

Possible scenarios for battery backup

Description	Inverter	Charge Controller	Batteries	Other	Total Cost	UPS	Diff	Comments
Basic	4.2kW Aurora for 17 panels. 2400	None	None	8 enphases @ 100 =800	2400+800= 3200	No	0	Basic system
Grid interactive 8Kw	Radian, w/ Mate3 (\$4500 + \$500)= \$5000	Two Fm80 (5000W) @ \$600 = 1200	10 = \$3000	load center (\$600), -8 enphases (800) = -200	5000 + 1200 + 3000 - 200 = 9000	yes	4100	Connects to all 25 panels.
Grid interative, 6kw	Xantrex (\$3000), control panel (\$300)= \$3200	Xantres 80a \$1200	Six= 1800		3200 + 1200 + 1800 = \$6200	yes	2200	240 V output, good surge output
Grid interactive, 3.6kw	FlexPower one 3.6 = \$3800	Incorporate d	Six = 1800	sub panel= \$100, + 3 enphases = \$400	3800 + 1800 + 400= \$6000	yes	2000	3 panels moved to micro invetersl.
AC counpled, 5kw	Sunny boy 5000 (\$2600), Sunny Island \$4600= \$7200	none	Six = 1800	sub panel @ 100, misc stuff \$500= \$600	7200 + 1800 + 600 = \$9600	yes	4480	Integrated solution (over charging avoided)
AC counpled, 4.6kw	4.2kW Aurora (\$2400), Magna 4400 (\$2100)	none	Six = 1800	sub panel= \$100	2400 + 2100 + 1800 + 100 = \$6400	yes	2400	6kw 30 second surge.
Charger/ inverter 2.5kw nel	Aurora (4200W) @\$2400, Exeltech 2000W \$1300= \$3700	Small Morningstar \$100	Four = 1200	sub panel \$100, - 1 enphase (\$100) = \$0	2400 + 1300 + 100 + 1200 = \$5000	yes	1260	Sub panel will contain important loads, and loads that should be UPS protected.
Charger inverter with 2.5ac output, no panel	Aurora 4200W (\$2400), and Xantrex 2400 \$900)= \$3300	none	Four = \$300= \$1200	\$900 + 1200= \$2100	\$3300 + 1200= \$4200	yes	1000	Like above, but no panel (so no fed subsidy)

Assumptions:

- By default, all 17 panels have dc optimizers (\$60) generating about 4.4kw, and 8 panels on microcomputers (enphases) (\$160) generating 2kw. So in scenarios with different # of microinverters, cost is adjusted by \$100/microinverter
- Sunextender 12V 100AH (1.2kwh) AGM batters are assumed to be used; each costing \$300. This is just for convenience
- Battery scenarios assume diy rack (with cost incorporated in battery cost)
- UPS means provides ups services (power conditioning) to connected loads
- DIFF means difference in price between basic, with fed rebate factored in

Notes:

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Description	Diff	Notes
Basic	0	Basic system (no pv power in blackouts). Transfer switch/generator not effected (fully seperate)
Grid interactive 8Kw (Radian)	4100	All PV power available all the time.. Should handle generators well
Grid interactive, 6kw (xantrex)	2200	Fully power loads on transfer switch.
Grid interactive, 3.6kw (FlexOne)	2000	3 panels moved to micro inveters. Might not work well with current generator. Might be tricky integrating new sub panel with with transfer switch
AC coupled, 5kw (SMA)	4480	Most PV power available all the time. Clear solution (over charging avoided)
AC coupled, 4.6kw (Magna)	2400	Enough surge to allow powering most loads on transfer switch. Needs load diversion (no price)
Charger/ inverter 2.5kw	1260	Provides UPS, short battery backup, a bit of pv power in blackouts, and generator buffering (though not generator cleanup)
Charger inverter with 2.5kwut, no panel	1000	Like above, but no panel (so no fed subsidy)