

EV Charger Load Assessment

NEC Article 220 calculation for a home electrical service

REPORT
sample-upgrade-report

VEHICLE
2026 Ford F-150 Lightning

PREPARED
August 16, 2026

METHOD
220.83-A

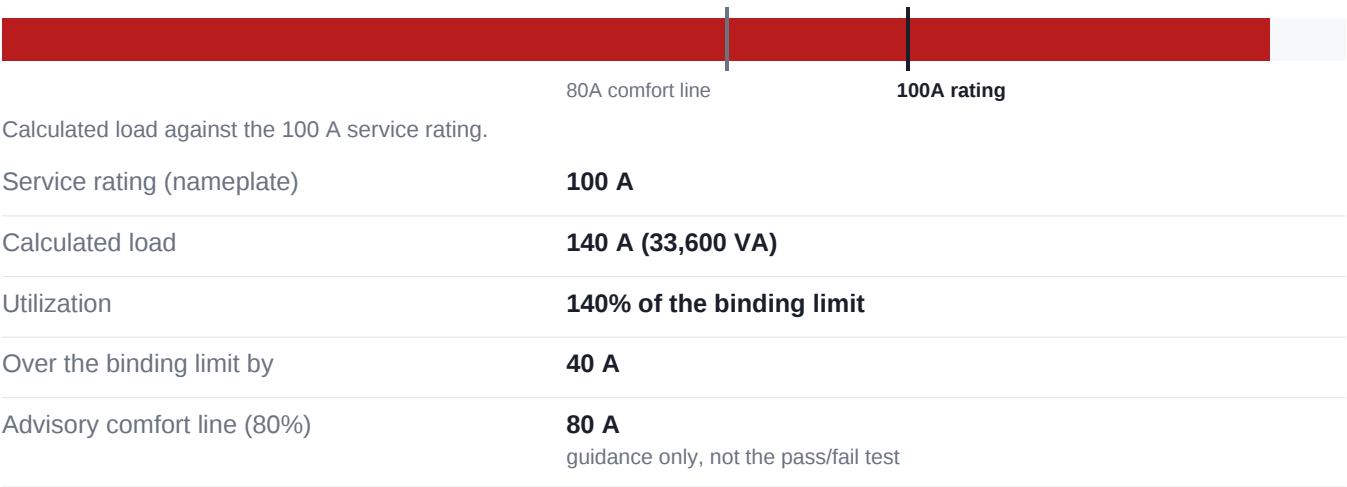
The verdict

Your calculated load exceeds your service rating.

The calculated load of 140 A is above the 100 A limit, so this installation does not pass the NEC 230.79 test as configured. That does not automatically mean a service upgrade: a lower charger setting, load management, or removing a load from the calculation can each bring it back under. Bring this document to a licensed electrician.

This verdict is the NEC 230.79 test: a service is adequate when the computed load does not exceed the service rating. The pass/fail threshold is 100% of the rating. The 80% line quoted throughout this document is an advisory comfort band, not the threshold.

Capacity



The charger this report sizes

Charger output	48 A at 240 V
Branch circuit to quote	60 A at 240 V overcurrent device at 125% of the continuous load
Recommended service size	200 A

The branch circuit above is sized per NEC 625.41 and 210.20(A), which require the overcurrent device to be at least 125% of a continuous load, then rounded up to the next standard NEC 240.6(A) size. A quote that proposes a smaller breaker for this charger setting is quoting a circuit this calculation does not support.

Every method, side by side

NEC 220.83(A) Existing Dwelling bound this assessment. Use when adding loads to existing home without new air conditioning or electric heating. The other Article 220 methods are shown so you and your electrician can see the spread rather than a single number with no context. The highlighted row is the one this report's verdict rests on.

METHOD	SECTION	CALCULATED LOAD	AGAINST YOUR SERVICE
220.82	2023 Section 220.82	145 A	Exceeds
220.83-A	2023 Section 220.83(A)	140 A	Exceeds
220.83-B	2023 Section 220.83(B)	140 A	Exceeds
Standard	2023 Article 220 Part III	184.4 A	Exceeds
2026 Preview	2026 Article 120.82	137.3 A	Exceeds

Across all methods the calculated load ranges from 137.3 A to 184.4 A. Every method agrees on whether your service is adequate.

Where the load comes from

LOAD	DEMAND
General Lighting (3VA/sqft) - 3 x 15A circuits	4,950 VA
Kitchen Circuits (2 x 20A)	3,000 VA
Laundry Circuit (1 x 20A)	1,500 VA
Fixed Appliances	17,500 VA
Subtotal (after 40% demand factor over 8kVA)	15,580 VA
Existing HVAC Load (100%)	6,500 VA
EV Charger Continuous Load	11,520 VA
Total calculated demand	33,600 VA

These are demand figures after the Article 220 demand factors are applied, not connected nameplate loads. They will not sum to the sticker ratings on your appliances, and are not meant to.

Circuits counted in this calculation

CATEGORY	CIRCUITS	RATING
General Lighting & Receptacles	3	15 A at 120 V
Kitchen Small Appliance Circuits	2	20 A at 120 V
Bathroom Circuits	2	20 A at 120 V

Laundry Circuit	1	20 A at 120 V
Electric Range	1	50 A at 240 V
Electric Dryer	1	30 A at 240 V
Electric Water Heater	1	30 A at 240 V
Air Conditioning (2 tons)	1	10 A at 240 V
EV Charger (48A)	1	48 A at 240 V

Typical cost ranges in Ohio

Based on median electrician wages in Ohio.

Dedicated 60 A circuit

\$480 to \$830

Labor and materials, from a short run near the panel to a longer run in conduit across the garage.

Panel service upgrade (if needed)

\$2,000 to \$4,500

Only needed if the panel is at capacity. National range: this figure is not regionalized.

Permit

\$50 to \$200

Set by your local inspection office, so it does not track labor rates.

These are cost figures, not quotes: local labor at burdened cost plus materials, with no contractor markup. Expect real quotes at or above the high end. Get at least two.

What to do next

Calculated load exceeds the panel's rating. See the upgrade options in the summary.

- Ask any electrician quoting this job to size the branch circuit at 60 A for a 48 A charger.
- Ask which Article 220 method their own calculation used, and compare it to the table above.
- If a quote includes a service upgrade, ask which calculated load figure makes it necessary.

How this was calculated

Binding method	NEC 220.83(A) Existing Dwelling
Code section	NEC 2023 Section 220.83(A)
How it works	For existing dwellings without adding HVAC. First 8kVA at 100%, remainder at 40%.

- Method for adding loads to existing dwellings
- Uses 8kVA threshold (vs 10kVA in 220.82)
- Apply when NOT adding new HVAC equipment
- This calculation uses your questionnaire answers. No panel photographs were read.
- No electric heating nameplate was available, so a conservative strip-heat allowance was used. A real nameplate

reading will usually lower this figure.

Calculation engine reviewed by Jason Walls, Master Electrician, KY Electrical License EE642643, IBEW Local 369, EVITP Certified.

This document is a load calculation prepared from the information provided about this home. It is not a permit, an inspection, or a substitute for one. Local amendments and the authority having jurisdiction govern the final installation, and a licensed electrician must verify conditions on site before work begins.

ChargeRight (evchargeright.com)