BILL'S HOME TECH
Home & Small Business Tech Solutions

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Home EV Charging

Charging your electric car in your own garage — explained in plain English, one step at a time

A plain-English guide for every EV owner

No wiring to learn — just how it all works

Written for you by Bill — Bill's Home Tech

(330) 200-8042 · BillsHomeTech.com

Level 1 and Level 2 home charging and the apps · facts current November 2026

What's Inside

This is your Home EV Charging guide. Read it in any order and at your own pace — there is no test, and you can't fall behind. Keep it nearby and reach for whatever you need. Every part explains what a thing actually does *for you*, in plain English, with no jargon left undefined. A gentle promise up front: **this book does not teach you to do any electrical wiring**, and it never will. Anything involving your home's 240-volt power belongs to a licensed electrician — and I'll be clear about that every time it matters. What you *will* learn is how home charging works, how to choose the right equipment, and how to use it with confidence.

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PART 1

Home Charging in Plain English

What charging an electric car at home really means, why it's the whole point of owning one, and the simple idea behind every cord, plug, and box in this book. Start here.

CHAPTER 1

A Note from Bill

Hello, and welcome. Whether you've just brought home your first electric car, you're thinking hard about one, or someone in the family talked you into it and now you'd like to actually understand it — this book is for **you**. You don't need to know a thing about electricity or cars to follow along. You just need to be curious, and you clearly are, because you're holding this book.

I'm Bill. Helping folks feel at home with their technology is what I do every day, and charging an electric car at home is really just another piece of home technology — one that happens to sit in your garage. I wrote this the same way I'd explain it sitting beside you with a cup of coffee: slowly, in plain English, with every term defined the moment it comes up. If I ever use a word you don't know, I'll stop and explain it right then.

Why home charging is the whole point

Here's the thing most people don't realize until they live with an electric car: the magic isn't the public charging stations you see at the store. The magic is that your car fills itself up **at home, overnight, while you sleep**. You pull into the garage, plug in the way you'd plug in a phone, and in the morning the car is full and ready. No gas station, no cold mornings at the pump, no detour on the way to work. For most owners, charging at home covers nearly everything — the public stations are just for the occasional long trip.

WHAT THIS DOES FOR YOU

A full 'tank' every single morning

Think about never stopping for gas again on an ordinary week. You wake up, the car is charged, and you drive. That is what home charging gives you — and it's why learning this small amount of know-how pays you back every single day you own the car.

What this book will and won't do

I want to be honest and clear right from the start, because that's how I do things. This book will teach you **how home charging works, how to choose the right equipment, and how to use it day to day** with total confidence. It will *not* teach you to do any electrical wiring, and I'd ask you not to try. Anything that connects to your home's 240-volt power — the strong kind that runs your dryer and stove — is the job of a **licensed electrician**. That's not me being overly cautious; it's a genuine safety matter and often the law. I'll say so plainly every time it comes up.

Read it any way you like

You do not have to read these pages in order, and there's no test at the end. Start at page one, or jump to the part that answers today's question. Fold the corners, underline things, write in the margins. Keep it in the car or on the workbench and pull it out whenever you need it. It's a reference, not a race — you cannot fall behind.

And I'm only a phone call away

This book will carry you a long way on your own. But if you get stuck, or you'd like a licensed hand with the charger side of things, you're never stuck alone. Call me at **(330) 200-8042** and we'll sort it out together, with no judgment and no rushing. There's no such thing as a silly question — the only bad question is the one you talked yourself out of asking.

— Bill

CHAPTER 2

What 'Charging at Home' Actually Means

Before we touch a single plug, let's answer the simplest question: what *is* charging, really? Strip away the jargon and it's a very ordinary idea.

It's just filling a battery — like your phone, only bigger

An electric car runs on a big battery instead of a tank of gasoline. Charging means putting electricity back into that battery. You already do this every night with your phone: you plug it into the wall, it fills up, you unplug it in the morning. An electric car works on exactly the same principle. The only real difference is that the car's battery is *much* larger, so it helps to understand the few ways to fill it faster or slower.

> **GOOD TO KNOW**
>
> **"EV" simply means electric vehicle**
>
> You'll see the letters **EV** everywhere — it stands for **electric vehicle**, which is just a car (or truck, or SUV) that runs on a battery instead of gasoline. When this book says "your EV" or "the car," it means the same thing. Don't let the initials put you off.

Two pieces: the car, and the thing that feeds it

Home charging always involves two pieces working together:

- **Your car**, with its battery and a built-in part (called the **onboard charger**) that manages how fast electricity can flow in. This part lives inside the car; you never see it or touch it.
- **The equipment on your wall** — the cord and box that connect your car to your home's electricity. This is the piece you handle, plug in, and choose when you buy one.

Most of this book is about that second piece — the wall equipment — and how to use it well. The car side mostly takes care of itself.

> **GOOD TO KNOW**
>
> **The box on the wall has a technical name: EVSE**
>
> The official name for the home charging equipment is an **EVSE** — "electric vehicle supply equipment." Nearly everyone just calls it a **charger** or a **charging station**, and so will I. If a salesperson or an electrician says "EVSE," now you know they simply mean the charging box on your wall.

CHAPTER 3

How the Battery and Range Work

You don't need to understand electricity to charge a car, any more than you need to understand a refinery to pump gas. But a few plain ideas will make everything else in this book click into place. Here they are, slowly.

Range: how far a full battery takes you

Range is simply how many miles the car can travel on a full battery, the way a full tank of gas has a range. A typical electric car today has a range somewhere in the ballpark of **200 to 300-plus miles** when fully charged, though it varies a great deal by model and by weather. That's the number you watch — and home charging is about topping it back up.

The battery is measured in 'kilowatt-hours'

A gas tank is measured in gallons. A car battery is measured in **kilowatt-hours**, written **kWh**. You don't need to do any math with this — just know that it's the "size of the tank." A bigger kWh number means a bigger battery and usually more range. It's the same unit your electric bill uses, which will matter later when we talk about cost.

GOOD TO KNOW

Kilowatts vs. kilowatt-hours — the easy version

A **kilowatt (kW)** is a *speed* — how fast electricity is flowing, like the width of a hose. A **kilowatt-hour (kWh)** is an *amount* — how much has flowed in total, like gallons in a bucket. A faster charger (more kW) fills the battery's kWh sooner. That one sentence is all the electricity you need for this whole book.

You rarely start from empty

Here's a comfort that surprises new owners: you almost never charge from empty to full. Most days you drive 30 or 40 miles, come home, and plug in to replace just those miles overnight. It's less like filling a tank and more like topping up a glass of water each evening. That's why even slower charging is often perfectly fine — you're only adding back what you used.

TIP

Think in 'topping up,' not 'filling up'

Gas-car habits say drive till near empty, then fill completely. Electric cars flip that: you plug in most nights and keep the battery comfortably topped up, like you do your phone. Once that habit clicks, charging stops being a chore you think about at all.

CHAPTER 4

The Three Levels, at a Glance

Almost everything about EV charging comes down to **three levels** — three speeds of charging. You'll hear them mentioned constantly, so let's meet all three now in one place. We'll spend the rest of the book on the two that happen at home.

Level	Where	How fast (rough)
Level 1	Any ordinary home outlet (120 volts)	Slow — about 3 to 5 miles of range per hour
Level 2	A special 240-volt circuit at home	Much faster — roughly 20 to 40+ miles per hour
Level 3 (DC fast)	Public stations only, not homes	Very fast — many miles in 20 to 40 minutes

Level 1 — the cord that came in the trunk

Level 1 uses an ordinary household outlet, the same kind your lamp plugs into (in the United States that's **120 volts**). Nearly every EV comes with a cord for this. It's the slowest way to charge — think a few miles of range added each hour — but it needs no special equipment at all. We cover it fully in Part 2.

Level 2 — the home upgrade most owners end up wanting

Level 2 uses a **240-volt** circuit — the strong kind that powers an electric clothes dryer or stove. It charges several times faster than Level 1, usually filling a car overnight with room to spare. It requires equipment installed by a licensed electrician, and it's what most owners settle on. Parts 2 and 4 are mostly about Level 2.

Level 3 — the fast public chargers (not for home)

Level 3, usually called **DC fast charging**, is the very fast kind you find at public stations along highways. It can add a lot of range in the time it takes to have a coffee. It uses special high-power equipment that is *not* installed in homes, so we'll only touch on it briefly, in Part 8, for road trips.

GOOD TO KNOW

Home is Level 1 or Level 2 — that's the whole choice

For your garage, the real decision is simply **Level 1 or Level 2**. Level 3 is a public thing you'll use now and then on trips. So when you see all the talk about "levels," remember: at home, you're choosing between two, and the next part walks you through both.

CHAPTER 5

What You Already Have vs. What You Might Add

Good news before we go further: you may already own everything you need to start charging today. Let's take stock, so you know where you stand before spending a dime.

What almost certainly came with your car

Most electric cars come with a **portable charging cord** in the trunk or frunk (the front trunk). At a minimum it plugs into a normal household outlet — that's Level 1 — so you can charge the very first night, slowly, with nothing else at all. Some cars include a cord that can also do Level 2 if you have the right outlet. Dig it out and have a look; we'll identify it together in Part 2.

What you might choose to add

- **A Level 2 home charger** — the wall box most owners add for faster charging. Choosing one is all of Part 4.
- **Electrical work** to feed that charger — a job for a licensed electrician, sometimes including room on your electrical panel. Also Part 4.
- **An adapter** if your car's plug and a charger's plug don't match — a small, common item we cover in Part 3.
- **An app or two** on your phone, to schedule cheap overnight charging and keep an eye on things — Part 6.

TIP

You can start slow and upgrade later — there's no rush

Plenty of people drive happily for weeks on the Level 1 cord that came with the car while they decide whether they even need Level 2. There's no harm in starting with what you have and upgrading once you know your real driving habits. This book helps you make that call with clear eyes.

FROM BILL

Not sure what you've got? I'm glad to look

If you're staring at a cord and a plug and not sure what you're looking at, that's a perfect thing to call about. I can tell you what you already have, what your home can support, and whether Level 2 is even worth it for how you drive — before you spend anything. Reach me at (330) 200-8042.

PART 2

The Two Home Levels — 1 and 2

Level 1 and Level 2 side by side: what each needs, how fast each goes, how to picture charging speed, and an honest way to decide which one actually suits you.

CHAPTER 6

Level 1: The Cord in the Trunk (120 Volts)

Level 1 is the simplest possible way to charge an electric car, and it's where most people begin because it needs nothing new. Let's look at exactly what it is and what it's good for.

What it is

Level 1 means plugging your car into an ordinary household outlet — the same three-hole outlet your toaster or lamp uses, which in the United States carries **120 volts** of power. Your car came with a cord for exactly this. One end plugs into the wall, the other into your car. That's the whole setup.

How fast it charges

Level 1 is slow and steady. In a typical hour it adds only about **3 to 5 miles of range** (the exact figure varies by car and outlet). Over a full night — say 10 or 12 hours plugged in — that's roughly 30 to 50 miles put back. For many people who drive modest distances, that overnight top-up is genuinely enough.

> GOOD TO KNOW
>
> **Slow isn't the same as useless**
>
> Level 1 sounds too slow to be useful, and for high-mileage drivers it can be. But remember the "topping up" idea: if you drive 30 miles on an average day, a Level 1 cord can replace that overnight without breaking a sweat. The question isn't "is it fast?" — it's "does it keep up with how *you* drive?"

What it's good for

- **Light, local driving** — errands, church, visiting family across town.
- **A brand-new owner** who wants to charge tonight and decide about Level 2 later.
- **A backup** — even owners with Level 2 keep the Level 1 cord in the trunk for travel.
- **Apartments or rentals** where you can't install new wiring but have a nearby outlet.

STAY SAFE

Plug straight into the wall — never a cheap extension cord

The one real rule for Level 1: plug the car's cord **directly into a proper wall outlet**, ideally one on its own without a space heater or freezer sharing it. Do **not** run it through a thin household extension cord or a power strip. A car pulls steady power for hours, and the wrong cord can overheat. We'll cover this fully in the safety chapter — but it matters enough to say now.

CHAPTER 7

Level 2: The Home Upgrade (240 Volts)

Level 2 is the charging most owners eventually want, and it's what the bulk of this book prepares you to choose and use. Here's the plain picture.

What it is

Level 2 uses a **240-volt** circuit — double the power of a normal outlet. That's the same strong kind of electricity that runs an **electric clothes dryer, an oven, or a hot water heater**. Because the power is stronger, the car fills much faster. A Level 2 setup has two pieces: the **charging box** (the EVSE) mounted on your wall, and a **240-volt circuit** running to it from your electrical panel, installed by a licensed electrician.

How fast it charges

This is the headline. Level 2 typically adds somewhere around **20 to 40-plus miles of range per hour** — several times faster than Level 1. The exact speed depends on the charger's strength and, just as much, on what your particular car can accept (more on that in the next chapter). In practice, Level 2 means the car goes from low to full overnight easily, and even a quick evening plug-in adds a useful chunk of range.

Level 2 at a glance	
Power source	A dedicated 240-volt circuit, like a dryer's — installed by an electrician
Speed	Roughly 20 to 40+ miles of range per hour (varies by charger and car)
Full overnight?	Yes, comfortably, for almost any car and any day's driving
What it needs	A charging box on the wall and professional electrical work

Why most owners end up here

Level 2 turns charging into a non-event. You never think about whether the car will be ready — it always is. You can charge fully in a few hours, which makes it easy to catch cheap overnight electricity rates (Part 7). And it comfortably handles bigger battery cars and higher-mileage days that Level 1 would struggle with.

STAY SAFE

A 240-volt circuit is electrician's work — always

I'll repeat this through the book because it genuinely matters: the 240-volt circuit a Level 2 charger needs must be installed by a **licensed electrician**, and your town will usually require a **permit**. This is not a do-it-yourself job, and it's not a corner to cut. Done right, it's safe and lasts for years. Part 4 walks through exactly why and what to expect.

CHAPTER 8

Charging Speed in Plain English

"Amps," "kilowatts," "miles per hour" — the numbers around charging speed can make it sound complicated. It isn't. Here's the whole thing in terms you already understand.

Picture a water hose

Charging your car is like filling a bucket with a hose. A **wider hose** fills the bucket faster. Charging speed is just how wide the hose is. Level 1 is a thin garden hose; Level 2 is a fat fire hose. The battery (the bucket) is the same — you're just filling it faster or slower.

Amps: the width of the hose

Amps (short for amperes) measure how much electricity flows at once — the width of the hose. Level 2 home chargers commonly come in sizes like **32 amps, 40 amps, or 48 amps**. A higher amp number means a wider hose and faster charging — but *only* if both your home's circuit and your car can handle that much. More on that catch below.

Kilowatts: the actual flow

Kilowatts (kW) combine the voltage and the amps into a single "how fast" number. You don't need to calculate anything. Just know: more kW means faster charging. A Level 1 setup is roughly 1.4 kW; a Level 2 setup is often around 7 to 11 kW. That jump is why Level 2 feels so much quicker.

The catch: the car has its own limit

Here's the part people miss, so read it twice. **Your car has a maximum speed it can accept**, set by that built-in onboard charger we met earlier. If your car can only take, say, the equivalent of a 32-amp flow, then buying a giant 48-amp charger won't charge it any faster — the car is the narrow part of the hose. Many popular EVs top out around 48 amps for home charging; some accept less. Your car's manual states its limit.

> **TIP**
>
> **Match the charger to the car, not the other way around**
>
> Don't overpay for the biggest, fastest charger on the shelf before checking what your car can actually use. A charger that can go faster than your car accepts just sits there holding back. Find your car's maximum home-charging rate (in the manual or from the maker), and buy a charger that meets it — not one that wildly exceeds it.

GOOD TO KNOW

"Miles per hour" is the number that matters to you

Amps and kilowatts are the plumbing. The number you actually feel is **miles of range added per hour**. When comparing chargers or deciding if you need Level 2, ask the simple question: "how many miles will this add in the hours my car is usually parked?" That's the answer that affects your life.

CHAPTER 9

Do You Actually Need Level 2?

This is the honest chapter. Level 2 is wonderful, but it costs money to buy and install, and not everyone truly needs it. Let's figure out which camp you're in — no sales pitch, just a clear look at your own driving.

The one question that decides it

Ask yourself: **how many miles do I drive on a typical day, and how many hours is the car parked at home?** If a night of slow Level 1 charging replaces what you drove that day, you may be perfectly happy on Level 1. If you regularly drive more than Level 1 can refill overnight, Level 2 will take the worry away.

A rough rule of thumb

If you typically drive…	Level 1 might be enough?
Under ~30-40 miles a day	Often yes — an overnight top-up usually keeps up
~40-60 miles a day	Maybe — it depends on how long the car sits plugged in
More than ~60 miles a day	Usually not — Level 2 is worth it for peace of mind

These are rough guides, not rules. A car with a very big battery, a cold climate (cold cuts range), or days where you can't leave it plugged in long all tilt you toward Level 2.

Reasons to go Level 2 even if Level 1 'works'

- **Peace of mind** — the car is always ready, even after an unexpected long day.
- **Cheap overnight rates** — Level 2 charges fast enough to finish inside a short, cheap off-peak window (Part 7).
- **A bigger or second EV later** — the circuit is there and ready.
- **Resale and home value** — a proper Level 2 setup is a selling point for the house.

WHAT THIS DOES FOR YOU

The real luxury is never thinking about it

Owners who move from Level 1 to Level 2 almost all say the same thing: the speed is nice, but the real gift is that charging simply disappears as a thing to worry about. You plug in from habit, and the car is always full. That freedom is what you're really buying.

FROM BILL

I'll give you the honest answer, even if it's 'you don't need it'

If you call and your driving truly fits Level 1, I'll tell you to save your money — I'm not here to sell you wiring you don't need. And if Level 2 is worth it, I'll explain exactly why and what it'll take. Either way you get a straight answer. (330) 200-8042.

PART 3

Connectors & Plugs

The handful of plug shapes in the EV world, what your own car uses, the industry's shift toward one standard, and how adapters let almost anything work with almost anything.

CHAPTER 10

The Plug on Your Car

Every electric car has a **charging port** — a little door, usually on a rear fender or near where a gas cap would be, that opens to reveal the socket you plug into. The shape of that socket is the one thing you must know before buying any equipment. There are only a few shapes, and this chapter names them all.

The two plug shapes you'll meet at home

Plug name	What it is
J1772	Say "J-seventeen-seventy-two." The standard plug on almost every non-Tesla EV for Level 1 and Level 2 (home) charging. A rounded plug with a flat top.
NACS (Tesla)	The sleeker plug Tesla has always used — "North American Charging Standard." Now being adopted across the whole industry. Smaller and rounder than J1772.

For **home** charging (Level 1 and Level 2), those two cover nearly everyone. If your car isn't a Tesla and was built in the last several years, it almost certainly uses **J1772** for home charging. If it's a Tesla, it uses **NACS**.

A third shape you'll only see at fast public stations

At public fast-charging stations you may also hear of **CCS** ("Combined Charging System") — a larger plug that non-Tesla cars have used for fast charging. You won't deal with CCS at home; it's purely a public-fast-charging thing. The industry is moving away from it toward NACS, which we'll explain in the next chapter. For home, forget CCS entirely.

> **TIP**
>
> **Go look at your car's port right now**
>
> The surest way to know your plug is to open the charging door and look, then compare it to pictures online or in your car's manual. Better still, your owner's manual states the plug type in plain words. Thirty seconds of looking now saves you buying the wrong adapter later.

CHAPTER 11

The Industry's Shift to One Standard (NACS)

If you've heard confusing talk about plugs "changing" or everyone "switching to Tesla plugs," here's the calm, plain-English version of what's actually happening — and why it's mostly good news for you.

What's changing

For years, Tesla used its own plug (now called **NACS**) while nearly everyone else used **J1772** (home) and **CCS** (fast charging). That split meant different cars needed different plugs and stations. Recently, most major automakers agreed to **adopt NACS as the common standard**. Over the next few years, more and more new cars are being built with the NACS plug, and more public stations are adding it.

GOOD TO KNOW

One plug for everyone is the goal

The whole point of the shift is to end the confusion of competing plugs — so that one connector works for most cars at most stations, the way one nozzle fits every gas car today. You're watching that happen in slow motion. It's a convenience coming your way, not a problem to solve.

What it means for you, practically

- **If you have an older non-Tesla EV (J1772):** nothing breaks. Your car and home charger keep working exactly as they do. For public NACS stations, you use a small adapter (next chapter).
- **If you have a Tesla (NACS):** you're already on the new standard. For older J1772 home chargers, a small adapter lets you plug in.
- **If you're buying a brand-new EV:** it may well come with a NACS port already. Check which plug it has so you buy matching home equipment.

HEADS UP

Don't panic-buy or throw anything out

The switch is gradual and designed so nobody gets stranded. You do **not** need to replace a working home charger because of it, and you don't need to rush. Adapters bridge the gap in both directions. When you next change cars, just check the plug — that's all the attention this really needs from you.

CHAPTER 12

Adapters: Making Plugs Match

An **adapter** is a small connector that lets one plug shape fit another — like the travel adapters people use for foreign outlets. In the EV world they're common, inexpensive, and perfectly safe when you use the right one. Here's how to think about them.

The two you're most likely to meet

Adapter	What it lets you do
J1772-to-NACS	Lets a Tesla (NACS) car use a J1772 charger. Tesla has long included one of these with its cars, so many Tesla owners already have it in the trunk.
NACS-to-J1772	Lets a non-Tesla (J1772) car use a NACS charger or station. Handy as more public stations become NACS.

The golden rule of adapters

Buy adapters from your car's maker or a reputable, well-reviewed brand — never the cheapest no-name one you can find. A cheap, poorly made adapter carrying a car's worth of power for hours is exactly the kind of corner you don't cut. A quality adapter is a modest, one-time cost for a lot of flexibility.

GOOD TO KNOW

An adapter can't make charging faster than the slower part

An adapter only changes the plug *shape*. It never adds speed. The charging rate is still set by the slowest link in the chain — the charger, the car, or the adapter's own limit, whichever is lowest. So an adapter solves "will it fit," not "will it be fast."

STAY SAFE

Match the adapter to the power level it's rated for

Adapters are rated for certain power levels — some for Level 1 and 2 only, some also for fast charging. Use each adapter only for what it's rated for, and stop using any adapter that feels hot, looks damaged, or fits loosely. When in doubt, ask the maker or give me a call before you rely on it.

CHAPTER 13

Finding Out Exactly What Your Car Uses

Before you spend money on a charger or adapter, pin down three facts about your specific car. They take five minutes to find and save you from buying the wrong thing.

The three facts to write down

Fact	How to find it
1. Plug type	J1772 or NACS? Open the charging door and look, and confirm in the owner's manual.
2. Max home charging rate	The fastest Level 2 speed your car accepts, often given in amps or kW. It's in the manual or on the maker's website.
3. What came in the box	Find the portable cord that shipped with the car and note whether it does Level 1 only, or Level 1 and 2.

Where to look

- **The owner's manual** — the charging section states the plug and the maximum rate in plain terms. This is the most reliable source.
- **The car maker's website or app** — search your exact model and "home charging" or "charging specifications."
- **The charging port itself** — a quick look settles the plug shape instantly.
- **The dealer** — if you bought recently, a quick call confirms all three facts.

TIP

Write these three on the inside cover of this book

Jot your plug type, your car's maximum charging rate, and what cord came with it right inside this book's front cover. When you're shopping for a charger, or asking an electrician for a quote, or calling me, those three facts answer half the questions before they're asked.

FROM BILL

Bring me the three facts and I'll handle the rest

If finding your car's maximum rate feels like hunting through a manual written for engineers, don't fret over it — tell me your car's year, make, and model and I'll track down what it needs. That's a two-minute phone call: (330) 200-8042.

PART 4

Getting a Level 2 Charger — Safely

Choosing the right charger, understanding plug-in versus hardwired, what your electrical panel has to do with it, and the one rule that runs through it all: the wiring is a licensed electrician's job.

CHAPTER 14

What a Level 2 Charger Really Is

Before choosing one, let's be clear about what a Level 2 charger (the EVSE) actually does — because the name is a little misleading.

It's a smart, safe switch — not really a 'charger'

Here's a surprise: the box on your wall doesn't actually do the charging. The real charging happens *inside the car*. The wall box's job is to safely deliver your home's 240-volt power to the car, talk to the car about how much it can take, and shut everything off the instant anything looks wrong. Think of it as a very smart, very safe faucet — not the well itself.

> **GOOD TO KNOW**
>
> **That's why the car controls the speed**
>
> Because the actual charging happens in the car, the *car* sets the pace. The wall box offers power; the car decides how much to sip. This is the same reason a bigger charger won't force a car to charge faster than it's built to. The box is the safe messenger in between.

What it looks like

A Level 2 charger is usually a weatherproof box about the size of a small loaf of bread, mounted on the garage wall or outside, with a thick cord and a plug that matches your car (J1772 or NACS). Many have a holster to hang the plug, a light or small screen to show what's happening, and some connect to your home Wi-Fi so an app can talk to them. We cover those apps in Part 6.

CHAPTER 15

Plug-In vs. Hardwired

When you buy a Level 2 charger, one of the first choices is whether it **plugs into a special outlet** or is **wired directly into your home's electrical system**. Both are safe and common. Here's the difference in plain terms.

Plug-in (uses a 240-volt outlet)

A **plug-in** charger ends in a large plug that goes into a special 240-volt outlet — most often a type called a **NEMA 14-50**, which is the same style of outlet many electric clothes dryers and RV hookups use. An electrician installs the outlet; then you plug the charger in yourself, much like any appliance.

Hardwired (connected directly)

A **hardwired** charger has no plug — an electrician connects its wires straight into your electrical system. There's no outlet in between. This is often chosen for outdoor installations, for the highest charging speeds, or simply for a clean, permanent look.

Option	What it means for you
Plug-in	Plugs into a 240-volt outlet (like a NEMA 14-50). Easy to unplug and take with you or swap. Needs the outlet installed by an electrician.
Hardwired	Wired directly in — no outlet, no plug. Often used outdoors or for the fastest charging. Permanent; removing or swapping it is electrician's work.

Which to choose

- **Choose plug-in** if you like the flexibility of unplugging the unit, might move it, or want the option to swap chargers easily later.
- **Choose hardwired** if it'll live outdoors, you want the maximum speed your car supports, or you simply prefer a tidy, fixed installation.
- **Either way**, the power work behind it is done by a licensed electrician. The plug-in kind just means you handle the final plug yourself.

TIP

Ask your electrician which fits your home best

There's no universally right answer — it depends on your garage, your panel, where the charger will hang, and how fast your car charges. A good electrician will look at your situation and recommend the sensible option. That conversation is part of what you're paying them for.

CHAPTER 16

Choosing a Charger: What to Look For

Chargers come in many brands and a wide price range. You don't need the fanciest one — you need the *right* one for your car and home. Here's the checklist I'd use.

The things that genuinely matter

What to check	Why it matters
Amperage (speed)	Pick one that meets your car's maximum rate — not wildly more. A 40- or 48-amp unit suits most cars; check yours first (Part 2).
Plug type	Must match your car: J1772 or NACS. Or buy one with the right plug and keep an adapter handy.
Cable length	Long enough to reach your car's charging port comfortably from where the box will hang. Measure before you buy.
Indoor or outdoor	If it'll live outside or in an unheated garage, make sure it's rated for the weather and temperatures.
Safety listing	Look for a recognized safety certification mark (such as a UL or ETL listing). This is not the place to save money.
Smart features	Optional Wi-Fi and an app for scheduling and monitoring (Part 6). Nice to have, not essential.

STAY SAFE

Insist on a safety-listed charger

A Level 2 charger handles serious power for hours at a time, often unattended overnight. Buy only a unit with a recognized **safety certification** (look for a UL or ETL mark) from a reputable seller. A bargain, uncertified box is a genuine fire risk, not a smart saving. If you're unsure whether a model is properly listed, ask before you buy.

What you can safely ignore

Don't be talked into the biggest or most expensive unit "to be safe." If your car accepts 40 amps, a 48- or 80-amp charger charges it no faster. And many smart features are pleasant but not necessary — plenty of people charge happily on a simple, reliable unit with no app at all. Buy for your car and your home, not for bragging rights.

TIP

Cheaper over time: schedule-capable units can pay for themselves

If your electric company charges less overnight (Part 7), a charger (or car) that can **schedule** charging for those cheap hours can quietly save you money every month. For many owners that makes a modest smart charger worth the small extra cost — but only if your rates actually differ by time of day.

CHAPTER 17

Your Electrical Panel: Is There Room?

A Level 2 charger draws a lot of power, so before anything gets installed, an electrician checks whether your home's electrical system can comfortably supply it. This chapter explains what they're checking and why — so the conversation makes sense.

The panel, in plain English

Your home's electricity comes in and is divided up at the **electrical panel** (the gray metal box full of switches, often in the garage, basement, or a closet). Each switch — a **breaker** — feeds part of your house. A Level 2 charger needs its own dedicated breaker and wire, sized for the strong, steady draw it pulls. The question is simply: does your panel have the room and the spare capacity for one more big draw?

What the electrician is checking

- **Spare space** — whether there's an open slot in the panel for a new breaker.
- **Total capacity** — whether your home's overall electrical service can handle a charger on top of everything else you run (the stove, dryer, air conditioning).
- **The run** — how far the wire has to travel from the panel to where the charger will hang, since distance affects the wiring needed.
- **Age and condition** — whether an older panel is up to the job or needs attention first.

If your panel needs an upgrade

Sometimes — especially in older homes — the panel is full, or the home's total electrical service isn't large enough to add a charger safely. In that case the electrician may recommend a **panel upgrade** or other work first. This adds cost, and it's a real possibility worth knowing about before you fall in love with a charger. There are also smaller devices that let a charger share power with another appliance; your electrician can tell you whether one fits your situation.

HEADS UP

Get the panel checked before you buy the charger

The single most common surprise in a home charger install is the panel: the charger is cheap, but making room in the panel can cost more than the charger did. Have an electrician assess your panel **first**, so you know the real total before you commit. Nobody likes that surprise after the box is already on the wall.

CHAPTER 18

Why a Licensed Electrician and a Permit Matter

This is the most important chapter in the whole book, and I've put it where you can't miss it. Everything about the 240-volt side of a Level 2 charger belongs to a licensed professional. Here's why — honestly, not to frighten you, but so you make the safe choice on purpose.

Why not do it yourself

A Level 2 charger runs on the same powerful 240-volt electricity as your stove and dryer, and it draws it steadily for hours, often while you sleep. Wiring that is done even slightly wrong — the wrong wire size, a loose connection, a missing safety ground — can overheat inside your walls and start a fire you won't see coming. A licensed electrician knows the code, uses the right materials, and makes connections that stay safe for years. This is genuinely not a corner to cut, and this book will never show you how to do the wiring.

STAY SAFE

240-volt wiring is for licensed electricians — no exceptions

Please hear me on this. Do not run a 240-volt circuit yourself, do not let a well-meaning handyman do it, and do not trust a video that makes it look simple. Hire a **licensed electrician**. It protects your home, your family, your insurance, and very possibly your life. The cost of doing it right is small next to the cost of doing it wrong.

Why the permit matters

Most towns require a **permit** for installing a 240-volt circuit and charger. A permit isn't red tape for its own sake — it means a local inspector checks the work was done safely and to code. That protects you, and it matters for your **home insurance**: unpermitted electrical work can jeopardize a claim if anything ever goes wrong. A proper electrician handles the permit as part of the job.

Questions to ask whoever you hire

- Are you a **licensed electrician**, and are you insured?
- Will you **pull the permit** and arrange the inspection?
- Have you installed **EV chargers** before?
- Can you assess my **panel** and give me the full cost, including any panel work?
- Will the installation meet the current **electrical code**?

FROM BILL

This is exactly the kind of work I do — and do right

Installing home EV chargers is part of what I do here in Portage County, Ohio, and I do it the proper way: licensed work, the right materials, a permit pulled, and an inspection passed. If you'd like it done safely and explained in plain English as we go, call me at (330) 200-8042 and we'll look at your garage and your panel together.

CHAPTER 19

Installation Day: What to Expect

Once you've chosen a charger and an electrician, the actual installation is usually a straightforward half-day job. Knowing the shape of it makes the day relaxed.

Roughly how it goes

1. The electrician confirms where the charger will hang and the best path for the wiring from your panel.
2. They install a new dedicated breaker in the panel (or the earlier-agreed panel work) and run properly sized wire to the charger's spot.
3. For a plug-in setup, they install the 240-volt outlet; for a hardwired one, they connect the charger directly.
4. They mount the charger, power it up, and test that it charges your car correctly.
5. The work is inspected under the permit, and they show you how to use it.

How long and how disruptive

A typical install is a few hours, though a panel upgrade or a long wiring run adds time. The power to part of your home may be off briefly while they work at the panel. It's clean, quiet work — no different from having any electrical job done.

TIP

Ask for a quick lesson before they leave

When the installer is done, ask them to walk you through plugging in, starting a charge, and reading the lights — with your own car, right there. Five minutes of hands-on while an expert stands beside you is worth more than any manual, and a good installer is happy to do it. (I always do.)

STAY SAFE

Keep the paperwork

Hold on to the permit, the inspection sign-off, and the charger's manual and warranty, all in one folder. If you ever sell the house, make an insurance claim, or need warranty service, that paperwork proves the job was done right. A simple folder in a drawer is all it takes.

PART 5

Day-to-Day Charging

The everyday routine: plugging in and unplugging, starting and stopping a charge, reading the lights and screens, how full to charge, and the small habits that keep the battery healthy for years.

CHAPTER 20

Plugging In and Unplugging

This is the heart of living with an electric car, and it's genuinely as easy as plugging in a phone — just bigger. Let's walk through it slowly the first time; after that it's second nature.

To plug in

1. Park so the charging cord comfortably reaches your car's charging port. You'll quickly learn the right spot.
2. **Open the charging door** on the car (a button inside the car, a push on the door itself, or through the car's app, depending on the model).
3. Take the plug off its holster and **push it firmly into the port** until it seats. It's shaped to go only one way, so it won't go in wrong.
4. Charging usually starts on its own within a few seconds — you'll see a light or hear a gentle clunk as the car locks the plug in place.

To unplug

Most cars **lock the plug in** while charging so no one can pull it out mid-charge. To release it, **unlock the car** (or press the button on the plug handle, or stop the charge in the app — it varies by model). Then pull the plug straight out and **hang it back on its holster**, and close the charging door. That's the whole routine.

TIP

If the plug won't come out, the car is still locked

The most common little puzzle for new owners: the plug won't pull free. It's almost always because the car is still locked, holding the plug for safety. Unlock the car (the key fob, the door handle, or the app) and it releases. You're not doing anything wrong — it's a safety feature working exactly as designed.

STAY SAFE

Handle the plug gently and keep it off the ground

The charging plug is sturdy but not indestructible. Don't drop it on concrete, don't yank it by the cord, and hang it back up rather than leaving it in a puddle on the garage floor. Keeping it clean, dry, and holstered makes it last for years. If it's ever cracked or the cord is damaged, stop using it and have it checked.

CHAPTER 21

Starting and Stopping a Charge

For most people, plugging in *is* starting the charge — it just begins. But it helps to know the few ways a charge starts and stops, because the apps and schedules we meet later work by controlling exactly this.

The usual way: it just starts

By default, the moment you plug in, the car checks in with the charger and begins drawing power. You don't press anything. When the battery reaches its target (often 80% or 100%, your choice — see Chapter 23), it stops on its own. You can walk away and forget it.

When it waits instead: scheduled charging

If you've set a **schedule** (to catch cheap overnight rates, say), plugging in won't start charging right away — the car waits until the scheduled hour, then begins. This can surprise you the first time ("why isn't it charging?"). It's not broken; it's waiting on purpose. We set schedules up carefully in Part 6.

Stopping early

To stop a charge before it finishes — maybe you need to leave — you can simply unlock the car and unplug, or stop the charge in the car's screen or app first. Stopping partway through does the battery no harm at all; you can unplug at any percentage.

> **GOOD TO KNOW**
>
> **You can unplug at any time — there's no harm**
>
> Unlike filling a gas tank, there's no "wrong" moment to stop charging. Need to leave with the battery at 63%? Just unplug and go. The battery doesn't mind being interrupted, and you'll never damage anything by unplugging early. Charge as much or as little as the day calls for.

CHAPTER 22

Reading the Car and the Charger

Both your car and your charger tell you what's happening — through lights, a small screen, or the car's dashboard. Once you can read them, you'll know at a glance whether all is well.

What the charger's lights usually mean

Chargers vary, but most use a few colored lights or a simple screen. The exact colors differ by brand, so check your charger's manual — but the common pattern is:

What you see	What it usually means
Steady green or blue	Ready and waiting — plugged in or standing by, all well.
Pulsing / breathing light	Actively charging right now — power is flowing.
Solid steady (charge done)	Finished — the car reached its target and charging stopped.
Red or flashing / amber	Attention needed — a fault or interruption. Check the manual or app.

What the car tells you

Your car is the more reliable storyteller. On the dashboard or center screen you'll see the **battery percentage**, often an estimate of **how long until it's full**, and the **range** in miles. Many cars also light a small indicator near the charging port — green or blue tones for charging, and so on. Your car's app (Part 6) shows all of this on your phone, too.

TIP

The car's percentage is the number to trust

When in doubt about whether charging is working, look at the **battery percentage** on the car and watch it over a few minutes. If it's climbing, you're charging — no matter what the lights seem to say. That simple check settles almost every "is it working?" worry.

CHAPTER 23

How Full Should You Charge?

New owners often assume you should always charge to 100%, like filling a tank. For everyday driving, that's usually *not* the best habit — and your car gives you an easy way to set a healthier target. Here's the plain guidance.

The everyday rule: around 80%

For most cars and most daily driving, charging to about **80%** is the gentle, battery-friendly habit. Topping up to 100% repeatedly, and leaving it sitting full, puts a little extra strain on the battery over the years. Your car lets you set a **charge limit** — tell it to stop at 80%, and it will, automatically, every time.

When to charge to 100%

Charge all the way to 100% when you actually need the range — before a long trip, say. It's perfectly fine to do that; just try not to leave the car sitting at a full 100% for days on end. Charge to full the night before the trip, not a week ahead. (Note: some battery types are happy at 100% routinely — your car's manual will say if yours is one. When in doubt, 80% for daily use is a safe default.)

GOOD TO KNOW

Set the limit once and forget it

The nicest part: you set the charge limit a single time, in the car's charging settings or its app, and it holds forever. Set it to 80% for daily life, bump it to 100% the night before a trip, and drop it back after. Two taps, and the battery looks after itself.

Don't fret over the battery

These are gentle good habits, not fragile rules. Modern EV batteries are built to last many years and are managed by the car itself. You won't ruin anything by occasionally charging to 100%, or by letting it get low now and then. Do the easy 80% habit when you can, and otherwise just drive and enjoy the car.

CHAPTER 24

Cold Weather and Everyday Habits

A few seasonal realities and small habits round out day-to-day charging. None are complicated; knowing them just keeps surprises away.

Cold weather uses more range

In cold weather — and we get it here in Ohio — an EV's range drops, sometimes noticeably, because heating the cabin and warming the battery take energy. This is normal and temporary; range returns when it warms up. In winter, simply plug in more often, and don't be alarmed when the miles read lower than in summer.

Warming up while still plugged in

A lovely cold-weather trick: many cars let you **warm the cabin (and defrost the windows) while still plugged in**, using the home's power instead of the battery. Set it going from the app before you head out, and you step into a warm car with a full battery. Your car's app (Part 6) is where you'll find this, often called "preconditioning."

Good everyday habits

- **Plug in most nights**, even if the battery isn't low. Topping up little and often is easiest on both you and the battery.
- **Keep the plug and port clean and dry.** Wipe off road salt and grit in winter.
- **Don't routinely run it to near-empty.** Like a phone, an EV is happiest living in the comfortable middle.
- **Keep the car's software up to date** — updates sometimes improve charging and range.

WHAT THIS DOES FOR YOU

A warm car and a full battery, every winter morning

Picture the coldest January morning: instead of scraping ice and warming a cold engine, you tap your phone from the kitchen, and by the time you've finished your coffee the car is defrosted, warm, and fully charged — all on home power. That small daily comfort is one of the quiet joys of living with an EV.

PART 6

The Apps

The phone apps that make home charging smart: the two kinds you'll meet, how to set one up, scheduling cheap overnight charging, and keeping an eye on things from your armchair.

CHAPTER 25

The Two Kinds of Apps

Charging can be run entirely from your car, with no phone at all — plenty of people do. But a phone app makes it nicer: you can schedule cheap charging, check progress from the couch, and get a nudge when it's done. There are two kinds of app, and it helps to know which does what.

1. Your car maker's app

Every major car maker has its own **phone app** for its cars — you may have set it up when you bought the car. It talks to the *car itself*, so it can show your battery level and range, start or stop charging, set your charge limit, schedule charging, and precondition (warm or cool) the cabin. For most owners, **this is the main app you'll use**, because it knows your car directly.

2. Your charger maker's app

If your Level 2 charger connects to Wi-Fi, its maker likely has an app too. This one talks to the *charger*, so it can show how much electricity you've used, track costs, schedule charging at the charger's end, and send notifications. Not every charger has (or needs) an app — a simple charger with no app still charges perfectly well.

App	What it controls
Car maker's app	Talks to your car. Battery level, range, charge limit, scheduling, preconditioning. The main one for most people.
Charger maker's app	Talks to your wall charger. Energy used, cost tracking, charger-side scheduling, alerts. Optional.

TIP

You usually only need one app doing the scheduling

If both your car and your charger can schedule charging, pick **one** to be in charge of it — not both, or they can fight and confuse each other. For most people the simplest choice is to let the **car's app** handle scheduling and limits. Keep the charger's app, if you have one, for watching energy use.

CHAPTER 26

Setting Up the App

Getting an app onto your phone and connected to your car (or charger) is a one-time job, and it follows the same friendly pattern as any other app. Here's the general path; the exact wording differs by brand.

Getting the app

1. On your phone, open the **App Store** (iPhone) or **Play Store** (Android).
2. Search for your **car maker's name** (or your charger's brand). Look for the official app — check the maker's name as the publisher so you get the real one.
3. Tap **Get** or **Install** and wait for it to download.
4. Open the app and **create an account** or sign in — often with the same account you used when buying the car.

Connecting it to your car or charger

The app will walk you through **pairing** — linking the app to your specific car or charger. For a car, this usually means confirming your car's identity (sometimes by a number from the car or a confirmation in the car's screen). For a Wi-Fi charger, it means telling the charger your **home Wi-Fi name and password** so it can get online. Follow the steps on screen; take your time.

STAY SAFE

Download only the official app, and guard your password

Search for the maker's **official** app and check the publisher's name before installing — scammers sometimes post fake look-alike apps. Use a strong password for the account, and never share the login. This account can unlock or start your car, so treat it like a house key. (My "Staying Safe Online" manual covers strong passwords in full.)

FROM BILL

Setup giving you trouble? That's a quick call

Pairing an app to a car or getting a charger onto Wi-Fi is exactly the sort of fiddly ten-minute task that's far easier with someone beside you. If it won't connect, don't lose an afternoon to it — call me at (330) 200-8042 and we'll get it paired together.

CHAPTER 27

Scheduling Overnight, Off-Peak Charging

This is the app feature that can actually save you money, so it's worth setting up. The idea is simple: tell the car to do its charging in the **cheap overnight hours** instead of whenever you happen to plug in. Why that saves money is Part 7; here's how to set it.

The two ways to schedule

- **By a set time window** — "only charge between midnight and 6 a.m.," matching your electric company's cheap hours.
- **By a "ready by" time** — "have the car full by 7 a.m.," and the app figures out the cheapest hours to do it in. Many apps offer this friendlier option.

Setting a simple overnight schedule

1. Open your **car's app** (or the car's own charging screen).
2. Find **Charging**, then look for **Schedule**, **Scheduled charging**, or **Charging times**.
3. Turn scheduling **on**, and set the **start time** (and end time) to your cheap overnight window — or set a "ready by" morning time if offered.
4. **Save** it. From now on, when you plug in at night, the car waits and charges during those hours automatically.

HEADS UP

Scheduled charging means it won't start the second you plug in

After you set a schedule, remember that plugging in during the day won't start a charge — the car is waiting for its scheduled hours. That's correct behavior, not a fault. If you ever need an immediate top-up, most apps have a **"charge now"** button to override the schedule just once.

GOOD TO KNOW

Check that the window is long enough to finish

If your cheap window is short (say midnight to 4 a.m.) and your battery is very low, there may not be enough time to fill up before the window ends. On Level 2 this is rarely a problem, but it's worth a glance the first few nights. If the car is short in the morning, widen the window or use "charge now" occasionally.

CHAPTER 28

Monitoring, Notifications, and History

Beyond scheduling, the apps let you keep a comfortable eye on everything from your chair. None of this is essential, but it's genuinely pleasant and occasionally useful.

Checking in from anywhere

Open the app and you'll see, at a glance, your **battery percentage**, estimated **range**, and — if it's charging — how much longer until it's done. You can check from the kitchen, from bed, or from the grocery store. No more wandering out to the garage to squint at a light.

Helpful notifications

Most apps can send little alerts to your phone. The handful worth turning on:

- **Charging complete** — a gentle nudge when the car hits its target.
- **Charging interrupted** — so you know if the plug slipped out or power blipped, rather than finding a half-charged car in the morning.
- **Plugged in / not plugged in** — some apps remind you if you parked but forgot to plug in. A genuine lifesaver on tired evenings.

Seeing where your money and power went

Many apps keep a **history** — how much electricity you used, roughly what it cost, how many miles you added. It's a nice way to see, over a month, just how inexpensive home charging usually is compared with gasoline. If your charger's app tracks cost, you can enter your electricity rate (Part 7) to make those figures accurate.

> **TIP**
>
> **Turn on just the alerts you'd actually want**
>
> You don't need every notification buzzing your phone. I'd turn on "charging complete" and "charging interrupted," and the "forgot to plug in" reminder if your app has it — and leave the rest off. A few useful nudges beat a constant stream you'll learn to ignore.

WHAT THIS DOES FOR YOU

Peace of mind, right in your pocket

The quiet value of the app is reassurance. A glance at your phone tells you the car's ready for tomorrow, the overnight charge went through, and all is well — without a trip to the cold garage. For a lot of owners, that little certainty is the app's real gift.

PART 7

Costs, Rates & Saving Money

What home charging actually costs, how to read your electric rate, how to charge for pennies by using off-peak hours, and an honest word about rebates — all in rough ranges, never invented prices.

CHAPTER 29

What Home Charging Roughly Costs

Charging at home is almost always much cheaper than buying gasoline — that's one of the big draws of an EV. I'll keep all the numbers here as **rough ranges**, because real prices depend on your car, your electric rate, and where you live. For exact figures, your own electric bill is the honest source.

Two different costs to keep separate

People mix these up, so let's name them clearly:

Cost	What it covers
One-time setup cost	What you pay once to get set up: the charger hardware and the electrician's installation. You pay it and you're done.
Ongoing charging cost	What you pay each month to the electric company for the power you use charging. This is the small, recurring part.

The one-time setup, in rough ranges

A Level 2 **charger (the hardware)** typically runs somewhere in the few-hundred-dollar range for a quality, safety-listed unit. The **installation** by a licensed electrician varies widely — a simple job near the panel costs far less than a long wiring run or a job that needs a panel upgrade. Because installs differ so much house to house, the only honest figure is a quote from an electrician who has seen your home. Level 1, of course, costs nothing to set up beyond the cord that came with the car.

HEADS UP

Installation is the part that varies most — always get a quote

The charger's price is easy to look up; the **installation** is the wild card, because it depends entirely on your panel, the distance, and your local permit costs. Don't trust a flat number from the internet — get an actual quote from a licensed electrician for your home. That's the only figure that's real for you.

The ongoing cost is usually small

The electricity to charge at home is typically a **small fraction** of what the same miles would cost in gasoline — often dramatically less, especially if you charge on cheap overnight rates (next chapters). Many owners are pleasantly surprised at how little the monthly difference on

their electric bill turns out to be. We'll show you how to estimate yours.

CHAPTER 30

Understanding Your Electricity Rate

To know what charging costs you — and how to make it cheaper — you need to understand how your electric company charges you. It's simpler than it sounds, and it all comes down to one unit you've already met.

You pay by the kilowatt-hour

Your electric company charges you per **kilowatt-hour (kWh)** — the same "bucket of electricity" unit we met in Part 1. Your bill shows a **rate**, a price per kWh. Charging a car just adds some kWh to your monthly total. Find the rate on your bill, or call your electric company and ask, "what do I pay per kilowatt-hour?"

The big question: do your rates change by time of day?

This is the money question. Electric companies offer two broad kinds of pricing:

Rate type	What it means
Flat rate	You pay the same price per kWh no matter when you use it. Simple — but no overnight discount to chase.
Time-of-use (TOU)	The price changes by time of day: expensive during busy daytime/evening "peak" hours, cheaper overnight "off-peak." This is where EV owners save.

Many electric companies offer a special **time-of-use plan** aimed at EV owners, with very cheap overnight power. It's worth a phone call to ask whether yours does and whether it would save you money. Switching plans is usually free and reversible — but confirm the details with your own utility, as the specifics vary.

TIP

One phone call to your electric company can save you real money

Call your electric company and ask two things: "What's my rate per kilowatt-hour?" and "Do you have a time-of-use or EV plan with cheaper overnight rates?" Those two answers tell you exactly what charging costs and whether scheduling (Part 6) will save you money. It's the single most worthwhile call an EV owner can make.

CHAPTER 31

Saving Money with Off-Peak Charging

Here's where the apps and the rates come together into real savings. If your electric company charges less overnight, charging during those hours can noticeably cut your cost — for no effort beyond setting it up once.

The whole idea in one sentence

Plug in when you get home, but tell the car to do its charging in the cheap overnight hours. You still wake up to a full battery; you just paid the off-peak price for it. That's the entire trick, and it can shave a good deal off your monthly cost.

How to set it up (bringing it together)

1. **Find your cheap hours** — ask your electric company when off-peak pricing applies (often overnight, something like 9 p.m. to 7 a.m., but confirm yours).
2. **Set a charging schedule** in your car's app to charge only during those hours (Part 6, Chapter 27).
3. **Plug in whenever you get home** — the car waits and charges in the cheap window on its own.
4. **Check once or twice** that it's full in the morning, then relax and let it run every night.

WHAT THIS DOES FOR YOU

Full every morning, at the cheapest price — automatically

This is the sweet spot of EV ownership: you plug in from habit, the car quietly charges while power is cheapest and the grid is quiet, and every morning it's ready at the lowest cost — with you doing nothing but plugging in. Set it up once and it pays you back every single night.

A gentle caution on off-peak

Two small things to watch. First, make sure your cheap window is long enough to finish charging (on Level 2 it almost always is). Second, if lots of appliances also run overnight, that's fine — just be aware off-peak is about *when* you use power, not using less of it. The savings come from timing, and they're real.

CHAPTER 32

Rebates and Incentives — Honestly

You may hear about rebates or incentives that help with the cost of a charger or its installation. These genuinely exist in many places — but they change often and vary by where you live, so I'll point you to them rather than quote numbers I can't stand behind.

Where savings sometimes come from

- **Your electric company** — many offer rebates toward a Level 2 charger or its wiring, or bill credits for charging off-peak. Ask them directly.
- **State or local programs** — some states and towns help with charger or installation costs. Your state's energy office is a good place to ask.
- **Federal programs** — tax credits for home charging equipment have existed at times. Whether one applies to you now, and its details, should be checked against current official sources or a tax professional.

HEADS UP

Verify every incentive at the official source before counting on it

I won't quote you a rebate amount or a tax credit figure, because these change and I'd hate to steer you wrong. Check directly with your **electric company**, your **state energy office**, and — for tax credits — the current official rules or a **tax professional**. Confirm you qualify and what's required *before* you spend, so a hoped-for rebate never becomes a disappointment.

FROM BILL

I'll point you to what's really available locally

Part of helping folks here in Portage County is knowing which local and utility programs are worth a look. I can't promise a specific dollar amount — those change — but I can point you to the right place to ask so you don't leave savings on the table. Give me a call: (330) 200-8042.

PART 8

Out on the Road, Safety & When to Call Bill

A brief look at public fast charging for road trips, the safety rules that matter most, quick fixes when a charge won't start, a plain-English glossary, your cheat-sheet, and an honest word about when to pick up the phone.

CHAPTER 33

Public Charging and Road Trips (A Brief Look)

Home charging covers nearly everything day to day. But for the occasional long trip, you'll want to charge away from home — and that's where the fast public chargers come in. This chapter is deliberately short, just enough to make road trips un-scary. Public charging is a topic big enough for its own book.

DC fast charging, in plain terms

The public stations along highways are mostly **DC fast chargers** (Level 3) — the very fast kind we mentioned in Part 1. Instead of the slow overnight top-up you do at home, these can add a large chunk of range in the time it takes to use the restroom and grab a coffee, often **20 to 40 minutes** for a meaningful charge. They're not installed in homes; they exist precisely for travel.

How it works, roughly

1. You find a station (your car's screen or a charging app shows nearby ones and whether they're working).
2. You pull up, plug the station's cord into your car — using your plug or an adapter if needed (Part 3).
3. You start the charge, usually by tapping a card, a phone app, or sometimes the car handles payment itself.
4. You wait a short while — stretch your legs, get a snack — then unplug and drive on.

GOOD TO KNOW

Fast charging is for trips, not every day

DC fast charging is wonderful for travel, but it's not how you'd charge day to day — it costs more than home power, and frequent fast charging isn't the gentlest thing for the battery over years. The healthy pattern for most owners: **home for daily charging, fast chargers for the road**. That's the best of both.

A calm word on 'range anxiety'

The worry about running out of charge on a trip has a name — "range anxiety" — and it fades fast with a little experience. Your car plans trips for you, showing where to stop and for how long. Fast chargers are far more plentiful than they were, and growing. Plan the first trip or two with care, and you'll soon find it no more fretful than watching a gas gauge.

TIP

Have one charging app ready before a trip

Before a long drive, put one good charging app on your phone and make sure you can start a charger with it, so you're not learning at the roadside. Your car maker often has one, or there are well-known network apps. A five-minute practice run at a nearby station beats figuring it out 200 miles from home.

CHAPTER 34

Safety: The Rules That Matter Most

Home charging is very safe when done sensibly — millions of people do it every night without a thought. These are the handful of rules that keep it that way. None are complicated; all are worth following every time.

The big ones

Rule	Why
Use a licensed electrician for 240-volt work	The Level 2 circuit is professional work with a permit. Never DIY it, and never let an unlicensed hand do it.
No cheap extension cords	Plug the car's cord straight into the wall. Don't run Level 1 through a thin household extension cord or power strip — it can overheat.
Buy safety-listed equipment	Chargers and adapters should carry a recognized safety mark (UL/ETL). No bargain, uncertified gear carrying power for hours.
Keep plugs and cords dry and undamaged	Don't use a cracked plug or frayed cord. Hang plugs up, off wet floors. Stop using anything damaged and have it checked.
Let the equipment do its job	Chargers have built-in safety that shuts off at the first sign of trouble. If yours keeps faulting, don't force it — find out why.

GFCI and other safety features — let the pros handle them

You may hear terms like **GFCI** (a type of safety protection that cuts power if it senses electricity going astray) or grounding. These matter a great deal — but they're part of what your **licensed electrician** handles when installing the circuit and charger correctly. Your job isn't to understand the wiring; it's to make sure a professional did it right and pulled the permit. That's the safety that counts.

STAY SAFE

If anything is hot, smells, or sparks — stop and get help

Trust your senses. If a plug, cord, outlet, or the charger itself is **hot to the touch, smells of burning, is scorched, or sparks**, stop using it at once, unplug if you safely can, and have a licensed electrician check it before using it again. These signs are rare, but they're never to be ignored or "watched for a while." When in doubt, call a professional.

CHAPTER 35

Quick Fixes: When a Charge Won't Start

Now and then you plug in and nothing happens, or charging stops short. Before you worry, run through these simple checks — they clear up the great majority of everyday hiccups, and none of them involves touching any wiring.

The things to try, in order

1. **Is a schedule holding it?** The most common reason charging "won't start" is a **scheduled charging** setting waiting for its off-peak hour. Check the app, and use "charge now" if you want it immediately.
2. **Reseat the plug.** Unplug and firmly plug back in, making sure it's fully seated. A loose plug is a frequent culprit.
3. **Check the charge limit.** If the battery is already at your set limit (say 80%), it won't charge further. Raise the limit if you need more.
4. **Look at the charger's light.** A fault light (red/amber) points to the problem — check the charger's manual for what that light means.
5. **Restart things.** Many chargers can be reset by switching their breaker off and on, but *only* if you're comfortable and it's the charger's own breaker — otherwise leave it. Locking and unlocking the car, or restarting the car's screen, also helps.
6. **Try later or try the other cord.** If a public station is the problem, try another one. At home, the Level 1 cord is a handy backup to test with.

TIP

"Is it on a schedule?" solves this more than anything else

Nine times out of ten, a car that "won't charge" at home is simply waiting for its scheduled off-peak hours, exactly as it was told to. Before anything else, check whether a schedule is set and whether it's currently inside the charging window. It saves a lot of needless worry.

FROM BILL

If the quick checks don't do it, that's what I'm for

If you've reseated the plug, checked the schedule and the limit, and something still isn't right — especially if a fault light keeps coming on — don't spend your evening wrestling with it, and please don't start poking at wiring. Call me at (330) 200-8042. A fault that keeps returning is worth a proper look.

CHAPTER 36

A Plain-English Glossary

EV charging has a vocabulary all its own, and the words can make simple things sound harder than they are. Here's a plain-English dictionary of the terms you'll meet. Keep it handy for the first few weeks; soon you won't need it.

Word	What it means
EV	Electric vehicle — a car that runs on a battery instead of gasoline.
EVSE / charger	The equipment on your wall that safely feeds power to the car. Everyone calls it the "charger."
Level 1	Charging from an ordinary 120-volt household outlet. Slow; needs no special equipment.
Level 2	Charging from a 240-volt circuit (like a dryer's). Much faster; installed by an electrician.
Level 3 / DC fast	Very fast public charging for trips. Not installed in homes.
kWh (kilowatt-hour)	The "size of the tank" and the unit on your electric bill — an amount of electricity.
kW (kilowatt)	A speed — how fast electricity is flowing. More kW means faster charging.
Amps	How much electricity flows at once; the "width of the hose." More amps, faster charging.
Range	How many miles the car can go on a full battery.
Onboard charger	The part inside the car that sets how fast it can accept home charging.
J1772	The standard home-charging plug on most non-Tesla EVs.
NACS	The Tesla-style plug now becoming the shared industry standard.
CCS	An older fast-charging plug for non-Tesla cars; being replaced by NACS.
Adapter	A small connector that lets one plug shape fit another.
NEMA 14-50	A common 240-volt outlet (like an RV or dryer outlet) used by plug-in Level 2 chargers.
Hardwired	A charger wired directly into the home's electrical system, with no plug.
Panel / breaker	The box of switches that divides your home's electricity; each breaker feeds a circuit.
Charge limit	The percentage you tell the car to stop charging at (often 80% for daily use).

Word	What it means
Off-peak / TOU	Cheaper electricity in certain hours (time-of-use pricing) — usually overnight.
Preconditioning	Warming or cooling the car on home power before you drive, while still plugged in.
GFCI	A safety protection that cuts power if electricity strays; part of a proper install.

CHAPTER 37

Your Home-Charging Cheat-Sheet

Tear this page out, or fold its corner. These are the everyday essentials, all in one place.

The everyday routine

To do this…	Do this
Charge overnight	Plug in when you get home; let the schedule do the rest
Plug in	Open the charging door, push the plug in firmly until it seats
Unplug	Unlock the car first, then pull the plug out and hang it up
Stop early	Just unlock and unplug — any percentage is fine
Charge now (skip schedule)	Use the "charge now" button in the app

Good habits

Habit	Why
Set the daily limit to about 80%	Gentle on the battery; set it once
Charge to 100% only before trips	Full range when you need it, not sitting full for days
Plug in most nights	Topping up little and often is easiest all round
Charge in cheap off-peak hours	Same full battery, lower cost — set a schedule
Keep plug and port clean and dry	Safe, long-lasting equipment

Safety and trouble

Situation	What to do
240-volt wiring needed	Licensed electrician + permit — never DIY
Level 1 charging	Straight into the wall — no extension cords
"It won't charge"	Check for a schedule first, then reseat the plug
Plug/cord hot, burnt smell, sparks	Stop at once; have an electrician check it
Fault light keeps returning	Don't force it — call Bill

CHAPTER 38

When to Call Bill

I built this book so you could understand home charging and handle the everyday parts yourself, with confidence. And you can. But part of doing things well is knowing when a task belongs to a licensed professional — so you get a safe result and can simply enjoy the car. Here's my honest take on when to pick up the phone.

Good reasons to call

- You want a **Level 2 charger installed** — this is licensed work with a permit, and it's exactly what I do here.
- You'd like your **electrical panel assessed** to find out whether it can support a charger before you buy one.
- You're not sure **which charger or plug** is right for your car, and you'd like a straight answer before spending money.
- An app won't **pair or connect**, or a charger won't get onto your Wi-Fi, and you'd rather not lose an afternoon to it.
- Something's **faulting repeatedly**, running hot, or just not working the way this book describes — and especially anything that worries you about safety.
- You'd simply like someone patient to **sit with you** and walk through it all once, start to finish.

What working with me is like

I'm Bill, and I run **Bill's Home Tech** right here in Portage County, Ohio. I've spent **30+ years** helping people feel at home with their technology, and installing home EV chargers is part of what I do — done the proper, licensed way, with the permit pulled and the work inspected. I treat every call the way I'd want my own parents treated: patiently, in plain English, with no rushing, no jargon, and never any eye-rolling. There is no such thing as a silly question with me.

How to reach me	
Call or text	(330) 200-8042
Book online	billshometech.com/book
Where I serve	Portage County, Ohio and nearby
What I do	Home EV charger installs, setup, and patient tech help of every kind

How to reach me	
What it costs	Fair, honest, and told to you up front — no surprises

FROM BILL

You're never a bother — that's the whole job

Some folks hesitate to call because they don't want to be a nuisance. Please don't feel that way. Helping you is not an interruption to my work — it *is* my work, and it's work I love. Whether it's a quick question about your car's plug or a full Level 2 installation, I'm glad to help. That's what I'm here for.

GOOD TO KNOW

If you reach my website, you may meet Sophie

When you visit billshometech.com, you might be greeted by **Sophie**, my friendly assistant on the site. She can answer quick questions and help you book a time with me. She's there to make reaching me easier — but a real person (me) always does the actual help, especially anything involving your home's wiring.

Thank you for letting me be your guide to home EV charging. Take your time, enjoy the quiet convenience of waking up to a full battery, keep the wiring in a licensed professional's hands, and remember — the everyday part is genuinely easy, and you're never stuck alone. I'm proud of you for learning something new.

— Bill