

Readiness report — Solar PV — Battery Storage & Charge Controller (CREATE Lesson 508)

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Verdict: Ready with caveats · 2026-07-19 · est. parts cost \$600–\$700

This is a cold check establishing the first baseline for this lab. The lab is implementable, but success depends on precision sourcing for two specific areas: the pyranometer (the original model is obsolete and requires a functional substitute) and the incandescent bulbs (instructors must ensure bulbs are rated for 12V DC, as standard hardware store E26 bulbs are 120V AC and will not function).

Action required

Part	Problem	Recommended action
Pyranometer (DS-05A)	Discontinued/Obsolete by manufacturer.	Purchase the General Tools or Tenmars substitute listed below.
12V 25W Lamp	Easily confused with 120V standard bulbs.	Use the Bulbrite specialized source to ensure DC operation for math exercises.

Parts

Core Power Components

Part	Spec/Package	Status	Stock	Price	Source
PV Module	12V, 30W, rigid	Ready (sub)	Yes	\$44.90	Home Depot
Deep Cycle Battery	12V, 8Ah, AGM	Ready	Yes	\$23.80	NAZ Solar
Charge Controller	SunLight-10 (12V)	Ready	Yes	\$99.00	NAZ Solar

Distribution and Load Hardware

Part	Spec/Package	Status	Stock	Price	Source
Load Center Enclosure	MNCBB (DIN Rail)	Ready	Yes	\$50.61	NAZ Solar
DC Circuit Breakers	10A, 150V DC	Ready	Yes	\$22.30	Missouri Wind

Part	Spec/Package	Status	Stock	Price	Source
Lamp	25W, 12V, E26 Base	Ready	Yes	\$2.78	Bulbs.com
Lamp Holder	E26 Keyless	Ready	Yes	\$3.95	Home Depot

Instrumentation

Part	Spec/Package	Status	Stock	Price	Source
Pyranometer	Handheld W/m ²	Obsolete	0	—	—
Clamp Multimeter	DC Amp Clamp	Ready (sub)	Yes	\$109.99	Tractor Supply
Standard Multimeter	Digital VDC	Ready (sub)	Yes	\$34.98	Home Depot

Construction Materials

Part	Spec/Package	Status	Stock	Price	Source
Plywood Base	3/8 in x 18 x 24	Ready	Yes	—	Local Hardware
Electrical Box	4 in Octagon	Ready	Yes	—	Local Hardware
Wiring	14 AWG THHN/Romex	Ready	Yes	—	Local Hardware
Connectors	1/4 in Female Spade	Ready	Yes	—	Local Hardware

Substitutes

For part	Substitute	Differences	Judgment
PV Module	ACOPower 30W Mono	Rigid Monocrystalline; replaces Peimar/Dasol.	Acceptable. Matches 12V/30W spec.
Pyranometer	General Tools Meter	Digital handheld; replaces Daystar DS-05A.	Acceptable. Measures in W/m ² as required.
Clamp Multimeter	Klein CL390	Successor to CL380.	Acceptable. Retains DC Amp clamp.

Verify any substitute against its datasheet before ordering.

Other dependencies

- Firmware: Not applicable.
- Downloads: Teacher answer keys and guides were not checked for current link vitality.
- Fabrication: Plywood base assembly requires a saw and drill (not included in BOM).

Watch list

- **12V Incandescent Bulbs:** These are becoming increasingly rare as specialty lighting. If they become unavailable, the lab's math exercises (designed for a 2.1 Amp load) must be updated for LED equivalents.
- **Battery Shelf Life:** AGM batteries must be charged at least every 6 months during storage to prevent permanent capacity loss from sulfation.