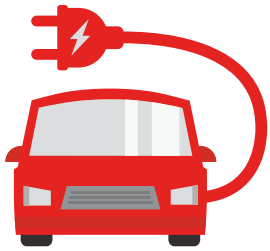
WORKING TOGETHER TO MANAGE BUSINESS RISK

Electric Vehicles

What powers EVs?

The popularity of electric vehicles ("EVs") is on the rise. It's not surprising with the cost-savings that lithium-ion batteries can provide. Along with the new way to power vehicles, comes new safety considerations and checks to ensure you stay safe.



Knowing the risks – fire and explosion

Lithium-ion batteries are efficient & convenient but from time to time the batteries can become unstable. This can lead to overheating, overcharging internal short-circuiting (known as thermal runaway) and in a worst-case scenario, fire or explosion.

Once they ignite, they emit huge amounts of toxic, corrosive, explosive gas which continues to fuel (and re-ignite) the fire.

Of course, these batteries are fitted with mechanical and electronic safety mechanisms, but failures happen and battery quality varies.

While this shouldn't put you off EVs it's important to be aware of the risks, and informed about the simple but necessary steps you can take to reduce them.

Powering up – charging

Ensuring you have proper processes around charging EVs around your site is one of the most important things you can do. There are lots of small actions you can take to help mitigate damage to your vehicles and property.

- Assign a dedicated area for EVs to park regardless of whether they are charging or not. This should be away from buildings if possible. But not so far away from the charging point that an extension cord is required – never use extension cords!
- Consider what fire detection systems you have in place for this area – monitored is best, as quick detection of smoke or fire can make a huge difference to the outcome. FENZ recommend having a fire blanket in the dedicated area and ensure your team know to evacuate immediately if there is smoke, fire or explosion.
- Ensure there is good airflow between charging vehicles, ideally a gap of metre or two. If there is a fire this can help reduce it spreading.
- Invest in good quality, reputable batteries and chargers. They should have plugs designed for NZ power supply and sockets. Ensure pins are insulated and get a copy of the Supplier Declaration of Conformity.
- Only use EV chargers that are compatible with the EV being charged. It's important your team know what they can use to charge company EVs too, especially if they're going to use publicly available chargers. If you're unsure check with the manufacturer or supplier.
- Check the EV battery is capable of handling the power supply of rapid chargers before using. They may save time, but once a battery is damaged (and it's often hard to detect) it becomes more unstable.
- Never use charger cables that are frayed or damaged. If the battery is not charging as expected, stop charging. It's advisable to check the condition of charger cables from time to time.

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- Avoid overcharging batteries. Put plans in place to help ensure your vehicles are fully charged when needed but avoid having them on charge once they are at 100%, especially if no one is around.
- Check your electrical systems can accommodate the extra load when installing charging devices or rapid charging. A registered electrician will be able to help with this.
- Ensure your charging point, switchboards and electrical systems comply to New Zealand electrical wiring standard code (AS/NZS 3000:2005). If in doubt a registered electrician can check your set up.
- If charging vehicles at home, make sure your EV is not charging near flammable material. Consider fire brigade access.
- If you are a building owner, ensure your tenants are aware of your requirements around EVs and their charging.

Considerations when driving

- Stop (as soon as it's safe to do so) if you see smoke, hear hissing sound or your EV is overheating. Call emergency services.
- Ensure your team know who to contact if they have to stop. If you don't subscribe to a breakdown service ensure you contact an approved garage or mechanic who knows the ins-and-outs of EVs.
- Get your battery assessed if it could have been exposed to water, as this can damage the battery makeup.
- Know what to do in an accident. Lithium-ion batteries can be compromised by impact. It's advisable to call emergency services so experts can disable the battery before the vehicle is moved.
- Remember rapid acceleration is a feature of EVs. Ensure team members have a bit of time to adjust to the vehicle especially if they normally drive fuel powered vehicles. This can help avoid prangs, especially in heavy traffic situations!

Plan longer journeys and ensure you know the location of charging stations. This will help ease any anxiety around running out of charge allowing the driver to stay focused on driving. Check out the Waka Kotahi NZTA charger map – EV Chargers | NZTA Journey Planner.

Give your EVs a once over

- Keep up with maintenance and servicing. Take note when your battery needs to be checked or replaced.
- Don't cut corners when replacing your lithium-ion batteries. It's often hard to know if a lithium-ion battery is compromised, do your homework if buying second-hand.
- Never store old lithium-ion batteries on site, and don't ditch them in the skip bin! For tips on safe disposal refer to your local council.
- If you have spare lithium-ion batteries on site ensure they're not exposed to excessive heat or moisture. For safe storage of extra batteries, consider using protective covers and avoid resting them on wet surfaces.

Electric vehicles will become even more common place, and with a bit know-how and good safety measures they provide huge benefits. If you have a large or complex site, consider consulting Fire & Emergency NZ to help design a tailored fire plan that considers evacuation, risks of thermal runaway, vapor explosion and toxic emissions.

Visit **vero.co.nz/risk-profiler** to check out our other risk guides for more tips and in-depth information about managing risk.

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