

Residential EV Circuit Sharing Capacity Calculator

Review a named shared-circuit rule with an entered circuit limit, EVSE cap, appliance schedule, and battery-energy requirement.

Generated October 10, 2026

<https://www.elecatrrix.com/ev-charging-electrical-infrastructure/residential-ev-circuit-sharing-capacity-calculator/>

Inputs

Input	Value	Unit
Shared circuit voltage	240	V
Entered shared-circuit current limit	30	A
EVSE maximum current	24	A
Shared appliance current	24	A
Sharing rule	Mutual exclusion	
Charging window	10	h
Appliance active time in window	2	h
Charging efficiency	90	%
Required battery energy	20	kWh

Results

Result	Value	Unit
EV current when appliance is off	24	A
EV current while appliance is active	N/A	A
Available wall energy	46.08	kWh
Available battery energy	41.472	kWh
Battery energy margin	21.472	kWh
Effective average EV power	4.608	kW
Charging-window comparison	Entered window can cover required energy	

Calculation details

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Detail	Value	Unit
Calculation basis	The window is split into appliance-active and appliance-off hours. The selected rule controls the EV current during appliance-active hours.	
Sharing boundary	Entered shared-capacity estimate only; verify circuit rating, device listing, control behavior, EVSE configuration, load calculation, utility context, and installation requirements separately.	

Formulas

$$I_{EV,off} = \min(I_{EVSE}, I_{shared\ limit})$$
$$I_{EV,on} = 0 \text{ for mutual exclusion}$$
$$I_{EV,on} = \min(I_{EVSE}, I_{shared\ limit} - I_{appliance}) \text{ for current sharing}$$
$$E_{wall} = \sum \frac{V}{1000} \times I_{EV} \times t$$
$$E_{battery} = E_{wall} \times \eta_{charging}$$
$$E_{margin} = E_{battery} - E_{required}$$

Warnings and limitations

This is a product- and project-specific shared-circuit arithmetic review. It does not approve a breaker, conductor, circuit-sharing device, EVSE, service, utility program, or code-compliant installation.