## 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 | Incorporated | Six = 1800 | sub panel= $100,  + 3 enphases = $400 | 3800 + 1800 + 400= $6000 | yes | 2000 | 3 panels moved to micro invetersl. |
| AC coupled, 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 2.5kwnel | 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:

## Possible scenarios for battery backup

| 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) |