

# Solar Powered Set Up for Sacred Mountains Sundance Pinon, AZ

July, 2021



# Outlining the Needs

- Need to power up select equipment during the Sundance
- Primary goal - run the following 24 hours per day:
  - 18-20 cu.ft. refrigerator with annual power consumption of 500kWh
  - 5-6 cu. ft. chest freezer with annual power consumption of 220kWh
- Secondary goal – run the following for 6-8 hours per day
  - PA system (need power consumption specs)
  - LED String Lights (approx. daily power consumption 200Wh)

# Defining the Needs

- Need the following:
  - Production and storage capacity of 2,200 watts to support the primary goal
  - Production and storage capacity of 1,000 watts to support secondary goal
- Solar Panels – 600w
  - Estimated actual charging time is 5 hours, for total of 3,000 watts

Note: Sun exposure is usually greater than 5 hours but not at full capacity
- Battery System – 400amp/4,800 watts
- Chargers and Inverters – to support above panels and batteries

# System Example



# Option 1- cheapest/generic \$2,120

- 3 x 200w Newpowa solar panels @\$200 each \$600
- 4 x 100Ah AGM batteries @ \$180 each \$720
- 60 Amp charge controller AMPINVT brand \$200
- 4000w modified wave inverter \$350
- Wires, switches and fuses \$250

## Option 2- decent/good brands \$2,400

- 3 x 200w Newpowa solar panels @\$200 each \$600
- 2 x 200Ah Gel Renody batteries @ \$400 each \$800
- 60 Amp charge controller Renogy brand \$350
- 4000w pure sine wave inverter \$600
- Wires, switches and fuses \$250

## Option 3 – high end/generic \$3,000

- 3 x 200w Newpowa solar panels @\$200 each \$600
- 2 x 200Ah Lithoum LiFePO4 batteries @ \$800 each \$1600
- 60 Amp charge controller Renogy brand \$350
- 4000w pure sine wave inverter \$600
- Wires, switches and fuses \$250

## Option 4 – premium brands \$5,000

- 3 x 200w Newpowa solar panels @\$200 each \$600
- 4 x 100Ah Lithoum LiFePO4 batteries @ \$800 each \$3,200
- 60 Amp charge controller Renogy brand \$350
- 4000w pure sine wave inverter \$600
- Wires, switches and fuses \$250



# Recommendation – Option 3

- Solar panels are “cheap” and can be expended if needed
- Battery TYPE is the most important and costly option – recommend option 3 because lithium batteries provide better storage, are half the weight and last few years longer.
- Solar charge controller is not an expensive option so going with good brand is not too expensive with option 2/3/4
- Inverter is an important device that will convert stored power to usable electricity – Pure Sine Wave models are recommended. Premium brands are too expensive because they have many extra features or have lesser output. Choice of generic name is based on prior experience. Additional warranty from Amazon can help with reliability issues over many years.