

OVERVIEW

CUSTOMER: Vermont Telecommunications Authority

APPLICATION: Cellular base station and local WiFi hotspot for Emergency Communications

SYSTEM TYPE: Grid Tied Solar + Battery Power System

NUMBER OF SYSTEMS: 10

SYSTEM/BATTERY SIZE: Total Battery Bank @ 6,600 AHrs

9X SPS 24 Systems @ 600 Ahr Battery | 2475 Peak Watt PV Array

1X SPS 24-G System @ 1,200 Ahr Battery | 4125W Peak Watt PV Array | 5.5kW Gen

LOCATIONS: Halifax, Hancock, Jacksonville, Norton, Readsboro, Roxbury, Stockbridge, Corinth, Brighton and Rochester VT, USA

COMMISSIONING: 2013-2014

BATTERY TYPE: Absorbent Glass Mat (AGM) - Valve Regulated Lead Acid

SYSTEM CONTROLLER: SC-100 / 100G

ENCLOSURE: Environmentally Controlled Cabinet - Standard SPS 24 Unit

SYSTEM DIMENSIONS: 48"W 72"H 36"D



RESILIENCY FOR CRITICAL COMMUNICATIONS

When Tropical Storm Irene left Vermont communities without power and access to the outside world for several days, the Vermont Telecommunications Authority (VTA) stepped in to prevent a loss of communication from ever happening again. Subsequently, Northern Reliability was selected to design and install ten solar-power, backup systems for the chosen sites. Sites were located in communities where cell coverage was very limited or did not exist. In turn, these systems became part of an expanded cellular network funded in part through the Federal Economic Development Administration. Because post-disaster access to communications in rural communities is critical for coordination of emergency services and family members everyone benefited greatly. The systems are designed for daily use with a primary focus on emergency functionality. Power generation is derived from renewable energy and stored whereas excess energy is directed back to the grid.

HOW THE SYSTEM FUNCTIONS

Northern Reliability designed the power system to work with the existing “host” facility and included solar panels, battery energy storage and remote monitoring functions. These systems ensure that remote communities have access to a cellular network and Internet via satellite in the event of a power outage. If a natural or man-made disaster occurs the system become stand-alone, providing reliable power for the communications equipment until utility power is restored. On the other-hand, normal operation diverts excess renewable energy to the grid through net metering.

BENEFITS

AUTONOMOUS RUN TIME

Approximately 5 days of operation from a full state of charge - reliable during unfavorable generation conditions & when the grid is down

LONG LASTING BATTERY

Estimated 15-20 year battery life - all equipment is environmentally controlled for optimal longevity

ALL WEATHER ENCLOSURE

Natural disaster recovery requires a tough system shell - NRI's aluminum enclosure is NEMA 3R certified and ready for all weather.



MONITOR, MANAGE & CONTROL

The Northern Reliability system controller acts as the brains of the system. The VTA needed insight into the system's status so that is exactly what the NRI team programmed every solution for. Everything from the battery's rate of charge, critical components, internal shelter temperatures, battery health, system faults and alarms are monitored and made available to HQ. Each system incorporates on board data collection capabilities that allow us to map, trend and alarm all of the parameters that are critical to the optimum performance for each system. Data is collected in one minute intervals and written to a web enabled data base that is user ID and password protected. Since the web application is “read only” the individual systems that are being monitored are protected from outside interference. In addition to trending and event logging, other critical parameters include battery voltage, battery temp, and state of charge... the latter being useful in the event of a power outage.