

**Submitted to the Maryland House and Senate Committees regarding  
A Commission To Advance Lithium-Ion Battery Safety  
HB0468 and SB0532 (FAV)**

February 24, 2024

Senator Jason Gallion  
Chairman Marc Korman  
Delegate Sara Love  
Delegate Regina Boyce

Senator and Delegates,

My name is Robert Swaim and I have been a Maryland resident for 36 years, moving to the area to become an NTSB aviation accident investigator and I've worked closely with firefighters around the world since the late 1980s. In January 2013, I was the launch investigator responsible for the Boeing 787 lithium ion battery fire investigations. I've been working lithium-ion battery incidents since, including Tesla and other electric vehicle fires since early 2017.

I retired from the NTSB after 32 years in 2019, started the [www.HowItBroke.com](http://www.HowItBroke.com) website, and developed the first firefighter course for electric vehicles to be based in the international 17840 format. The Maryland Fire Rescue Institute – or MFRI – now provides training for free to Maryland firefighters and we all need to support that. I am also a leader in the SAE J2990 Committee for First Responder Electric Vehicle Safety, consult on the topic, teach a Lithium battery and electric safety course for the Society of Automotive Engineers (SAE), worked on the issues of flooded electric vehicle issues after Hurricane Ian, and am a member of the National Fire Protection Association, or NFPA.

Almost a year ago I was asked to help the New York legislature with some ideas about improving battery safety in their State. These efforts are underway and largely revolve around preventing e-bike fires, charger kill-switch requirements, and a new SAE sticker (J3108) for license plates to let firefighters know if they were working with an alternative fuel vehicle.

Last Fall I approached Chairman Korman, Delegate Love, and Delegate Boyce to see if they would be interested in similar ideas for our own State. This led to some excellent discussions as they brought in others and realized how pervasive lithium-ion batteries have become in our day to day lives.

Say “battery” and people think about cars, but those are actually a very small part of our reliance on battery technology. In answer to a question posed by the delegates, we estimate there were roughly 56 Maryland EV fires in 2022, more than a hundred in 2023,

and of course the number will grow with the increasing fleet of EVs. But those are not the biggest or only issues for this Commission to address.

When I was teaching firefighters in Queen Anne County last year we had great discussions about the number of vape fires they've dealt with and people horribly burned. We talked about house fires from cheap e-bikes.

When you drive along your own street and see houses with solar panels, realize that some of those will have a large Lithium-Ion power wall in the garage. Firefighters may only become aware of these once already involved in garage fires.

Most of the public is not aware that the electric utilities now have nice looking brick buildings which house lithium-ion banks called Battery Electric Storage Systems (BESS) for when the power goes out, such as one in Ann Arundel County. A world-wide database containing BESS failures has recorded at least 75 explosions.

We should fully support the proposed "Commission to Advance Lithium-ion Battery Safety in Maryland." While technically there is nothing new or cutting edge about what the Commission will do, the key is that it will be a tailored approach for what unique conditions are applicable by locations across Maryland.

For example, there are 60.9 gasoline car fires per EV, but they are dealt with differently. The best course of action for firefighters in Queen Anne or on I-70 in Allegheny County, where water needs to be trucked to a fire, is to let an electric car fire simply burn itself out. This approach could be disaster if the same car were to catch fire in a Baltimore apartment garage. Having taught around Maryland I am aware that most fire department vehicles do not carry simple chains or car fire blankets to extricate burning EVs from garages or prevent them from causing structural damage.

The Commission will need to look into how best to establish towing agreements because tow companies do not want to pick up cars which can re-ignite while on the bed of an expensive tow truck. At least one forward thinking County already has a standing agreement with a waste company to supply steel 20 foot roll-on containers for moving fire damaged EVs. An e-bike fire in Southern Maryland may burn down a house, but in the heart of West Baltimore it could burn down an entire block.

Firefighter training will be a major aspect, as one day they need to already know what to do when there is a burning lithium-ion power wall in a garage. On the next call they may deal with a burning e-bike. There is a right way and a wrong way to simply approach and move a burning e-bike. As a side note, there is current Federal funding available which should be pursued immediately for our firefighter training.

The smoke from a burning lithium battery fire carries potentially cancerous heavy metals which bond to the fibers of firefighter clothing. Cleaning with normal soaps does not remove these deposits, so the Commission may look into whether fire stations have appropriate chemicals and procedures.

But as Delegates Love and Boyce pointed out, before all that and more important than the emergency response aspects are the needs for managing prevention through legislation and other programmatic aspects. How do we end the current problem of lithium-ion fires being created in our trash recycling locations? Since large scale back-up battery banks can emit a large plume of toxic smoke, how close can a utility place one upwind of a school for example? Should we allow a battery recycling facility to be built and where? Nobody currently knows how many large battery installations are in the heart of Baltimore skyscrapers. Can we get our Motor Vehicle Administration to begin using the SAE license plate stickers, informing firefighters they are approaching a burning alternate fuel vehicle? Should Maryland restrict sales of non-UL approved e-bikes, which is what New York now does? Are building codes ready for an apartment garage full of EVs?

I am submitting an outline which lists topics to assist Legislators understand and envision suggestions regarding what this Commission could or should look into. Thank you for your time and I look forward to any questions, by email or through my website at [www.HowItBroke.com](http://www.HowItBroke.com).

Respectfully,

Robert Swaim