

TRANSCRIPT

LEGISLATIVE COUNCIL ECONOMY AND INFRASTRUCTURE COMMITTEE

Inquiry into Electricity Supply for Electric Vehicles

Melbourne – Friday 27 February 2026

MEMBERS

Georgie Purcell – Chair

Richard Welch – Deputy Chair

John Berger

Gaelle Broad

Katherine Copsey

Moira Deeming

Tom McIntosh

Evan Mulholland

Sonja Terpstra

WITNESSES (*via videoconference*)

Michael Shay, National Manager, Fire Suppression Group;

Mike Greiner, President, and

Dan Miller, Chief of Training, Hazard Control Technologies; and

John Blair, Managing Director, Australasia, Firestryker.

The CHAIR: I declare open the Legislative Council Economy and Infrastructure Committee's public hearing for the Inquiry into Electricity Supply for Electric Vehicles. Please ensure that mobile phones have been switched to silent and that background noise is minimised.

I would like to begin this hearing by respectfully acknowledging the Aboriginal peoples, the traditional custodians of the various lands we are gathered on today, and pay my respects to their ancestors, elders and families. I particularly welcome any elders or community members who are here today to impart their knowledge of this issue to the committee or who are watching the live broadcast of these proceedings. I also welcome any other members of the public watching via the live broadcast.

To kick off we will just have committee members introduce themselves to you. I am Georgie Purcell, Member for Northern Victoria.

Katherine COPSEY: Katherine Copsey, Member for Southern Metropolitan.

Tom McINTOSH: Tom McIntosh, Member for Eastern Victoria.

The CHAIR: Thank you so much for taking the time to appear before us today. All evidence taken is protected by parliamentary privilege as provided by the *Constitution Act* and further subject to the provisions of the Legislative Council standing orders. Therefore the information you provide during this hearing is protected by law. You are protected against any action for what you say during this hearing, but if you go elsewhere and repeat the same things, those comments may not be protected by this privilege. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament.

All evidence is being recorded. You will be provided with a proof version of the transcript following the hearing, and then transcripts will ultimately be made public and posted on the committee's website.

For the Hansard record, could you all please state your full names and any organisations you are appearing on behalf of?

Michael SHAY: Michael Shay, Fire Suppression Group. I am not here on behalf of the CFA, but I am the CFA captain in Central Victoria up at Marong.

John BLAIR: John Blair on behalf of Firestryker. We are a company that supports encapsulating technology, which is a new form of technology for lithium ion and EV batteries.

Mike GREINER: I am Michael Greiner. I am the President of Hazard Control Technologies. Hazard Control Technologies is one of the developers of an encapsulator technology that is now covered under NFPA 18A, which is a relatively new standard released in 2022. I sit on that technical committee as well.

Dan MILLER: My name is Dan Miller. I am also with Hazard Control Technologies.

The CHAIR: Thank you so much. We now welcome your opening comments. We ask that they are kept to around 10 to 15 minutes. I am not sure how you plan on coordinating this, if you all want to go individually or if it is going to be a joint presentation, but I will leave it up to you and then afterwards we will ask questions.

John BLAIR: Perhaps what I will do is go through just a brief summary of what we intend to talk about.

Visual presentation.

John BLAIR: Just a brief summary of what we want to talk about is it is electric vehicle charging mitigating fire risk. Of a couple of the things we would like to talk about, one is the technology that we are using – the fundamental difference between this technology and any other technology is molecular versus mechanical – then we will go through the different types of compliant encapsulator agents, then a very short video on the technology, because obviously we respect your time, and I understand that time is precious, then a couple of the direct versus indirect consequences, and challenges and equipment sizing, and then just recently, which is days ago on 18 February, there was an accreditation test done on the largest lithium ion battery fire to date of 700 kilowatt hours, so just a very brief summary on that, then just a couple of notes on comparing different types of agents, testing and accreditations, and then international advocates of the agents.

The CHAIR: Great.

John BLAIR: Please, Mike Greiner, if you would like to jump in at any time, because you are the absolute guru on this – the fundamental difference between the product that we are using, an encapsulation agent, versus many of the other agents that are around us is our product works on a molecular basis versus a mechanical basis. A molecular basis means it works on every single droplet; it basically betters the molecule. The other agents essentially work effectively on a mechanical basis, whether it is water, powder or foam; it is creating a blanket on the surface, whether it is a foam blanket or a fire blanket, and all it is doing is it is starving the oxygen, but the heat and the source is still there, so as soon as you break the blanket it opens itself up to reignition. Essentially what you are doing is you are masking the problem.

If you can go on to the next slide, the next slide is NFPA 18A Annex 4.3. I do not know if you want to have a quick word on that, Mike.

Mike GREINER: Yes, I do. Currently, at least in the United States, NFPA 18A is one of the only standards that addresses encapsulator agents, and this appendix discusses what is now 18 years of very extensive third-party testing that demonstrates that these encapsulator agents can extinguish lithium ion battery fires and stop thermal runaway propagation. In addition, an encapsulator agent has the ability to encapsulate the very explosive hydrogen offgas, so it makes it a very tenable and safer environment for emergency responders who are coming in to extinguish these fires. Also, these technical reports, scientific reports, show the encapsulation of HF toxic gas, so that is a toxic offgas that is very hazardous to humans; in fact in a small battery, just say 2 kilowatt hours, it puts off enough HF gas that the environment is toxic to humans; the IDLH is less than 5 minutes. Using an encapsulator agent and encapsulating increases that environmental exposure time to over an hour.

So this is again one of the only standards. There is NFPA 855, but that is really a qualification test on lithium ion battery energy storage systems. This is the only one that currently addresses the lithium ion battery as a standalone hazard – until just January, when the international standards organisation updated their standard 3941. This was just released on 2 February. They have now designated class L, so they see this hazard as being so unique and different that they have now set aside and created its own separate class of fire for lithium ion battery, which we see as an amazingly good thing, because these batteries, by default, the world seems to treat them like class A fires – meaning ‘Hey, let’s just use water’. Unfortunately, the direction is ‘Let’s use copious amounts of water.’ And this designation by the international standards organisation is really saying, ‘Copious amounts of water does not work. It’s not effective. We need to designate this hazard as class L and then move forward to identify fire-suppression agents and techniques that can extinguish this successfully.’ Thank you, John.

John BLAIR: Sure. If you look at slide 5, which Mike ran through, that was the new class L. We just discussed that one. If we go on to slide 6, if you hover your mouse over there, there is a short video. We can send you a copy of the video. It is just a very short video. It is a 1-minute video describing what an encapsulator agent does. It is a diagrammatic video of what the encapsulator agent does.

The CHAIR: I think we are having some tech issues in the room. So what we might do is get committee staff to send it out to committee members, and we can watch it after the hearing.

John BLAIR: Sure.

The CHAIR: Great. Thanks for that.

Mike GREINER: It is just an animation showing what an encapsulator agent is. It is an agent that is based on spherical micelle technology. It describes how the spherical micelles are made, what micelles are, how they orient inside and on the surface of every droplet that enters onto a fire, and the three functions they have. One encapsulates fuel to separate the fuel from the oxygen on a chemical molecular basis. The second thing these agents do is change the heat-reduction mechanism of a droplet from steam conversion to thermal conveyance, accounting for 10 to 20 times greater heat reduction. Then the third one is to interrupt free radical coalescence, which greatly reduces the amount of toxic soot and smoke – carcinogenic toxic soot and smoke – that is formed in every fire. So there are three major benefits, two of which are huge health and safety benefits for the emergency responders, as well as any trapped victims in a fire incident.

John BLAIR: Okay, great. Thank you, Mike. If we go on to the next slide, this is essentially just the direct consequences of fires – injuries, fatalities and damage; community economic impact; business interruption; and loss of revenue. Obviously to all the people that we are trying to help, this is very fundamental to their livelihood and to their business. Encapsulator technology greatly assists with this.

Going on to the next slide, the indirect consequences – this is probably more in line with your side – are environmental pollution and fines; class actions and lawsuits, which can get drawn in inconsequentially; insurance coverage and loss; and damage to reputation. We are purposely not going into each one of these items in major depth because from what I understand this is an initial hearing. There are reams of information behind each one of these topics. I understand that you will be looking for sort of a summary version, so that is the reason why we are doing it in this format. If you need more detail on each one, we are happy to go through it.

Going on to the next slide, current protection challenges. This is up-to-date protection structural risks. That is fire damage caused by an EV that has gone up in a parking garage. Modern combustibles, lightweight construction, compromised atmospheres and volatile environments – and obviously EV lithium ion batteries are highlighted there because that is one of the big ones. Then also just a little further down there on the right-hand side under ‘compromised atmospheres’ is the polycyclic aromatic hydrocarbons, PAHs. There are over 100 toxic, carcinogenic and mutagenic chemicals produced during incomplete burning of organic materials. An encapsulator agent greatly, greatly reduces and nullifies these.

Going on to the next slide, sizing for the correct fire equipment. Sometimes products actually get a bad rap, because you will see a picture of somebody holding a fire extinguisher and standing in front of an EV motorcar – it does not matter what brand it is. That is 100 per cent false advertising, because a fire extinguisher cannot put out an EV car, and we are all cognisant of that. There are different types of fires, and size does count: small, medium, large and oversized. For an EV car and EV stations you would generally be looking at the oversized version. Each one of those has a myriad of different discussions through it.

Going on to the next slide, where we are talking test results. Mike, there are three pictures on this slide. Just discuss very briefly this particular test. This particular test was the largest EV fire battery test to date, and it was conducted literally days ago, on 18 February.

Mike GREINER: If you do not mind, I will grab this. This fire testing was performed at a place called Applus+, who is in Spain, and they are a NRTL, so it is a nationally recognised lab for performing fire tests. This was really driven by Español Mass Transit, EMT for short.

John BLAIR: Slide 13 will show it.

Mike GREINER: Let us stay here for a moment. EMT has many, many electric buses in Spain. They have five hubs that have electric charging stations. They have electric trains coming into these hubs. They have shopping, restaurants, high population, and they understood very clearly that these buses were a huge hazard and a huge risk to public health and safety. So they set forth and looked for design guidelines on ‘How can I protect these electric bus charging stations?’ And quite frankly, because this hazard is relatively new, there are no international design guides. So EMT got together with their corporate risk people. A risk consultant did a hazard analysis, involved their insurance company and came up with what they thought would be an applicable design to suppress a 700-kilowatt-hour EV bus. Then they moved forward and worked with Applus+ to verify and run a full-scale, large-scale test to verify their design.

Now, their design did incorporate an encapsulator agent conforming to the NFPA 18A, section 7.7 encapsulator technology protocol. It did happen that the encapsulator agent they chose was an F-500 Encapsulator Agent. What they were doing was verifying their design via a large scale. In that design it shows sprinkler nozzles, sprinkler spacing, application density, proportioning equipment to proportion an encapsulator agent into the sprinkler at 3 per cent, as well as detection and panels. It was a complete system design in this large-scale test to prove to the EMT that yes, this is a solution that can protect their assets and, more importantly, protect the public from any of these fires. Within really the first minute – well, let me back up; I do not want to get too far down the road, because the test was only run on Wednesday 18 February. We are getting feedback, but until we get a complete certification report from Applus+ that outlines all the details – they have thermal imaging on this, thermal couplers. But what I heard was that within 1 minute of activation of the sprinkler system the battery itself was – this is what I heard – 700 C to under 100 C, in 1 minute. I have seen some video. The video I saw showed 350 to under 100, but you do not know if they started videoing the computer monitor that is monitoring that right away or not. So really, the only statement I want to make at this time is that until all of the full testing reports and the certification and documents are available, I think at this point what we need to recognise is that test was to qualify a design that could successfully extinguish these high voltage batteries, 700 kilowatt-hour batteries, on EV buses and stop thermal runaway propagation and keep the fire from going to any other exposures. It will probably be another 30 days before all the specific engineering details are available and documented by the certifying, accrediting testing agency, so at this point I am not even sure I can say 500 C to 100 C in 3 to 5 minutes. I can say the fire was 100 per-cent extinguished and never propagated to the exposure bus. Go ahead, John.

John BLAIR: Thanks. The next slide just gives you a picture of the bus testing done with Applus+. Applus+ is a massive worldwide organisation. I believe it is around about twice as big as the UL organisation worldwide.

Mike GREINER: They have a 2-kilometre-long tunnel, and you can see this is done in the tunnel built with a roof. You can see the roof above. Over on the left what they have is a mock-up exposure bus that is approximately a metre to a metre and a half – again, until we have exact drawings and details. In that exposure bus they have some passenger seats. Each of those passenger seats has thermal couplings. Once the ceiling temperature reached, I believe it is, 90 degrees C – we know concrete fails at 100 C – they wanted to set something so that they could start the sprinkler system before you would get structural damage of any concrete structure. Again, to me this is hearsay, but I heard that the thermal couplers in the passenger seat on that exposure mock-up bus on the left within 1 minute were reading 9 degrees C. Now, remember, we are in northern Spain, it is winter time, so it is probably maybe 5 or 6 degrees C outside. So once the sprinkler system with the encapsulator agent was activated, very quickly the heat is knocked down, so it does not surprise me that thermocouples are at 9 C within a minute.

John BLAIR: Thank you, Mike. The next slide, slide 13, is just a summary of what Mike has just discussed with you, outlining the various different parties who are party to the test.

Mike GREINER: By the way, there are other parties involved here. There is a risk-consulting company, there is an insurance underwriter and there are insurance companies here, so this was not just a small test of, ‘Does our agent work?’ No, this is a full-scale creating, testing and qualifying the complete design to safely extinguish these buses and keep the public safe.

John BLAIR: Thank you, Mike. The next one, slide 14, would be a video, which I am guessing is not going to play with the technical issues.

The CHAIR: No, it is not going to, but we can get it sent around.

John BLAIR: Sure.

Mike GREINER: Again, for me, this is way early. We will have all the full data within the next 30 days from the accredited testing facility Applus+ and from the customer. The customer here is EMT. They will be providing all this. They have already committed on their five hubs that they are going to implement this design because the test was so successful.

John BLAIR: Thank you, Mike. The next slide, slide 15, is effectively comparing different fire suppression agents using a couple of the parameters on the left: application method, versatility, enclosure requirement and

life safety; clean agents versus water agents versus encapsulator agents. The encapsulator agent comes out tops on all of them. The item that is highlighted there is probably the standout for the encapsulator agent amongst all the others because it not only addresses all of the other issues but it addresses the flammable, explosive and toxic hazards, which is a very, very big concern nowadays. Going on to the next slide, the encapsulator agent when mixed with water at only 3 per cent greatly improves the plain water. Thermal conveyance – it basically acts 10 times faster and uses 60 per cent less water. Water is a very valuable resource these days. It encapsulates toxins, impurities in smoke, soot and run-off, which is directly affecting environmental impact and firefighter safety. And then there are a number of economic impacts as well, where it prevents damage during and after fire suppression.

Mike GREINER: I do not know if I can speak to this. I know sometimes people want to say, 'Plain water, it's free and it's environmentally safe.' With these lithium ion battery fires, the minute you start putting water on, you start having a tremendous amount of toxic run-off. In fact a lithium ion battery changes the pH of the water from 7 up to about 10 to 11. That in itself is very harmful to any fish. We have very specific incidents here in the United States and southern California, where they had 10,000 pounds of lithium ion batteries – a battery truck caught on fire. It took 60,000 gallons of plain water to extinguish it. That is 60,000 gallons or 240,000 litres of water that ran off into the environment and closed the interstate down in both directions for 15 hours, really messing up commerce. Only 60 miles away and across the border in Nevada was a second incident. That fire department was using the F-500 Encapsulator Agent. It had three times bigger fuel loads. It was 30,000 pounds of lithium ion battery. It took them 10 minutes to extinguish with 5000 gallons of water, so one-twelfth the amount. They were able to confine everything and have the roads open for commerce within an hour or two, so a very big difference.

I know it just seems like the world has been treating these hazards like they are class A with copious amounts of water, but in 2024 a roll-on, roll-off ship carrying EV cars caught on fire in the Atlantic Ocean. It was surrounded by copious amounts of water. They could not extinguish the ship fire, and it sank into the Atlantic Ocean. That was in 2024, which led me to believe, 'Oh, copious amounts of water must mean the Pacific Ocean,' until 2025 when a Korean vessel carrying EV cars headed for the United States caught on fire off the shores of Japan. It too could not be extinguished even though it was surrounded by copious amounts of water – the Pacific Ocean – so it too sank into the ocean. So I am glad to see the international standards organisation finally say, 'Hey, world, this is not a class A fire. Hey, world, the number one class A fire medium is water, and copious amounts of water does not work on this hazard.' They have taken the first step, which is to classify it as L, and hopefully the world will fall in line and start to look for what is the best way to extinguish this class L fire to protect the public.

John BLAIR: Thanks, Mike. Going on to the next slide, slide 17 is just some of the testing accreditations in picture format. We can all understand those, from accrediting bodies to large companies. Johnson Controls is the biggest fire company in the world. Those are just some of them, in a diagrammatic form, that are being used. Then on the next slide there are just some worldwide large brands that are using the technology. Then on the last slide is just encapsulator agents' superior protection and versatility: mitigates multiclass and three-dimensional fire, vapour, flammability, explosivity, contamination and toxicity risks. You can use it on a one-time or through a continuous discharge. Environmental impact: fluorine free, biodegradable, non-corrosive, reduces environmental impact and costly disposal fees. Obviously those all affect regulatory bodies in a material format. The last slide is just our details, which is Firestryker. We represent HCT within Australia. Mike Greiner is the president of HCT, knows this backwards and sits on the committee of the NFPA. I think on the back of that we would like to open it up to some questions on your side, please.

The CHAIR: Great. Thank you so much for that. We will go to Ms Copsey.

Katherine COPSEY: Thank you very much. Thank you for that presentation, and we will look forward to viewing the videos when they are sent around by committee staff. Just so I have got clarity, I note in our submission summary here that we have got information that this material can be used against a range of classes of fire. Can you, for the committee's benefit, give some examples of what would be a category B, C or F fire, just to illustrate the differences between the classes?

Mike GREINER: Sure. Okay. Class A is any type of fire that burns down to form an ash. That would be wood, pulp, paper, rubber or rubber tyres. We have multiple fixed mix systems in place that proportions encapsulator agents for Goodyear, Michelin and around the world: Sri Lanka, Mexico, Thailand and France.

They are very effective on class A fires in minimising the amount of water – cooling capabilities without the creation of steam. The interruption of the free radical greatly reduces the toxic soot and smoke.

Class B fires are flammable liquids like oil and gas. They come in two varieties: polar solvents and non-polar solvents. We have many, many systems in place protecting things like transformers that have hydraulic oil in them, under-turbine lube oil, some tank fire examples like flammable liquid tanks. Class C here is considered electrical. For the rest of the world, class E is electrical. We have done testing of the agent with certain spray patterns and have details on the use of it on energised environments. Class D is considered metals. We do an awful lot of work in the recycling industry, including metal and metals recycling, so we can provide case histories on that. Class F around the rest of the world is fat fires like grease fires, and that is class K here in the US. I do not know why the US is different. We use C for electrical and K for oil and grease, and the rest of the world uses E for electrical and F for fat. It is a very versatile agent in its effect. It used to be called the fire triangle; now it is the fire tetrahedron, because it has the four elements, and this encapsulator agent actually interacts with all four elements of that fire tetrahedron simultaneously on every class of fire, so it is really quite an advanced technology.

Katherine COPSEY: Fantastic, thank you. That gives me much more insight. Can you just explain to me practically what the clean-up for the agent is? What happens once it is dispersed? I understand it is minimising run-off, which is an excellent thing, but what happens? Does it solidify? What is the clean-up for this agent?

Mike GREINER: The agent is non-toxic. Typically here in the United States when they extinguish a fire, they want to contain the run-off because what is on the fire is toxic, and then their clean-up is just picking up with a vacuum truck or just allowing it to evaporate off the pavement if it is a smaller fire. The agent is completely biodegradable, so it can be run directly through an industrial wastewater treatment plant or a municipal wastewater treatment plant.

Katherine COPSEY: Fantastic, thank you. Those are my questions.

The CHAIR: Great. Thank you so much. I do not think I have any questions, but if committee members have anything further, we will get committee staff to submit them through to you on notice. Thank you so much for such an in-depth presentation and for taking us through all of that information.

Witnesses withdrew.