These kits are specifically designed for the REC245PE-US black frame panel. They are pre-designed for the Outback hybrid grid tie battery backup inverters, the CEC listed GVFX and Radian. The kits include everything except batteries and cables, and regular hardware store items needed like a back-feed breaker and conduit. The inverters come with transfer switches inside of them that switch the power from the grid to off grid in a split second when the grid drops, and back again when it comes back on. The basic function of these systems is having a back-up independent solar system for times when the utility grid may go down, but exporting power when the grid is on. The solar continues to charge the system whether the system is functioning as off grid or grid tie. See pictorial diagram at end

Top Hat Energy offers field support to self-installers on these kits.

1470W off grid kit SMALL ----------

- (6) solar panels, REC245, 1-2 rows, 2 strings
- (1) Outback GVFX 3648 3600W 120VAC 48VDC hybrid grid tie inverter/charger
- (1) Outback Flexware 250 junction panel with bypass assy and battery breaker
- (1) Outback MATE 1 display controller
- (1) Morningstar Tristar charge controller TS MPPT 45A 12/24/48V, 5 yr warranty
- (1) Midnite 3 circuit DC combiner MNPV3 NEMA3 outdoor rated
- (2) 15A 150VDC PV input breakers
- Snap N Rack roof mount racking (aluminum and stainless steel)
  - (12) L feet
  - (2) extra rail splices
  - (8) end clamps, universal or top mount
  - (10) mid clamps
- Panel grounding system
  - (6) panel grounding lugs
- Solar panel cables
  - (2) 30’ cables
- **Total - $6047**
- Shipping Options
  - Shipping extra, shipped to location or will call at Redding Warehouse
  - FREE Local Pickup in Sacramento, CA
- Sales Tax in CA
- **Customer Will Need:**
  - AC wiring and conduit
  - Some DC wiring for panels cables to combiner and combiner to charge controller
  - Misc DC wiring for wiring breakers and charge controllers
  - Batteries and cables (typical for this size system – 8 x golf cart batt, 225Ah @ 48VDC
  - Battery Box and Rack (We can provide the batteries, depending on type)
  - 10 yr inverter warranty if in CA on participating CSI utilities ($600 GVFX $800 Radian)
- **Optional Items:**
  - Flashed L feet ($0.06/w), ground mount racking ($0.10-.15/w), alloy tile roof mounts ($0.19/w), standing seam roof (for standing seam roof, same price), tilt up hardware ($0.01-.05/w)
  - Display for Tristar charge controller – ADD $95
- **Use:**
  - Small hybrid kit for offsetting utility usage and having power when grid is down

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2940W off grid kit SMALL / MEDIUM --------

- (12) solar panels, REC245, 2-4 rows, 4 strings
- (1) Outback GVFX 3648 3600W 120VAC 48VDC hybrid grid tie inverter/charger
- (1) Outback Flexware 250 junction panel with bypass assy and battery breaker
- (1) Outback 60A MPPT FlexMax charge controller, with battery temp sensor
- (1) Outback MATE 1 display controller
- (1) Outback PV8 DC combiner MNPV6 NEMA3 outdoor rated
- (1) 60A output breaker, (1) 60A input breaker
- (4) 15A 150VDC PV input breakers
- Snap N Rack roof mount racking (aluminum and stainless steel)
  - (24) L feet
  - (4) extra rail splices
  - (16) end clamps, universal or top mount
  - (24) mid clamps
- Panel grounding system
  - (12) panel grounding lugs
- Solar panel cables
  - (4) 30’ cables

**Total - $5974**

- **Shipping Options:**
  - Shipping extra, shipped to location or will call at Redding Warehouse
  - **FREE** Local Pickup in Sacramento, CA

- **Sales Tax in CA**

- **Customer Will Need:**
  - AC wiring and conduit
  - Some DC wiring for panels cables to combiner and combiner to charge controller
  - Misc DC wiring for wiring breakers and charge controllers
  - Batteries and cables (typical for this size system – 8 of L16, 420Ah @ 48V)
  - Battery Box and Rack (We can provide the batteries, depending on type)
  - 10 yr inverter warranty if in CA on participating CSI utilities ($600 GVFX $800 Radian)

- **Optional Items:**
  - Flashed L feet ($.06/w), ground mount racking ($.10-.15/w), alloy tile roof mounts ($.19/w), standing seam roof (for standing seam roof, same price), tilt up hardware ($.01-.05/w)
  - Outback HUB4 and MATE3 (online monitoring) network instead of MATE1 – ADD $598
  - Outback GS8048 Radian 8kw inverter substitute for GVFX3648 – ADD $1850

- **Use:**
  - Small hybrid kit for offsetting utility usage and having power when grid is down

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3675W off grid kit MEDIUM / LARGE

- (15) solar panels, REC245, 2-5 rows, 5 strings
- (1) Outback GVFX 3648 3600W 120VAC 48VDC hybrid grid tie inverter/charger
- (1) Outback Flexware 250 junction panel with bypass assy and battery breaker
- (1) Outback 80A MPPT FlexMax charge controller, with battery temp sensor, 5 yr warranty
- (1) Outback MATE 1 display controller
- (1) Outback PV8 DC combiner MNPV6 NEMA3 outdoor rated
- (1) 80A output breaker, (1) 60A input breaker
- (5) 15A 150VDC PV input breakers
- Snap N Rack roof mount racking (aluminum and stainless steel)
  - (42) L feet
  - (6) extra rail splices
  - (20) end clamps, universal or top mount
  - (36) mid clamps
- Panel grounding system
  - (15) panel grounding lugs
- Solar panel cables
  - (3) 30’ cables
  - (2) 40’ cables

**Total - $10,411**

- Shipping Options
  - Shipping extra, shipped to location or will call at Redding Warehouse
  - FREE Local Pickup in Sacramento, CA
- Sales Tax in CA
- Customer Will Need:
  - AC wiring and conduit
  - Some DC wiring for panels cables to combiner and combiner to charge controller
  - Misc DC wiring for wiring breakers and charge controllers
  - Batteries and cables (typical for this size system – 16 x L16, 840Ah @ 48V or sealed FLA or gel)
  - Battery Box and Rack (We can provide the batteries, depending on type)
  - 10 yr inverter warranty if in CA on participating CSI utilities ($600 GVFX $800 Radian)

- Optional Items:
  - Flashed L feet ($0.06/w), ground mount racking ($0.10-.15/w), alloy tile roof mounts ($0.19/w), standing seam roof (for standing seam roof, same price), tilt up hardware ($0.01-.05/w)
  - Outback HUB4 and MATE3 (online monitoring) network instead of MATE1 – ADD $598
  - Outback GS8048 Radian 8kw inverter substitute for GVFX3648 – ADD $1850

- Use:
  - Hybrid kit for offsetting utility usage and having power when grid is down
5880W off grid kit LARGE---------

- (24) solar panels, REC245, 2-6 rows, 6 strings
- (1) Outback Radian GS8048 8000W 48VDC 120/240VAC off grid / grid interactive inverter/charger, 5 yr warranty
- (1) Outback GSLC prewired junction panel with bypass and battery breakers for GS, no Flexnet
- (2) Outback 60A MPPT FlexMax charge controller with battery temp sensors, 5 yr warranty
- (1) Outback MATE3 network controller / display
- (1) Outback HUB4 for network
- (2) Outback 12 circuit DC combiner NEMA3 outdoor rated
- (2) 60A output breakers, (2) 60A input breakers
- (8) 15A 150VDC PV input breakers
- Snap N Rack roof mount racking (aluminum and stainless steel)
  - (48) L feet
  - (6) extra rail splices
  - (24) end clamps, universal or top mount
  - (48) mid clamps
- Panel grounding system
  - (24) panel grounding lugs
- Solar panel cables
  - (8) 40’ cables
- **Total - $18,226**
- **Shipping Options**
  - Shipping **FREE to 48 states**, shipped to location or will call at Redding Warehouse
  - FREE Local Pickup n Sacramento, CA
- **Customer Will Need:**
  - AC wiring and conduit
  - Some DC wiring for panels cables to combiner and combiner to charge controller
  - Misc DC wiring for wiring breakers and charge controllers
  - Batteries and cables (typical for this size system – 16 or 24 of L16, 840 or 1260Ah @ 48V or gel etc)
  - Battery Box and Rack (We can provide the batteries, depending on type)
  - 10 yr inverter warranty if in CA on participating CSI utilities ($600 GVFX $800 Radian)
- **Optional Items:**
  - Flashed L feet ($0.06/w), ground mount racking ($0.10-.15/w), alloy tile roof mounts ($0.19/w), standing seam roof (for standing seam roof, same price), tilt up hardware ($0.01-.05/w)
  - roof (for standing seam roof, same price), tilt up hardware ($0.01-.05/w)
  - Upgrade to Outback GSLC prewired junction box with GFDI breakers and Flexnet DC monitoring — ADD $250
- **Use:**
  - Hybrid kit for offsetting utility usage and having power when grid is down

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7350W off grid kit LARGE ---------

- (30) solar panels, REC245.3-7 rows, 10 strings
- (1) Outback Radian GS8048 8000W 48VDC 120/240VAC off grid / grid interactive inverter/charger, 5 yr warranty
- (1) Outback GSCL prewired junction panel with bypass and battery breakers for GS, no Flexnet
- (2) Outback 80A MPPT FlexMax charge controller with battery temp sensors, 5 yr warranty
- (1) Outback MATE3 network controller / display
- (1) Outback HUB4 for network
- (2) Outback 12 circuit DC combiner NEMA3 outdoor rated
- (2) 80A output breakers, (2) 60A input breakers
- (10) 15A 150VDC PV input breakers
- Snap N Rack roof mount racking (aluminum and stainless steel)
  - (64) L feet
  - (8) extra rail splices
  - (28) end clamps, universal or top mount
  - (54) mid clamps
- Panel grounding system
  - (30) panel grounding lugs
- Solar panel cables
  - (9) 40’ cables

**Total - $20,730**

- **Shipping Options**
  - Shipping FREE to 48 states, shipped to location or will call at Redding Warehouse
  - FREE Local Pickup in Sacramento, CA

- **Customer Will Need:**
  - AC wiring and conduit
  - Some DC wiring for panels cables to combiner and combiner to charge controller
  - Misc DC wiring for wiring breakers and charge controllers
  - Batteries and cables (typical for this size system – 16 or 24 of L16, 840 or 1260 Ah @ 48V or gel etc)
  - Battery Box and Rack (We can provide the batteries, depending on type)

- **Optional Items:**
  - Flashed L feet ($0.06/w), ground mount racking ($0.10-.15/w), alloy tile roof mounts ($0.19/w), standing seam roof (for standing seam roof, same price), tilt up hardware ($0.01-.05/w)
  - Upgrade to Outback GS prewired junction box with GFDI breakers and Flexnet DC monitoring
    – ADD $250

- **Use:**
  - Hybrid kit for offsetting utility usage and having power when grid is down

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8820W off grid kit XLARGE ---------

- (36) solar panels, REC245.4-7 rows, 12 strings
- (1) Outback Radian GS8048 8000W 48VDC 120/240VAC off grid / grid interactive inverter/charger, 5 yr warranty
- (1) Outback GSLC prewired junction panel with bypass and battery breakers for GS, no Flexnet
- (2) Outback 80A MPPT FlexMax charge controller with battery temp sensors, 5 yr warranty
- (1) Outback MATE3 network controller / display
- (1) Outback HUB4 for network
- (2) Outback 12 circuit DC combiner NEMA3 outdoor rated
- (2) 80A output breakers, (2) 60A input breakers
- (12) 15A 150VDC PV input breakers
- Snap N Rack roof mount racking (aluminum and stainless steel)
  - (76) L feet
  - (6) extra rail splices
  - (28) end clamps
  - (66) mid clamps
- Panel grounding system
  - (36) panel grounding lugs
- Solar panel cables
  - (12) 50’ cables
- **Total - $23,376**

- **Shipping Options**
  - **Shipping FREE to 48 states**, shipped to location or will call at Redding Warehouse
  - FREE Local Pickup in Sacramento, CA
- **Sales Tax in CA**
- **Customer Will Need:**
  - AC wiring and conduit
  - Some DC wiring for panels cables to combiner and combiner to charge controller
  - Misc DC wiring for wiring breakers and charge controllers
  - Batteries and cables (typical for this size system – 16 or 24 of L16, 840 or 1260 Ah @ 48V or gel etc)
  - Battery Box and Rack (We can provide the batteries, depending on type)
  - 10 yr inverter warranty if in CA on participating CSI utilities ($600 GVFX $800 Radian)
- **Optional Items:**
  - Flashed L feet ($0.06/w), ground mount racking ($0.10-.15/w), alloy tile roof mounts ($0.19/w), standing seam roof (for standing seam roof, same price), tilt up hardware ($0.01-.05/w)
  - Upgrade to Outback GS prewired junction box with GFDI breakers and Flexnet DC monitoring – ADD $250
  - Upgrade to dual Radian inverter with GSLC, and upgrade to HUB10 for network – ADD $4860
- **Use:**
  - Hybrid kit for large facility offsetting utility usage and having power when grid is down

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11760W off grid kit XXXLARGE ---------

- (48) solar panels, REC245.5-8 rows, 16 strings
- (2) Outback Radian GS8048 8000W 48VDC 120/240VAC off grid / grid interactive inverter/charger, 5 yr warranty
- (2) Outback GSLC prewired junction panel with bypass and battery breakers for GS, no Flexnet
- (3) Outback 80A MPPT FlexMax charge controller with battery temp sensors, 5 yr warranty
- (1) Outback MATE3 network controller / display
- (1) Outback HUB10 for network
- (1) Outback 8 circuit DC combiner NEMA3 outdoor rated
- (1) Outback 12 circuit DC combiner NEMA3 outdoor rated
- (3) 80A output breakers, (3) 60A input breakers
- (16) 15A 150VDC PV input breakers
- Snap N Rack roof mount racking (aluminum and stainless steel)
  - (96) L feet
  - (6) extra rail splices
  - (32) end clamps
  - (90) mid clamps
- Panel grounding system
  - (48) panel grounding lugs
- Solar panel cables
  - (16) 50’ cables
- **Total - $34,997**
- **Shipping Options**
  - Shipping FREE to 48 states, shipped to location or will call at Redding Warehouse
  - FREE Local Pickup in Sacramento, CA
- **Sales Tax in CA**
- **Customer Will Need:**
  - AC wiring and conduit
  - Some DC wiring for panels cables to combiner and combiner to charge controller
  - Misc DC wiring for wiring breakers and charge controllers
  - Batteries and cables (typical for this size system – 24 or 32 of L16, 1260 or 1680 Ah @ 48V or gel etc)
  - Battery Box and Rack (We can provide the batteries, depending on type)
  - 10 yr inverter warranty if in CA on participating CSI utilities ($600 GVFX $800 Radian)
- **Optional Items:**
  - Flashed L feet ($0.06/w), ground mount racking ($0.10-.15/w), alloy tile roof mounts ($0.19/w), standing seam roof (for standing seam roof, same price), tilt up hardware ($0.01-.05/w)
  - Upgrade to Outback GS prewired junction box with GFDI breakers and Flexnet DC monitoring – ADD $250
  - Upgrade to triple Radian inverter with GSLC – ADD $4810
- **Use:**
  - Hybrid kit for large facility offsetting utility usage and having power when grid is down

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Pictorial Example of Hybrid Grid Tie System

Utility Grid

Optional Bypass Breaker assembly

Main House Panel

House

Outback MATE

Solar on racking

Network CAT5 for monitoring

240 VAC

48 VDC

Battery Bank

Backup Generator (If allowable)

Charge Controller

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1) The Radian inverter has L1 and L2 connections for two AC input sources, although the inverter can only accept one source at a time.

2) The Radian inverter has separate neutral connections for grid input, generator input, and output. These are electrically common. If an external neutral bus exists (as shown in the AC Load Panel above), not all of the Radian neutral connections need to be made.

3) Maintenance bypass switching assemblies are commonly used so that the inverter can be taken offline, if necessary, without shutting down the entire system. These assemblies usually include an interlock mechanism that isolates AC lines from each other.

4) When multiple inverters are stacked, the GS Load Center (GSLC) for each inverter can be wired together to serve as a common input conduit box and AC load center. However, the GSLC bypass switching assemblies are only sized for single inverters and cannot work in conjunction. The GSLC bypass assemblies should not be used with multiple inverters present. An external bypass assembly must be used instead. Larger external assemblies are available from other manufacturers.