

# DEV NEWSLETTER



Denver Electric Vehicle Council **EAA Affiliate** [www.electricauto.org](http://www.electricauto.org)  
811 Iowa Ave [www.facebook.com/ElectricAutoAssociation](http://www.facebook.com/ElectricAutoAssociation)  
Colorado Springs, CO 80909  
719-444-8645 Next Meeting:  
[www.devc.info](http://www.devc.info) **No April Meeting**

---

## SPONSORING MEMBERS

## April 2020

- Bob Andersen**, Facebook Administrator and GEM Car/TEZ Driver, 303-810-6104  
**Boulder Nissan**, 2285 28<sup>th</sup> St, Nigel Zeid, 303-443-8110, [www.bouldernissan.com](http://www.bouldernissan.com)  
**Canopy Airport Parking**, A **Green** Facility, 303-574-9800, [www.canopyairportparking.com](http://www.canopyairportparking.com)  
**Century Chevy**, Alex Roberts, 303-469-3355 Ex201, [AlexRCentury@gmail.com](mailto:AlexRCentury@gmail.com)  
6105 West 120<sup>th</sup> Avenue, Broomfield [www.CenturyChevy.com](http://www.CenturyChevy.com)  
**Colorado Renewable Energy Society**, CRES, [www.cres-energy.org](http://www.cres-energy.org)  
**Kelly Cookson**, "Supports EV's"  
**Kit Davlin**, "Conversion Interest", [www.evalbum.com/5125](http://www.evalbum.com/5125)  
**Denver Metro Clean Cities**, Steve Trowbridge, 303-518-3253, [Steve@DenverMetroCleanCities.org](mailto:Steve@DenverMetroCleanCities.org)  
[www.DenverMetroCleanCities.org](http://www.DenverMetroCleanCities.org)  
**e-Bike of Colorado**, "Just Try It", 544 Front St, Louisville, [www.ebikeofcolorado.com](http://www.ebikeofcolorado.com)  
720-739-0299, [contact@ebikeofcolorado.com](mailto:contact@ebikeofcolorado.com)  
**EV Trail**, EV Charging Stations where you need them, Curtis Claar, [curtis@evtrail.com](mailto:curtis@evtrail.com)  
719-645-4944 [www.evtrail.com](http://www.evtrail.com)  
**Golden Real Estate**, Jim Smith/Owner, 303-525-1851, [jim@goldenrealestate.com](mailto:jim@goldenrealestate.com)  
17695 S Golden Road, Golden [www.GoldenRealEstate.com](http://www.GoldenRealEstate.com)  
**Scott Gordon**, "EV Enthusiast"  
**Jiggawatt Racing**, Scott Stanley, "Racing to bring EVs to the Mainstream" [info@jiggawatt.net](mailto:info@jiggawatt.net)  
[www.facebook.com/JiggawattRacing](http://www.facebook.com/JiggawattRacing)  
**Judd Johnson**, 2935 3<sup>rd</sup> Ave, Boulder, 80304, 303-449-5005, [jaj\\_356b@indra.com](mailto:jaj_356b@indra.com)  
**Peak View Solar**, Charge your EV with sunshine! Leaf Driving Energy Consultant, John Duprey,  
719-338-3535, [jduprey@peakviewsolar.com](mailto:jduprey@peakviewsolar.com)  
**Pedego Southlands**, Electric Bikes, 303-627-5788, [www.pedegosouthlands.com](http://www.pedegosouthlands.com)  
**REEVA**, Mark Hanson, President, Community Service RE & EV's, [www.reevadiy.org](http://www.reevadiy.org)  
**Steve Szabo**, "Clean Energy" Advocate  
**Bill Tyree**, Custom Electric Mobility, [btyreedesigns@msn.com](mailto:btyreedesigns@msn.com)  
**Bill Williams**, "Build, Don't Buy!"  
**Women Who Charge**, LaSheita Sayer, 720-949-2020, [lasheita@zozogroup.com](mailto:lasheita@zozogroup.com)  
[www.womenwhocharge.com](http://www.womenwhocharge.com)

---

## IN THIS ISSUE

### Contents:

Experience Electric Road Show	Will The Newsletter Remain in The Future . . . . P3
Held in Grand Junction . . . . . P2	2020 Colorado EV Related Bills . . . . . P4,5
Western Colorado Tesla Club . . . . . P2	Driverless Technology, How Does It Work . . . . P6,7
DENC EV Meetup to Shut Down . . . . . P2	Latest Pedestrian Alert for Electric Scooters . . . P7
CSEVC April Newsletter,	Innovations in Auto Battery Cell Composition. . P8
Are EVs Real Race Cars by Chris Lennon . . . P2	Are You Wearing the Proper Mask(s) . . . . . P8
Near Term Meetings . . . . . P3	Colorado EV Group Links & DEVC Charter . . . . P9

## **EXPERIENCE ELECTRIC ROAD SHOW HELD IN GRAND JUNCTION**



The Experience Electric Road Show (details in last month's newsletter) was held in Grand Junction on March the 9<sup>th</sup>. The photos and comment are provided by Aaron Hoffman. "Thanks to everyone for coming out to the Experience Electric Road Show this afternoon. It felt like a lot of questions [were] asked and answered!"

## **WESTERN COLORADO TESLA CLUB**

By Aaron Hoffman

Great news for the Tesla arm of our group (Western Colorado EV Club)! With all of the changes in our everyday lives right now, and the growing difficulty to hold in-person meetups, Tesla decided to forego the rest of our group's "probationary" period and invited us to become an official Tesla Owners Group.

I have to complete some paperwork before everything is official, but I started putting together a Tesla Owners Group here. All Tesla owners and/or reservation holders in Colorado are welcome to join at <https://www.facebook.com/groups/WestCOTeslaClub/> and this will not affect the membership or goings-on of the Western Colorado EV Club. Note: This new Tesla Club has been added to the last page of the newsletter.

## **DENC EV ENTHUSIASTS MEETUP GROUP TO SHUT DOWN**

The Drive Electric Northern Colorado EV Enthusiasts Meetup Group will shut down in 2 days since the current organizer has stepped down. I have tried to contact him for comment but with no response.

They have 209 members who have been notified by Meetup and are requesting someone to step up to continue the group, which has been in existence for about 7 years. It looks like there are no takers. I scanned through the membership and about 6% receive the DEVC Newsletter.

I speculate on a few reasons for the shutdown. 1) Meetup has had a couple of ownership changes recently with a price increase in service fees which are now \$24 a month or \$100 per six months, paid by the organizer. 2) Some members may have moved away or lost interest without removing their names from the membership. 3) Some may have joined simply to monitor the group activity. It's sad to see the shutdown.

## **COLORADO SPRINGS EV CLUB APRIL NEWSLETTER**

"Are EVs Real Race Cars" by Pikes Peak Racer, Chris Lennon on Pages 3 & 4  
[https://drive.google.com/file/d/1dv6OtvFQJBUD\\_FvrfSuxkCclyJytZktk/view?usp=sharing](https://drive.google.com/file/d/1dv6OtvFQJBUD_FvrfSuxkCclyJytZktk/view?usp=sharing)

## **NEAR TERM MEETINGS**

Well...needless to say I am at a loss for words (and my oldest daughter would say, "Yeah, right"). It's like driving down the road at 70 MPH and all four tires blow out at the exact same time. The world has changed and we haven't yet come to a complete stop in order to assess the damage. We have now changed to survival mode and the crystal ball just went dark. Time will only tell the length of this intermission from the norm.

It's obvious that our planned April Meeting at the Penrose Heritage Museum has been canceled. National Drive Electric Earth Day, with April events all across the nation, has been canceled. A few are going to attempt to do something online, which includes Fort Collins, but I haven't been able to get any details on their proposed procedure.

Our annual DEVC Summer BBQ has been moved to Saturday August the 22<sup>nd</sup>. The Pikes Peak International Hill Climb has been pushed out two months to Sunday the 30<sup>th</sup> of August. Tech Inspection will be on Monday the 24<sup>th</sup> with Fan Fest on Friday the 28<sup>th</sup>. Of course this all depends on the crystal ball that has gone dark.

## **WILL THE NEWSLETTER REMAIN IN THE FUTURE?**

With all that exists online today including webpages, blogs, YouTube and Facebook; it makes me wonder if a newsletter has much value in this day and age. Forty-five years ago it was an absolute necessity to communicate EV activity. Today it's like using a horse to commute to and from work. Over the past eight years I hope it has helped to keep the DEVC going. It's sort of like a crystal ball running on vacuum tubes rather than on the latest solid-state technological modes of communication.

The newsletter is currently sent out to 780 individuals and a few have made favorable comments over the years. However, I question of the remainder left, how many read, glance through or just plain delete it but don't "unsubscribe". I have had a few "unsubscribe" over the past couple of years but prior to that it was rare. From our website we used to get about five requests per month for our free newsletter. Now that has dropped to near nothing. Times due change and maybe the time of the DEVC newsletter has come to the end of its road.

I would like your input on the newsletter subject. Please respond to the email that this issue was attached; and let me know if you read, glance through or just plain delete the newsletter when it is received. If I don't hear from you, I'll take it that you delete it and are just being polite in not unsubscribing. You can respond with REPLY; and just add to the subject line; "Read", "Glance", "Delete" (if you would like to continue getting the newsletter) or "Unsubscribe" if you would like to be removed from our free newsletter list. I will share the results with you in the next newsletter. Thanks!

## **2020 COLORADO EV RELATED BILLS**

**SB20-167 Electric Motor Vehicle Manufacturer and Dealer** (Introduced 2-13-20)  
This bill is concerning increasing consumer access to electric motor vehicles by allowing manufacturers to sell their own electric motor vehicles directly to consumers.

### **Bill Summary**

Current law states that, with certain exceptions, a motor vehicle manufacturer may not own, operate, or control any motor vehicle dealer or used motor vehicle dealer in Colorado. The bill creates a new exception that allows the ownership, operation, or control of a motor vehicle dealer if the manufacturer makes only electric motor vehicles and has no franchised dealers of the dealer's line-make.

<https://leg.colorado.gov/bills/sb20-167>

On the 2<sup>nd</sup> of March the bill was introduced in the House and assigned to Energy & Environment. This Committee convened on the 9<sup>th</sup> with testimony lasting about 1½ hours. Many of those testifying before the Senate Transportation & Energy Committee also testified at this hearing. You can hear the testimony of this hearing at: <https://leg.colorado.gov/committee/granicus/1474906> then scroll down to Mar 9<sup>th</sup>, click on "Audio", then click on "SB20-167", then click on the play arrow.

The House had a Second Reading on the 11<sup>th</sup> with amendments, and it was then passed on the Third Reading on the 12<sup>th</sup>. The Senate considered the house amendment on the 13<sup>th</sup> and concurred, then repassed. The Governor then signed the bill on the 23<sup>rd</sup>.

**HB20-1155 Higher Efficiency New Construction Residence** (Introduced 1-17-20)  
Concerning requirements that builders of new residences offer buyers options to accommodate higher efficiency devices.

### **Bill Summary**

Current law requires a home builder to offer to a buyer of a new home one of the following:

- A solar panel system or a solar thermal system;
- To prewire or pre-plumb the home for these systems; or
- A chase or conduit to wire or plumb the home for these systems in the future.

**Section 1** of the bill changes this to require that the home builder offer each of these options.

**Section 2** requires a home builder to offer one of the following options to a buyer of a newly constructed residence:

- An electric vehicle charging system;
- Upgrades of wiring to accommodate future installation of an electric vehicle charging system; or
- A 208- to 240-volt alternating current plug-in located in a place accessible to a motor vehicle parking area.

Section 2 also requires the home builder to offer electric heating options. These requirements apply to traditional detached, single-family homes.

<https://leg.colorado.gov/bills/hb20-1155>

This bill, HB20-1155, was introduced in the House, Passed Energy & Environment Committee and Passed the House Second & Third Readings. It was then introduced in the Senate, Passed the Senate Energy & Transportation Committee with Amendments. The Senate passed the Second Reading with amendments on the 10<sup>th</sup> of March and the Third Reading on the 11<sup>th</sup>. On the 13<sup>th</sup> the House considered the Senate amendment and the result was to NOT to concur. This would call for a Conference Committee however it is on the House schedule for June 1<sup>st</sup>.

### **HB20-1325 Low-emission Vehicle Managed Lane Access** (Introduced 2-25-20)

Concerning a requirement that the executive director of the department of transportation adopt rules that allow preferential access to managed lanes for low-emission vehicles.

#### **Bill Summary**

**Section 1** of the bill requires the executive director of the department of transportation to adopt rules, no later than December 31, 2021, to establish a program that allows preferential access to managed lanes for low-emission vehicles (LEVs) regardless of the number of vehicle occupants. The rules may:

- Require a LEV owner to pay an annual fee to enroll the owner's LEV in the program;
- Limit the number of LEVs eligible for the program;
- Limit the number of years that a LEV is eligible for a program;
- Treat different classes of LEVs differently;
- Allow preferential access to all or only a subset of managed lanes; and
- Allow either free or reduced toll access to any given toll lane or high occupancy toll lane.

Section 1 also defines the terms "low-emission vehicle" and "managed lane" as well as other terms used in the definition of low-emission vehicle.

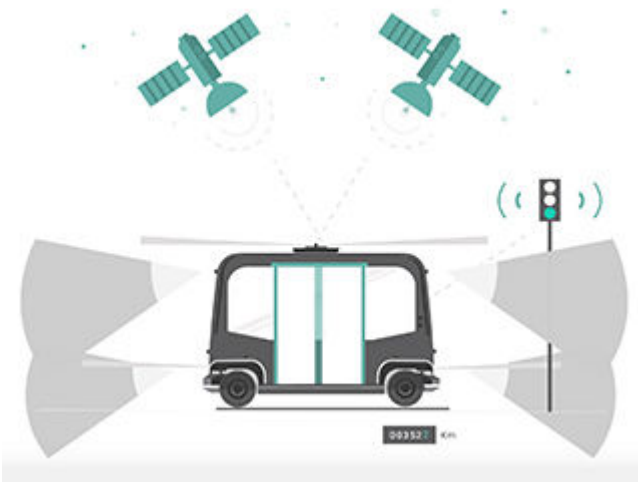
**Section 2** repeals the statutory authority for an existing program, which is expiring on May 31, 2020, due to a change in federal law, under which a limited number of low-emission vehicles are allowed free access to managed lanes regardless of the number of vehicle occupants. <https://leg.colorado.gov/bills/hb20-1325>

This bill was introduced in the House on February 25<sup>th</sup> and assigned to the Energy & Environment Committee. Nothing has been scheduled at this time.

Note: The legislature is limited to 120 days in session and a court has ruled that those days don't have to be in succession. Therefore the legislature is adjourned until sometime in the future when it is safe to reconvene.

## **DRIVERLESS TECHNOLOGY, HOW DOES IT WORK?**

From EasyMile April Newsletter



An autonomous vehicle requires a high level of information to reach its destination safely. It is therefore equipped with a full range of sensors. It collects and crunches recorded data to create a 360-degree picture of its environment – infrastructures, other vehicles and pedestrians, or anything else in its path. Real time processing of the data allows the driverless vehicle system to decide how to behave to progress safely along the road (stop, go, or slow down).

EasyMile's unique technology allows autonomous vehicles to navigate safely without dedicated infrastructure in mixed traffic (cars, bikes and pedestrians).

### **Geolocalisation**

EasyMile's powerful localisation algorithm calculates a vehicle's position with centimeter-level accuracy in real-time by fusing data obtained via the sensor set:

- LIDARs (Laser Detection And Ranging)
- Cameras
- Differential GPS
- Inertial Measurement Unit (IMU)
- Odometry

The autonomous vehicle is in constant communication with both its environment (V2X) and the supervision center thanks to a 4G data connection network.



### **Obstacle Detection**

The full range of high performance sensors ensures the vehicle has the widest angle of vision possible and low ground clearance. It is therefore able to detect and avoid potential obstacles on the road. Depending on the situation it will either: adapt its speed and trajectory, safely control brake or stop.

## Safety

Our AVs are equipped with multiple layers of redundant systems in order to maximize the safety of passengers and road users.

- Redundant coverage by full range of sensors, and constant monitoring of the perfect functioning of each sensor at all time
- Redundant obstacle detection function
- Fail-safe and redundant braking systems



## Cybersecurity

Cybersecurity is embedded in every aspect of our software, development processes and validation protocols. Our product and software teams set up various security gates to ensure the integrity of the entire system. Furthermore, our system is regularly audited and challenged with penetration tests.

## Monitoring and blackbox

The vehicle condition is reported to and stored in the vehicle supervision software servers. The data is the results from the information processed and analysed by the vehicle such as:

- Quality metrics (sensors, location and route monitoring)
- Position
- Assignments sent to the vehicle by the supervision system
- Usage statistics

Our vehicles are also equipped with a Black Box module. The module records the raw data from the various sensors exchanged between the vehicles' hardware and software parts. In case of a critical event, all data is recorded prior and after the event to help understand and diagnose the event. Learn more at: <https://easymile.com/driverless-technology-easymile-how-does-it-work/>

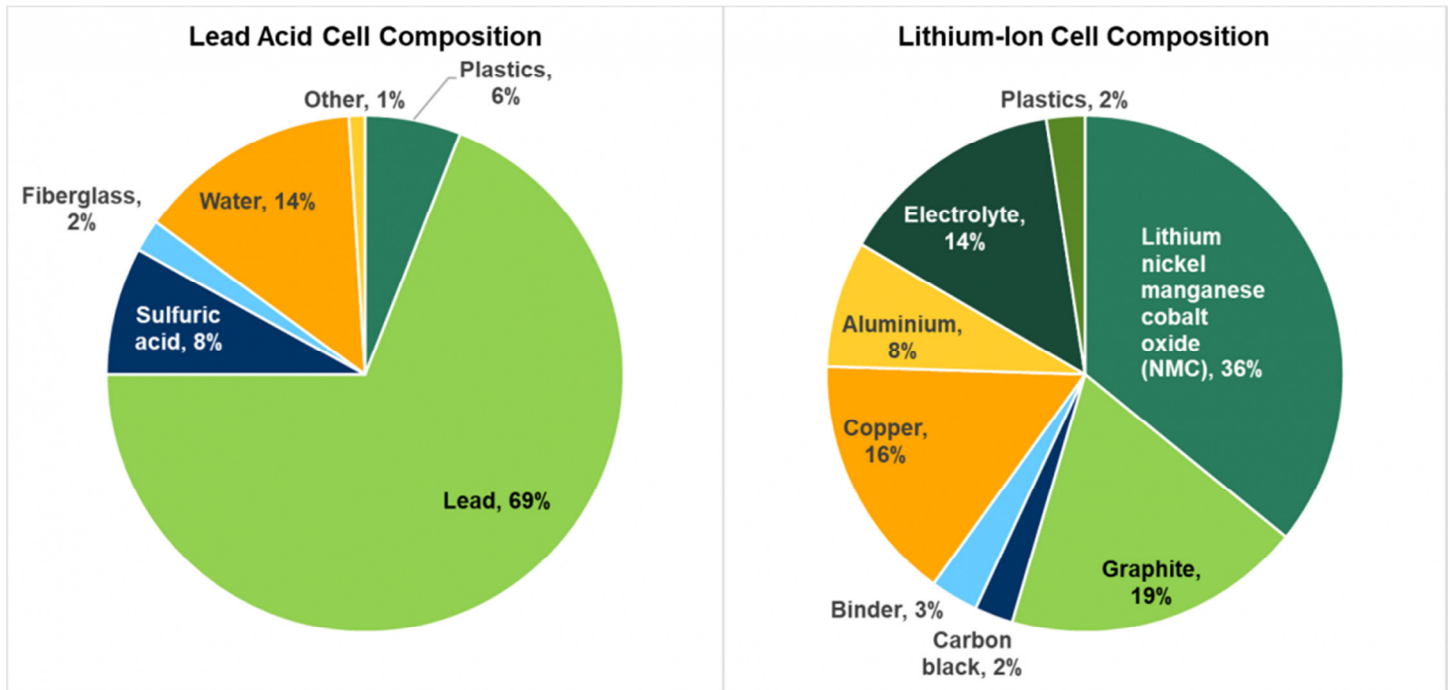
## **LATEST PEDESTRIAN ALERT FOR SILENT ELECTRIC SCOOTERS**

This 11 second video tells it all! [https://youtu.be/ynNQ\\_wfVabo](https://youtu.be/ynNQ_wfVabo)

## **INNOVATIONS IN AUTOMOTIVE BATTERY CELL COMPOSITION**

From DOE EE&RE Vehicle Technologies Office

In 2019, most plug-in electric vehicles were powered by lithium-ion batteries. The cells in a lithium-ion battery are more complex than the lead-acid cells of a conventional vehicle's battery, and they are composed of different materials. The exact chemistry of automotive lithium-ion batteries can vary by manufacturer. The Department of Energy has recently launched the ReCell Advanced Battery Recycling Center to further research on recycling technologies for current lithium-ion batteries and future battery chemistries.



**Source:** Presentation by Argonne National Laboratory researcher Linda Gaines at the 2020 Transportation Research Board 99th Annual Meeting, January 12–16, 2020.

Learn more at: <https://www.energy.gov/eere/vehicles/articles/fotw-1128-april-6-2020-innovations-automotive-battery-cell-composition>

## **ARE YOU WEARING THE PROPER MASK(S)?**





## **COLORADO EV GROUP LINKS**

- Denver Electric Vehicle Council  
Web: <http://devc.info/> Facebook: <http://facebook.com/groups/devc.info>
- Denver Tesla Club  
Web: <https://denverteslaclub.org/>  
Facebook: <https://www.facebook.com/groups/902089643268988/>
- Model 3 Club of Denver Women Who Charge  
Facebook: <https://www.facebook.com/groups/m3den/> Facebook: <https://www.facebook.com/WomenCharge/>
- Tesla Motors Colorado  
Facebook: <https://www.facebook.com/groups/634758276674229/>
- Wheat Ridge STEM Engineering  
Web: <https://sites.google.com/a/jeffcoschools.us/wrhs-stem/>  
Facebook: <https://www.facebook.com/Wheat-Ridge-Stem-Engineering-1511925885713601/>  
YouTube: <https://www.youtube.com/channel/UC1v98CLykHXTMEXJ5F2vA>
- Colorado State University Vehicle Innovation Team  
Web: <http://ecocar3.org/colostate/about-us/>  
Facebook: <https://www.facebook.com/CSUEcoCAR3/>
- Drive Electric Northern Colorado Shared Paths Boulder  
Web: <http://driveelectricnoco.org/> Web: <http://www.sharedpathsboulder.org/>  
Meetup: <https://www.meetup.com/Drive-Electric-Northern-Colorado-EV-Enthusiasts/>
- Northern Colorado Clean Cities EV Owners Network  
Web: <http://northerncocleancities.org/> Web: [www.facebook.com/EVOwnersofColorado?ref=hl](http://www.facebook.com/EVOwnersofColorado?ref=hl)
- Colorado Electric Vehicle Coalition  
Web: <https://www.colorado.gov/pacific/refuelcolorado/colorado-electric-vehicle-coalition>
- Denver Electric Ride  
Meetup: <https://www.meetup.com/Denver-Electric-Bike-Rides-Meetup/>
- Electric Bicycle Club of Colorado  
Meetup: <https://www.meetup.com/Electric-bicycle-club-of-Colorado/>
- Southlands Adventure Bike & e-Bike Fitness Rides  
Meetup: <https://www.meetup.com/Southlands-Adventure-Fitness-Rides/>
- Colorado Springs EV Club Colorado Springs e-Bike Meetup  
Web: <http://www.csevc.com/> Facebook: <https://www.facebook.com/CSeBikeMeetup/>  
Facebook: <https://www.facebook.com/groups/123192271678145/>
- EV Four Corners (Durango) Western Colorado Tesla Club  
Web: <https://ev4corners.org/> Facebook: <https://www.facebook.com/groups/WestCOTeslaClub/>
- Western Colorado EV Club  
Facebook: <https://www.facebook.com/groups/1691902797561519/>
- Colorado Electric Car EV Network  
Facebook: <https://www.facebook.com/groups/1879818525642801/>
- Colorado i3 (BMW)  
Facebook: <https://www.facebook.com/groups/1444710492515574>
- Nissan LEAF Owners Group Colorado  
Facebook: <https://www.facebook.com/groups/167205677149247/>

### **DENVER ELECTRIC VEHICLE COUNCIL CHARTER**

The Denver Electric Vehicle Council, Inc. is an incorporated non-profit 501(c)(3) educational organization. The goal of the DEVC is to offer 1) a forum for information exchange about electric vehicle concepts, designs and developments; 2) instructive information and opinion to interested individuals and the public; plus 3) assistance in promotion of the development and use of EVs throughout Colorado.

Services are: 1) to arrange talks and tours by universities, companies, and individuals who are involved with EVs or components and 2) to provide information about EVs through a monthly newsletter, current EV literature, lectures and panel or group discussions at DEVC and other meetings; plus through the news media, shows and rallies to the public.

Anyone may join. Sponsoring member dues are \$50 per year and besides receiving the DEVC Newsletter, they are listed on the front page of the newsletter and in our website Sponsor list with their business contact information. Regular member dues are \$20 per year and receive the DEVC Newsletter. The DEVC sends out approximately **780** newsletters via email per month which includes our courtesy list containing other interested persons, companies and community leaders.

### **BOARD MEMBERS:**

**President;** Gary Skinner, [gsknnr@gmail.com](mailto:gsknnr@gmail.com) **Vice President;** Kathy Pitts, [kpitts@verdek.com](mailto:kpitts@verdek.com) **Secretary/Treasurer/Newsletter Editor;** J. David McNeil, [jdmc44@comcast.net](mailto:jdmc44@comcast.net) **Web Master;** Drew Gaylo, [drewgaylo@gmail.com](mailto:drewgaylo@gmail.com) **EV Conversion Committee;** Brendan Miller, [brendandeanmiller@gmail.com](mailto:brendandeanmiller@gmail.com) **Education Outreach Committee;** Dave Pence, [arhsdave@aol.com](mailto:arhsdave@aol.com) **Facebook Committee;** Bob Andersen, [bobandersen251@hotmail.com](mailto:bobandersen251@hotmail.com) **At Large Members;** Jill Bishop, [jbanounou@gmail.com](mailto:jbanounou@gmail.com) & Kit Davlin, [kdavlin@yahoo.com](mailto:kdavlin@yahoo.com)