vifalio

FREE PLAYBOOK FOR ELECTRICIANS

20 CALLS SERVICE-CALL PLAYBOOK



The 20 calls you get most in US homes: what is usually wrong, what to measure, how to fix it, how long it takes and what to charge.

- 20 common calls, symptom to fix
- Normal meter readings on one page
- The 5-step troubleshooting method
- Flat-rate price and time for each call
- Printable service ticket

HOW TO USE THIS PLAYBOOK

Diagnose faster, quote with confidence and leave every job with proof on paper.

1 FIND THE CALL

Pages 4 to 8 list 20 calls by symptom. Read the likely causes in order: the first one is the most common.

2 MEASURE

Page 3 shows what normal looks like. Compare your readings before you open anything else.

3 FIX

Each call ends with the usual repair. Replace like with like and follow the local code.

4 QUOTE

Each call has a typical time and price. Page 9 has all 20 in one table.

5 WRITE IT UP

Fill the ticket on page 10: readings, findings, work done, total. Clients trust paper.

6 STAY SAFE

Live-dead-live every time. A non-contact tester alone is not proof that a wire is dead.

WHAT'S INSIDE

- 3 Normal readings and the 5-step method
- 4 Calls 1 - 4: dead outlets and GFCI
- 5 Calls 5 - 8: breakers, AFCI, flicker
- 6 Calls 9 - 12: lost leg, heat, sparks
- 7 Calls 13 - 16: 3-way, fan, doorbell, alarms
- 8 Calls 17 - 20: water heater, shock, ground
- 9 Flat-rate table: time and price
- 10 Service ticket (print)

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

WHAT NORMAL LOOKS LIKE

Readings for a typical US home. Out of range = you found a clue.

Test	Normal	Notes
120 V outlet, hot-neutral	114 - 126 V	ANSI C84.1 Range A for 120 V
Hot-ground	same as hot-neutral	About 0 V = no ground
Neutral-ground	under 2 V	Higher under load = loose or long neutral
240 V, L1-L2	228 - 252 V	ANSI C84.1 Range A for 240 V
L1-N vs L2-N	both 114 - 126 V	One up, one down under load = neutral problem
Closed switch / good fuse	about 0 ohms	OL = open
Doorbell transformer	10 - 24 V AC	16 V is the most common
Water heater element (240 V)	4500 W = 12.8 ohms	3500 W = 16.5 ohms
Continuous load (80% rule)	12 A / 16 A	On a 15 A / 20 A breaker

THE 5-STEP METHOD

1 ASK

When did it start? What was running? Any recent work, storm or new appliance?

2 LOOK

Panel, every GFCI, scorch marks, smell, water. Most calls end here.

3 MEASURE

Live-dead-live: test the meter on a known source, test, test again.

4 ISOLATE

Unplug loads, open the circuit at a midpoint, disconnect LOAD.

5 FIX + PROVE

Repair, retest with the meter, show the client, write it on the ticket.

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

CALLS 1 - 4 · OUTLETS AND GFCI

1 DEAD OUTLETS IN ONE ROOM

0.5 - 1.5 h | $100 - $250

LIKELY CAUSES
- Tripped GFCI upstream (bath, garage, kitchen, outdoor)
- Tripped breaker
- Loose backstab wire in the last outlet that works

WHAT TO TEST
Hot-neutral at the dead outlet (expect about 120 V). Check every GFCI on the circuit, then open the last outlet that still works.

USUAL FIX
Reset or replace the GFCI. Move backstab wires to the screw terminals or replace the device.

2 GFCI WON'T RESET

0.5 - 1.5 h | $120 - $270

LIKELY CAUSES
- No power on the LINE side
- LINE and LOAD wires swapped
- Fault downstream or GFCI at end of life

WHAT TO TEST
Voltage at the LINE terminals. Cap the LOAD wires and try again: if it resets now, the fault is downstream.

USUAL FIX
Put the feed on LINE, find the downstream fault, or replace the GFCI.

3 GFCI KEEPS TRIPPING

1 - 2.5 h | $150 - $350

LIKELY CAUSES
- Water in an outdoor box or receptacle
- Damaged appliance cord or motor
- Shared neutral on the LOAD side

WHAT TO TEST
Unplug everything, reset, add loads one at a time. Then disconnect LOAD and retest; insulation test the downstream run.

USUAL FIX
Dry and seal the box with an in-use cover, repair the run, or separate the neutral.

4 BREAKER TRIPS AFTER A WHILE

1 - 2 h | $150 - $400

LIKELY CAUSES
- Overload: too much on one circuit
- Weak or overheating breaker
- Loose connection at the breaker or a device

WHAT TO TEST
Clamp meter on the hot at the panel with the normal loads on. 80% rule: 12 A continuous on 15 A, 16 A on 20 A.

USUAL FIX
Move loads or add a dedicated circuit, replace the breaker, re-torque the terminals.

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

CALLS 5 - 8 · BREAKERS AND LIGHTS

5 BREAKER TRIPS THE MOMENT YOU RESET

1 - 3 h | $150 - $450

LIKELY CAUSES
- Short circuit: pinched wire, nail or screw in a cable
- Failed device or fixture
- Ground fault on the run

WHAT TO TEST
Breaker OFF, wires off the breaker. Ohms hot-neutral and hot-ground on the run. Split the circuit at a midpoint to isolate.

USUAL FIX
Repair or replace the damaged section, device or fixture.

6 AFCI NUISANCE TRIPS

1 - 3 h | $150 - $400

LIKELY CAUSES
- Neutral touching ground somewhere
- Neutral shared between two circuits
- Loose connection; some vacuums and motors

WHAT TO TEST
Read the trip indicator if the breaker has one. With the circuit isolated, ohms neutral-ground should read open.

USUAL FIX
Separate the neutrals, fix the neutral-ground contact, tighten connections; replace the AFCI if it is bad.

7 ONE LIGHT FLICKERS

0.5 - 1 h | $100 - $250

LIKELY CAUSES
- Loose bulb, or LED not made for that dimmer
- Loose wire at the switch or fixture
- Worn switch or dimmer

WHAT TO TEST
Try a known good bulb and check the dimmer's LED list. Power off: open the switch and fixture, inspect every splice.

USUAL FIX
Compatible LED or dimmer, new switch, redo the splice.

8 WHOLE HOUSE DIMS, OR LIGHTS GET BRIGHTER

URGENT | 1 - 2 h | $150 - $500

LIKELY CAUSES
- Loose or open service neutral
- Loose main lug
- Problem on the utility side

WHAT TO TEST
At the main, L1-N and L2-N while a big 120 V load runs. One leg going up while the other goes down = neutral problem.

USUAL FIX
Utility for their side; tighten or repair the neutral in the panel. Urgent: it can burn electronics.

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

CALLS 9 - 12 · LOST LEG, HEAT, SPARKS

9 HALF THE HOUSE IS DEAD

1 - 2 h | $150 - $400

LIKELY CAUSES
- One leg lost from the utility
- Loose main breaker or lug
- Tripped 2-pole breaker

WHAT TO TEST
At the main: L1-L2 about 240 V, each leg to neutral about 120 V. A lost leg reads 0 V or low on one side.

USUAL FIX
Utility if the problem is before the meter; main breaker or lugs if it is in the panel.

10 HOT OUTLET OR SWITCH, BURNING SMELL

URGENT | 1 - 2 h | $150 - $350

LIKELY CAUSES
- Loose terminal or backstab
- Overloaded device (space heater)
- Aluminum wire on devices not rated for it

WHAT TO TEST
Power off first. Look for melted plastic and dark insulation; IR thermometer on loaded devices of the same circuit.

USUAL FIX
Cut back to clean wire, new device; CO/ALR devices or listed AL-to-CU connectors on aluminum.

11 OUTLET SPARKS OR WON'T HOLD A PLUG

0.5 - 1 h | $100 - $215

LIKELY CAUSES
- Worn contacts
- Loose terminal
- Plugging in a load that is already on

WHAT TO TEST
A tiny spark when plugging in a load can be normal; scorch marks are not. Check the terminals with power off.

USUAL FIX
Replace with a new receptacle (tamper-resistant where required).

12 SWITCH DOES NOTHING

0.5 - 1 h | $100 - $250

LIKELY CAUSES
- Dead bulb or fixture
- Failed switch
- Open hot or neutral upstream

WHAT TO TEST
Power off: continuity across the switch in ON. Power on: voltage at the switch line terminal and at the fixture.

USUAL FIX
Replace the switch or fixture, or repair the open connection.

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

CALLS 13 - 16 · SWITCHES, FAN, BELL, ALARMS

13 3-WAY WORKS FROM ONLY ONE SIDE

0.5 - 1.5 h | $120 - $300

LIKELY CAUSES
- Common and traveler swapped at one switch
- Failed 3-way switch

WHAT TO TEST
Find the common screw (dark color) on each switch. Power off: continuity common-to-traveler as you flip it.

USUAL FIX
Line or load on the common, travelers on the brass screws; replace the switch if it is bad.

14 CEILING FAN DEAD OR SLOW

1 - 2 h | $100 - $300

LIKELY CAUSES
- Pull-chain switch failed
- Weak capacitor (slow speeds)
- Remote receiver failed

WHAT TO TEST
Voltage at the fan leads; check the wall switch and the receiver; compare the capacitor to its label value.

USUAL FIX
Replace the switch, capacitor or receiver; confirm the box is fan-rated.

15 DOORBELL IS SILENT

0.5 - 1.5 h | $100 - $250

LIKELY CAUSES
- Transformer dead
- Bad button
- Broken low-voltage wire or chime

WHAT TO TEST
Transformer output: usually 10 - 24 V AC (16 V is common). Jumper the button terminals: the chime should ring.

USUAL FIX
Replace the transformer, button or chime; video doorbells often need 16 - 24 V.

16 SMOKE ALARMS CHIRPING

0.5 - 1 h | $70 - $150 / unit

LIKELY CAUSES
- Low battery
- Alarm at end of life (replace at 10 years)
- Interconnect fault

WHAT TO TEST
Read the date on the back of each alarm. Press test on each one: interconnected alarms should all sound.

USUAL FIX
Replace old units with the same interconnect type; new batteries where used.

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

CALLS 17 - 20 · HEATER, SHOCK, GROUND

17 ELECTRIC WATER HEATER, NO HOT WATER

1 - 2 h | $150 - $450

LIKELY CAUSES
- High-limit (ECO) tripped
- Burned element
- Bad thermostat

WHAT TO TEST
Power off. Element ohms at 240 V: 4500 W = 12.8 ohms, 3500 W = 16.5 ohms; open = bad. Check 240 V at the heater.

USUAL FIX
Reset the ECO and find why it tripped; replace the element or thermostat.

18 OUTDOOR OUTLET OR YARD LIGHTS DEAD

0.5 - 1.5 h | $120 - $300

LIKELY CAUSES
- Tripped GFCI (often in the garage or a bath)
- Water in the box
- Timer or photocell failed

WHAT TO TEST
Find the GFCI that protects the outdoor circuit; look for water in the box; test the timer or photocell.

USUAL FIX
Weather-resistant GFCI with an in-use (bubble) cover; replace the timer or photocell.

19 TINGLE OR SHOCK FROM APPLIANCE OR FAUCET

URGENT | 1 - 3 h | $150 - $500

LIKELY CAUSES
- Missing ground or bonding
- Reversed polarity
- Appliance fault to its frame

WHAT TO TEST
Hot-ground and neutral-ground at the outlet; plug-in tester for polarity; volts from the appliance frame to ground.

USUAL FIX
Restore grounding and bonding, fix polarity, take the appliance out of service.

20 3-PRONG OUTLETS WITH NO GROUND

0.5 - 2 h / outlet | $50 - $300 / outlet

LIKELY CAUSES
- Old 2-wire wiring
- Ground wire not connected in the box

WHAT TO TEST
Plug-in tester shows open ground; hot-ground reads about 0 V while hot-neutral reads about 120 V.

USUAL FIX
Run a ground, or GFCI-protect and label it 'No Equipment Ground' (NEC 406.4(D)(2)).

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

FLAT-RATE TABLE · ALL 20 CALLS

Typical total for the visit, labor and common parts. Big repairs (new circuit, panel) are quoted apart.

#	Call	Time	Price
1	Dead outlets in one room	0.5 - 1.5 h	$100 - $250
2	GFCI won't reset	0.5 - 1.5 h	$120 - $270
3	GFCI keeps tripping	1 - 2.5 h	$150 - $350
4	Breaker trips after a while	1 - 2 h	$150 - $400
5	Breaker trips the moment you reset	1 - 3 h	$150 - $450
6	AFCI nuisance trips	1 - 3 h	$150 - $400
7	One light flickers	0.5 - 1 h	$100 - $250
8	Whole house dims, or lights get brighter	1 - 2 h	$150 - $500
9	Half the house is dead	1 - 2 h	$150 - $400
10	Hot outlet or switch, burning smell	1 - 2 h	$150 - $350
11	Outlet sparks or won't hold a plug	0.5 - 1 h	$100 - $215
12	Switch does nothing	0.5 - 1 h	$100 - $250
13	3-way works from only one side	0.5 - 1.5 h	$120 - $300
14	Ceiling fan dead or slow	1 - 2 h	$100 - $300
15	Doorbell is silent	0.5 - 1.5 h	$100 - $250
16	Smoke alarms chirping	0.5 - 1 h	$70 - $150 / unit
17	Electric water heater, no hot water	1 - 2 h	$150 - $450
18	Outdoor outlet or yard lights dead	0.5 - 1.5 h	$120 - $300
19	Tingle or shock from appliance or faucet	1 - 3 h	$150 - $500
20	3-prong outlets with no ground	0.5 - 2 h / outlet	$50 - $300 / outlet

Our estimates for 2026, built from the US price ranges in the Vifalio Electrician Pricing Kit (HomeAdvisor, Fixr, This Old House). Adjust to your area.

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.

SERVICE TICKET

Client: _____ Address: _____

Phone: _____ Date / time in: _____

Complaint (in the client's words)

Readings

L1-N	L2-N	L1-L2	N-G	Ohms	Amps

What I found

Work done

Part / labor	Qty	Each	Total

Paid by: _____

TOTAL $

Client signature

Technician



EVERY CALL, THE SAME WAY

Ask, look, measure, isolate, fix and prove. Then write it down and get paid.
More free guides for the trades on vifalio.com.

Educational guide. Work de-energized whenever possible, follow NFPA 70E and your local code (AHJ). Prices are reference ranges and vary by area.