

Key Considerations for Electric Vehicles in Cold Weather



The AutoSense [EV + Hybrid training programme](#) covers how cold and extreme winter weather can affect EV performance, including the impact on driving range. It's important to understand that while these impacts are generalised, they can vary greatly depending on the specific vehicle, environment, and driving style.

Remember, cold weather doesn't imply a fault in the vehicle. The conditions naturally lead to reduced battery performance.

Cold Weather Battery Performance of EVs: FAQs and Best Practices

Battery Performance in Cold Temperatures

Why does my EV's battery range decrease in cold weather?

Cold temperatures slow down the battery's internal chemical reactions, making it harder for the battery to deliver power efficiently. Additionally, more power is used to heat the cabin and maintain the battery temperature, reducing the overall range.

Why does charging take longer in the winter?

In colder weather, the battery's internal resistance increases, which slows down the charging process. This is why it can take longer to charge your EV when it's cold outside.

Why does my EV use more energy in winter for heating?

Unlike gas-powered cars that use engine heat to warm the cabin, EVs rely on their battery power for heating. This extra energy demand reduces the battery range in cold weather.

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Steps to Maximise Range in Cold Temperatures

How can I prepare my EV for driving in cold weather?

Use the pre-conditioning feature to warm up the cabin and battery while your EV is still plugged in. This way, you save battery power for driving instead of heating.

What's the best way to heat my car in winter without using too much battery?

Use seat warmers and the steering wheel heater instead of the main cabin heater, as they use less power. If you need to use the cabin heater, set it to a lower temperature.

Where should I park my EV to help with battery performance in winter?

Park in a garage or sheltered area to minimize exposure to extreme cold. If possible, keep the vehicle plugged in when parked to maintain the battery's temperature.

Can taking shorter trips help my EV's range in winter?

Yes, planning shorter trips can help, as batteries are less efficient on long trips in the cold. Keeping the vehicle plugged in between short trips can preserve range.

How can I drive to conserve my EV's battery in cold weather?

Use your EV's eco or energy-saving mode, which reduces power consumption by adjusting acceleration and climate control. Also, avoid sudden accelerations and maintain a steady speed.

Does tyre pressure affect my EV's range in winter?

Yes, cold weather lowers tire pressure, which increases rolling resistance and decreases range. Regularly check and maintain the recommended tire pressure for the best efficiency.

What should I do if I need to charge my EV in freezing weather?

If possible, plug in your EV to keep the battery warm. You may notice that charging takes longer, so plan accordingly to ensure you have enough time to reach the desired charge level.

Is there anything else I can do?

Evaluate whether the trip is essential. If it can be replaced with a call or virtual meeting. It may be better to avoid driving in extreme conditions.

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Use the following quick tips to maximise your vehicle's efficiency.



Before starting your journey

- Journey planning:**
If the weather is predicted to worsen, consider rescheduling your trip. If you are unable to reschedule, ensure you know where your charging stations are along your route, particularly which ones are fast chargers.
- Tyre Tread and Pressure:**
Regularly check tyre pressure and tread.
- Pre-conditioning the Cabin:**
Heat the cabin while the vehicle is charging, some EV models have a pre-conditioning setting found in the vehicle settings in their console.
- Vehicle settings:**
If available, set regenerative braking to HIGH and place the vehicle into ECO mode.

On the road

- Driving style:**
Maintain a smooth and steady driving style. Avoid harsh acceleration and braking, and scan the road ahead to anticipate traffic and conditions. If available, set regenerative braking to "HIGH" and place the car into ECO mode.
- Minimise Power Use:**
Avoid using heated seats, radio and other non-essential devices to conserve battery power.
- Keep Windows Closed:**
This reduces drag and improves efficiency

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