



**American  
Red Cross**

# Hurricane Maria: Three-Year Update

December 2020



## A Message from Trevor Riggen Senior Vice President, Disaster Cycle Services

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Just over three years ago, Hurricane Maria battered islands across the Caribbean — including St. John and St. Thomas in the U.S. Virgin Islands — before striking Puerto Rico with deadly force. This historic storm destroyed or severely damaged thousands of homes and knocked out key infrastructure across the island, leaving some parts of Puerto Rico without electricity and clean water for nearly a year.

Powered by our steadfast supporters, the American Red Cross quickly worked to provide relief in the wake of this massive disaster. Tireless Red Cross volunteers and employees fanned out across Puerto Rico for months — from the capital of San Juan to remote mountain communities. They delivered pre-made meals, snacks, bottled water, bulk food supplies, cooking equipment and critical relief supplies like water filters, tarps and comfort kits to tens of thousands of survivors. They also offered emotional support and spiritual care to people who had lost so much, and helped residents reconnect with friends and loved ones to let them know that they were okay.

Maria was the strongest hurricane to hit Puerto Rico in more than 80 years, and the damage it caused will take time to heal. That's why the Red Cross has continued to stand with Maria survivors over the last three years, helping them and their communities become more resilient as they rebuild lives upended by the storm and its aftermath.

Together with our partners, we've supported a wide range of community-focused recovery efforts. This work included installing solar micro-grids to ensure uninterrupted electrical service at schools — which often serve as emergency shelters — strengthening the clean water supply for communities by installing solar-powered water systems, supporting community health with education and wellness checks for children, providing critical medical equipment and supplies, helping communities build more resilient economies, and more.

We're proud to continue supporting Maria survivors as they recover from this life-changing disaster. Our ability to provide disaster relief on this scale is made possible with the incredible generosity of our donors. The compassionate commitment of our donors and volunteers has allowed us to deliver help and hope to Maria survivors long after the storm clouds cleared, and we are grateful for your partnership and trust.

A handwritten signature in black ink that reads "Trevor Riggen". The signature is fluid and cursive, with a large initial "T" and "R".

Trevor Riggen

## American Red Cross Stands With Maria Survivors

In September 2017, Hurricane Maria swept through the Caribbean, causing severe damage in the U.S. Virgin Islands before making a direct hit on Puerto Rico. This deadly and powerful storm caused catastrophic damage and changed the lives of tens of thousands of residents, leveling homes, destroying businesses, decimating crops, taking down power grids across the island and cutting off access to essential resources like safe drinking water. Many lost everything, while others had to live without electricity or running water for months.

In response to this historic hurricane and the ensuing hardships caused by its crippling impact on the island's infrastructure, hundreds of American Red Cross disaster workers, both from Puerto Rico and the U.S. mainland, delivered critical emergency aid to survivors. And as tropical storms and even earthquakes continued to impact the island over the last three years, we have also implemented solutions to help residents recover and become more resilient against ongoing and future crises — helping to ensure that they have access to consistent power and clean water, essential health services, and emotional support, as well as by supporting economic recovery and preparedness programs with our partners.

### Providing Relief and Comfort for People with Urgent Needs

After a disaster like Maria, people in the affected communities often struggle to address needs that they usually take for granted — and the Red Cross is there to bring relief and comfort in their darkest hours. In Puerto Rico, hurricane survivors not only faced heartbreaking personal tragedies, but also the widespread loss of essential utilities, including electricity, drinking water and phone service.

Working alongside government and partner organizations as well as other national Red Cross societies, including Finland, Mexico, Spain, Colombia, Costa Rica and more, we provided food and relief supplies to help survivors with their most urgent needs in the days and weeks after Maria's impact. Our workers brought bulk food items, snacks, bottled water, cleanup supplies, tarps and comfort kits to thousands of hard-hit residents. To meet the dire need for clean drinking water, we also

offered water purification filters to individuals and families that lacked a safe water supply after the hurricane.

Along with food, supplies and access to clean drinking water, the Red Cross delivered more than 2,700 gas and solar generators to aid survivors with serious medical conditions. Due to the widespread damage to the power grid, many people would otherwise have had to discard medications requiring refrigeration or would have been unable to use life-sustaining equipment like oxygen and dialysis machines.

In addition to this material support, another key component of our response was providing health services and emotional support. Caring Red Cross health and mental health workers offered basic health services and assessments, as well as a comforting presence and spiritual care for residents suffering from this traumatic experience.



In Barceloneta, Puerto Rico, Red Cross volunteers distribute water, food and other basic necessities to families affected by Hurricane Maria. Photo by Sergio Rojas/American Red Cross

With much of the island's communications system damaged or destroyed, the American Red Cross also helped affected residents reach out to missing or distant family and friends. With assistance from the Finnish and Spanish Red Cross, we set up mobile satellite communications, charged residents' mobile

phones and helped them access the internet. All told, the Red Cross provided reconnection services for individuals and families more than 14,900 times across 51 Puerto Rico municipalities — giving survivors the reassurance of hearing a loved one's voice in a time of grief and uncertainty.

## Response at a Glance



More than **12.8 million meals and snacks** served with partners



More than **5.2 million relief items** distributed



More than **77,000 water purification filters** distributed



More than **40,800 health and mental health** contacts made



More than **2,700 generators** provided for people with medical equipment needs

All numbers are cumulative and reflect Red Cross response efforts since September 20, 2017



Red Cross volunteers deliver a generator to María Orta in Guaynabo, Puerto Rico. With electricity out for months in many communities, the Red Cross provided more than 2,700 generators to help residents like Maria power life-sustaining medical equipment. Photo by Isaac León/American Red Cross



## Building Community Resiliency After Maria

The American Red Cross has joined with our recovery partners to help 78 municipalities across the island become more resilient and better prepared for future disasters.



**Consistent Power:** The Red Cross worked with partners to deliver solar power sources to schools across Puerto Rico that also serve as shelters during emergencies.

- **Solar micro-grid systems** installed at **160 schools** that serve as community shelters and at **five community health centers**



**Clean Water:** We worked to restore safe drinking water in communities that rely solely on wells—something that many communities lost after Maria.

- **22 community wells** now powered by solar micro-grids
- **14,400 additional water filters** distributed to residents in isolated communities as part of recovery support
- **43 water storage tanks** provided to schools, plus five water storage tanks provided to the Puerto Rico Emergency Management Bureau



**Community Health:** Access to health services and emotional support is an ongoing need. Working alongside our partners, we help deliver basic services, medical equipment and preparedness training.

- More than **145,400 additional health and mental health contacts** made as part of recovery support
- More than **3,400 vaccinations** conducted
- Provided health care centers with **88 pharmaceutical refrigerators** and **five pharmaceutical freezers**



**Community Resiliency:** Preparedness and economic recovery programs provided with our partners are supporting small business farmers and building stronger communities.

- More than **186,700 people** trained in disaster preparedness
- More than **5,000 teachers** certified through CPR and first aid courses
- **746 automated external defibrillators (AEDs)** installed in schools
- **Financial assistance** provided to **450 small business farmers**
- **Labor support and equipment** provided to **525 small business farmers**
- **Hydroponic systems and traditional gardens** provided to **25 schools**



Left: At 160 community schools, like the Angelica Delgado Sella school in Lares, the Red Cross installed solar micro-grids to provide consistent access to power during emergencies. Photo by American Red Cross

Right: Small business farmers like U.S. military veteran Alexander Coss received micro-grants to help them rebuild and purchase essential materials after Maria. Photo by American Red Cross

## Community-Focused Recovery and Preparedness Support

The Red Cross has supported ongoing disaster recovery and preparedness activities across Puerto Rico in the three years since Maria's destructive rampage, with a focus on four pillars — providing consistent access to power, providing a reliable clean water supply, meeting critical public health needs and increasing the resilience of impacted residents and their communities through preparedness and economic recovery programs. As they cope with the severe effects of Hurricane Maria on Puerto Rico's fragile infrastructure, this programming will make a meaningful difference in the lives of survivors for years to come.

Thanks to the invaluable contributions of generous donors and tireless volunteers, as well as effective teamwork with government agencies, nonprofit partners and other organizations, we have continued to implement this community-centered approach to meet ongoing needs of people affected by Maria over the past year.

### Enabling Consistent Access to Power

The installation of solar micro-grid systems is critical to building a more resilient Puerto Rico. These systems provide schools — which often double as emergency shelters in communities across the island — with a more durable source of electricity than was in place before Hurricane Maria. Each grid can generate 50kW of power and are able to withstand 160 mph wind uplifts and flying debris.

In times of crisis, schools are hubs of activity in Puerto Rican communities. Over the last three years, the Red Cross has worked to develop these schools to better serve local residents during emergencies like tropical storms or last winter's earthquakes. In total, we've helped provide 160 solar micro-grid systems for schools since our Maria recovery efforts began — with 48 installed in the past year.

In addition to schools, we also supported the installation of solar micro-grids at five community health centers over the last year — including Gurabo, Caguas, San Sebastian, Morovis and Toa Baja — ensuring that these critical facilities have consistent access to power during emergencies.

### Providing Communities with Reliable Clean Water

In addition to making schools and the communities they serve more resilient, solar micro-grids are helping bring clean water to communities that lost clean water access because of Maria. We set a goal of installing 20 micro-grids to power wells, and working alongside our nonprofit partner Water Mission, we're proud to have surpassed that goal — installing 22 grids to power community wells to date. These wells are often the only source of clean water for residents in areas that are not connected to a public water system.

Along with solar systems to power community wells, the Red Cross has teamed with MIT Lincoln Laboratory to supply potable water to local schools for consumption, cooking and sanitation for an extended period during emergencies.

The centerpiece of this effort is a palletized, self-contained “onion” water tank and pressurization kits, which are delivered to a shelter prior to an event. The 30,000-liter onion tanks are unpacked and quickly set



Red Cross worker Jenner Alarcón helps set up and fill an “onion” water storage tank at a local school. The Red Cross provided 43 of these 30,000-liter water tanks to schools in Puerto Rico to provide clean water during emergencies. Photo by American Red Cross



up inside a classroom, providing both security and environmental protection from the storm. The tanks are then filled with potable water from the school using a simple hose, which takes about a day.

The pressurization kit, which contains a pump and pressure tank, is then easily connected to the onion tank and school plumbing with common fittings supplied in the kit. The pump can either be powered by the solar micro-grid or by a small generator. Once the system is connected and powered, the school's kitchen and sanitation operations can be brought back online to serve the community.

This scalable and flexible water resiliency solution is capable of supporting hundreds of people with kitchen and sanitation services in the aftermath of a disaster. The Red Cross has provided 43 onion tanks to schools across the island.

### Improving Health and Wellness Across Puerto Rico

Expanding access to community health and mental health services is another cornerstone of our work to aid Puerto Rico's recovery from Hurricane Maria. The Red Cross has provided health and mental health services to tens of thousands of disaster-impacted residents, while also conducting thousands of vaccinations against serious diseases.

We have also extended recovery support to community health centers, including providing solar micro-grid power systems to five community health centers. With our partner Direct Relief, we have provided other equipment like pharmaceutical refrigerators and freezers, and we have also worked to bolster telemedicine — enabling clinicians to evaluate and diagnose patients virtually — in underserved communities.

Hurricane Maria severely limited transportation, communication and overall accessibility on the island, leaving many patients unable to access needed medical care and health monitoring. With this challenge in mind, the University of Puerto Rico Medical Sciences Campus (RCM) launched a six-month initiative to provide care for more than 9,700 people — most of whom live in the island's mountainous center.

Funds from the Red Cross helped RCM invest in the infrastructure needed to support this program. Both the RCM and the Red Cross recognized residents' needs

for ongoing medical care, and telemedicine made such care significantly more accessible. "Telemedicine was extremely useful after Hurricane Maria," said Dr. Ivonne Jiménez, a medical professor at the University of Puerto Rico, "because practically all the doctors had their offices closed and it was impossible for us to attend to the patients, (who in turn) did not have access to their doctors because of the closed roads."

### Supporting Agricultural Resiliency and Food Security

Along with destroying essential infrastructure and impeding access to vital services, Maria severely damaged local industries, with the farming sector taking one of the greatest hits. As part of our Hurricane Maria long-term recovery program, the Red Cross invested \$3 million to provide micro-grants to 450 farmers on the island and educate them on how to best prepare for an upcoming disaster event. In addition to the micro-grants, we also connected 525 farmers with labor support and donated equipment.

"After seeing this need during the response, we quickly decided that one of our recovery initiatives would



The Red Cross worked with the University of Puerto Rico Medical Sciences Campus to launch a telemedicine initiative that provided remote care for more than 9,700 people, most of whom live in the island's mountainous center. Photo by American Red Cross

support and encourage local production by investing in our small farmers,” said Lee Vanessa Feliciano, regional executive of the American Red Cross Puerto Rico Region. “With this effort, we are promoting greater food security and sovereignty in Puerto Rico to improve resiliency in the face of disasters,” she said.

Puerto Rico imports about 85% of its food supply, making food security a critical issue in times of crisis. The “Recuperación Agrícola” (Agricultural Recovery) project, developed with the support of the Puerto Rico Science, Technology and Research Trust, was created to increase sales of local agricultural products, provide training for business development, education in disaster preparedness and agroecological agriculture conservation practice — with a focus on land crops, women, veterans and agroecological farms.

In addition to economic support for small business farmers, the Red Cross has worked with local business partner Agrolnova to implement hydroponic systems and traditional gardens at 25 community schools, and we provided food security training to more than 1,000 students. Through these efforts, we are helping to encourage a strong local food system that improves community resiliency.

## Helping Residents Become Better Prepared for Disasters

Our community resiliency work also focuses on preparing residents for future disasters. In the last year alone, we’ve trained more than 86,000 individuals in disaster preparedness — reaching a total of more than 186,000 people trained since our recovery efforts began. In addition, we’ve worked with the Puerto Rico Department of Education to provide lifesaving CPR and first aid training to more than 5,000 teachers and school personnel, and we have installed 746 automated external defibrillators (AEDs) in schools.

A crucial part of disaster preparedness education post-Maria has focused on empowering people with disabilities, who suffer a disproportionately high level of disaster death and injuries.

“In Puerto Rico, the deaths caused by hurricane Maria were mostly of people with disabilities, or people with chronic conditions made worse by the lack of electricity,” said Betzaida Ramos, executive director of Movement for the Attainment of Independent Living (MAVI), a Red Cross partner. In fact, one in five people in Puerto Rico has a disability.



Betzaida Ramos, the executive director of Movement for the Attainment of Independent Living (MAVI), conducts a disaster preparedness and management training workshop focused on people with disabilities. Photo courtesy of MAVI



The Red Cross has partnered with MAVI to offer training workshops on disaster preparedness and management focused on people with disabilities. The workshops, which include sign language interpretation, have been specially designed for people with disabilities, their families and neighbors, and officers and employees of government agencies active in emergency management.

“The workshop allowed me to understand what is truly important for me in the family emergency management plan,” said José Hernández, a community leader in an assisted housing project who has a condition that limits his mobility. “This information was vital to me.”

## Compassionate Supporters Make Our Work Possible

In the three years since Maria struck, the American Red Cross has stood with this resilient island, providing urgent relief and ongoing recovery support. None of this vital work would be possible without the remarkable contributions of our donors. The Red Cross has raised \$72 million, including the value of critical donated goods and services, to help Hurricane Maria survivors. As of August 31, 2020, the Red Cross had programmed approximately \$109.1 million on Hurricane Maria relief and recovery efforts and estimates approximately \$1.9M remaining to spend.

Today, the Red Cross continues to help those impacted by Hurricane Maria and to support community-based recovery programs in the affected areas. We estimate total expenses will be approximately \$111 million at the end of service delivery for our Hurricane Maria response, including allocations from the Hurricanes of 2017 fund. This estimate could change, based on remaining community needs and partner services for Hurricane Maria, as well as the other hurricanes of 2017. To learn more about Red Cross response and recovery efforts to aid Hurricane Maria survivors, visit [redcross.org/maria](https://www.redcross.org/maria).



Red Cross volunteers distribute water, food and other basic necessities to families affected by Hurricane Maria. Photo by Sergio Rojas/American Red Cross

## Hurricane Maria Expenses and Commitments (in millions)<sup>1</sup>

As of August 31, 2020 (\$72.0 million raised)

Expense Categories	Food Relief Items	Health and Emotional Support	Individual and Community Recovery	Total	Expense %
Long-term recovery projects	—	—	\$46.2	\$46.2	30%
Food, relief items and other assistance	\$18.9	\$0.2	\$0.3	\$19.4	24%
Long-term recovery disbursements on grants to help meet unmet needs <sup>2</sup>	—	—	\$13.2	\$13.2	14%
Freight, postage, warehousing and other logistics that enable service delivery	\$8.4	—	\$1.1	\$9.5	11%
Deployment and maintenance of volunteers and staff (includes airfare, lodging, meals and vehicles)	\$5.1	\$0.4	\$0.2	\$5.7	7%
Temporary disaster hires	\$1.5	\$0.1	\$2.0	\$3.6	3%
IT, communications and call centers	\$0.6	\$0.1	\$0.3	\$1.0	1%
Full-time Red Cross employees	\$0.3	\$0.1	\$0.1	\$0.5	1%
Equipment, maintenance and fueling of Red Cross emergency vehicles and rented trucks	\$0.2	—	—	\$0.2	0%
<b>Total Program Expenses</b>	<b>\$35.0</b>	<b>\$0.9</b>	<b>\$63.4</b>	<b>\$99.3</b>	<b>91%</b>
Management, general and fundraising <sup>3</sup>				<b>\$9.8</b>	<b>9%</b>
<b>Total Expenses<sup>4</sup></b>				<b>\$109.1</b>	<b>100%</b>

<sup>1</sup>Because the Hurricane Irma response in the U.S. Virgin Islands was already underway when they were impacted by Hurricane Maria, the costs for the response to both storms in the U.S. Virgin Islands were included in the Hurricane Irma budget.

<sup>2</sup>Does not include partner organizations' administrative costs related to the grant, which are approximately 1-3 percent of the awarded amount. These costs are reflected in the management, general and fundraising rows.

<sup>3</sup>Management, general and fundraising expenses support our work at its core and are indispensable to running the organization and helping people in need. They include the people and systems to maintain our enterprise-wide computer and telecommunications, HR and payroll systems to support our approximately 19,000 employees and more than 300,000 volunteers, fundraising and communications functions, and other support services across all program lines. 91 cents of every dollar received for Hurricane Maria will be spent on services to help people affected by Hurricane Maria.

<sup>4</sup>As of August 31, 2020, we estimate total expenses will be approximately \$111 million at the end of service delivery for our Hurricane Maria response, including allocations from the Hurricanes of 2017 fund. This estimate could change, based on remaining community needs and partner services for Hurricane Maria, as well as the other hurricanes of 2017.

*Thank you!*

The Red Cross must be ready for every disaster, big or small, and we respond to an average of more than 60,000 disasters per year — including single-family or apartment home fires, severe weather, floods and wildfires. Those in need turn to the Red Cross in their darkest hours because they know they can depend on us right after the disaster and through their recovery. Your donation helps us fulfill this promise. We are grateful for your trust.

Cover: A Red Cross worker speaks with Jaycob, age 4, and his mother, Stephanie. As part of our recovery support for healthier communities in the aftermath of Hurricane Maria, Jaycob, who has a congenital heart condition, was provided with medical equipment that helps his mother monitor his condition. Photo by the American Red Cross