

OVERVIEW

CUSTOMER: *Jacobs Telecommunications*

APPLICATION: *Remote power solution for First Responder Radio Network and U.S. Border Patrol*

SYSTEM TYPE: *Off-Grid, Generator + Solar Hybrid Energy Storage*

NUMBER OF SYSTEMS: 3

SYSTEM/BATTERY SIZE: *Total Battery Bank @ 9,728 AHrs*

Mt. Blue @ 3648 Ahr Battery | 6600W PV Array | 25kW Gen

Mt. Chase @ 3648 Ahr Battery | 9240W PV Array | 25kW Gen

Big Moose Mtn. @ 2432 Ahr Battery | 9240W PV Array | 25kW Gen

LOCATIONS: *Mt. Blue, Mt. Chase, Big Moose Mtn. Maine, USA*

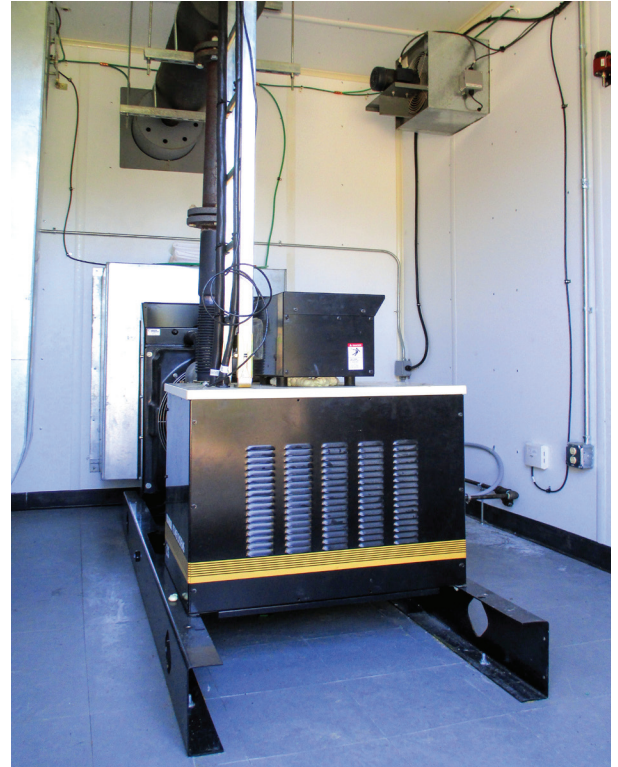
COMMISSIONING: *2012-2013*

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

SYSTEM CONTROLLER: *Custom*

ENCLOSURE: *Custom Designed, Environmentally Controlled Cabinet*

SYSTEM DIMENSIONS: *12'H X 28'W X 14'D*



SYSTEM CONFIGURATION

12kW of photovoltaic power configured in 4 redundant solar arrays

25kW propane-fired Kohler generators for back up battery charging

3,600 Ahr AGM VRLA battery system with ground fault protection

Power conversion, conditioning, and distribution system

Heating Ventilation and Air Conditioning (HVAC) with fire detection

Custom Programmable Logic Control (PLC) system

Custom SCADA system

THE DESIGN CHALLENGE & TECHNICAL SOLUTION

Tasked with implementing a state-wide radio communication network for first responders, law enforcement, and the U.S. Border Patrol, Jacobs Telecommunications turned to Northern Reliability for a robust, reliable off-grid power solution for repeater and communications equipment. Each of the three remote mountaintop sites had no existing commercial power source and required a reliable solution designed for all types of weather. Relying on over forty years of expertise in the remote power field, Northern Reliability created an off-grid power solution to connect the remote repeater sites with the rest of the first responder network. The resulting solutions integrated photovoltaic power with a propane-fired 25kW generator and battery energy storage. During low solar periods the generator supplements power generation to maintain the battery's state of charge during periods of reduced solar availability.

The systems were designed to perform for long periods of time between servicing or refueling visits; an absolute must given their mountaintop locations which are accessible only by helicopter for much of the year. To protect the equipment during Maine's harsh winter, the NRI team incorporated sophisticated environmental protections into the system and shelter design. NRI's custom built system controller acts as the brains of the operation and monitors the battery rate of charge, fuel tanks, generators, environmental conditions, system faults and alarms. Our solar power systems (SPS) are part of Maine's Statewide Communication Network Program, covering 95% of the state, designed to facilitate communication between various state and federal agencies regardless of frequency band, type of radio, or the operating mode of the equipment being used.



BENEFITS

COST EFFECTIVE

Renewable energy solution reduces 24/7 dependence on fossil fuel generator

RELIABLE

Robust, low-maintenance solution, minimizing downtime and service calls

FLEXIBLE

Designed to meet specific site & load requirements in any environment



“We chose Northern Reliability for its extensive experience engineering and commissioning off-grid systems in remote locations, and for its battle-tested tools and designs.” - Ian Majid, Sr. Project Manager, Jacobs Telecommunications