

7 Months after the Hurricanes, thousands of Puerto Rican Families Have no roofs over their heads.



In addition to a roof's obvious shelter function, **in the post-disaster setting, unless a roof is in place to seal a home from the elements, critical interventions like mold sanitizing and permanent repairs are unwound with each rain shower...**and rain is a daily certainty in Puerto Rico.

In contrast to the “bottom up” damage caused by Hurricane Harvey’s rising floodwaters in Texas, the destruction caused by Hurricanes Maria and Irma came from above, with 150 mph winds wrenching rooftops off like an aerial bottle-opener.

Petra Nemcova surveying a roofless home in Barranquitas



Unfortunately, well-intentioned federal programs are falling short.



According to the New York Times, **“Government workers [Army Corps of Engineers] have installed 57,000 blue tarps as makeshift roofs on damaged homes across the island. There’s *no plan* [sic] for installing permanent roofs.”** [Link to article](#) In any case, the tarps begin leaking after about a month, so six months out from the storms, tarped or untarped, families are still suffering, if they haven't fled to a shelter on the mainland.

Over 200,000 Puerto Ricans have fled to Florida alone. [Link](#)

Lack of roofing is a classic case of an urgent unmet need.

Likewise, FEMA's VALOR program, which is intended to accelerate recovery by providing voluntary agencies with materials, misses the mark when it comes to the demand for roofs. In the hard-to-access central mountains where AHAH is operating, roofs are constructed of CGI (corrugated galvanized iron). Due to a supply-chain issue, VALOR's sole supplier for materials, National Lumber, has not been able to provide a consistent supply of metal sheeting for roof repairs.



AHAH volunteers at work in Puerto Rico

All Hands & Hearts brings experience, professional expertise and a uniquely motivated labor force to rebuild disaster impacted communities.

In our 13+ year history, AHAH has led over 90 disaster programs in 15 countries, safely mobilizing 47,000+ volunteers to rebuild hope in the lives of 1,170,000 people. In the process, we have developed expertise in project and management. AHAH has rebuilt thousands of homes, schools, and community structures in post-disaster contexts around the world which have withstood the test of time and weather, many of them with CGI roofing. Thanks to the frequency, innovation and resilience focus of our reconstruction projects, engineers and architects are drawn to volunteer with us and even join our staff at a fraction of what they could be making in the private sector.



One of a number of new homes AHAH built with resilient roofing and culturally appropriate, sustainable materials after Typhoon Haiyan in Tacloban, Philippines

All Hands & Hearts – Smart Response in Puerto Rico

AHAH came to Puerto Rico in December to assess where our skills were needed most. In January we **launched 2 programs:** in Yabucoa, on the southeast coast, and in Barranquitas, located in the more remote mountainous region in the center of the island. We are running 50-60 volunteers a day out of each base, and have had 2,624 people apply to volunteer with us since January. During this time we have worked on a full range of activities from muck and gut through repairs.

Combined Program Impact after 2 ½ Months:

All Hands and Hearts ***has already engaged 340 volunteers*** in Puerto Rico, who have accomplished the following:

Sites	Notes re: Specific Activities	People Affected
3 Schools	Debris Management/tree clearance	1,400
223 homes	Activities cover the spectrum from muck/gut/mold through minor repair/roofing Of these, 56 roofs repaired	569
226	<< Totals >>	1,969

As we work in these communities, we are seeing that, once a roof is in place, a family's needs go down dramatically: debris and mold clean-up can be finalized and remaining repairs proceed. All of a sudden the task before them seems manageable; they often can finish or participate in the work themselves.

This is empowering, and goes a long way to rebuilding hope in the future.



*Aerial photo of Barranquitas last September**

Barranquitas was directly in the path of Hurricane Maria. Heavy winds, flooded rivers, spot tornadoes and landslides made the area even harder to access. **According to local reports, at least 1,200 homes lost their roofs.** The most common roofing design in this region is shallow pitched metal roofing. In order to leave the community stronger in the face of future disasters, we firmly believe these roofs also must be replaced using hurricane resilient design.

Yabucoa, where our other program is located, also experienced heavy roof damage. However, this more urban, coastal region is mainly comprised of homes with flat concrete roofs. The process there involves cleaning and patching the roofs, filling the cracks, and then applying a silicone sealant that comes with a lifetime warranty and can be applied even during wet, humid weather. **Resilient repair of these roofs requires less volunteer time and materials, so AHAH is not seeking funding specific to our roofing work there.**

Hurricane Resilient Roofing Project (Barranquitas)

Project Design – What makes a roof resilient?

The project goal is to repair roofs so they can withstand winds in Barranquitas and surrounding mountain communities, by using hurricane resilient materials and methods. The best way to put roofs back over heads without rebuilding the whole house is to re-fit the structure with the roof for which it was designed. To do this for the metal roofed houses prevalent in this area, AHAH is focusing on the following best practices:

- Hurricane clips on every rafter
- Increased points of attachment between roof and repaired underlying purlins and rafters, using screws, not nails
- Hurricane strapping: tying the ridge beam all the way to the foundation at several points, collar ties on rafters to act like truss system
- Plywood sheathing on the underside for sound and heat buffering; fascia boards to block wind from getting up under the roof

Labor: Program Director, Project Manager, Engineer (project ramp up stage), Site Supervisors directing 3-4 teams of 5 volunteers each/day, 5 days/week, Logistics Coordinator, Procurement Coordinator. Each roof takes a team of 5 volunteers 7 days to complete.

Capacity: 10-12 roofs per month, up to 144 per 12 month period

The Cost of Hurricane Resilient Roofing

Pitched metal roofing is a materials-dense repair budget. Unfortunately, running disaster relief operations on an island where the entire land mass has been affected -- where power, water, vehicles, fuel, connectivity, and even reliable roads are in short supply – is already enormously expensive. There is no unscathed “neighboring” town or state from which to economically draw resources. Although we are performing other relief activities along with metal roof repair (flat cement roofs, debris work, other repairs), this proposal focuses on the gap in our budget to cover the expense of resilient roofing.

The all-in budget for rebuilding roofs in Barranquitas is \$7,500 per house. \$5,000 of that amount is attributable to materials.

The rest represents program expenses: project management (volunteer room, board, connectivity, office supplies), salaries, tools and equipment, vehicles and fuel.

Timeline: Ongoing since end of March.

We are committed to helping Puerto Rico recover through December of 2019. Our ability to attract adequate funding to support hurricane resilient roofing -- *the most impactful recovery intervention we have identified for Puerto Rico's situation* – will determine whether we can fulfill our commitment.

Avg Cost/Home		
Material Expenses	Grooved Plywood	\$1,462.00
	Metal sheeting	\$1,820.00
	Ridge Cap	\$72.59
	Timber (various sizes)	\$995.40
	Screw, Nails, Hurricane Clips, etc.	\$650.00
	TOTAL Materials	\$5,000.00
Project Expenses	Project Management	\$407.60
	Project Labor	\$722.99
	Transportation/Fuel	\$1,159.81
	Tools/Equipment	\$209.61
	Total Project Expenses	\$2,500.00
TOTAL COST/HOME		\$7,500.00

Conclusion

This project offers the people of Puerto Rico, so used to “second best” assistance, a responsible, long-term solution to a critical reconstruction need. AHAH has the experience, the ready labor force, and the momentum on the ground. However, **in order to reach our full capacity of up to 144 roofs per year, we need more funding partners to help cover the materials-dense budget in and around Barranquitas.** Every increment of \$7,500 ensures that another family will have the fundamental prerequisite for recovery: a home that they can count on now, and to weather the storms ahead. With your generous support, we can rebuild hope in the future.

An influential cause: this project can have a major impact on recovery throughout Puerto Rico and the region by highlighting 1) the critical role roof repair plays in relieving the bottleneck in the pace of recovery and 2) the challenges local groups and outside non-profits face in affording the materials required to rebuild in a resilient way. Our Marketing Department is already gearing up to chronicle and widely publicize this project on our channels.

THANK YOU FOR YOUR CONSIDERATION!