

Video Transcript: Mics & Sirens Season 2 – Episode 6

[Female Narrator] You're listening to Mics and Sirens, the official podcast of the Department of Fire and Emergency Services in Western Australia. DFES acknowledges the traditional owners on the land of which this podcast is created, the Whadjuk people.

[Sirens sound while news footage of fires play]

[Emma Conway, Deputy Director Operations AFAC & EVEREST Program] It doesn't actually put out EVs. And this is one of the challenges that we have. Once a lithium-ion battery goes into thermal runaway, it's just going to keep going. Our capacity to influence it is very small. What's different about these vehicles and let's focus the training on that to take our people to the next level. People are my tools. People are my power. So, the technology that I want to embrace is technology that helps people do their work better.

[Female Narrator] In Australia, around 300,000 electric vehicles are on our roads. That's almost doubled in the last year. While their presence is increasing, it's fortunate that very few of them have caught fire, but it's something we need to plan for because when an electric vehicle's high voltage lithium batteries do ignite, they release a toxic gas, they take a long time to get under control, putting firefighters and drivers in harm's way. Emma Conway, whose voice you just heard, is behind a team who have developed a training package to guide emergency responders as they take on these specialised fires. Thousands have already enrolled. The question here is whether it's as simple as putting the wet stuff on the hot stuff? Here's Emma to answer it.

[Di Darmody, Interviewer] Welcome, Emma.

[Emma] Thank you very much, Di.

[Di] Can you tell us about the unique challenges electric vehicles pose for emergency responders?

[Emma] So, electric vehicles without battery interaction is just a normal vehicle. So, what we focus on is the lithium-ion battery itself and the hazards that presents. So, again, there are very few recorded instances of lithium-ion battery failure in electric vehicles, but when there is, the consequences then become more challenging. So, we're dealing with toxic vapour and fumes. We're dealing with potentially jet-like flames that extend from the vehicle. We're dealing with prolonged events because it takes a long time to burn out an electric vehicle battery. So, these are some of the things that agencies are trying to adapt to.

[Di] Are there any incidents involving these lithium-ion battery packs that you're able to share with us?

[Emma] Yes and no. So, there have been instances where agencies have dealt with lithium-ion batteries. In my CFA career, I haven't, but through the project that I've just completed, we have had agencies share with us some of their experiences. And in a lot of cases, the battery has failed because it's been physically impacted by something, and the fire then comes from that. So, in a lot of cases, the agencies were able to protect exposures, they were able to remove people from the area and just let the battery burn out.

[Di] Given the unique nature of these kind of fires then, what are the current options for handling them?

[Emma] Water. [Laughs]

[Di] OK.

[Emma] So, our evidence suggests that the best method of dealing with lithium-ion battery fires in vehicles is to approach it with water. The battery packs are encased. You can't get foam or powder or anything into them. All we can do is cool them down. We understand that once they've gone into thermal runaway, they generate their own heat. So, if we get to that point, the best strategy is to let them burn out. If we do have to try and extinguish it, you need to make sure you've got plenty of water - a reticulated supply, and a lot of time because to get the battery back to a stable ambient temperature can take hours.

[Di] What's the level of confidence and preparedness in the emergency services sector around electric vehicle fires, given that we haven't had very many of them?

[Emma] So, agencies have been working on developing training to address electric vehicle incidents for years. And there's lots of examples amongst the agencies of work that's already been done. The AFAC project to develop a nationally consistent training program actually took all of that material as a starting point. And what we've created is an agreed standard of how we're going to deal with them.

We've been really fortunate that we've been able to access all the experience and the knowledge and the resources and the research and the technology that agencies have already created. And we've built a contemporary, engaging and accessible training package that's available to all Australian emergency service responders.

[Di] And this program I think is called EVEREST.

[Emma] So, the project was EVEREST.

[Di] OK.

[Emma] I wasn't allowed to call the training package that. The training package is called Response to Electric Vehicle Incident foundation training.

[Di] OK. Catchy title then, [Emma laughs] obviously. So, you've used lots of other information to design that. Does that include elsewhere around the world?

[Emma] Yes. We were very fortunate that our international partners got very excited about our program. We were offered research; we were offered other programs that have already been put in place. They provided feedback on the material that we built. They've created testimonials for us about how valuable they think what we've created is. It's been a huge conglomerate of like-minded people coming together to build this, and we've been so fortunate that we've had the AFAC networks that have allowed us to access this experience.

[Di] And how is the program being delivered?

[Emma] So, the program is hosted on the AFAC website. It's a three to four hour online self-paced training package. Some agencies have opted to self-host it so members can find the

training on their own learning hubs. Otherwise, everyone can access it through the AFAC website.

[Di] And who do you think should be doing it?

[Emma] Everyone. So, we've specifically targeted all emergency response agencies. So, fire is obviously the first one you think of, but we've been very conscious of the fact that in a lot of areas, SES are responding to vehicle incidents. SES are responding to EVs involved in floods. Mine Rescue goes and deals with EV incidents in their environment. So, we've created a package that allows everyone to get something from this training that they can then apply. The other thing we've really deliberately focused on is not to try and teach people what they already know. If the battery is not involved, it's just a car fire, or it's just a car accident, or it's just a car involved in a flood, and we do that really well already. What we've focused on is the nuances involved in the EV: what's different about these vehicles, and let's focus the training on that to take our people to the next level.

[Di] Emma, what response or feedback have you had from people who've undertaken the program so far?

[Emma] It's actually been really exciting. So, the first response we had was when we offered our members an opportunity to participate in the pilot. So, we partnered with TAFE New South Wales to develop the training material, and they thought we might get ten; that would be a good number for a pilot. We got 102 volunteers to participate and 66 actually completed it and provided us feedback. Since we started the program, in the first month we had 1,474 people enrol. And we were getting 4.6 stars out of five, and 98% recommended to their colleagues that this would be a good course to do. Huge increases in people's level of confidence around the scenarios and the hazards that we presented in the material. We're two months in now. We're at 7,576 enrolments, which I'm just so excited about. And we're still right up there at a 4.6 star rating and 99% of people would recommend it to their colleagues.

[Di] And will this program continue to be updated as we learn more about these fires?

[Emma] Absolutely. I estimate the content in this program will be valid for about two years, and then the technology will continue to advance and we will have to re-evaluate. And agencies are doing that all the time anyway. One of the things about a nationally consistent program is that we have to be relatively generic. We are not saying you have to do everything the same way. We're saying these are the consistent hazards that you will find across all these vehicles, but use your agency SOPs, use your agency guidelines when you talk about the specifics of decon, handover, and all that sort of stuff. So, agencies will continually evolve those strategies. And in a couple of years, we'll go back to them and say, what have you learnt? And let's do it again.

[Di] Here in Western Australia, DFES led a trial to look at the best ways to extinguish EV fires. And that involved using, I think, robotic fire equipment. Are you able to tell us a little bit about what was done?

[Emma] It was actually fantastic. The tests that they were doing coincided with the time we were building content. So, they were giving us raw data as they were doing it that we were then using for our training. So, one of the things they had was a robotic ground monitor, that

was able to move around the fireground independently. So, they actually used that to suppress the vapour cloud that's generated when a lithium-ion battery burns. And one of the things that does is creates a much safer atmosphere for everyone around the incident. If you can suppress the vapour, you can prevent the toxic fumes then moving through your community, it makes that environment much safer. It doesn't actually put out EVs. And this is one of the challenges that we have. Once a lithium-ion battery goes into thermal runaway, it's just going to keep going. Our capacity to influence it is very small. So, we focus on the exposures, we focus on community and respond to safety, and we do the best we can. At the moment, the best medium we have is water.

[Di] It's so interesting, isn't it? I guess these technologies that we get excited about, and obviously, they're for lots - a variety of reasons provide such big challenges, don't they?

[Emma] They do. And this is something that fire agencies have been grappling with forever. The changes that vehicles have gone through with the introduction of LPG gas, and airbags created a whole lot of unique challenges for fire agencies about how to keep themselves safe. And we continue to evolve and adapt, and we will continue to do that.

[Di] Is there anything else that you think is important for our audience to know about these specialised fires we've been discussing today?

[Emma] I think the really important thing is to educate yourself as much as you can. In the training that we've created, we try to myth bust as much as possible and create a really realistic scenario for our people, and help them understand that the skills and knowledge that they already have can be transferred into these unique and involving environments. Size up is the same. Dynamic risk assessment is the same. The strategies and tactics that they already use can be used in these situations. What we've worked to do is help them understand what the hazards are that are unique to these vehicles, and the strategies they can put in place to protect them from those.

[Di] And they can feel much more confident once they've done the program.

[Emma] All the data says that they do.

[Di] [Laughs] Excellent. Well, data is the thing we've been talking about a lot. Emma in this series, Mics & Sirens, we speak to fire and emergency services experts from all around the world, and they all bring a vast depth of knowledge and a wide range of experiences, but all our guests are connected, like you, I would imagine, by a personal drive to improve how we respond to and manage emergencies.

You now obviously work for AFAC and have been talking to us in that capacity, but could we go into your personal experience, if you don't mind, and tell us about how you first started working in emergency services?

[Emma] Absolutely. So, my introduction to emergency services started when I was about eight when my dad joined Country Fire Authority. So, I grew up in a volunteer fire agency that was absolutely part of the community, working for the community. When you're a fire family, you are automatically brought into it. So, we would go to fire events, not the incidents of course, but fire family events, we'd go to the brigade. I was helping my dad in headquarters; fire, you know, file fire reports in triplicate when I was 13.

[Di] [Laughs]

[Emma] And then I joined the Navy, so he was devastated. But, joining the Navy was also very much about service. And I think that's what I was brought up believing was a really valuable use of my time. I was very fortunate through my service. I saw active service twice. I was given a whole range of amazing opportunities to see and do some amazing things. There were some areas that were really challenging, but what it really reinforced to me was the value of coming together as individuals to create something of value that was always bigger than what we could ever be on our own. And coming into the fire service as a career firefighter in CFA, that's what I brought with me. So, I spent 17 years as a career firefighter in CFA. And in the end with Fire Rescue Victoria. A huge range of opportunities. So fortunate to work with the communities and the local brigades.

I still get goosebumps when I think of some of the things that we - these very small little people were able to achieve when we came together, and put others before ourselves. And when you're working in that environment, the people you're working alongside become so much closer than I've ever found in any other industry or environment.

So, being part of emergency services is such a privilege. It's such a huge responsibility. As soon as you put a uniform on, you become a trusted person in our community. You become a voice that people listen to and it carries a whole range of different responsibilities that you as a person have to carry. But at the same time, it's such important work, and we are making a difference in people's lives and, you know, it's absolutely worth it.

[Male Narrator] Not all heroes wear medals, but many do. Do you know any fire and emergency services personnel worthy of an Australian Fire Service Medal, Emergency Services Medal or Australian bravery decorations? Say thank you to those who make a difference, serve others and run towards the danger to protect us all. Nominate someone for national recognition at the highest level. Visit the DFES website: dfes.wa.gov.au to find out more now.

[Di] I think you were the 13th female firefighter employed by the CFA.

[Emma] Yes.

[Di] How did your dad and the rest of your family feel when you took up that role?

[Emma] I think they were excited for me. Apparently, my dad and my brother and I had a conversation where we swore we would never join the fire brigade, and now we both have.

[Di] And you don't remember that? [Laughs]

[Emma] I have no recollection, but he says it happened. I think they were proud. I've been incredibly supported throughout my career. I'm a single parent. I am enabled to do the work I do through the support of my family, and the guys that I co-parent with. I have such a supportive network. And it's so important to be a woman working in this space at this level.

AFAC is such a revolutionary agency from my experience, in that we have such a heavy female workforce. It's so collaborative and engaging and inclusive and supporting, and everyone is in that space together. It's not just the girls pushing it; it's the guys as well. And this environment that we've created, is effectively the multiplier for all the agencies involved

in AFAC. We bring their capability together, we connect them with each other. They share resources, they share knowledge, they share resources - research rather. And they go back out to their agencies with something bigger than they could build on their own. And this is the value of the AFAC model.

[Di] Is there an incident, Emma, that stands out in your mind even today that you could share with us?

[Emma] There is, I actually, thought really hard about this question. And I wanted to share something that is not actually fire related, but really resonates for me as something that is everything about what fire brigade is.

So, in 2007, I went to my first station in Mildura, in north-west Victoria. And my OIC was this big gruff, you know, bald, beard bikie fella. He was a legend. And he's taking me out to the back blocks of wherever because there's a lot of distance between fire stations out there and he's telling me this story.

So, the end of 2000, of course, we're at the end of the millennial drought. Very heavily impacted the western and north-western districts of Victoria. And a lot of the communities were really, really struggling. So, they'd lost their schools, they'd lost their post offices, they'd lost their general stores, they'd lost their football club and their netball club, and there's nothing left. Farms were being shut down; people were walking away because they had no other option.

At the time, there was a whole lot of fundraising going on in the city. Raising funds for the farmers, and a whole lot of money was generated. And when the organisers came out to these communities, they're like, "well, how do we get this to the people who need it?" All that was left was the fire brigade. So, they went to the fire brigade and they said, "this is what we need to do." And CFA is like, "yeah, absolutely, let's get onto it."

So, we created community days and music events and all these things for community to do. And one of the things they did was they took this money into communities that still had general stores and they built hampers. So, they went back to their committees going, "who needs help?" And of course, the people in that part of the world, they don't need help from anyone. Thank you very much. They'll do it just fine on their own.

The organisers went back and went, "OK, so who do you think needs help?" And all of a sudden, his fingers started to be pointed at families who were in distress. So, my big burly tough OIC is crying at this point where he talks about this instance where there's a woman who's been given a hamper and she's crying because it has shampoo. She's been washing her kids' hair with dishwashing liquid for six months, and we were able to create this for her. And nothing else has reinforced for me what fire brigade can be in our communities than that example. And I see it all the time.

Every time a fire agency or an SES agency or a Red Cross agency invest in their volunteers, they invest in community resilience. That is what we are. That is our strength. That is why we are able to come back from these events again and again and we must keep coming back, which means we must keep investing in our communities, through our brigades, through our units, through our volunteers, through our organisations.

[Di] Well, that's such a beautiful story, Emma, because it really does highlight, I think, the people listening and watching this why they do what they do, and the difference that you make to people, not just in the moments of disaster or tragedy or fire, but the moments afterwards.

[Emma] Absolutely. We come into people's lives generally at the worst time of their life. It's a really powerful thing to be able to come in and make their life a little bit better at other times as well.

[Di] Is there something about the work that you do in emergency services that keeps you up at night or is often at the forefront of your mind?

[Emma] Yeah, absolutely. So, climate change, and our changing environment, is one of the biggest risks I can imagine when it comes to survivability, and we're seeing it already. I'm responsible for the National Resource Sharing Centre, which shares fire and emergency service personnel across Australia and New Zealand, and I also share wildfire resources to Canada and the United States. And the data tells us we are seeing a significant increase in not just the size of fires, but the amount of fires. The fire seasons are becoming longer, the fire behaviour is becoming more extreme, the fire weather is changing. And that's just fire. The flood risk is enormous. And we're seeing it across the globe, and we are past the point where we can prevent climate change impacting our lives and our communities.

We're at the point now where we need to start talking about what's next, how do we adapt, how do we make sure our communities can keep coming back from these events because they're not gonna stop. So, this is the conversation we need to step up and have. Our communities need to be resilient. This is not something you can just wave a wand and say you're going to be resilient. It's something that has to happen over time. It has to be community buy-in. It's gotta be community led, and it's gonna be different for every community, which is why they have to lead it.

So, we as agencies have the power to be able to start having these conversations with people. And it's the conversation like, after an event, we are not gonna talk about going back to normal. We're going to talk about going back to able. How are you going to be able to keep going? How are you gonna be able to take those next steps? What do you need to do that because normal is gone? We need to focus on what's next. And one of the things I see time and again is that communities have the capacity to do this. This is not something that they need to be afraid of. It's something that they need to embrace because we can, and we do and there's examples of it all the time all over the place. We just need to start having those conversations.

[Di] What technological development do you think will have the greatest impact on the future of firefighting and emergency services?

[Emma] So, this is also gonna be slightly controversial. As a proponent of fire and emergency services, I don't actually like trucks.

[Di] [Laughs]

[Emma] And I don't like aircraft. [Chuckles]

[Di] Right. Well, you were in the Navy. That makes perfect sense to me.

[Emma] Absolutely. Don't actually get that excited about boats.

[Di] [Laughs] Right.

[Emma] So, I learnt very early on that I manage emergencies with people. People are my tools. People are my power. So, the technology that I want to embrace is technology that helps people do their work better. And it's about making sure we've got systems that are accessible. Systems that are user-friendly and are easy to access. Training that is easy to access wherever you are in whatever your situation is. These are the things that we need to be starting to think about is how do we upskill our people? How do we empower our people? Because they are our true strength.

[Di] What's the most rewarding part of your job, Emma?

[Emma] The people. [Laughs] I walk into rooms of my brothers and my uncles and progressively my aunts and my sisters and it is just a really, really powerful, inspiring place to be. The people are what make it worth it.

[Di] Emma Conway, thank you for being part of Mics & Sirens.

[Emma] Absolutely my pleasure, Di. Thank you.

[Male Narrator] Are you looking for fast, accurate, and official information that helps you to make informed decisions to stay safe during an emergency? The Department of Fire and Emergency Services Emergency WA app lets you set up watch zones for places important to you. So, if an emergency happens in your watch zone, you'll receive alerts and warnings. The best part? It's sent direct to your mobile device. Download DFES' Emergency WA app from the App Store or Google Play today.

[Female Narrator] That was Emma Conway on preparing for the risks of electric vehicle fires. This is Mics & Sirens, the official podcast of the Department of Fire and Emergency Services in Western Australia. If you are finding these conversations useful, please rate the show and share. It helps us reach more people.

Next time, we speak to Michael Tovine from Fire and Emergency New Zealand, who shares how they're unlocking the hidden skills of volunteer firefighters.