

Sunergy off grid system packages

Because power is an essential service.....



Our packages bring together everything you need to run an off-grid home. We have used our experience to carefully select the best solar panels, inverters, solar regulators and battery storage systems in the market. By best we mean products which are tried, tested and proven in Australian conditions and where the manufacturer has a direct presence in Australia, including for support and warranty.

The packages include REC solar panels, inverter charger, charge controller, Gel or Lithium batteries and battery interconnects. All of our systems include auto start capability for compatible generators (generator is not included). A cyclone rated panel mounting system with tilt frames suitable for a pitched iron roof is included. Ground mount systems are also available.

Options include:

- **Solar panels:** Suntech, REC, LG, Sunpower (or pretty much any other brand)
- **Inverters:** Victron (European) or Selectronic (Australian)
- **Batteries:** Flooded lead acid (GNB Exide). Gel from BAE, GNB or Sonnenschein. Lithium from BYD or Sonnenschein. Carbon batteries from Nerada

Where Sunergy installs, we supply the balance of system including disconnects, fuses, labels and warning signs to Australian standards, solar cable and battery cable. We can also supply a quality auto start compatible generator in either petrol or diesel.

Install yourself or we can install for you. Where we install, you not only get our lifetime workmanship warranty, you also get rebates. For larger systems, rebates go a long way to covering the cost of installation.

Sunergy off grid packages provide everything you need and nothing you don't in premium quality packages that won't let you down



Sunergy Solar & Batteries
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offgrid@sunergysolar.com.au
www.sunergysolar.com.au/offgrid








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HOW TO SELECT A PACKAGE:

Select you package in four easy steps:

<p>STEP 1</p>	<p>What size system do you need</p>	<ul style="list-style-type: none"> • Use the sample usage tables in this brochure; or • Do a load survey
<p>STEP 2</p>	<p>Select package</p>	<ul style="list-style-type: none"> • Match to your expected consumption from step 1 • Choose between Victron or Selectronic based equipment <p style="text-align: center;">   </p>
<p>STEP 3</p>	<p>Select Battery Bank Option</p>	<p>Our packages in step 3 include a standard battery bank. But you may want something else. No problem!</p> <p>When you want a quote, discuss this with our off grid experts.</p> <p>We offer different battery banks including flooded, AGM, Gel, Carbon or Lithium.</p> <p style="text-align: center;">      </p>

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STEP 1 - WHAT SIZE SYSTEM DO YOU NEED?

The tables below show what various appliances go to make up different sized loads, from 1.6 kWh per day, all the way up to 20kWh per day.

If you're looking for a basic power solution for RV, shed or camping, take a look at our "Shack Packs"

Look at each one and work out which most matches what you want to do. This will tell you what size system you should be looking at.

Remember we can always design a system to meet your exact needs, so don't worry if you can't find exactly what you want!

Example 1: 1.5 kWh per day

Appliance	Volts	Wattage	Hours / Day	Quantity	Watt Hours
Fluoro light	240V AC	18	4	3	216
Waeco 65L fridge/freezer	240V AC	50	13	1	650
Microwave	240V AC	1200	5 mins	1	120
TV – 68cm LED	240V AC	45	5	1	225
Laptop computer	240V AC	30	2	1	60
Ceiling fan	240V AC	50	2	1	100
Water Pump	24V DC	80	1	1	80

Example 2: 2.5 kWh per day

Appliance	Volts	Wattage	Hours / Day	Quantity	Watt Hours
Fluoro light	240V AC	18	4	4	288
LED Light	240V AC	6	4	3	72
Electrolux fridge – 420 litre	240V AC	145	6	1	870
Microwave	240V AC	1200	0.2	1	240
TV – 80cm LED	240V AC	65	6	1	390
DVD	240V AC	20	3	1	60
Stereo/Radio	240V AC	30	4	1	120
Laptop computer	240V AC	30	2	1	60
Top loader washing machine	240V AC	250	0.5	1	125
Ceiling fan	240V AC	50	3	1	150
Water Pump	24V DC	80	1.5	1	120

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Example 2: 5 kWh per day

Appliance	Volts	Wattage	Hours / Day	Quantity	Watt Hours
Fluoro light	240V AC	18	4	4	288
LED Light	240V AC	6	4	3	72
Electrolux fridge – 520 litre	240V AC	162	6	1	972
Microwave	240V AC	1200	0.25	1	300
Toaster	240V AC	1600	0.16	1	256
Kettle	240V AC	2400	0.2	1	480
TV – 102cm LED	240V AC	85	6	1	510
DVD	240V AC	20	3	1	60
Stereo/Radio	240V AC	30	4	1	120
Laptop computer	240V AC	30	3	1	90
Top loader washing machine	240V AC	250	0.5	1	125
Vacuum cleaner	240V AC	1600	0.16	1	256
Iron	240V AC	1200	0.16	1	192
Ceiling fan	240V AC	50	4	2	400
Water Pump	240V AC	400	2	1	800

Example 3: 10 kWh per day

Appliance	Volts	Wattage	Hours / Day	Quantity	Watt Hours
Fluoro light	240V AC	18	6	4	432
LED Light	240V AC	6	6	4	144
Electrolux fridge – 700 litre	240V AC	240	6	1	1440
Microwave	240V AC	1200	0.25	1	300
Toaster	240V AC	1600	0.16	1	256
Kettle	240V AC	2400	0.2	1	480
Blender	240V AC	350	0.16	1	56
TV – 140cm LED	240V AC	120	6	1	720
TV – 80cm LED	240V AC	65	6	1	390
DVD	240V AC	20	3	2	120
Stereo/Radio	240V AC	30	3	2	180
Laptop computer	240V AC	30	3	2	90
Desktop computer	240V AC	175	1	1	175
Top loader washing machine	240V AC	250	1	1	250
Vacuum cleaner	240V AC	1600	0.25	1	500
Iron	240V AC	1200	0.25	1	300
Ceiling fan	240V AC	50	4	2	400
Air conditioner – Mitsubishi 2kW	240V AC	350	4	2	2800
Water Pump	240V AC	450	2	1	900

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Example 4: 15 kWh per day

Appliance	Volts	Wattage	Hours / Day	Quantity	Watt Hours
Fluoro light	240V AC	18	6	6	648
LED Light	240V AC	6	6	6	216
Electrolux fridge – 700 litre	240V AC	240	6	1	1440
Freezer	240V AC	165	8	1	1320
Microwave	240V AC	1200	0.25	1	300
Toaster	240V AC	1600	0.16	1	256
Kettle	240V AC	2400	0.2	1	480
Blender	240V AC	350	0.16	1	56
TV – 140cm LED	240V AC	120	6	1	720
TV – 80cm LED	240V AC	65	6	1	390
DVD	240V AC	20	3	2	120
Stereo/Radio	240V AC	30	3	2	180
Laptop computer	240V AC	30	3	1	90
Desktop computer	240V AC	175	1	1	175
Top loader washing machine	240V AC	250	1	1	250
Vacuum cleaner	240V AC	1600	0.25	1	500
Iron	240V AC	1200	0.25	1	300
Ceiling fan	240V AC	50	4	4	1200
Air conditioner – Mitsubishi 2kW	240V AC	350	4	2	2800
Water Pump	240V AC	450	1.5	1	675
Pool Pump	240V AC	750	3.75	1	2820

Example 5: 20 kWh per day

Appliance	Volts	Wattage	Hours / Day	Quantity	Watt Hours
Fluoro light	240V AC	18	6	6	648
LED Light	240V AC	6	6	6	216
Electrolux fridge – 700 litre	240V AC	240	6	1	1440
Freezer	240V AC	165	8	1	1320
Microwave	240V AC	1200	0.25	1	300
Toaster	240V AC	1600	0.16	1	256
Kettle	240V AC	2400	0.2	1	480
Blender	240V AC	350	0.16	1	56
TV – 140cm LED	240V AC	120	6	1	720
TV – 80cm LED	240V AC	65	6	1	390
DVD	240V AC	20	3	2	120
Stereo/Radio	240V AC	30	3	2	180
Laptop computer	240V AC	30	3	2	90
Desktop computer	240V AC	175	1	1	175
Front loader washing machine	240V AC	385	1	1	385
Vacuum cleaner	240V AC	1600	0.25	1	500
Iron	240V AC	1200	0.25	1	300
Ceiling fan	240V AC	50	4	4	1200
Air conditioner – Mitsubishi 2kW	240V AC	350	8	2	5600
Water Pump	240V AC	450	2	1	900
Pool Pump	240V AC	750	6	1	4500

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STEPS 2 & 3 – Select Your Package

Please peruse the following system options which offer the choice of Victron or Selectronic and Gel or Lithium batteries.

WHAT'S NEXT?

It is always best to perform a load survey specific to you and then design a custom system specific to your needs.

Also in order to quote installation we need to confirm some details about your site – please refer the section on site requirements below.

If you'd like to know more about off grid systems, design principles, equipment and how to live off grid, Sunergy has a regular free off-grid newsletter which is delivered via email.

You can subscribe by visiting <http://www.sunergysolar.com.au/free-off-grid-newsletter/>

System 1: \$169 – Solar lighting kit with lithium battery, 3 x LED lights & USB outlet



The ideal solution for lighting your shed, shack, tent or fishing trip.

The Sunergy solar lighting kit comprises:

- Plug and play design
- 12 watt solar panel
- 7.2 Ah long life deep cycle **lithium** battery
- 3 x bright 3 watt LED lights (one light for 24 hours or all 3 for 8 hours from fully charged battery)
- USB outlet for charging phones etc.

System 2: \$2290 – 0.5kWh/day with 800-watt inverter for AC power



This DIY system is designed to deliver 2 days of autonomy with 3.5 peak sun hours and with consumption of 0.5kWh per day.



Kit includes :



- Suntech 275 watt solar panel
- European Victron 12V 800-watt pure sinewave inverter with AU 3 pin plug – directly plug your AC loads into this.
- Victron BlueSolar MPPT 75V 10-amp charge controller.
- 12V 220Ah gel battery
- Battery monitor
- Three pole battery fuse/switch with fuses
- Framing system tin roof installation of your solar panel. Includes tilt legs so you can angle your panel for optimum production.
- Optional cable kit / wiring loom



DIY standalone power systems for shacks, sheds or RV with modest power requirements

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System 3: \$3790 – 1kWh/day with 1200 watt inverter for AC power



This DIY system is designed to deliver 2 days of autonomy with 3.5 peak sun hours and with consumption of 0.5kWh per day.



Kit includes :

- 2 x Suntech 275 watt solar panels
- European Victron 12V 1200-watt pure sinewave inverter with AU 3 pin plug – directly plug your AC loads into this.
- Victron BlueSolar MPPT 100V 30-amp charge controller.
- 2 x 220Ah gel battery
- Victron BMV-700 battery monitor
- Three pole battery fuse/switch with fuses
- Framing system tin roof installation of your solar panel. Includes tilt legs so you can angle your panel for optimum production.
- Optional cable kit / wiring loom

If you want more power per day, please see the Victron or Selectronic based systems below.

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Standalone power systems for sheds, domestic homes, small business, farms & stations requiring real power

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based systems are ideal for low to medium consumption users up to 10 kWh per day, running low to medium powered appliances up to 5kW half hour rating (at 25C) or 3.7kW half hour rating (at 40C). These will surge up to 10kW

Victron is European and comes with a 5 year warranty. It can be programmed via a laptop or smart phone with the appropriate optional communications cables.

We include a battery monitor as standard with more advanced monitoring solutions available as an option.

These packages team the following quality components:



REC solar panels.



Victron Multiplus pure sine wave inverter chargers and Victron MPPT charge controllers



GNB Exide Energystore Gel batteries (Sonnenschein Gel solar blocks on smaller systems). Battery options include Narada Carbon and BYD lithium



Install yourself* or we can install for you. Where Sunergy installs, you get our lifetime workmanship warranty. You also get rebates. For larger systems, rebates go a long way to covering the cost of installation.

* AC connections and DC connections over 90 volts must be performed by a licensed electrician



Reliable

High quality components; grid quality & reliability day and night



Easy to Use

Programmed to be fully automated and user friendly; all systems have generator auto start capability



Low Maintenance

Maintenance free sealed gel batteries; generator auto start prolongs battery life



Efficient

Maximum Power Point Tracker regulators and efficient inverters.



Safe

Exceeds applicable safety standards; concealed wiring; sealed batteries



Monitoring

Monitoring of battery health included

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Standalone power systems for sheds,
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(Gel batteries)

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kWh/Day		1.5	2.5	2.5	5	5	7.5	10
Model		V24/3/70/16 1.5GH	V24/3/70/16 2.5GH	V24/3/70/16 2.5G	V24/3/70/50 5G	V48/3/70/50 5G	V48/3/70/50 7.5G	V48/5/70/100 10G
Application		Holiday home etc. used on average 2 days per week & occasional small loads	Holiday home etc. used 2-3 days per week & regular small loads	Very efficient fully occupied homes with regular small loads	Average home with regular use of high wattage appliances	Average home with regular use of high wattage appliances	Larger home with regular use of high wattage appliances	Large home with regular use of high wattage appliances
Voltage		24V	24V	24V	24V	48V	48V	48V
Power Output @ 25C (watts)	Continuous	2400	2400	2400	2400	2400	2400	4000
	30 minute	2400	2400	2400	2400	2400	2400	4000
	Surge (5 seconds)	6000	6000	6000	6000	6000	6000	10000
Max battery charge current – inverter		70 amps	70 amps	70 amps	70 amps	70 amps	70 amps	70 amps
Max battery charge current – solar		50 amps	45 amps	60 amps	70 amps	70 amps	100 amps	120 amps
Solar Array	290 watt panels/capacity (watts)	2 / 580	3 / 870	6 / 1740	9 / 2610	9 / 2610	15 / 3.90	18 / 4680
	Winter %	81%	73%	144%	108%	108%	120%	108%
	Summer %	164%	148%	291%	218%	218%	243%	218%
	Average %	135%	122%	239%	179%	179%	199%	179%
Battery bank (kWh)		4.8	7.92	15.84	19.92	27.36	33.6	49.82
Days of autonomy @ 60% DOD		2.0	1.9	3.9	2.4	3.2	2.7	3.0
System kit price (excludes delivery)		\$6,340	\$7,840	\$11,290	\$12,990	\$15,840	\$19,690	\$26,490
Standard installation after rebate		\$5,090	\$4,890	\$4,440	\$4,340	\$4,340	\$4,240	\$4,140
Inverter operating range (°C)		-10 °C to 60 °C (power derated above 25 °C)						
Unit connection		Fixed; hard-wired to application						
Monitoring		Includes Venus GX controller and monitor with all systems. Colour Control GX display – add \$390						
Warranty		Inverter – 5 years; Regulator – 5 years; Solar panels – 12 years product/25 year performance; Batteries – 12 months; Workmanship – lifetime if Sunergy installs						
Power Input Types		Solar panels; wind turbines; fuel generators						
Auto generator start (AGS)		System has AGS capability as standard. Requires compatible generator (not included).						

* Prices include GST

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Standalone power systems for sheds, domestic homes, small business, farms & stations requiring real power (Lithium batteries)

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kWh/Day		1.5	2.5	2.5	5	7.5	10
Model		V48/3/70/16 1.5LH	V48/3/70/16 2.5LH	V48/3/70/16 2.5L	V48/3/70/50 5L	V48/3/70/50 7.5L	V48/5/70/100 10L
Application		Holiday home etc. used on average 2 days per week & occasional small loads	Holiday home etc. used 2-3 days per week & regular small loads	Very efficient fully occupied homes with regular small loads	Average home with regular use of high wattage appliances	Larger home with regular use of high wattage appliances	Large home with regular use of high wattage appliances
Voltage		48V	48V	48V	48V	48V	48V
Power Output @ 25C (watts)	Continuous	2400	2400	2400	2400	2400	4000
	30 minute	2400	2400	2400	2400	2400	4000
	Surge (5 seconds)	6000	6000	6000	6000	6000	10000
Max battery charge current – inverter		70 amps	70 amps	70 amps	70 amps	70 amps	70 amps
Max battery charge current – solar		50 amps	45 amps	60 amps	70 amps	100 amps	120 amps
Solar Array	290 watt panels/capacity (watts)	2 / 580	3 / 870	6 / 1740	9 / 2610	15 / 3.90	18 / 4680
	Winter %	81%	73%	144%	108%	120%	108%
	Summer %	164%	148%	291%	218%	243%	218%
	Average %	135%	122%	239%	179%	199%	179%
Battery bank (kWh)		2.56	5.12	5.12	7.68	12.8	17.92
Days of autonomy @ 100% DOD		1.6	1.9	1.9	1.4	1.5	1.6
System kit price (excludes delivery)		\$7,890	\$10,340	\$11,590	\$14,290	\$21,340	\$27,390
Standard installation after rebate		\$5,090	\$4,890	\$4,440	\$4,340	\$4,240	\$4,140
Inverter operating range (°C)		-10 °C to 60 °C (power derated above 25 °C)					
Unit connection		Fixed; hard-wired to application					
Monitoring		The Venus GX controller and monitor is included with all systems. Colour Control GX display – add \$290					
Warranty		Inverter – 5 years; Regulator – 5 years; Solar panels – 12 years product/25 year performance; Batteries – 12 months; Workmanship – lifetime if Sunergy installs					
Power Input Types		Solar panels; wind turbines; fuel generators					
Auto generator start (AGS)		System has AGS capability as standard. Requires compatible generator (not included).					

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Premium standalone power systems for domestic homes, small business, farms & stations requiring serious power

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SELECTRONIC based systems are ideal for medium to high consumption users from 5 to 100 kWh per day, running medium to high powered appliances. Power delivery capability of up to 30 kW half hour rating / 44 kW surge. Selectronic equipment is IP43 rated. Sunergy is SP Pro accredited so we can offer extended warranties (10 years) where we install. Systems can either be AC or DC coupled or a mix of both (please note our kits below are AC coupled).

These packages team the following quality components:



REC Twinpeak solar panels



Selectronic SP Pro sine wave inverter chargers and MPPT charge controllers



GNB Exide Energystore Gel batteries or BYD lithium. Battery options include Nerada Carbon and Sonnenschein lithium or gel



Install yourself* or we can install for you. Where Sunergy installs, you get our lifetime workmanship warranty plus you also get 10 years on the SP-Pro. Rebates go a long way to covering the cost of installation, especially for larger systems.

* AC connections and DC connections over 90 volts must be performed by a licensed electrician



Reliable

High quality components; grid quality & reliability day and night



Easy to Use

Programmed to be fully automated and user friendly; all systems have generator auto start capability



Low Maintenance

Maintenance free sealed gel batteries; generator auto start prolongs battery life



Efficient

Maximum Power Point Tracker regulators and efficient inverters.



Safe

Exceeds applicable safety standards; concealed wiring; sealed batteries



Monitoring

Full system monitoring included

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kWh/Day		5	5	7.5	10	15	20	40
Model		S240-5G	S481-5G	S481-7.5G	S481-10G	S482-15G	S482-20G	S1200-40G
Application		Efficient home with regular use of medium wattage appliances	Efficient home with regular use of high wattage appliances	Average home with regular use of high wattage appliances	Average home with regular use of high wattage appliances	Larger home with regular use of high wattage appliances	Large home with regular use of high wattage appliances	I don't want to run out of power
Voltage		24V	48V	48V	48V	48V	48V	120V
Power Output @ 25C (watts)	Continuous	3000	5000	5000	5000	7500	7500	7500
	30 minute	4200	7000	7000	7000	11250	11250	11250
	Surge (5 seconds)	7500	12000	12000	12000	18000	18000	18000
Max battery charge current – inverter		125 amps	104 amps	104 amps	104 amps	156 amps	156 amps	125 amps
Max battery charge current – solar		125 amps	104 amps	104 amps	104 amps	156 amps	156 amps	125 amps
Solar Array (Assumes 45 degree tilt)	290 watt panels/capacity (watts)	10 / 2900	10 / 2900	14 / 4060	20 / 5800	28 / 8120	40 / 11600	68 / 19720
	Winter %	123%	124%	116%	124%	116%	124%	107%
	Summer %	248%	251%	234%	251%	234%	251%	216%
	Average %	204%	206%	192%	206%	192%	206%	177%
Battery bank (kWh)		32.4	33.6	49.8	59.5	79.8	119.0	249.1
Days of autonomy @ 80% DOD		5.2	5.4	5.4	4.8	4.3	4.8	5.1
System kit price (excludes delivery)		\$19,940	\$22,340	\$27,990	\$32,240	\$41,990	\$58,840	\$111,890
Standard installation after rebate		\$4,240	\$4,240	\$4,240	\$4,090	\$3,890	\$3,640	\$2,990
Inverter operating range (°C)		-10 °C to 60 °C (power derated above 25 °C)						
Unit connection		Fixed; hard-wired to application						
Monitoring		Battery & system monitoring available						
Warranty		Inverter – 10 years if Sunergy installs. Regulator – 10 years; Solar panels – 12 years product/25 year performance; Batteries – 12 months; Workmanship – lifetime						
Power Input Types		Solar panels; wind turbines; fuel generators						
Auto generator start (AGS)		System has AGS capability as standard. Requires compatible generator (not included).						

* Prices include GST

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kWh/Day		5	7.5	10	15	20	40
Model		S481-5B	S481-7.5B	S481-10B	S482-15B	S482-20B	S482-40B
Application		Efficient home with regular use of high wattage appliances	Average home with regular use of high wattage appliances	Average home with regular use of high wattage appliances	Larger home with regular use of high wattage appliances	Large home with regular use of high wattage appliances	I don't want to run out of power
Voltage		48V	48V	48V	48V	48V	48V
Power Output @ 25C (watts)	Continuous	5000	5000	5000	7500	7500	7500
	30 minute	7000	7000	7000	11250	11250	11250
	Surge (5 seconds)	12000	12000	12000	18000	18000	18000
Max battery charge current – inverter		104 amps	104 amps	104 amps	156 amps	156 amps	156 amps
Max battery charge current – solar		104 amps	104 amps	104 amps	156 amps	156 amps	156 amps
Solar Array (Assumes 45 degree tilt)	290 watt panels/capacity (watts)	16 / 4640	24 / 6960	34 / 9860	48 / 13920	62 / 17980	68 / 19700
	Winter %	201%	201%	214%	201%	195%	107%
	Summer %	407%	407%	432%	407%	394%	216%
	Average %	334%	334%	355%	334%	323%	177%
Battery bank (kWh)		10.24	17.92	20.48	30.72	40.96	81.92
Days of autonomy @ 100% DOD		2.0	2.0	2.0	2.0	2.0	2.0
System kit price (excludes delivery)		\$23,290	\$31,140	\$42,090	\$53,490	\$68,340	\$102,990
Standard installation after rebate		\$4,190	\$3,990	\$3,790	\$3,440	\$3,140	\$2,990
Inverter operating range (°C)		-10 °C to 60 °C (power derated above 25 °C)					
Unit connection		Fixed; hard-wired to application					
Monitoring		Battery & system monitoring available					
Warranty		Inverter – 10 years if Sunergy installs. Regulator – 10 years; Solar panels – 12 years product/25 year performance; Batteries – 10 years; Workmanship – lifetime					
Power Input Types		Solar panels; wind turbines; fuel generators					
Auto generator start (AGS)		System has AGS capability as standard. Requires compatible generator (not included).					

* Prices include GST

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STANDARD INSTALLATION

Standard installation referred to above means:

- Installation in a single-story building (gutter height less than 3.4m) with a tin roof (corrugated iron, Colour bond or Trimdeck)
- Target installation building to be suitable for installation (see site requirements below)
- Compliant AC switchboard to connect to in the same building as the installation
- Excludes digging, trenching, construction, sub mains or other electrical work other than connection to a compliant electrical switchboard
- Within 40km of Bendigo, else additional travel charges apply

SITE REQUIREMENTS:

Solar arrays, battery banks, inverter/chargers and generators for off grid systems must be installed in locations that meet specific criteria. The distances between equipment, ventilation, security, infrastructure strength, equipment safety and vermin (particularly rodents and insects) can have impacts on your safety, system performance, reliability, and lifespan.

Sunergy ensures that all our installations meet or exceed all applicable Australian standards and that your system is installed to achieve optimal safety, performance, and service life.

During your site inspection/system consultation and design we look at existing facilities and provide you with recommendations about where the system components are to be installed.

Our contract with you provides clearly details on where equipment is to be installed, requirements before installation and what Sunergy and You are each responsible for.

Safety, Standards and Regulations:

Sunergy takes safety, standards and regulations very seriously. There are many standards and regulations specific to the design and installation of standalone power systems in Australia. This requires us to keep abreast of regulatory and other changes. In Victoria, all standalone systems are "Prescribed Work" and therefore require an independent assessment and inspection by Energy Safe Victoria.

What this means to you:

- Personal Safety - Stand Alone systems can be very dangerous if not properly installed.
- Maximum system and component life is achieved
- Confidence that your system abides by Australian Law
- Your system meets regulations when inspected by an inspector

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Normal System Installation:

It is usual to install inverters, regulators/charge controllers and batteries in new or existing sheds, garages, utility rooms or custom-built enclosures. If you don't have a suitable place, we will discuss options with you, but usually, the most cost-effective option is for the owner to purchase and erect a pre-fabricated shed or a shipping container.

Obviously if we can utilise existing infrastructure, it reduces the overall cost.

Typically, installation requires a clear, protected area of 2m x 3m (excluding generator). Requirements include:

- A strong fully framed construction; although light duty frame-less garden sheds can be used if a free standing frame is constructed within them
- An outward opening door is required to meet Australian safety standards

Solar Arrays

These should be located as close as practical to the standalone equipment; this is of importance for DC coupled installations. Tips for solar panel installation include:

- Orientated to true north (different to magnetic north). Good results can also be achieved with east/west splits.
- Ideally pitched at 45° to aid winter performance
- Avoid shading at all times of the year, this is especially critical in winter
- When solar panels are mounted on a suitable existing roof structure the need for a separate ground mounted system; additional cable; conduit and trenching costs are removed. Ground mounts are expensive.
- Solar panels sited on the roof of an equipment enclosure (Shed) can also assist in lowering internal operating temperatures; this helps to prolong the battery bank and equipment life.
- In some cases it may be more economical to install more solar panels at a lower tilt angle to achieve a similar winter performance to higher tilt angles and/or for roof spaces which do not face true north. This however can also drive up the cost of charger infrastructure to cope with the higher potential output.

Generators

Avoid yellow generators from eBay! Low priced generators typically have low quality alternators with aluminium windings. These produce "dirty power". Your inverter/charger will have very specific power quality requirements which if not met, will mean they won't connect to your generator. Please consult with Sunergy before making any generator purchase. If you purchase through Sunergy, we can guarantee it will work.

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Sunergy strongly recommends auto start generators. These will take a lot of pressure off your battery bank and significantly extend its' life. All systems have auto start functionality as standard and operate via a basic two wire start/stop mechanism.

Generators also require careful thought and planning when it comes to their installation and operation. The generator should be installed as close as is reasonably practical and convenient to the main residence and other standalone equipment while considering the possible noise level when in use. Please note different safety regulations are applicable to permanently installed generators and portable generators.

Below are some prompts as to where and how a generator is to be installed:

- Permanent or portable generator set
- Auto-starting or manual start
- Exhaust gas ducting/extraction
- Air intake, ventilation and heat dissipation
- Noise - Many people under estimate how much nuisance the noise can be
- Storing fuel and oils safely
- Maintenance - Easy access to parts of the generator for maintenance
- Safety - Insulating hot exhaust pipes, protection of moving parts within the generator, electrical safety
- Security - Theft of generators and batteries has been known to happen
- Access - Excluding unauthorised people; pets, vermin and wildlife

House wiring

For a conventional standalone power system installation there are usually no alterations or special considerations required for existing or new house wiring. Often house wiring and circuitry can be the same as any regular grid connected property depending on the intended plant specification. Existing wiring must however be compliant with electrical safety regulations. If the standalone system is installed in a separate shed, the electrical cabling between shed and (say) the home must be adequate for the household loads.

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WHAT'S NEXT?

It is always best to perform a load survey specific to you and then design a custom system specific to your needs.

Also, in order to quote installation, we need to confirm some details about your site – please refer the section on site requirements above.

The cost of preparing a custom design and quotation is \$330. **This is refundable against purchase.** The deliverables are:

- Assistance with completing your load survey including one review cycle
- One site inspection within 100km of Bendigo. If further, then travel is charged (refundable against purchase). Alternatively, we have a photo and information guide.
- Design and specification of equipment to be used and expected performance
- Quotation
- As above, the design fee is refundable against purchase
- Preparation of an off-grid design and quote to all relevant Australian Standards takes between 1-2-person days. You'd normally pay \$700 to \$1800 for this service at normal charge rates.

If you'd like to know more about off grid systems, design principles, equipment and how to live off grid, Sunergy has a regular free off-grid newsletter which is delivered via email. You can subscribe by visiting <http://www.sunergysolar.com.au/free-off-grid-newsletter/>