

Electrical Panel Load Calculator

Add three circuit load-current estimates to create a transparent preliminary estimate using the entered panel voltage, phase count, panel nameplate rating, and target reserve percentage.

Generated October 10, 2026

<https://www.elecatrix.com/residential-load-service/electrical-panel-load-calculator/>

Inputs

Input	Value	Unit
Panel voltage	240	V
Phase count	Single-phase	phase
Panel rating	100	A
Circuit 1 load	20	A
Circuit 2 load	15	A
Circuit 3 load	10	A
Target reserve	20	%
Load-current basis note	N/A	

Results

Result	Value	Unit
Total connected load	45	A
Estimated apparent power	10800	VA
Phase multiplier	1	x
Estimated connected-load current	45	A
Target estimated capacity	56.25	A
Target capacity increment	11.25	A
Estimated spare capacity at entered rating	55	A
Estimated utilization of entered rating	45	%
Capacity gap to target	N/A	A

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Calculation details

Detail	Value	Unit
Capacity boundary	No NEC demand calculation, panel approval, breaker selection, bus rating decision, or service-size decision is made by this calculator.	
Phase model boundary	Balanced equivalent phase model only; no phase-balance, load-by-leg, neutral, power-factor, or equipment-duty analysis is made by this calculator.	

Formulas

$\text{total connected load} = \text{circuit 1 load} + \text{circuit 2 load} + \text{circuit 3 load}$

$\text{phase multiplier} = 1 \text{ for single-phase; } \sqrt{3} \text{ for three-phase}$

$\text{estimated VA} = \text{panel voltage} \times \text{total connected load} \times \text{phase multiplier}$

$\text{estimated connected-load current} = \text{estimated VA} / (\text{panel voltage} \times \text{phase multiplier})$

$\text{target reserve ratio} = \text{target reserve percent} / 100$

$\text{target estimated capacity} = \text{estimated connected-load current} / (1 - \text{target reserve ratio})$

$\text{target capacity increment} = \text{target estimated capacity} - \text{estimated connected-load current}$

$\text{estimated spare capacity} = \text{entered panel rating} - \text{estimated connected-load current}$

$\text{estimated utilization} = \text{estimated connected-load current} / \text{entered panel rating} \times 100$

$\text{capacity gap to target} = \max(0, \text{target estimated capacity} - \text{entered panel rating})$

capacity boundary = no NEC demand calculation, panel approval, breaker selection, bus rating decision, or service-size decision is made by this calculator

Warnings and limitations

This is a U.S. English preliminary estimate, not an NEC demand calculation, not service sizing, and not code-compliance approval. It does not apply demand factors, diversity, continuous-load rules, feeder or service rules, breaker limits, conductor ampacity, panel nameplate limits, load balancing, or utility requirements. Verify the adopted NEC edition, AHJ direction, equipment data, and project conditions before design or installation.