

THE EV QUICK CHECK

Twelve things to look at once a month on a Tesla, Ford, Chevrolet, Hyundai or Kia.
What good looks like, what bad looks like, and what to do about it.

Fifteen minutes, once a month.

Unplug the charge cable first. Flat ground.

Almost no tools.

Tire gauge, flashlight, multimeter, a rag.

Nothing here goes near high voltage.

But read the three rules first.

THREE RULES YOU DON'T BREAK

NEVER TOUCH ANYTHING ORANGE

Every high-voltage cable, connector and cover is bright orange. That system runs at several hundred volts of direct current and it does not care that the car is switched off. **Nothing an owner ever does requires touching it.** If a job looks like it does, it belongs to a certified technician.

ONLY LIFT AT THE MARKED POINTS

The pack is a large flat slab running most of the floor, right beside the correct jack points — which are marked with a stamped triangle. A jack an inch off target can breach it. That is not a dented sill; it is the most expensive part of your car.

NEVER CHARGE A DAMAGED CAR

Flooded, or hit something hard underneath? Do not plug it in and do not drive it until it has been inspected — even with a clean dashboard. Park it outside, clear of buildings. Damaged packs can ignite hours or days later.

WHAT THE COLORS MEAN

ALL GOOD

Nothing to do. Write down what you saw so you can compare next month.

FIX IT SOON

Not an emergency. Schedule it, or fix it yourself in the next week or two.

STOP NOW

Don't drive it. Call a shop or a tow before you go anywhere.

STOP DRIVING AND CALL FOR HELP IF...

- **Popping, hissing, or white vapor from underneath** — everyone out, well clear, call 911, say *electric vehicle*
- Any **red** warning light comes on while driving
- A "Stop Safely Now" message appears
- You smell burning plastic or anything sharp and electrical
- The car has been flooded — don't start it, don't charge it
- You hit something hard underneath — don't charge it until it is inspected
- A charge plug, cable or outlet is hot, browned, or melted
- Any tire has a bulge, or shows cords or wire
- You hear grinding when you brake

MONTHLY TICK SHEET

☐ 01 Charge inlet and cable	☐ 07 Twelve-volt voltage
☐ 02 Charge limit still set right	☐ 08 Dash messages and updates
☐ 03 Fast-charge habits	☐ 09 Cabin air filter
☐ 04 Preconditioning set up	☐ 10 Wipers and washer fluid
☐ 05-06 Tires, tread, brake discs	☐ 11-12 Coolant, underbody wash

Model / year: _____ Chemistry: _____ PSI f _____ r _____ Charge limit: _____ Warranty ends: _____

WILL C. VOGEL

Quick Guide — companion to *The EV Owner's Handbook*

01 CHARGE INLET AND CABLE



Look into the inlet on the car with a flashlight, then run your eye and your hand along the whole portable cable — wall plug, cable, connector.

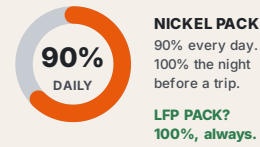
- Grit, road salt, leaves, insects. Check the metal pins for corrosion. Work the latch and make sure it moves freely.
- **Clean dry only** — compressed air or a soft dry brush. Never water, never solvent, never contact cleaner in a charge inlet.
- Never plug in a wet or iced-up connector. Shake it out, dry it, then connect.

OK Clean pins, free latch, cable and plug undamaged.

SOON Grit or corrosion in the inlet, or a cable with nicks and chafing. Clean it, and price a replacement cable.

STOP Anything on the plug, connector or wall outlet that is **hot, browned, blistered or melted**. That is an active fire risk, and the outlet behind it is probably failing too. Stop using it and get both looked at.

02 CHARGE LIMIT



Open the charge screen and check the limit is still where you set it. Software updates and profile changes move it more often than you would think.

- **Your maker's own number for a nickel pack — and they disagree:** Ford 90%; Chevrolet, Kia and Tesla 80%; Hyundai names none. 100% before a long trip either way.
- **LFP pack? Set 100%,** and take a full charge at least once a month so the car can recalibrate its range estimate.
- Don't guess your chemistry from the model year. Confirm it in the manual or with a dealer, using your VIN.

OK Limit where you set it, and you have written down which chemistry you have.

SOON Limit sitting at 100% on a nickel pack, or the car regularly parked full for days. Change the setting today; it costs nothing.

STOP Pack left at or near **zero** for more than 14 days. That is a written warranty exclusion. If you are going away, charge to about half first.

03 FAST-CHARGE HABITS



DC fast charging is for trips, not for every day. The largest real-world study found habitual high-power fast charging roughly doubling the rate a pack ages.

- Use Level 2 at home for daily charging. Use fast chargers on the road, freely, without worrying.
- **Unplug at 80%.** Above that the charging rate collapses — the last fifth of the pack can take as long as the first three.
- Two short stops beat one long one, every time.

OK Most of your charging happens at home overnight.

SOON You cannot charge at home. Worth knowing: on fast charging alone, an efficient crossover costs about the same per mile as a gas crossover, and a heavy pickup costs more than a gas one.

STOP Charging is not the emergency here — but a charger that arcs, smells hot, or has a damaged connector is. Walk away and report it.

04 PRECONDITIONING



Warm the car on shore power, not on the battery. This is the highest-value habit in electric car ownership and it is free.

- **Cabin:** set a **departure time** in your owner app — FordPass, myChevrolet, Bluelink, Kia Connect, Tesla — rather than using remote start.
- **Battery: automatic on some brands, manual on others.** On most it triggers when you set a DC fast charger as your destination in the navigation.
- Expect roughly 20–30% less range in ordinary winter weather. That is normal, and it all comes back in spring.

OK Departure time set, and you route to fast chargers in the nav rather than just driving to them.

SOON No departure time set, or your connected navigation subscription has lapsed — which also costs you battery preconditioning.

STOP Arriving at a fast charger below 10% on a freezing night with no preconditioning. The car may add almost nothing for the first 30–45 minutes. In winter plan arrivals at **20%.**

WEAR & WARNINGS

Your car is heavy, it stops itself with the motor, and it has a small battery that strands more EVs than the big one ever will.

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05 TIRE PRESSURE AND TREAD



Check them cold, against the door-jamb sticker — not the number on the sidewall, which is a maximum. Then a penny in the tread, head down.

- Pressure matters more than it did on your old car. Rolling resistance is a big share of a small energy budget, and there is no engine inefficiency hiding it.
- Tires lose about **1 psi per 10°F**. The first cold week will light your warning lamp and nothing is wrong.
- Replacing tires **Match or exceed the load index on the placard**. That one is not negotiable on a car this heavy.

OK All four within a couple of psi, tread covers the top of the head.

SOON One tire always lower than the rest, or tread getting close. Get the slow leak found before it becomes a roadside job.

STOP A bulge, a deep cut, or cords showing. Most EVs carry no spare — the sealant kit buys you a trip to a tire shop, not a fix.

06 BRAKE DISCS



Shine a light through the wheel and look at the disc, not the pads. On an electric car the rotor is what fails, because regenerative braking means nothing ever scrubs it clean.

- Light surface rust after rain is completely normal and wipes off in a few stops.
- Deep pitting, heavy scoring, or an outer edge rusting away is not. An EV can need new discs with nearly-new pads.
- Live where they salt the roads? **Ask for a brake clean and lubricate once a year, by name.** Only Tesla publishes an interval; on the rest you must ask.

OK Smooth disc face, light surface rust only, pads with plenty left.

SOON Pitting, a rust ridge at the outer edge, or a groan that does not clear after the first few stops.

STOP Grinding, or a pedal that feels wrong. Brake fluid runs on a calendar, not mileage — Ford 3 years, Hyundai and Kia 4, Chevrolet 5, Tesla tested at 4.

07 THE TWELVE-VOLT BATTERY



Let the car sleep for a few hours, then read the terminals with a multimeter. Fifteen dollars of tool against the most common way an EV strands its owner.

- **Healthy AGM sits at about 12.6 V.** Below 12.4 needs attention. Below 12.0 you are on borrowed time.
- It only charges while the car is awake, and it drains around the clock. Short trips never replenish it.
- Plan on **3 to 5 years** and replace it early. **Some cars, including some Teslas, use lithium-ion here** — it must not be charged or jumped like lead-acid.

OK 12.6 V or better, clean tight terminals, no crust.

SOON Under 12.4 V, or crusty posts. Clean the terminals yourself — negative off first, on last, eye protection on — and book a replacement.

STOP Flat. The doors and charge port may not open. **Find your manual door, charge-port and frunk releases now,** before you need them.

08 DASH AND UPDATES



Turn the car on without driving and look at what lights up. Then check your owner app for a pending software update.

- Red means stop as soon as it is safe. Amber means schedule it. Green or blue just means switched on.
- The **turtle** means two different things: in real cold with a lowish charge it is the pack protecting itself; in mild weather at healthy charge it is a fault.
- On these cars a software update is maintenance — it has changed charging speed, range and defect fixes. **Ford allows 30 days, GM 45.**

OK Everything lights at start-up then goes out. No pending update.

SOON A steady amber lamp, or an update you have been postponing. Install it overnight, and check your 12-volt first.

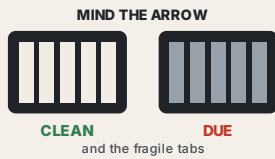
STOP Any red light while driving, or a "Stop Safely Now" message. Pull over safely and shut it down.

THE REST OF THE CAR

The short list of ordinary jobs that did not disappear when the engine did.

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09 CABIN AIR FILTER



Behind the glovebox on both cars, and easier than on most gas cars. Empty the box, drop it down, open the housing, swap.

- **Photograph the airflow arrow** before you pull the old one. Fitting it backwards is the classic mistake.
- Go gently on the retention tabs — they are fragile and they are on the car, so a broken one cannot be fixed by buying a new filter.
- Skip the very restrictive aftermarket HEPA filters. They make the blower work harder, and on an EV that is measurable range.

OK Clean pleats, arrow pointing the right way, tabs intact.

SOON Grey, dusty or smelling musty, or roughly 20,000 miles since the last one.

STOP Nesting material or droppings in the housing. Get the wiring looked at before something expensive gets chewed.

10 WIPERS AND WASHER



Check whether your car needs a service position on the touchscreen before you lift the arms. Some EVs park the wipers under the cowl.

- Put a folded towel on the glass before lifting an arm. A spring-loaded arm falling on bare glass can crack a windshield.
- Winter-rated washer fluid if you get frost. Plain water freezes and splits things.
- The filler neck may sit under a frunk trim panel — check the manual rather than guessing.

OK Clean sweep, no chatter, bottle full.

SOON Streaking or juddering. Blades are a yearly item and take five minutes.

STOP Nothing here is a stop — but do not drive into winter with summer fluid and worn blades.

11 COOLANT — LOOK ONLY



Read the level through the plastic against MIN and MAX. That is the whole job. You have several separate loops, and one of them cools the battery.

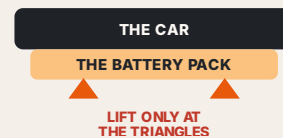
- **Never open a cap on a system that is not cold. Top up nothing.**
- Check only what your manual says is owner-checkable. On several of these cars the reservoirs sit under frunk panels, which is past the line.
- A low level is not something to correct. A low level is a leak.

OK Between the marks, fluid bright, nothing changed since last month.

SOON Slightly low, or cloudy and discolored. Book a cooling system check — do not top it up.

STOP Visibly dropping, a sweet syrupy smell, or a temperature warning. A leak in a battery loop is a dealer visit, not a driveway job.

12 UNDERNEATH



Rinse the wheel wells and underbody through the salt season, and know where your jack points are before anyone lifts the car.

- More valuable than on a gas car: your discs are rusting from disuse, and the pack enclosure and its seals live at the very bottom.
- **Do not aim a pressure washer** at the charge port, at anything orange, or up into the seams of the battery enclosure.
- Jack points are marked with a **stamped triangle**. Photograph yours. Next time a shop lifts your car, point at them.

OK Clean underbody, dry cardboard overnight, jack points found and photographed.

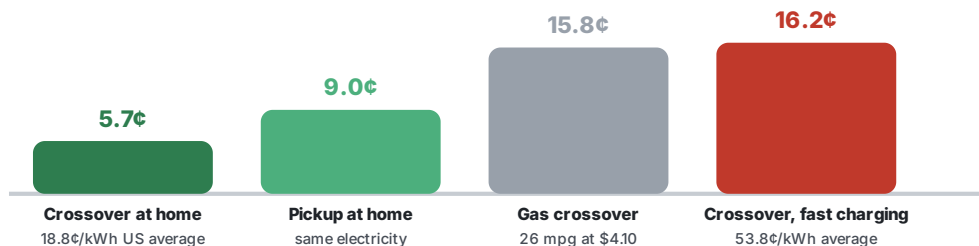
SOON Heavy salt build-up, or a small dark spot that comes back each night. Book a leak check.

STOP You hit something hard underneath. **Do not charge it and do not drive it** until the pack has been inspected — even if the dashboard is clean. Park it outside, clear of buildings.

ON A LONG TRIP

The page to read the night before you go. Ten minutes here is worth an hour on the road.

CENTS PER MILE — THE WHOLE ARGUMENT FOR CHARGING AT HOME



BEFORE YOU LEAVE — EVERY TRIP

- ☐ **Charge to 100%** the night before, and leave soon after. Full is for using, not for sitting at.
- ☐ **Plan every stop before you go**, with one alternate for each. Check recent user photos and reports.
- ☐ **Set the charger as your destination in the navigation** so the pack preconditions — automatic on some brands, manual on others.
- ☐ **Unplug at 80%**. Two short stops beat one long one. Above 80% you are paying to wait.
- ☐ **In winter, plan arrivals at 20%, not 10%**. Below zero indicated there may be no reserve at all.
- ☐ **Cold tire pressures checked** against the door jamb. One psi per ten degrees.
- ☐ **Roof bars off** if nothing is on them. A box costs 10–25% of your range; bare bars cost you too.
- ☐ **Charging apps installed and logged in**, with a payment method that actually works.
- ☐ **Adapters aboard**. An 800-volt Hyundai or Kia charges at roughly **half speed** on a 400-volt Supercharger — physics, not a fault.
- ☐ **Roadside number saved**, and the nearest EV-capable dealer to your route.
- ☐ **Towing? Only if your car is rated for it** — many are not, and the manual says so plainly. Budget a third to two thirds of your range.
- ☐ **Slow down**. Aerodynamic drag rises with the square of speed. Ten mph slower recovers a surprising amount.

YOUR NUMBERS — WRITE THEM IN ONCE

From the door jamb, the window sticker and your electricity bill. Cost per mile is your electricity price divided by your miles per kilowatt-hour.

Miles per kWh _____ Usable kWh _____

Electricity price _____ ¢/kWh Cost per mile _____ ¢

Cold pressures f _____ r _____

Charge limit _____ Chemistry _____

Baseline state of health _____ on _____

For scale. At the 18.8¢ US average, an efficient crossover runs about **5.7¢ a mile** and a heavy pickup about **9.0¢**. At the 54¢ fast-charging average those become roughly **16¢** and **26¢** — against about 16¢ for a 26 mpg gas crossover. **Home charging is the whole saving.**

IF SOMETHING GOES WRONG

Popping, hissing, or white vapor from under the car. Everyone out, well clear, upwind. Do not open the hood or the frunk. Call 911 and say it is an **electric vehicle**, with the make and model. The vapor arrives before any flame and it is toxic.

Reduced power in the cold. The pack is protecting itself. Slow down promptly, get off the highway, and let it warm for fifteen minutes with the climate off.

Out of charge. Zero on the display is roughly seven miles in mild weather and possibly nothing in deep cold. It is a flatbed call — all four wheels off the ground, never a dolly.

WHERE THE RANGE WENT

Cold costs you 20–30%, mostly through the cabin heater rather than the battery — and you get every bit of it back in spring. Heated seats cost far less than heated air.

Speed costs more than you think. Drag rises with the square of speed, so 75 mph costs roughly double what 60 does in aerodynamic losses alone.

Heat is the quieter problem. It costs less range than cold but, unlike cold, hot-climate operation permanently ages the pack a little faster. Park in the shade and avoid sitting at a high charge in the heat.