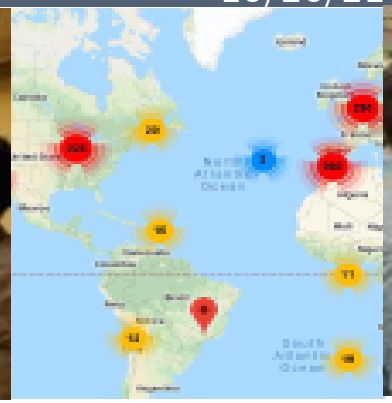
Energy Storage Demonstration Projects –

OE-ES Peer Review

Rural Energy Storage Deployment Program (RESDP)

10/26/21



PRESENTED BY

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Poudre Valley REA Red Feather Lakes Microgrid

Where: Red Feather Lakes, CO

What: 140kW, 446kWh Li-Ion Battery (Tesla), Controller (Encorp Egility control platform) paired with an existing 130kW propane generator

Why: Community volunteers organized to prepare for, respond to, and rebuild after a regional emergency

- Project initiated by significant solar PV (~8kW) grant received by the Red Feather Lakes Library from a private foundation
- Natural disaster concern and propensity (Fire)
- Radial 69 kVA transmission and limited distribution feeder redundancy
- Seek to provide resiliency to 8+ hours

Status: Project became operational in July 2021

Case Study: https://www.cooperative.com/programs-services/bts/Rural-Energy-Storage-Deployment-Program/Documents/RESDP-Case-Study-PVREA-July-2021.pdf

Protective Device – East
Will isolate the microgrid from the incoming circuit

Protective Device – West
Will isolate the microgrid from the remaining circuit

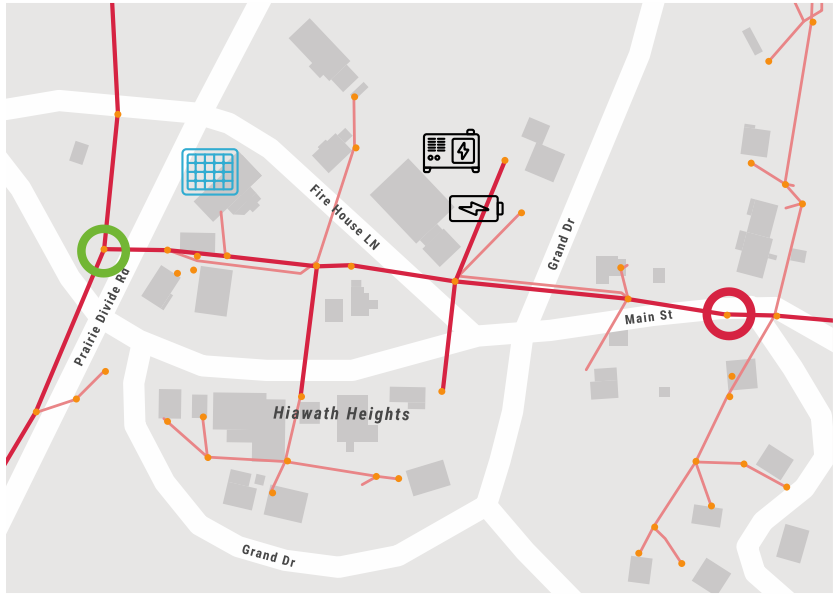
Behind the Library Meter

PV Solar Array
~20 kW

Behind the Fire Station Meter

Fossil Fuel Generator
130 kW

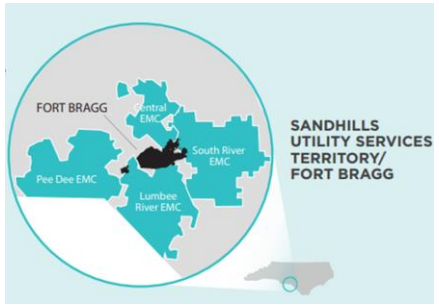
Energy Storage
140 kW / 446kWh



Sandhills Utility Services Fort Bragg Microgrid

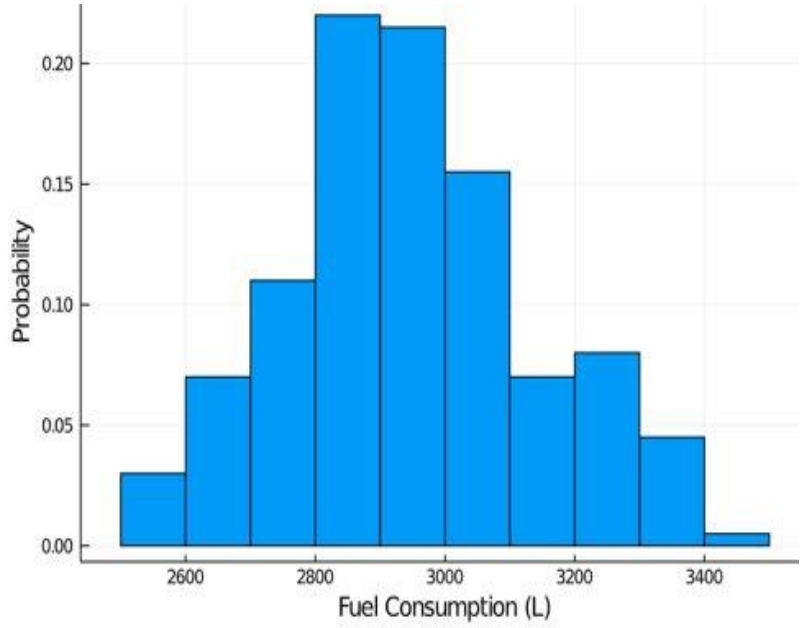
- **Where:** Fort Bragg, North Carolina
- **What:** Li-Ion BESS/ 100kW/300kWh paired with an existing 300kW generator for a building microgrid
- **Why:** Resilience of a critical load at military installation and to solve some of the power quality issues
- **Status:** Delivery of battery in October 2021 with a testing and commissioning November 2021

Project Goal: Seeks to be able to provide power to this critical load during a long duration outage



5/23-8/3, 2020
Peak load: 90 kW
Average: 23 kW

Existing DG: 300 kW
Fuel storage capacity: 6192 L
Full load: 72 hours
Min load: 187 hours (< 8 days)



With a 100 kW/3 hr BESS, the microgrid can survive any two-week outages.

Rose Acre Farms Microgrid

Who: North Carolina EMC, Tideland EMC

Where: Rose Acre Farms, Hyde County, NC

What: 2.5 MW/5MWh Tesla battery paired with a 2MW solar and existing diesel generators

Why: Demand response, reliability, and resiliency

Status: Testing and Commissioning Fall/Winter 2021

Project Goals:

- Seeks to help the large commercial member meet their sustainability goals
- Provide resilience when there is an outage
- Peak Shaving

West River Electric Association Ellsworth Air Force Base Microgrid

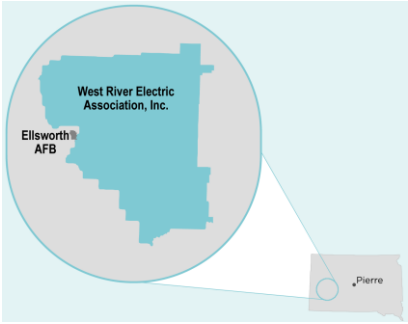
Where: Ellsworth AFB, South Dakota

What: BESS 250kW/250kWh paired with an existing 400kW generator for a building microgrid

Why: Resilience of critical loads at critical military installation and peak shaving

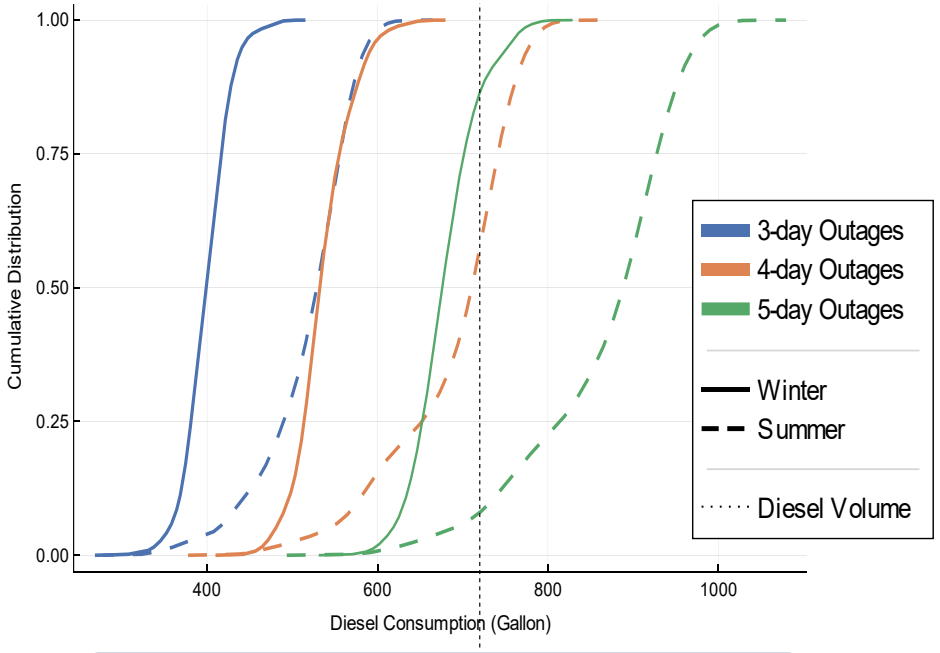
When: Testing and commissioning in Q2 2022.

Project Goal: Provide the installation with resilience to serve a critical load during a long duration outage



Peak load: 130 kW
Annual avg: 60 kW
Summer avg: 80 kW

Existing DG: 400 kW
Full load: 25 hours
Min load: 65 hours (< 3 days)



Significantly increased survivability against outages with a duration of 3-5 days

Questions?

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