain chief, recently told Automotive News the rotary will return in 2019 as a range extender for electric vehicles.

On paper, the rotary engine would perform the same function as the 600cc

two-cylinder available at an extra cost on the BMW i3. **It wouldn't directly drive the wheels, but it would generate enough electricity to charge the battery pack on-the-go.** An electric car equipped with a gasoline-burning range extender inevitably emits a little bit of CO₂, but it's able to drive much further on a single charge.

A few drawbacks have prevented the Wankel engine from truly rivaling the piston engine. Notably, it uses more fuel and it typically produces less torque than a comparable four-cylinder. But, its advantages are well-suited to range-extending duties. It's compact, which clears up more space for passengers, cargo, and in this application batteries, it's light, quiet, and vibration-free. Mazda is even developing an advanced start-stop system to keep fuel economy in check, according to patent applications uncovered by Autoblog.

Mazda experimented with using a rotary

engine in an electric car four years ago when it introduced the experimental Mazda2 RE concept. It never reached production, but engineers are using the data gathered over the course of the project to develop a series-produced electric vehicle.

Those drooling over the idea of an RX-7 successor have some hope, though. Hitomi confirmed Mazda is developing a larger rotary engine that could power a sports car, but the brand hasn't settled on its application just yet. Mazda is a small outfit compared to most automakers, so slotting in another performance vehicle alongside the MX-5 is a task that cannot be rushed.

Either way, stay tuned for an update as soon as Mazda lifts the sheet on its new concept. If the RX-Vision is any indicator, there's a handsome car awaiting us.



<https://www.digitaltrends.com/cars/mazda-wankel-range-extender-news-rumors-specs/>

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Contact: Bruce Sharpe
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continued on next page

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Contact: Marty Weirick
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Daimler's electric school bus will have a 100 mile range



Most school buses don't scream "high-tech," but they're actually perfect candidates for electrification — most run two short routes and have long breaks for recharging. Daimler and its Thomas Built Buses division have unveiled an electric bus called the Jouley that should be able to handle that task perfectly. It's got a 160 km (100 mile) all-electric range and can pack up to 81 kids "safely, quietly and emission-free," Thomas said. Should operators need more range, they can add another battery pack.

Jouley is just a first step in an electric future, Thomas suggested. "We snuck up on our competition, they didn't see it coming," said CEO Caley Edgerly on Facebook. "I've had the pleasure to drive it, it's super smooth, it's going to allow us to develop future electric vehicles."

Thomas points out that it's equipped with both 120 volt and USB charging ports for laptops and cellphones, an obvious must for students nowadays. The company also

implied that it might one day serve as a Tesla Powerwall-type device that could, say, backup power for a school or even a neighborhood.

Daimler's Mercedes-Benz, much like other automakers, has said it will greatly expand its electric vehicle range over the next few years with the EQ lineup of electric cars. Daimler is also set to start making its first electric truck deliveries in Japan and the US.

Whether schools will jump on board the Jouley, however, likely depends on the economics. School boards are chronically short of money, so the overall cost would have to be less than regular school buses, unless they're supplemented by local, state or federal governments. In Europe and Asia that's a given, but under the fossil fuel-loving Trump and Republican administration, the situation is less clear.



<https://www.engadget.com/2017/11/10/daimler-jouley-electric-school-bus/>

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