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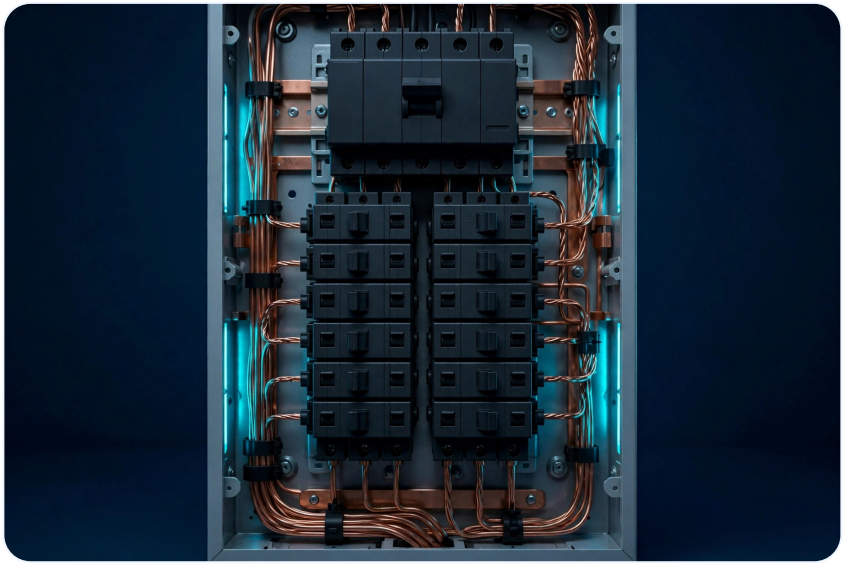

JS POWER LLC · HOMEOWNER SERIES · YOUR COPY

Panel Upgrade Planner

The complete guide — yours to keep. Thanks for supporting JS Power LLC.

Jason Mohoska · Owner-Operator, JS Power LLC
Registered Pennsylvania Home Improvement Contractor · PA HIC #PA166735
Serving Pittsburgh & Western Pennsylvania

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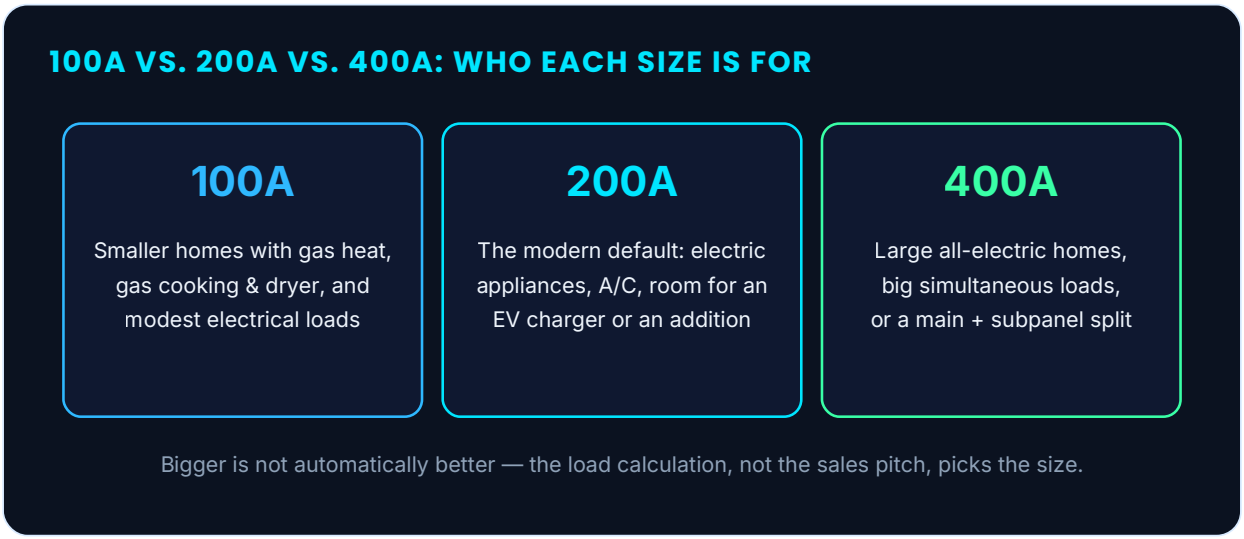
Digital guides — launch sale ends Sun Oct 4: $9 Safety guide · $17 Rental checklist · $13 Panel upgrade planner · $13 Homebuyer's guide · $13 DIY projects guide

CHAPTER 1

Do you actually need an upgrade?



Service sizes in plain terms. Most homes that upgrade land on 200A; the right answer comes from the load calculation worksheet in this planner, not from what a salesperson leads with.

Not every old panel needs to be replaced — but some absolutely do. Here's how to tell which camp you're in before you spend a dime.

Signs you likely need an upgrade:

- **Your breakers trip regularly** under normal use. A trip now and then is the system working; weekly trips mean you're out of capacity.
- **You still have a fuse box.** Fuses aren't unsafe by themselves, but the box can't handle modern loads and most insurers hate them.
- **You're adding big loads** — an EV charger, a hot tub, a home addition, electric heat, a workshop. Each of these can eat 30–60 amps on its own.
- **Your panel is 25–40+ years old** and full — no open breaker spaces left for anything new.

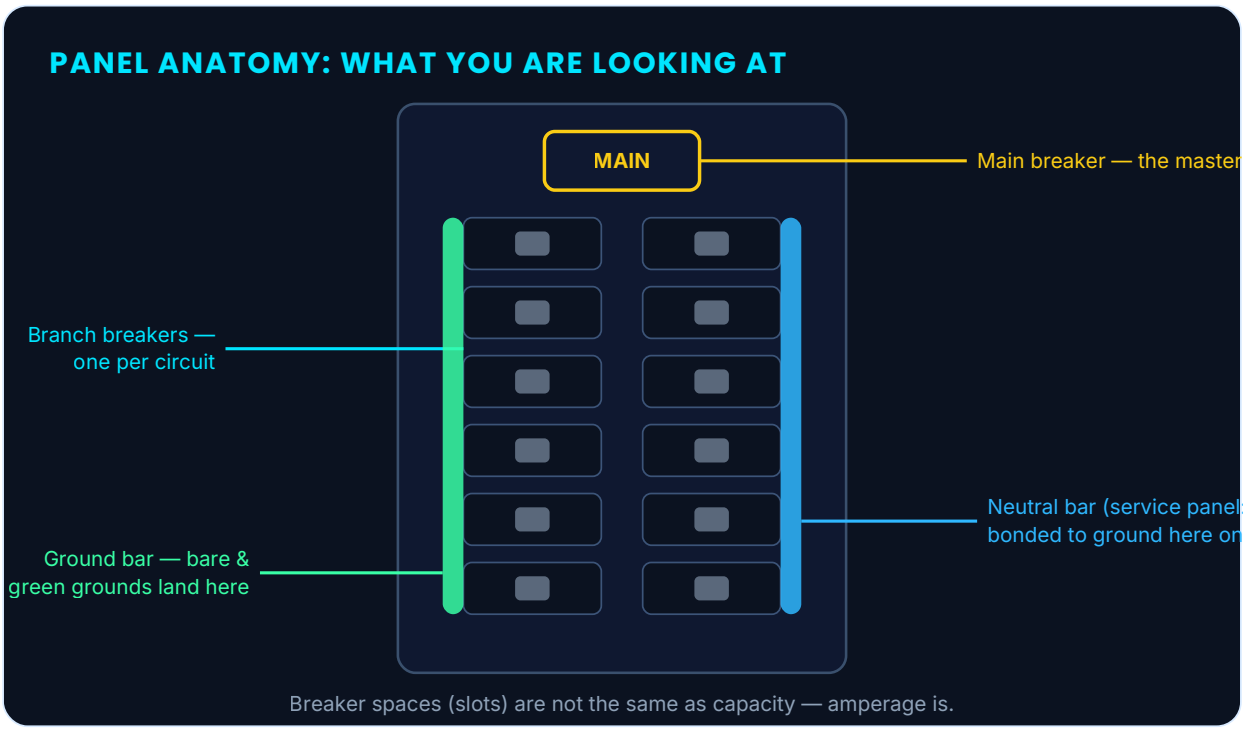
- **You have a Federal Pacific (Stab-Lok) or Zinsco panel.** These have documented breaker-failure issues. If you see either name on your panel, get it evaluated — this one isn't optional.

How to check your service size right now: open the panel door (just the door, not the cover) and read the number on the main breaker at the top — it'll say 60, 100, 150, or 200. That's your service size in amps.

> **⚠ NEVER REMOVE THE PANEL COVER**
>
> Behind that cover are live bus bars that stay energized even with the main breaker off. Reading the main breaker number through the open door is homeowner-safe; anything deeper is electrician-only.

CHAPTER 2

100A vs 200A vs 400A: what the numbers mean



A loadcenter in one picture: the main breaker feeds two columns of branch breakers, with the neutral and ground bars at the sides. Counting empty slots tells you about space — never about how much load the service can carry.

Service size is the total amount of electrical current your home can draw at once. Here's the plain-English breakdown:

- **60A:** Pre-1960s standard. Fine for a cabin, not for a modern home. If you have this, you're upgrading — it's a matter of when.
- **100A:** The post-war standard and still adequate for a smaller all-gas home with no EV charger, no hot tub, and no electric heat. Most 100A homes I see are fine until the homeowner adds one big electric load.

- **200A:** The modern residential standard. Handles an EV charger, central air, electric dryer and range, plus headroom. This is what I recommend for most homes that are upgrading anyway.
- **400A:** Large homes, all-electric homes with multiple big loads, or properties with a detached shop. Overkill for most houses — and roughly double the work.

The rule I give customers: if you're opening the walls (or the wallet) for a service upgrade, go 200A unless your load calculation says otherwise. The cost difference between 100A and 200A equipment is small compared to the labor, and 200A future-proofs you for an EV charger later. Going 400A 'just in case' on a 1,600-square-foot house is money you'll never get back.

CHAPTER 3

The load calculation worksheet

Electricians size services with a formal load calculation (NEC Article 220). You don't need to run the official math — but walking through this simplified version tells you roughly where you stand before anyone quotes.

Step 1 — General lighting and receptacles: multiply your home's finished square footage by 3. Example: 1,800 sq ft × 3 = 5,400 volt-amps.

Step 2 — Small-appliance and laundry circuits: add 1,500 VA for each required small-appliance branch circuit (kitchens need at least two) and 1,500 VA for the laundry circuit. Example: 1,500 + 1,500 + 1,500 = 4,500 VA.

Step 3 — Major appliances (use nameplate ratings if you have them):

- Electric range: ~8,000–12,000 VA
- Electric dryer: ~5,000 VA
- Central air conditioner: ~5,000–7,000 VA
- Electric water heater: ~4,500 VA
- EV charger (48A hardwired): ~11,500 VA
- Hot tub: ~7,000–11,000 VA

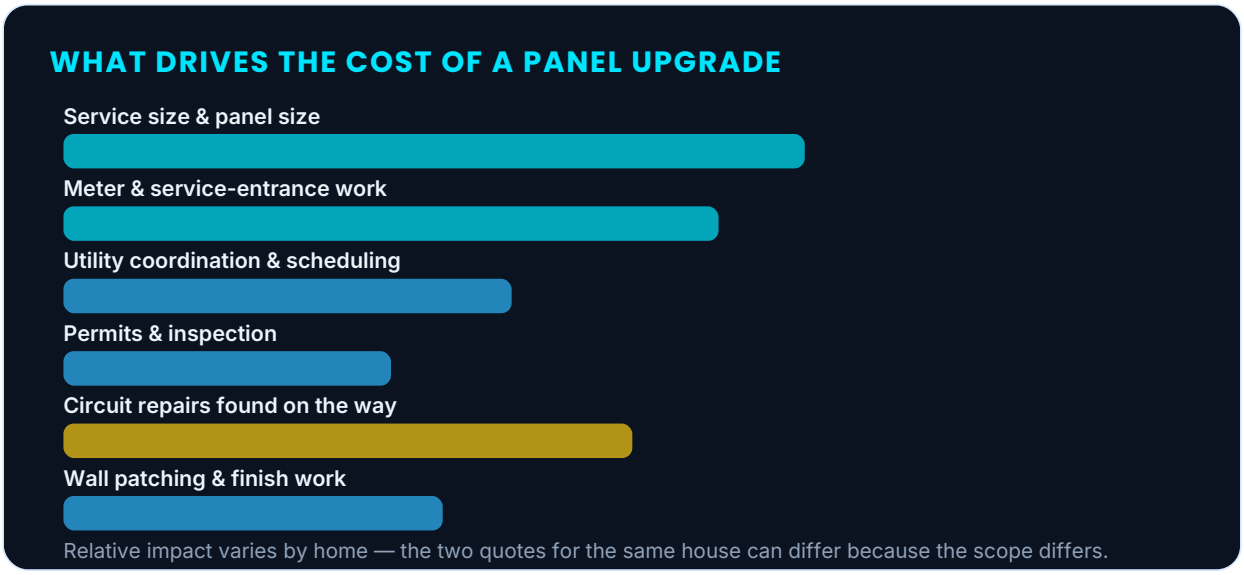
Step 4 — Add it up and divide by 240 to get approximate amps. Example: 5,400 + 4,500 + 8,000 (range) + 5,000 (dryer) + 5,000 (AC) = 27,900 VA ÷ 240 = ~116A. That house is over a 100A service on paper — 200A is the right call.

> **NOTE**
>
> This is a planning estimate, not the code calculation. Your electrician runs the official NEC Article 220 calc for the permit. But if your worksheet lands at 130A and

> someone quotes you a 100A panel 'to save money,' you now know enough to push back.

CHAPTER 4

What drives the cost of a panel upgrade



No two panel quotes are priced on the same scope. These are the levers that move the number — when quotes differ, compare which of these each contractor actually included.

Panel upgrade quotes vary wildly — sometimes by thousands for the same house. Here's what actually moves the number, so you can read a quote like a pro:

- **Service size and panel spaces:** a 200A 40-space panel costs more in material than a 100A 20-space, but the labor is nearly identical. Bigger is barely more expensive once the crew is there.
- **Overhead vs. underground service:** if your feed comes from a pole (overhead), the upgrade usually includes a new mast, meter socket, and weatherhead. Underground services need trenching or conduit work — often pricier.
- **Meter location and grounding:** code requires proper grounding electrodes (ground rods, water pipe bond). Older homes often need this brought up to code as part of the job — legitimate, but it should be itemized.

- **Permit and inspection fees:** vary by municipality. A real quote includes these; a suspiciously cheap quote often doesn't.
- **Utility coordination:** the power company has to disconnect and reconnect your service. Reputable electricians schedule this; the brief outage is normal.
- **Wall repair:** most panel swaps need a bigger opening or new mounting. Ask whether patching is included or on you.

I publish real, on-the-truck prices for panel upgrades in the Pittsburgh area on my panel upgrade cost page — use it as a reality check against any quote you get.

CHAPTER 5

Panel brands and what to ask for

Not all panels are equal, and the brand your electrician installs matters for the next 30 years.

- **Ask for:** Square D (QO or Homeline), Eaton (BR or CH), or Siemens. These have readily available breakers, solid track records, and any electrician can service them.
- **Ask about spaces, not just amps:** a 200A panel comes in 20, 30, or 40 spaces. Always get the 40-space. The cost difference is tiny and you'll use the spaces — future EV charger, basement finish, hot tub. A full 20-space panel five years from now means subpanels and extra cost.
- **Combination AFCI/GFCI breakers:** current code requires AFCI protection on most living-space circuits and GFCI in kitchens, baths, garages, and outdoors. Your quote should include these where required — not as a surprise add-on.
- **Whole-home surge protector:** ask for one to be installed at the panel during the upgrade. It's a small add-on while the panel is open and protects everything downstream.
- **Brands to replace on sight:** Federal Pacific Stab-Lok and Zinsco — documented failure rates. If your quote says 'we can reuse the existing panel,' and it's one of these, get a second opinion.

CHAPTER 6

How to vet quotes: the 3-quote method

Get three quotes. Not one, not five — three. Here's how to make them comparable:

1. **Give every electrician the same brief:** 'I want a 200A service upgrade, 40-space panel, permit and inspection included, whole-home surge protector.' Same words to all three. Different briefs produce incomparable quotes.
2. **Demand itemization:** equipment, labor, permit fees, utility coordination, grounding upgrades, wall repair. A one-line '$X for panel upgrade' tells you nothing.
3. **Compare scope, not just price:** the cheapest quote often excludes the permit, the surge protector, or the grounding work — then adds them back as 'unforeseen' extras.
4. **Check the license:** in Pennsylvania, verify their Home Improvement Contractor registration (HIC number) at the Attorney General's site. Mine is PA166735 — look yours up the same way.
5. **Ask for the permit by name:** 'Which municipality are you pulling the permit with, and is the inspection included?' Anyone vague here is planning to skip it.

On price: legitimate 200A upgrades in our area cluster in a range — if one quote is 40% below the other two, something's missing. The most expensive isn't automatically the best either. Pick the middle quote with the clearest scope, from the contractor who answered your questions directly.

CHAPTER 7

Red flags in a contractor's proposal

Walk away — politely — if you see any of these:

- [ ] **'We don't need a permit for this.'** Yes, you do. A service upgrade always needs a permit and inspection in Pennsylvania municipalities. No exceptions.
- [ ] **Cash-only discount with no paperwork.** No contract, no permit, no warranty, no recourse. The 'discount' is your protection disappearing.
- [ ] **Reusing your Federal Pacific or Zinsco panel** 'to save you money.' That's not savings, that's liability.
- [ ] **No license/HIC number on the proposal.** Legitimate contractors print it on everything.
- [ ] **Pressure to sign today** for a 'today-only price.' Electrical work is planned work. Sleep on it.
- [ ] **They bad-mouth every competitor by name.** Professionals sell their own work.
- [ ] **Vague timeline with full payment upfront.** Standard is a deposit (often 30–50%) with balance on completion and passed inspection. Never pay 100% before the work starts.

CHAPTER 8

Permits and inspections in Pennsylvania

A service upgrade without a permit is a problem that compounds: it can void your homeowner's insurance coverage for electrical fires, kill a future home sale (buyers' inspectors flag unpermitted electrical), and leave you with no independent verification the work is safe.

- **Who pulls it:** your electrician, not you. It's part of the job.
- **What the inspector checks:** proper grounding and bonding, correct wire sizes, torque specs on lugs, labeling, working clearances, AFCI/GFCI protection where required.
- **The sticker matters:** after passing, you get an inspection approval — keep it with your house records. It's gold at resale time.
- **Pittsburgh proper:** electrical permits go through the Department of Permits, Licenses, and Inspections (PLI). Surrounding boroughs and townships have their own offices — your contractor should know exactly which one covers your address.

If a contractor suggests skipping the permit 'because the township never checks' — that's your sign to hire someone else.

CHAPTER 9

Install day: what to expect

Power will be off most of the day. Plan for it: charge phones, keep the fridge closed (food is safe ~4 hours unopened), and if anyone in the home depends on powered medical equipment, arrange to be elsewhere.

- **Morning:** utility disconnects power at the meter. Old panel comes out, new panel and meter socket go in, grounding gets brought up to code.
- **Midday:** circuits get landed on new breakers, everything gets labeled (ask for this — a labeled panel is worth its weight in gold), AFCI/GFCI breakers installed where required.
- **Afternoon:** utility reconnects, power comes back on, electrician tests every circuit.
- **Your job:** walk the house with the electrician and flip everything — every light, every outlet, the dryer, the AC. Find problems while the truck is still in your driveway.
- **After:** inspection gets scheduled (your contractor handles it), you keep the approval paperwork, and you photograph the labeled panel for your records.

AFTER-UPGRADE CHECKLIST

☐ Every circuit tested and working · ☐ Panel directory filled out and legible · ☐ Inspection passed and paperwork in hand · ☐ Whole-home surge protector installed · ☐ Old panel and debris hauled away · ☐ Warranty terms in writing

— ABOUT THE AUTHOR

Need an electrician? Call JS Power LLC.

I'm Jason Mohoske, owner-operator of JS Power LLC (Insured · PA HIC #PA166735), serving Pittsburgh and Western Pennsylvania. 20+ years in the trade. When you call, you deal directly with me: I quote the job, I do the work, and it's done to code.

- Panel upgrades & service changes (100–200 amp)
- EV charger installs
- Generator installs
- Lighting, ceiling fans & remodels
- Troubleshooting & safety inspections
- Commercial fit-outs

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