Keeping Children Safe
All photos from Keep Safe Guide-Enterprise Community Partners, Inc. 2020
“People who are already vulnerable, including lower-income and other marginalized communities, have lower capacity to prepare for and cope with extreme weather and climate-related events and are expected to experience greater impacts”
-National Climate Assessment 2019
Direct and Cascading Impacts of Maria
<table>
<thead>
<tr>
<th>Country</th>
<th>Confirmed</th>
<th>Recovered</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puerto Rico</td>
<td>2,805</td>
<td>-</td>
<td>124</td>
</tr>
<tr>
<td>United States</td>
<td>1.56M</td>
<td>297K</td>
<td>92,258</td>
</tr>
</tbody>
</table>

Puerto Rico: Confirmed +64, Deaths +1
United States: Confirmed +21,287, Deaths +792
THE SPREAD OF ILLNESS AND DISEASE IN THE WAKE OF NATURAL DISASTERS

Building Resilient Homes helps mitigate impacts to the health and well-being of residents and communities facing extreme weather and natural hazard risks. See Keep Safe for guidance.

Untreated sewage after a flood can introduce bacteria, viruses, and parasites.
Heavy rain and flooding can create conditions for mosquitoes and other vectors that cause malaria and dengue fever.
Moisture after flooding leads to mold, which can cause asthma and other respiratory problems.
Particle pollution from fires can trigger asthma attacks, heart attacks, and strokes.
Carbon monoxide from fires can lead to headaches, nausea, dizziness, and, in high concentrations, premature death.
Extreme heat can lead to cardiovascular and respiratory disorders.
Earthquakes can create dust clouds that carry fungi and spores, which can cause asthma.
Emergent Themes in Recovery and Rebuilding

Sufficient $ Resources
Building to Code
Stability of Energy/Water Grid
Rebuilding in the Floodplain
Reuse of Vacant Properties
Proof of Ownership
Building in the Flood Plain
“The house is the place where both planning and community development impact upon the family and individual. Planning for housing should consider the social, economic and psychological needs of the individuals and families who will occupy the housing. And housing must be considered within the community context.”

Lucilla Fuller Marvel
Designing for the Future

**SATELLITE DATA: 1993-PRESENT**

Data source: Satellite sea level observations. Credit: NASA Goddard Space Flight Center

**RATE OF CHANGE**

↑ 3.3 millimeters per year
Objective of Keep Safe Program

- **RAISE AWARENESS** about safe rebuilding home safely through featured solutions and best practices;
- **CALL ATTENTION** to multiple risks faced by communities;
- **BUILD COMMUNITY** around resilient housing to #KEEP SAFE;
- **IDENTIFICATION OF COMMUNITY NEEDS** to encourage multi-sector response strategies.
KEEP SAFE

Introduction
Chapter 1: A Safer Site
Chapter 2: Building Protection
Chapter 3: Passive Habitability
Chapter 4: Energy Generation
Chapter 5: Water Management
Chapter 6: Household Preparedness
Chapter 7: Community Engagement
“A RESILIENT HOME”
ANTONIO LUIS VÁSQUEZ ROSADO
• Barrio Toro Negro Inc., Ciales
• Casa Pueblo, Adjuntas
• Centro Comunitario de Caimito, San Juan
• Centro de Adiestramiento para Personas con Impedimentos (CAPI Inc.)
• Comunidad Corcovada, Añasco
• Daguao, Naguabo
• Enlace, San Juan
• Ferdinando Abruña Y Casa Ausente, Dorado
• Heart 911, New York City
• Hogar Alberque Para Niños
• Jaquita Baya/ La Comedería, Miramar, San Juan
• PECES, Punta Santiago, Humacao
• Plenitud, Las Marías
• Resilient Power Puerto Rico, San Juan
• Rio Chiquito, Ponce
• Rosalina Abreu y Susana Sanabria,
  Asociación Recreativa Educativa y Comunal Barrio Mariana, INC. (ARECMA), Humacao
• San Juan Bay Estuary, San Juan
• Taller Salud, Loíza
## HAZARDS AND STRATEGIES

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Winds</td>
<td>Page 06</td>
</tr>
<tr>
<td>Drought</td>
<td>Page 06</td>
</tr>
<tr>
<td>Fire</td>
<td>Page 06</td>
</tr>
<tr>
<td>Extreme Temperature</td>
<td>Page 06</td>
</tr>
<tr>
<td>Heavy Rainfall</td>
<td>Page 06</td>
</tr>
<tr>
<td>Storm Surge</td>
<td>Page 06</td>
</tr>
</tbody>
</table>

### Strategies

- **Strategy 1:** Build a Strong Foundation
- **Strategy 2:** Reduce Strain on Your House
- **Strategy 3:** Plant a Living Cover
- **Strategy 4:** Assess the Foundation for Yearly Home or Building Structural Condition Prior to Impact
- **Strategy 5:** Install Energy Backup
- **Strategy 6:** Reduce Water Consumption
- **Strategy 7:** Develop a Household Emergency Plan
- **Strategy 8:** Reduce Your Energy Use
- **Strategy 9:** Integrate Solar Electricty
- **Strategy 10:** Integrate Solar Thermal Energy
- **Strategy 11:** Increase Home Ventilation
- **Strategy 12:** Reduce Heat Gain
- **Strategy 13:** Reduce Home Ventilation
- **Strategy 14:** Collect and Use Sunshine
- **Strategy 15:** Improve Soil Waste Disposal Systems
- **Strategy 16:** Prevent Water trespass

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**Note:** Each strategy is rated on a scale of 1 to 5, with 5 being the most effective.
Interior Air Quality (Passive Habitability)

Moisture = Mold

Mold = Respiratory problems
Safe Water Treatment (Resilient Water)

Filtration

Water Catchment
Safe Waste Water Treatment (Resilient Water)

Septic System

Failed System = Community Impacts
Safe Energy Backup (Resilient Energy)

Solar Power

Power Loss
Creamos este recurso para ayudar a las comunidades a diseñar centros comunitarios resilientes para fortalecer la capacidad organizativa, promover la educación durante todo el año y poder enfrentar cambios climáticos, sociales y económicos. Ofrece sugerencias prácticas, incluido el desarrollo organización comunitaria, capacidad operativa y activos físicos relevantes para lograr resiliencia.
Systems of a Community Resilience Center

COMMUNICATIONS
- EMT
- Satellite phones
- Local internet
- Wi-Fi access to social media
- Community broadband

SOLAR POWER
- Installs solar panels with batteries (some centers might also have a connection to the grid for selling power during low use or consuming power during high use)

STRUCTURAL
- A professional structural engineer should be consulted to verify if building meets code requirements for seismic movement
- Building location, utmost structural elements will withstand forces caused by seismic or tsunami events

SOLAR THERMAL HEATER
- Use solar energy to heat up water

ENERGY STORAGE
- Design a holistic system that includes batteries for storing energy, ensure that basic needs—like ventilation, emergency lighting, and electricity for essential equipment—are connected

OPENINGS
- Design using operable windows and doors
- Includes fins to increase air ventilation
- Maximizes space by allowing the exterior areas to be used

ENERGY GENERATOR
- Have a backup energy generator for emergency use
- Ensures that the generator is placed outdoors, at least 100 feet from the structure, and is protected from debris

VENTILATION
- Design a ventilation system in which air is always moving through the inhabited space
- This ventilation system could be passive with natural breezes or mechanical with active systems, such as fans or air conditioning

RAINWATER COLLECTION
- Install a rainwater collection system for non-potable water use, such as irrigation, flushing toilets and cleaning
- If needed, water can be used for cooking
- Roofwater storage tank could be located on the rooftop or ground
Opportunity

- Rollout of Code compliance program
- CDBG-DR investment
- CDBG-MIT
- Training, Capacity Building, Pilots
Enterprise Free Keep Safe Trainings Spanish and English

5/10 Why is Puerto Rico Shaking, Protect homes from Earthquakes
6/1 Reduce Moisture and Mold
6/20 Business Continuity and Emergency Planning
7/1 Keep Safe Training Series
All photos from Keep Safe Guide-Enterprise Community Partners, Inc. 2020
Laurie Schoeman lschoeman@enteprisecommunity.org