

Charged Up



ELECTRIC VEHICLE ASSOCIATION OF SAN DIEGO (EVAOSD)

An affiliate of the Electric Auto Association (EAA)

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Newsletter Editor: David Crow

Webmaster: Russ Lemon

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Monthly Meetings: During the 4th week of the month, day depends on venue.
(No Meeting in December).

Meeting Location, Date and Time:

Center for Sustainable Energy

9325 Sky Park Court, Suite 100

San Diego, CA 92123

Wednesday, 24 August 2016, 7:00 P.M.

Program: News, Projects, Future Events

Newsletter Topics:

Better Batteries



National Drive Electric



Turbine Electric Trasher



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Message from the President

Hi All,

As a lot of you have heard, we have a big push for helping out at [National Drive Electric Week \(NDEW\)](#). Raejean Fellows, a new member and our new Director of Marketing, is taking the lead on making this event a big success! Raejean has our full support and backing. So let's make sure we do everything we can to support her and this excellent event.

I haven't felt this much effort and push since the Aptera days. Every time I see that car (thanks Dave for posting a photo of one on our Facebook page) I am reminded how cool, futuristic, and forward thinking it was. When I hear about Tesla building big rigs I can't help but wonder what Steve Fambro would have come up with if he designed a truck. So let's not let this new passion and new help go to the wayside. Let's grab this energy, listen to the tips of the next generation that wants to grow us again, and bring back the drive to the group. I hope to see you at the next meeting!

-Joseph



Joseph's first Dream EV, the Aptera

Federal Research Aims to Knock Down Two of the Electric Cars' Biggest Hurdles

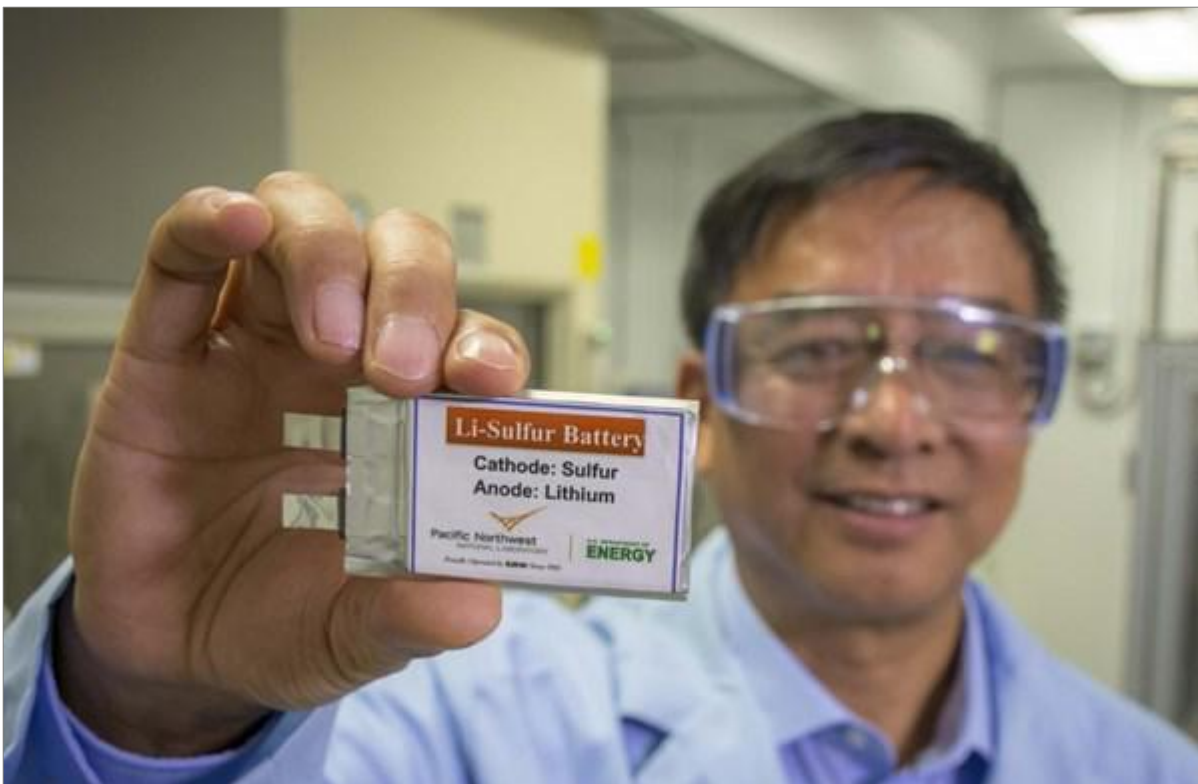
Department of Energy-funded programs are looking to improve on both range and charging time for electric vehicles.

www.govtech.com, news staff, August 9, 2016

The U.S. Department of Energy thinks it can solve two of the largest obstacles standing in the way of the electric car.

Many experts have asserted that the limited range of modern electric vehicles and the amount of time it takes to charge the batteries are the primary reasons why they still make up a miniscule portion of the automobile market — less than 1 percent, according to HybridCars.com. But with a pair of research projects, the DOE is betting that it can more than double the energy density of lithium-metal batteries and dramatically increase the speed of charging.

The [energy density project](#) — which Pacific Northwest National Laboratory will lead in conjunction with eight other research institutions — is called Battery500. That's because the project is aiming to pack 500 watt-hours of energy per kilogram into lithium batteries, compared with today's average 170-200 watt-hours per kilogram. That means cars would essentially be able to travel 2.5 to 2.9 times farther without increasing the weight of their batteries.



Pacific Northwest National Laboratory example of a Lithium Sulfur cell

The news comes in the context of a few companies standing poised to release fully electric cars in the next two years with the kind of range experts think the mass market can get behind. A 2013 survey from the California Center for Sustainable Energy found that 57 percent of electric car drivers wanted a range of at least 150 miles on a single charge; Tesla's upcoming Model 3 promises 215 miles, and the Chevrolet Bolt will offer 200.



2017 Chevy Bolt EV

Doubling that range would mean either car could drive about as far as the gas-powered Toyota Camry, one of the best-selling cars in the U.S.

The Battery500 project will receive \$10 million from the DOE every year for five years to conduct its research.

The fast-charging program, also funded through the DOE, is in an earlier stage. The White House announced July 21 that the department will seek to conduct a study by the end of the year on whether 350-kilowatt fast chargers are feasible. Such a charger, according to the announcement, would be able to charge a battery with 200 miles of range in 10 minutes — not much longer than a stop at a gas station.

That's a big deal for the usefulness of electric vehicles too. According to a February study from the University of Michigan Transportation Research Institute, battery-electric vehicles can keep up with gasoline-powered and hydrogen fuel cell vehicles for short trips but not long ones. Any trip of 250 miles or more in a battery-electric car might involve something like an hour of charging with a direct current level-two fast charger, while a gas-powered or fuel cell car wouldn't have to stop at all during that time frame.

During a 1,000-mile trip — about the distance from Chicago to New Orleans, or New York to Orlando, Fla. — a battery-electric car might need five-and-a-half hours of charging.

"The implementation of DC fast charging has the potential to impact many technology areas and tackle key technological barriers associated with high-rate charging [50 kW and above], and fast charging increases the utility of [electric vehicles], aides in their adoption."

National Drive Electric Week kicks off one month from today

Stephen Edelstein, Green Car Reports, Aug 10, 2016

More than 100 cities across the U.S. will take part in the sixth annual National Drive Electric Week during the week of September 10 to 18, 2016.

What started in 2011 as National Plug-In Day has expanded to become scores of local gatherings to promote plug-in electric cars. Since then, it has actually outgrown its "National," designation, with past events also held in several European countries, Canada, Hong Kong, and New Zealand.

The massive undertaking is a collaboration between advocacy group Plug In America, the Sierra Club, the Electric Auto Association, and various smaller local groups. Individual events typically include electric-car rallies, test drives, and information sessions meant to familiarize the public with plug-in vehicles.

National Drive Electric Week's backers believe there is no better way to switch to electric cars than to experience them firsthand. Last year, more than 130,000 people did just that at 196 events, which included some 9,000 test rides.



San Diego National Plug-in Event, 2013 (EVAOSD Cars at center foreground)

At the time of publication, 141 2016 events were confirmed, with 45 more finalizing specifics. Many of those events include test drives and vehicle displays where owners can discuss their experiences.

One such display will be on the National Mall in Washington, D.C. to help close out National Drive Electric Week on September 18. The Columbia, South Carolina, event on September 10 is billed as "part car show, part science fair, part tailgate party." It will include current electric-car models like the Nissan Leaf and Tesla Model S, and even a Proterra electric bus—manufactured locally in Greenville, South Carolina.

National Drive Electric Week isn't limited to modern electric cars, either. In Morristown, New Jersey, a 1917 Detroit Electric Model 68 (previous featured on Green Car Reports) will be on display, while a local dealer will offer test drives of the BMW i3.



BMW i3 Electric Car

National Drive Electric Week does have a tangible impact on electric-car sales, says Plug In America, noting that sales have increased as much as 23 percent in the month after an event. It's also a great opportunity to get up close with electric cars, and to have any lingering questions answered.

A full list of events (searchable by ZIP code) is available on the [National Drive Electric Week website](#). Take a look and see if there's anything going on in your area.

Yes, there is a San Diego Event, Saturday 17 September at Qualcomm Stadium. EVAOSD volunteers and attendance highly encouraged.

A TESLA CO-FOUNDER IS MAKING ELECTRIC GARBAGE TRUCKS WITH JET TECH, AND WHY NOT

Wired.com, Jack Stewart, 11 July 2016

A Tesla co-founder is selling a turbine-electric drivetrain for garbage trucks. MACK TRUCKS TURBINE ENGINES ARE ideal technology for jets. They cram piles of power into a small, lightweight package, and have revolutionized air travel since their invention in the 1930s. Ian Wright sees them revolutionizing something else: garbage trucks.

Wright is a founder of Tesla Motors who left early on to launch Wrightspeed. He wanted to build a high-performance electric sports cars and even created a concept called the X1 that could hit 60 mph in under three seconds. But Wright realized he could make a much bigger difference tackling trucks most often associated with early morning wakeups, diesel fumes, and the stench of rotting garbage.

Sure, garbage trucks are boring. But they're devilish environmental actors, belching diesel exhaust all day as they creep through the city. So Wright developed an electric drivetrain that bolts right in. When the battery runs low, a turbine spins up, burning fuel to generate electricity to keep the truck moving. Coupled to motors at the wheels, it makes the system more similar to a train, which have used hybrid engines for decades, or a hugely overpowered Chevrolet Volt.

Wright says the setup trumps the inefficient straight-six diesel engine and heavy gearbox now used in trucks. "If you were to start with a clean sheet, you'd make it more like an locomotive."



These 66,000-pound trucks won't win any drag races (no ludicrous mode), but the innovative drivetrain could reduce fuel consumption by 70 percent. The electric motors provide 400 horsepower and enough torque to happily trundle up a 40 percent grade. The motors double as generators, capturing energy as the truck slows. It's a seriously beefed up version of what your Prius offers: They provide 1,000 horsepower of stopping power—the kind of might a truck driver with a heavy load on a stop-start route tends to demand.

An overnight charge provides 20 miles of range before the turbine kicks in. At just 250 pounds, about one tenth the weight of a conventional engine of similar power, it's a featherweight. If you're worrying about noise, relax: The trucks run on electricity most of the time, and even with the turbine running they are said to be far quieter than diesel trucks.

That sounds great, but turbines have a spotty history in vehicles. Chrysler plopped them into cars in the 1960s and '70s but gave up on the scheme. A Lotus racecar of similar vintage was fast but unreliable, and generally considered crazy. Other automakers have considered small turbines as range extenders, but found they don't scale down well.

But they could be just right for trucks. Turbine engines are simpler than reciprocating engines. They can run on almost any flammable liquid (Chrysler claimed its car could run on everything from from peanut oil to perfume), but Wrightspeed plans on using easy diesel or natural gas. The high temperature, continuous combustion means pretty much everything is burned, leaving little pollution. "The exhaust is incredibly clean," says Wright. "You can meet California emissions without any after-treatment."



Ian Wright working on his turbine electric test bed

Wrightspeed's turbine drivetrain, batteries, and motors fit in the space of a conventional diesel engine, gearbox, differentials, and two rear axles. The company offers kits to retrofit existing trucks and outfit new ones.

FedEx has ordered 25 and already outfitted two delivery vehicles. The first retrofitted Mack LR garbage truck is about to ship. Wrightspeed won't reveal pricing, but one estimate puts it around \$200,000. The turbine should run for about 10,000 hours between service, cutting maintenance costs along with fuel bills.

There are around 150,000 refuse trucks in the US. Giving them turbines may finally usher in the era of jet-powered vehicles we've been waiting for since the 1960s—even if they aren't quite the vehicles anyone imagined.



FOR SALE: 1998 VW Golf EV Conversion
Range: 50-60 miles, driver dependent
Azure Dynamics Motor/Controller
97 X CALB 60 AH Cells, 19 Kwhr Batt Pack
5-Speed Manual Transmission
Power Brakes, Power Steering
Displayed at SD Intl Auto Show
Contact Dave Crow, (619) 846-5358 (cell)
deekcrow@yahoo.com
\$3,900 or OBO



Electric Auto Association (EAA) Membership Application Form

Fill out this form, attach a check, money order or use PayPal, in US funds only, payable to 'Electric Auto Association'. CE = Current EVents newsletter

e-CE \$35 USA & other Countries \$25 Student \$25 Senior (>65-USA/Canada only) birth year

paper CE \$45 USA \$48 Canada \$52 World \$29 Student \$29 Senior (>65-USA/Canada only)

\$120 (supporting level-1) \$240 (supporting level-2) \$500 or more (high voltage)_____ do not list my name

I support the _____EAA Chapter (additional chapters, \$10 each) _____

(\$10 each) Additional Chapters or Special interest group (other than the one that comes with the membership)

You can fold this form as indicated and mail it with your payment enclosed. Use tape to seal the form, **on the sides** , before you mail it or send an e-version of this form, through PayPal using <http://electricauto.org/eamembership.html>

New Member Renewal

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This Form is to be updated

Please, use the EEA Website (www.electricauto.org) to Join our San Diego Chapter of EEA at:

https://electricauto.site-ym.com/general/register_member_type.asp

And specifically mention San Diego as your chapter.

The EEA website is a great general resource for EV information.

membership dues include a percentage goes to the EAA Chapter you support for public Electric Vehicle promotion Events like rallies, shows and EV rides.

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