

Residential Generator Load Calculator

Estimate preliminary residential generator kW and kVA for selected outage loads, including motor-start allowance, reserve factor, power factor, and margin against an entered generator rating.

Generated October 10, 2026

<https://www.elecatrrix.com/residential-load-service/residential-generator-load-calculator/>

Inputs

Input	Value	Unit
Base essential running load	7	kW
Largest motor load	2.5	kW
Motor start multiplier	2	x
Reserve factor	20	%
Entered generator rating	16	kW
Generator power factor	0.8	pf

Results

Result	Value	Unit
Motor starting allowance	5	kW
Required generator kW	14.4	kW
Required generator kVA	18	kVA
Entered generator kW margin	1.6	kW

Status

Status	Value	Unit
Generator note	Entered residential generator has planning margin.	

Calculation details

Detail	Value	Unit
Calculation basis	Generator load is calculated from entered base essential running load, largest motor start allowance, reserve factor, power factor, and generator rating.	

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Review boundary

Load planning only; no residential generator, transfer equipment, standby classification, or code-compliance approval is made.

Formulas

Motor starting allowance=Largest motor load x Start multiplier

Required generator kW=(Essential load+Motor starting allowance) x (1+Reserve/100)

Required generator kVA=Required generator kW/Power factor

Generator kW margin=Entered generator kW rating-Required generator kW

Warnings and limitations

This residential generator load estimate does not select or approve a residential generator, transfer equipment, fuel system, motor-start performance, standby/emergency classification, utility approval, or code compliance.