

EV Charging Cost Methodology

EV charging cost depends on your home/public mix and charging losses, not just a single electricity rate.

There is no single "EV charging cost per mile"

A widely quoted EV cost-per-mile figure usually assumes one electricity rate, applied to every mile driven. In practice, most EV owners charge from a mix of sources: a cheaper home rate most of the time, and a meaningfully more expensive public or fast-charging rate some of the time. A single blended number can be off by a large margin depending on how heavily you actually rely on public charging, which is why every EV engine on this site asks for your home and public rates and your charging mix separately, rather than one flat rate.

The actual formula

Energy needed at the battery is your miles driven times kWh consumed per 100 miles, divided by 100. Energy actually drawn from the wall or a charger is higher than that, because some energy is lost in conversion, an optional charging-efficiency factor accounts for that loss. The blended electricity rate is your home-charging share times your home rate, plus the remaining share times your public rate. Multiplying the energy drawn by the blended rate gives the real cost. EV Home Charging Cost runs this exact calculation and shows kWh drawn, not just a final dollar figure, so each step is checkable.

Why charging losses matter more than they sound

Charging efficiency below 100% is normal, not a defect, energy is lost as heat during AC-to-DC conversion and battery management. A 90% efficiency figure means you're paying for about 11% more energy than actually ends up usable in the battery. This site never assumes 100% efficiency by default for a reason: treating charging as lossless quietly understates the real cost, the same way ignoring interest understates a loan's real cost.

Why the home/public mix dominates the result

Public charging, especially DC fast charging, is often priced close to or even above the per-mile cost of gasoline in some markets, while home charging is typically the cheapest option available. Because the blended rate is a weighted average of the two, a relatively small increase in how much you rely on public charging can erode most of an EV's usual cost advantage. Public vs Home Charging Cost compares two named strategies directly, and Home Charger Payback checks whether installing a home charger to shift that mix would actually pay for itself.

What this methodology deliberately does not do

No electricity rate, home or public, is fetched or assumed current. Utility rates vary by region, time of day, and rate plan far too much for a single default to be honest, so every engine requires you to enter your own rates, the same policy this site applies to gas prices, APRs, and every other volatile input. This also does not model time-of-use rate schedules or demand charges, which some utilities apply; if yours does, use your actual effective average rate as the input.

What to actually check before trusting an EV cost estimate

- Whether the figure you're looking at assumes 100% home charging, which most real driving does not match.
- Whether a charging-efficiency loss is included at all, many simplified estimates skip it entirely.
- Your own utility's actual rate, not a national average, since rates vary widely by region.
- How much of your real driving would actually rely on public charging, honestly, not optimistically.

Related calculators

EV Home Charging Cost

What does it actually cost to charge an EV, blending home and public charging?

EV vs Gas Cost Calculator

Does an EV actually cost less than a comparable gas car once financing, depreciation, and charging are all counted?

Public vs Home Charging Cost

How much does relying on public charging actually cost me compared to mostly charging at home?

Annual EV Electricity Cost

Is my monthly EV charging budget actually enough?



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