



resilience

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See how an emerging network of
“Resilience Hubs” and
microgrids are transforming
community-led disaster
response and recovery



*Non-profit organizations Footprint Project, Invest Appalachia, and Appalachian Voices are backing **Resilience Hubs** to support Helene recovery and long-term resilience, providing permanent and autonomous solar power installations that support **safety and connectivity** for communities impacted by **climate events**.*

Central Appalachia has weathered generations of disinvestment, and serious infrastructure gaps are being exposed by increasingly frequent climate-driven disasters like Hurricane Helene. But across the region, communities are creating solutions that strengthen both daily life and long-term resilience in small towns, rural communities, and underserved neighborhoods. Out of challenge comes innovation, and across Western North Carolina, regional organizations Invest Appalachia and Appalachian Voices (manager of the Appalachian Solar Finance Fund) have partnered with energy resilience non-profit Footprint Project to invest in a growing regional network of "Resilience Hubs," solar microgrids, and mobile energy resilience solutions.

Some microgrids are mobile, while Resilience Hubs are permanent improvements to existing trusted spaces—often community centers, churches, fire departments, anchor businesses, and schools - that are go-to facilities for local residents, and in many cases, support local Helene response and recovery. Some Resilience Hubs offer shelter during and after extreme weather events. The Resilience Hubs we support are equipped with solar power and battery storage to sustain, and provide back-up power for, critical functions including communication, medical device operation, medicine storage, and food preparation. They can also provide other essential services and resources, such as food pantries and youth programs. Year-round, they cut utility costs when the grid is up, provide backup power during outages, expand access to services, and strengthen community ties.

Through the generous support of funders, partners, and volunteers, we're financing and installing the solar panels and battery storage to power a growing network of resilience hubs across the region. Each project is tailored to the needs of its local community, but all share the same goal: to build local resilience and disaster preparedness, while also fostering community connection and creating long-term prosperity for Appalachian people.

"The people who are still displaced and struggling to regain their livelihoods since Helene were living day-to-day before the storm. For future resilience, it's vitally important that projects--to improve readiness--are built by and with the communities on the frontlines of climate disasters."
- Kristin Stroup of Appalachian Voices





Celo Community Center

Yancey County, NC

**"If we have another outage,
we'll be ready."**

- Gred Gross, building manager

Founded as a rural cooperative settlement via land trust in 1937, Celo is a picturesque and remote area of Yancey County, North Carolina nestled alongside the Toe River. The same geography that makes the Toe River Valley beautiful - steep terrain, waterways, isolated coves- makes it particularly vulnerable during storms. In Hurricane Helene, Celo suffered extreme flooding and lost multiple community-owned buildings.

Their community center space, however, survived the flood. Even through a month without power, it served as an indispensable resource and default gathering space in the immediate response to the storm. Community members ran generators to power a Starlink and shared refrigeration. In addition to serving as a space for organizing supply distribution, the Celo Community Center also housed communal childcare while schools remained closed.

Helene revealed the true value of Celo's Community Center as a hub for shared resources and connection. With a new microgrid from Footprint Project, the Celo Community Center will be able to power communications, refrigeration, and essential services during extended outages.

The work to rebuild structures lost to Helene in Celo continues. And while disaster may again visit this quiet, intentional community, their spirit of cooperation will be supported by reliable, uninterrupted power and connectivity. "I think it probably will more or less zero out our electrical loads — that'll save us quite a bit of money over the course of the year," says Gred Gross, building manager of the Celo Community Center. "And, of course, if we have another outage, we'll be ready."

Broad River Fire Department: Shumont Substation

Black Mountain, NC
Buncombe County



With steep slopes and abundant water, the Broad River Fire Department is located in a highly climate-vulnerable region of Western North Carolina. During Helene, Broad River Township suffered extreme flooding that washed away bridges and roads, triggered major landslides, and left snarls of downed trees on all main routes. Many residents were stranded in their homes for over a week due to road closures and destroyed infrastructure. As a direct neighbor to some of the most heavily Helene-devastated communities (Chimney Rock, Bat Cave, Gerton, and Garren Creek), Broad River became an island, cut off and isolated from outside help.

As an area that frequently experiences power outages, the aftermath of Hurricane Helene left Broad River residents without power for over three weeks. Amid isolation and destruction, the Broad River Fire Department played a vital role as a resource and information hub, maintaining close partnership with the Broad River Church to meet community needs. In normal operations, fire department vehicles stay plugged into station "shore power"- external electricity that keeps vehicle batteries, radios, and equipment charged. Steady, reliable power is essential to station readiness, so reliable power means no dead batteries, no dark bays, and no delays when a matter of seconds can save lives.

The Broad River area also faces demographic challenges that compound the difficulties of disaster recovery. With a median age of 54, the population is older than the state average, resulting in greater home health needs and a reduced capacity to clear roads or engage in other critical recovery efforts. Without consistent power, critical services like medical care, food storage, and emergency communications are severely disrupted, leaving residents at greater risk.

Footprint Project supported the Schumont Fire Station in the district with a large solar generator immediately after the storm. Building on that success, we've now invested in building a permanent, resilient, solar-powered microgrid there. The microgrid is expected to enhance and ease coordination between the fire department and Broad River Church in emergency events.

Even in isolation, Broad River's first responders are now equipped to power lifesaving medical devices, keep food and medicine safe, and maintain communications when disaster strikes. While no community can predict the next storm, Broad River is better prepared to protect residents and preserve quality of life.

Rural Organizing and Resilience (ROAR)

Marshall, NC
Madison County

"Our mobile solar trailer allows us to provide power for emergency communications, medical equipment, water wells, and more when the grid goes down, allowing us to provide crucial support to communities in the immediate wake of catastrophes."

– Matt Wallace, ROAR



In the first days after Helene, when shock, displacement, and loss were everywhere, it was neighbors helping neighbors that sustained people and lifted spirits. Mutual aid groups know this work best—they have been practicing community care since long before the storm. In Marshall, Rural Organizing and Resilience (ROAR) embodied that spirit, stepping up to support residents when official channels were stretched thin.

With support from the Appalachia Funders Network, ROAR now has a solar microgrid trailer to strengthen their role in the Central Appalachian mutual aid network. The mobile unit carries 3 kilowatts of roof-mounted solar generation and 18 kilowatt-hours of battery storage, with the option to expand with a 1.2-kilowatt ground-mounted array. Outfitted with a small refrigerator, the trailer can serve as a mobile kitchen, and it has space for tools, medical equipment, and other supplies needed in both emergencies and everyday community use. Perhaps most importantly, given the prolonged shortage of potable water post-Helene, ROAR's trailer can run a well pump for an hour per day.

Under clear skies, ROAR members view the microgrid trailer as a resource for daily life, including a mobile kitchen, sound system for outdoor gatherings, and tool charger for community workdays.

"Hopefully, we don't have another Helene-like situation for a very long time," says Matt Wallace, a ROAR member. Wallace noted that because the unit is mobile, ROAR will be ready to share the trailer with mutual aid partners across the region, stretching the value of this investment across Appalachia.



Alan Campos Mobile Home Park, Swannanoa Buncombe County, NC

The Alan Campos mobile home park sits in a valley between two lakes, and alongside the Swannanoa River. When Hurricane Helene struck, homes at the bottom of the hill were completely destroyed, leaving families displaced and facing the daunting task of rebuilding. While sustaining these losses, the residents of Alan Campos, many of whom are Spanish speaking and/or immigrants, also faced language barriers and other challenges navigating disaster assistance.

A network of community helpers have come to rebuild. Community Organized Relief Effort (CORE), alongside partners such as Catholic Charities, Lowe's Foundation, and United Way of Asheville-Buncombe County, committed to rebuilding more than 25 homes in the park. To support this massive effort, Footprint Project provided a solar trailer that powered CORE's office operations, charged batteries, and ran power tools on-site. This mobile resilience hub allowed rebuilding to move forward even as grid power remained unreliable and infrastructure was strained. It also offset the costs of running diesel generators to sustain the repair work, and reduced the noise for residents.

The solar trailer also demonstrated what resilience looks like in practice: clean, renewable energy supporting both emergency response and long-term recovery. By keeping operations running and construction moving, it became an anchor for hope in a community hit hardest by the storm. While no solar trailer can erase the trauma of Helene, this investment shows how practical resilience infrastructure can make disaster recovery more accessible.

Double Island Volunteer Fire Department

Green Mountain
Yancey County, NC



"In very rural communities like Green Mountain, residents need resources that are local. Double Island VFD is already a critical hub for their community, and it kept serving their neighbors even when supplies were scarce, rescues were dangerous, and roads were closed. Funding a Resilience Hub here means this community will have the reliable power and support resources to keep people safe when grey skies come, and to thrive when the skies are blue."

- Andrew Crosson, CEO of Invest Appalachia.

In rural Yancey County, where Helene's floods and landslides made some of their most devastating impacts, the Double Island Volunteer Fire Department was without power for six weeks. Despite that challenge, the department still served as a lifeline to the core community it serves, as well as neighboring communities whose volunteer fire departments sustained terrible damage in the storm. At least four fire departments in Yancey County were destroyed in the storm, and at least a dozen lost critical equipment. Double Island stepped up as a hub for rescues while coordinating rebuilding efforts and supply distribution. They also facilitated the housing of out-of-state volunteers who came to support the recovery. Yancey County experienced some of the most prolonged power outages in the region, with many residents remaining without power well into December.

Even before Helene, the Double Island Volunteer Fire Department station faced recurrent outages. Isolated topography and fragile grid connections left it vulnerable even in an average storm. Now, with the equipment handover to install a solar microgrid at their main station, Double Island is preparing for the next crisis, equipped to control temperatures for lifesaving medicine, run essential equipment, and continue delivering the support their community depends on.



These projects, driven by a small group of determined partners, have accelerated Central Appalachia's long-term resilience and preparedness. Footprint Project's Resilience Hubs have been a catalyst and are now poised for a significant scale-up, as the state of North Carolina recently announced a \$5 million investment in solar and battery storage microgrids for emergency responders and community-based organizations.

Funders and financial supporters of the WNC microgrid and resilience hub strategy include:

- The Appalachian Funders Network Helene Response Fund
- Truist Foundation Western North Carolina Recovery and Resiliency Fund
- New York Community Trust
- WNC Long Haul Fund
- Southeast Clean Energy Network
- Dogwood Health Trust
- Educational Foundation of America
- North Carolina Department of Environmental Quality
- Land of Sky Regional Council
- North Carolina Sustainable Energy Association
- Direct Relief

"It's been beautiful what our team and many partners have accomplished since the storm. These solar microgrids not only make us more prepared for the next grid interruption, they strengthen the electric grid and make us less dependent on fossil fuel supply lines."

- James Trowbridge, Senior Program Manager - Appalachia of Footprint Project



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