# The Future of Energy: Mini-Grid Solar System

## Materials List

RENOGY TRUSTED ENERGY SOLUTIONS

## Supplied Materials

The following materials are included in your purchase of The Future of Energy: Mini-Grid Solar System product. VoltED will arrange shipping to the address you provided at the time of purchase.

| Item | Image | Description | Quantity | SKU |
|---|---|---|---|---|
| Renogy 100 W 12V N-Type Portable Solar Suitcase Kit with 20 A PWM Controller |  | Includes 100 W Solar suitcase, solar connector to alligator clips cable w/fuse, Voyager 20A PWM solar charge controller (Pre-installed to solar panels) | 1 kit used with maximum of 20 students | RNG-KIT-STCS100DC-VOY20-US |
| Renogy 700 W 12V Pure Sine Wave Inverter |  | Includes 700 W 12 V pure sine wave inverter, 1 x 6AWG 3 ft inverter cables, 1 x wired remote control (optional), 1 RJ11 network cable (optional) | 1 per solar suitcase | RNG-INVT-700-12V-P2-US |
| Renogy Mini Size 12V 20 Ah Trolling Motor Lithium Iron Phosphate Battery |  | Includes Renogy 12.8V 20Ah Deep Cycle Lithium Iron Phosphate Battery, 2 M6*1.25*10mm terminal bolts | 1 per solar suitcase | RBT1220LFP-TM-US |
| Renogy 12V 20A AC-to-DC LFP Portable Battery Charger |  | 14.6V 20 A AC to DC LFP Portable Battery Charger, DC Output Adapter Ring Terminal Cables, DC Output Adapter Alligator Clips Cable, Mounting Screws | 1 | RBC20A1P-US |

| Item | Image | Description | Quantity | SKU |
|---|---|---|---|---|
| Renogy 100A Battery Fuse |  | 100A ANL Fuse only | 1 per solar suitcase | RNG-ANL-FUSE100-US |

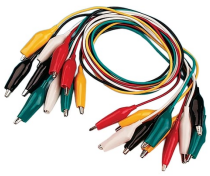
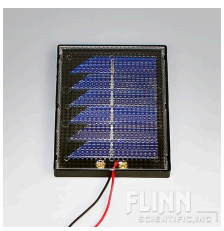
## Materials to Source

The following materials are required to support the hands-on engineering experience. You will need to source these materials from existing inventory, or we have provided links to sample products.

### Classroom Mini-grid Solar System Project Hardware

| Item | Image | Description | Quantity | SKU |
|---|---|---|---|---|
| AC Loads |  | Instructor-approved standalone 120V AC test load(s) approximately 50-75 W range | 1 - 3 | Example: Honeywell TurboForce HT900 fan<br><br>Model: HT900 |
| Phillips head screwdriver (PH2) |  | For use with inverter | | |
| 10 mm wrench |  | For use with the battery | | |

## Electric Circuits and Solar Energy Exploration Materials

| Item | Image | Description | Quantity | SKU |
|---|---|---|---|---|
| Solderless Breadboard |  | Reusable board that lets learners build and revise low-voltage circuits without soldering | 1 per pair | Item #AP9872 |
| Male to male jumper wire assortment |  | Insulated wires used to make temporary connections between breadboard rows and circuit components | 1 per group of 4 | SKU: PRT-00124 |
| LED assortment, 5mm |  | Low-power light-emitting diodes used as visible loads in student-built circuits | 1 per group of 10 | SKU: COM-12062 |
| ¼-watt resistor assortment |  | Color-coded resistors that limit current and protect LEDs and other low-voltage components | 1 per group of 4 | SKU: PRT-14493 |
| Alligator clip test lead set |  | Clip-ended leads for quickly connecting components, batteries, solar panels, and meters without permanent wiring | 1 pack per group of 20 | Item #AP6052 |
| Small classroom solar panel |  | Low-voltage photovoltaic panel that converts light energy into electrical energy for student investigations | 1 per large group | Item #AP7902 |

| Item | Image | Description | Quantity | SKU |
|---|---|---|---|---|
| Battery holder (9V or 2 AA batteries) |  | Secure holder for connecting one or more batteries to a student circuit | 1 per breadboard purchase | Item #WGC-BH1 |
| Batteries |  | Select batteries that match the voltage requirements of the holder and planned activities | 1 set per battery holder | |

## Measurement and Data Tools

| Item | Image | Description | Quantity | SKU |
|---|---|---|---|---|
| Digital multimeter (Student/education model) |  | Measures voltage, current, resistance, and continuity in low-voltage circuits | 1 per pair or group (Max: 4 students) | Item #AP4639 |

## Simulation and Analysis Software

- PhET simulation for electric circuits and energy transformations

## Computing and Collaboration

- (Optional) Learner devices (Chromebooks/laptops) for access to learner lessons
- Instructor device (Chromebook/laptop)
- (Optional) Projector/smart board

If you have any questions or need help with the materials required, please contact your account representative or email hello@voltedlearning.org.