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GreenGrid 90K Community-Resilience Deployment Guide

The GreenGrid 90K is a 90 kWh/20 kVA trailer-mounted battery energy storage system designed to deliver safe, silent and quickly deployable power for community resilience. This guide translates technical capabilities into decision-grade deployment strategies, featuring real-world case studies that demonstrate proven success across five critical use cases.

Shelters & Resilience Hubs

The Challenge

During extreme weather or prolonged outages, community shelters must provide safe, quiet and autonomous electricity for lighting, HVAC, communications and refrigerated food/medicine. Traditional generators produce fumes and noise, require fuel logistics and pose safety hazards.

GreenGrid 90K Solution

- **Multi-day autonomy:** 90 kWh provides 15-24 hours at typical shelter loads
- **Solar-ready:** Up to 5.5 kW PV input adds ~22 kWh/day
- **Quiet operation:** Zero emissions, <2% THD sine-wave power
- **Fast deployment:** Trailer-mounted with <20 ms UPS transfer

Shelter Case Studies: Proven Resilience

Babcock Ranch, Florida

Hurricane Ian 2022: America's first solar-powered town used a 10-MW battery with community solar to stay powered during Hurricane Ian. The community served as a refuge for neighbors, maintaining clean water, refrigeration and communications while thousands around them lost power.

GreenGrid Application: Offers scaled-down version of this resilience—trailer-based battery with PV delivers multi-day shelter power and can be redeployed where needed.

New Orleans Community Lighthouses

Faith-Based Resilience: Organizations installed solar arrays and large batteries (167 kW solar + 440 kWh battery at New Wine Christian Fellowship) to create "lighthouses" providing cooling, refrigeration and phone charging during outages. Systems sustain operations for 10-14 days.

GreenGrid Application: Can establish interim resilience hubs while permanent installations are built. Mobility allows one unit to serve multiple shelters as needs shift.

Redwood Coast Airport Microgrid, California

Earthquake Response: First 100% renewable multi-customer microgrid in California (2.2 MW solar + 2.3 MW/8.9 MWh battery). When a 6.4-magnitude earthquake cut power to 70,000 customers, the microgrid islanded and kept the airport and Coast Guard base powered for nearly 15 hours.

GreenGrid Application: Replicates islanding concept on portable scale, making resilience hubs feasible even in rural areas without existing microgrids.

Communications & Coordination Hubs

The Challenge

Emergency operations centers (EOCs), public-safety buildings and telecom hubs require reliable, high-quality power. Radio repeaters, IT racks, satellite links and HVAC must remain online through grid disturbances with instantaneous transfer to avoid data loss. Personnel need low-arc-flash equipment safe for non-electricians.

GreenGrid 90K Solution

UPS-grade performance

<20 ms transfer, <2% THD protects sensitive electronics

High power output

Up to 20 kVA continuous, 30 kVA peak supports multiple systems

Remote monitoring & safety

Arc-flash <0.2 cal/cm², cellular telemetry, GPS tracking

Communications Case Studies: Mission-Critical Power

Beaverton Public Safety Center, Oregon

First EOC Microgrid: Oregon's first EOC microgrid uses 873 solar panels (332 kW) with battery storage and diesel generator. Supplies 40% of normal building load and automatically islanded during thunderstorm-induced outage. Dispatched 10-20 times per month for grid services.

GreenGrid brings similar capabilities to smaller EOCs or field command posts with no permanent installation required.

Portland General Electric Salem & Beaverton Microgrids

Multi-Site Program: PGE's program includes 250 kW/1 MWh battery at Beaverton Public Safety Center and proposed 5 MW battery with 200 kW solar for Salem public works. Designed to provide resiliency for essential operations while supporting grid services.

Demonstrates trend toward distributed microgrids. GreenGrid offers lower-cost entry point for smaller counties.

Hot Springs Microgrid, North Carolina

Hurricane Helene 2024: When flooding shut down Duke Energy's Marshall Substation, the solar-plus-battery microgrid automatically isolated and supplied power to the town center for **143.5 hours—nearly six days**—until repairs were complete.

GreenGrid can provide similar autonomy for temporary communications hubs in rural areas where substation outages lead to multi-day blackouts.

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Medical Refrigeration & Sensitive Loads

The Challenge

Health clinics, pharmacies and vaccine distribution points rely on constant, high-quality power to maintain refrigeration and operate ventilators or dialysis machines. Diesel generators can fail under extended use and produce harmful exhaust. Many clinics lack budgets and space for permanent microgrids.

GreenGrid 90K Solution

>50

Hours of Runtime

For 1.4-1.5 kW medical refrigeration load

15+

Hours for Clinics

5 kW loads (clinic + refrigeration)

<2%

THD Output

Protects sensitive lab equipment

- **Hybrid recharging:** Integrates PV, portable generators and grid input
- **Compact footprint:** Trailer positioned outside, connected via 120/208 V cabling
- **$LiFePO_4$ safety:** Eliminates thermal-runaway concerns for near-patient use

Medical Case Studies: Protecting Critical Healthcare

Puerto Rican Hospitals Post-Maria

Rural Hospital Resilience: After Hurricane Maria, eight rural hospitals installed solar-plus-storage microgrids (3.96 kW PV array + four 3.5 kWh batteries = ~14 kWh per site). Systems power vaccine and medicine refrigeration, replacing diesel generators and reducing refueling expenses. Administrators praised microgrids as reliable "Plan C" that also lower daily energy bills.

GreenGrid Application: Aggregates capacity of several hospital systems into single trailer. Supports multiple refrigerators plus lab equipment and can be redeployed to different clinics as disasters shift.

Direct Relief Warehouse, California

Medical Supply Protection: Medical-relief charity installed microgrid at 155,000-ft² warehouse: 320 kW solar panels + 676 kW battery + 600-kW diesel generator with 4,000-gallon fuel tank. Microgrid allows warehouse to operate as self-contained power island for months, safeguarding medicine during extended outages. Fuel consumption drops from one week to three months of autonomy.

GreenGrid Application: Implements same hybrid approach with integrated PV and generator inputs, enabling clinics to operate refrigeration for days without refueling.

Casa Pueblo Adjuntas Community Microgrid, Puerto Rico

Community-Scale Healthcare: Community-owned microgrid spans seven buildings with two 0.5-MW battery systems and 700 solar panels providing power to essential businesses including pharmacy, bakery and pizza shop. During outages the microgrid islands and supplies local loads, allowing businesses to remain open. Owners pay lower energy costs and reinvest proceeds into additional solar projects.

GreenGrid Application: Serves as modular building block for similar projects, offering immediate resilience while larger microgrids are developed.

Neighborhood EV & E-Mobility Support

The Challenge

Electric-vehicle adoption is accelerating, yet most communities lack resilient charging infrastructure. During outages or grid constraints, drivers cannot recharge, and transportation services may be grounded. Municipalities need mobile charging assets that scale with demand and integrate with future hydrogen or fast-charging systems.

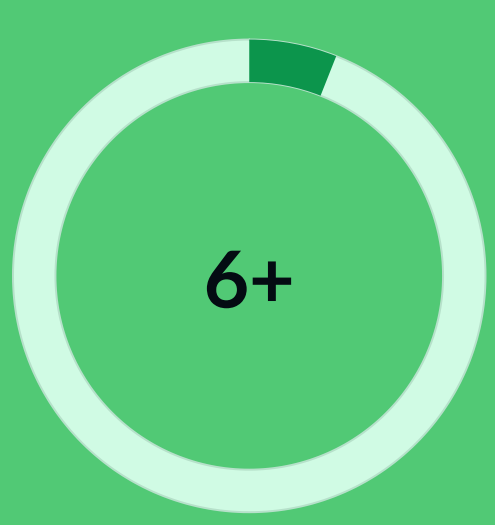
GreenGrid 90K Solution

kW Level-2 Charging

Integrated AC charging port

kWh/Day Throughput

Battery + PV combined



EV Charges Daily

Or dozens of e-bike charges

- **Multiple outputs:** 120/208 V three-phase for additional chargers or scooter/bike racks
- **Scalable fleet support:** Multiple trailers parallel for pop-up charging hubs
- **DC inputs:** Support portable PV arrays

EV Mobility Case Studies: Electrifying Transportation

Brookville Smart Energy Bus Depot, Montgomery County, MD

Transit Fleet Electrification: In 2022 Montgomery County partnered with AlphaStruxure to build 6.5 MW microgrid for Brookville bus depot. System integrates solar PV canopies, renewable-natural-gas-ready on-site generation, battery storage and microgrid controls, providing energy for 70 electric buses. Delivered via energy-as-a-service partnership, ensuring continuous operation without upfront capital cost.

Ideal for smaller transit agencies seeking to pilot electrification before committing to multi-megawatt microgrids.

EMTOC Transit Depot, Montgomery County, MD

Zero-Emission Future: Equipment Maintenance & Transit Operation Center features 4.84 MW solar generation, 2 MW/6.88 MWh battery and up to 2.25 MW charging capacity. Microgrid operates without utility power and will eventually support 200 zero-emission buses, including hydrogen fuel-cell and battery electric buses. Project aims to avoid 4,000 metric tons of carbon emissions.

Offers portable microgrid element for transit agencies to test charging infrastructure or provide redundancy during construction.

Denker Heavy-Duty EV Charging Hub, Torrance, CA

Largest Heavy-Duty Hub: April 2024—Prologis Mobility built largest heavy-duty EV charging hub in North America near Ports of LA/Long Beach. Self-sufficient microgrid with six independent microgrids, each with battery, generators and charging stalls. Provides **96 charging stalls, 18 MWh battery storage, 9 MW charging capacity** and 3 MW fuel-flexible generation (natural gas, renewable gas or hydrogen). Delivers 27,000 miles of truck charging per day, supports 300+ medium/heavy-duty EVs, produces 1.3 tons hydrogen-to-EV-ready blended fuel daily. Runs 3+ hours on battery alone; indefinitely with generators.

Lets municipalities pilot similar hubs at neighborhood scale with Level-2 charging, showing residents what resilient EV infrastructure looks like.

Multi-Day Micro-Hub & Field Operations

The Challenge

Disaster relief camps, field clinics, remote construction sites and rural community events require multi-day autonomous power. Loads include refrigeration, communications, lighting and device charging. Sites may have intermittent PV or small generators but no permanent infrastructure. Power systems must be safe, easy to deploy and scalable.

GreenGrid 90K Solution

- **Hybrid operation:** 5 kW average load powered ~15 hours on battery; adding 5 kW PV extends autonomy indefinitely with occasional generator use
- **Scalability:** Multiple units parallel; accepts DC fast-charge modules
- **Remote telemetry:** Cloud monitoring tracks state of charge, coordinates fuel logistics

01

Deploy trailer to site

One-person tow, quick setup

02

Connect PV & loads

MC4 connectors, standard outlets

03

Monitor remotely

GPS tracking, cellular telemetry

04

Scale as needed

Parallel units, add generators

Selling Point: Field operations and rural communities need simple, scalable and clean power. GreenGrid 90K extends proven microgrid concepts to pop-up micro-hubs, offering safety, mobility and rapid deployment. Use RCAM, Hot Springs and Casa Pueblo case studies to show that solar-plus-battery microgrids already provide multi-day resilience—GreenGrid makes it portable.

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Empower Your Community with GreenGrid 90K

Ready to deploy scalable, resilient energy solutions for your community? The GreenGrid 90K is engineered to provide critical power for shelters, communication hubs, medical facilities, and EV infrastructure, ensuring continuity and preparedness in any situation.

Request a Consultation | **Download Full Guide**

Ready to get started? Contact our team today:

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