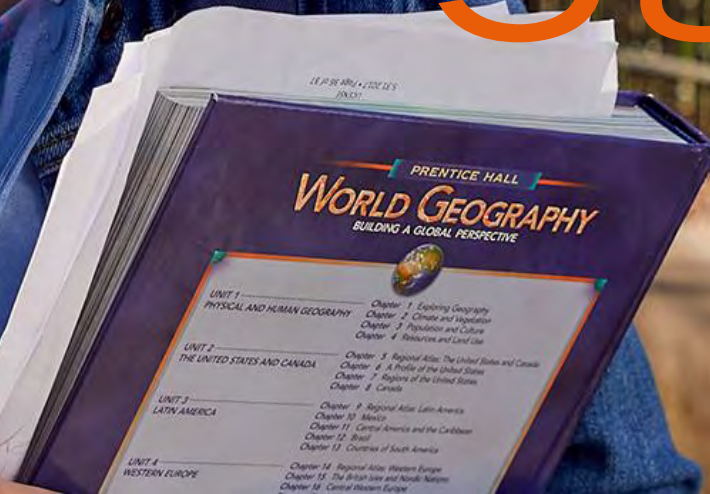


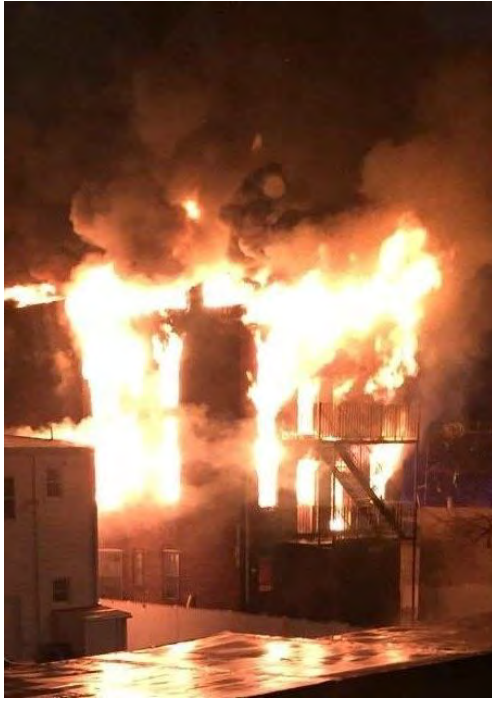


Keeping Children Safe



All photos from Keep Safe Guide-Enterprise
Community Partners, Inc. 2020

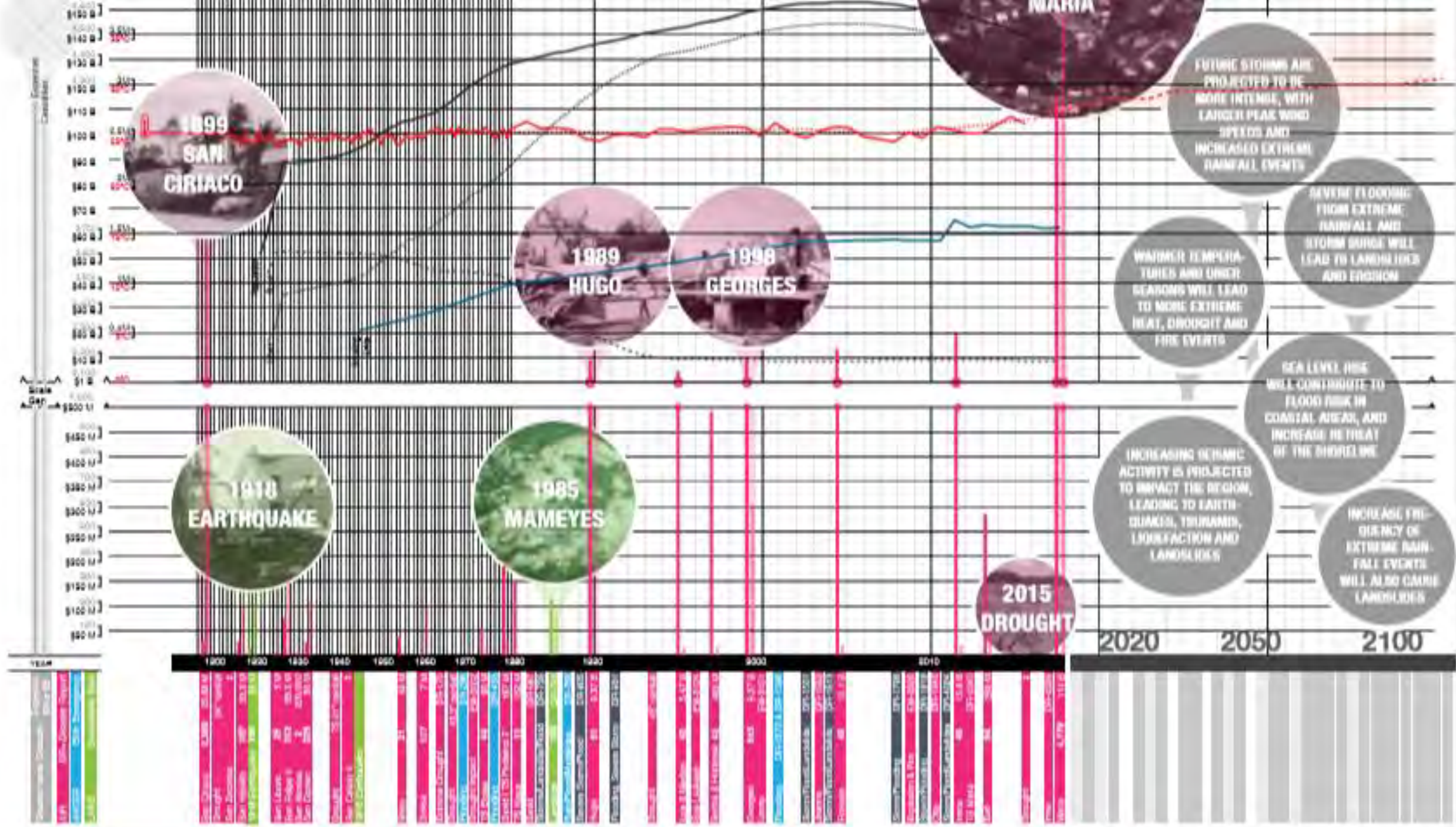




“People who are already vulnerable, including lower-income and other marginalized communities, have lower capacity to prepare for and cope with extreme weather and climate-related events and are expected to experience greater impacts”

-National Climate Assessment 2019





Hurricane Maria



Direct and Cascading Impacts of Maria



Source: Getty Images

NOW THIS

Puerto Rico

Confirmed

2,805

+64

Recovered

-

Deaths

124

+1

United States

Confirmed

1.56M

+21,287

Recovered

297K

Deaths

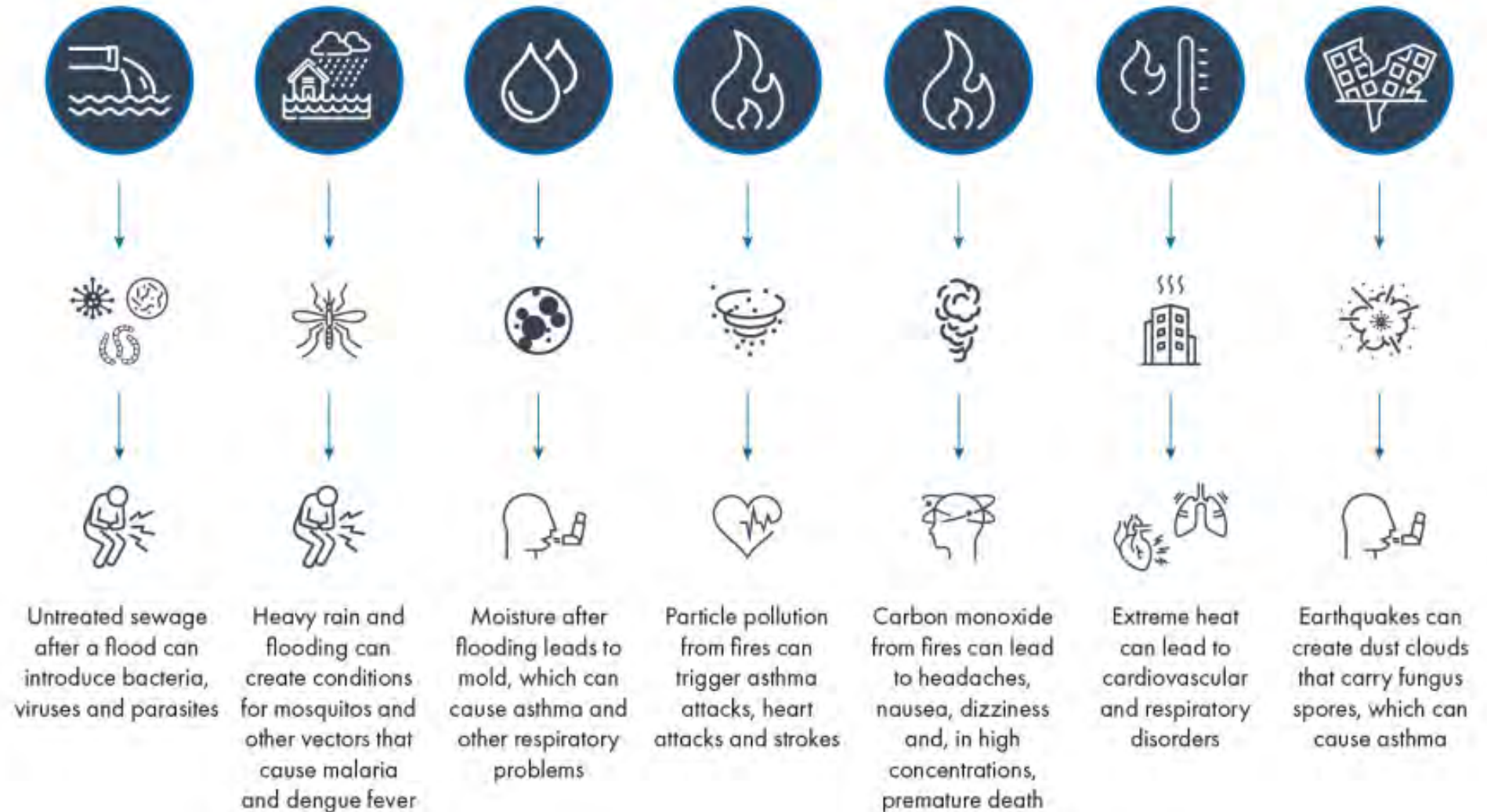
92,258

+792



THE SPREAD OF ILLNESS AND DISEASE IN THE WAKE OF NATURAL DISASTERS

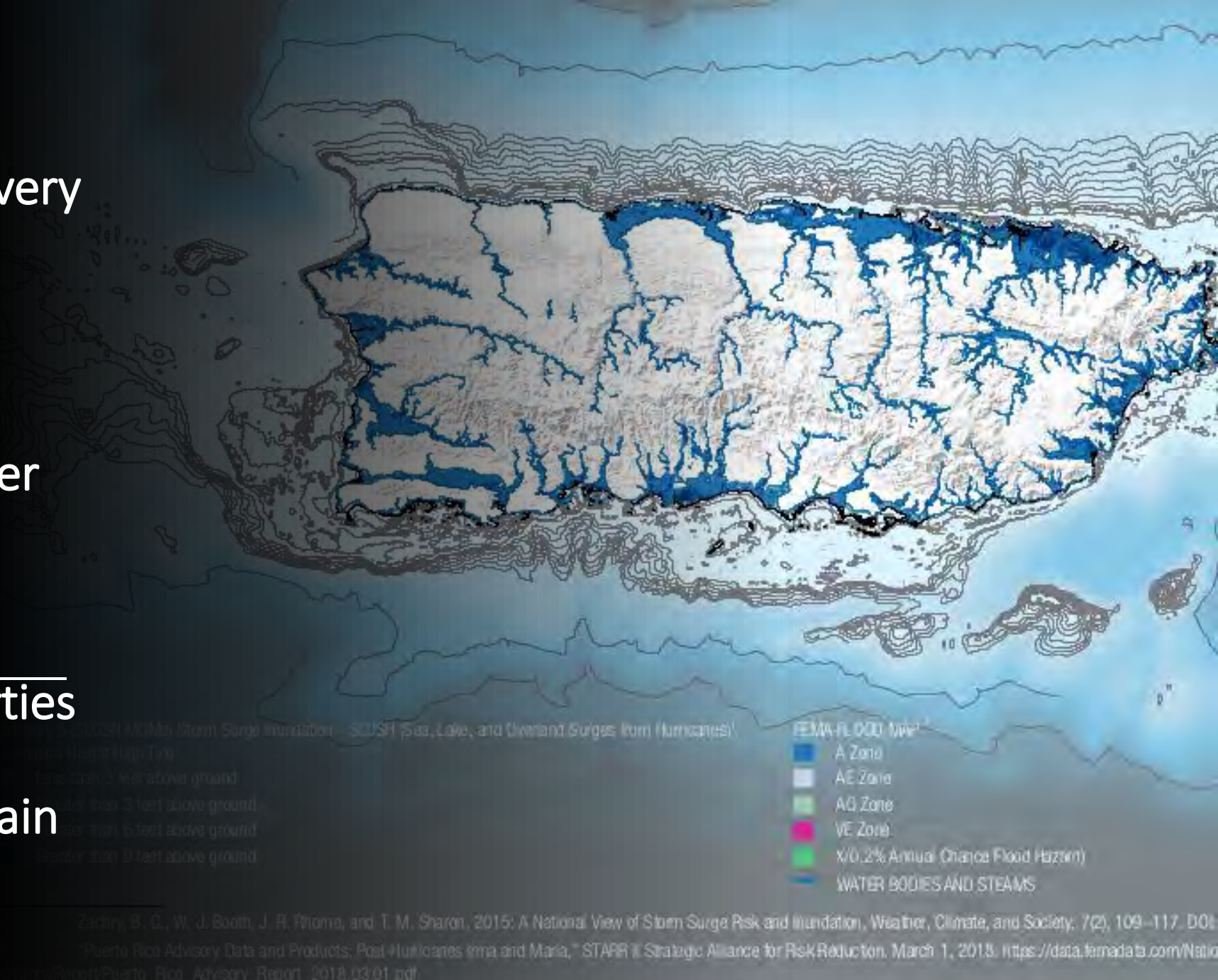
Building Resilient Homes helps mitigate impacts to the health and well being of residents and communities facing extreme weather and natural hazard Risks. See Keep Safe for guidance.





© 2005 Blackwell Publishing Ltd

Reuse of Vacant Properties



“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

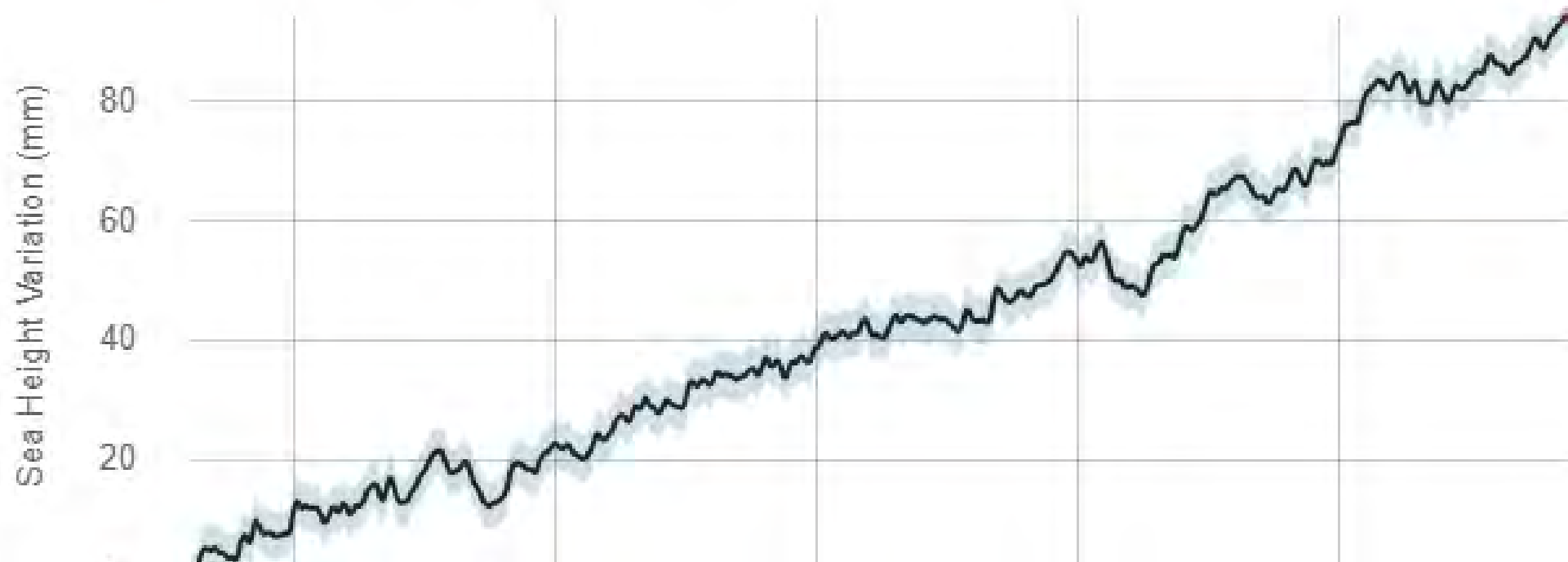
Data source: Satellite sea level observations.

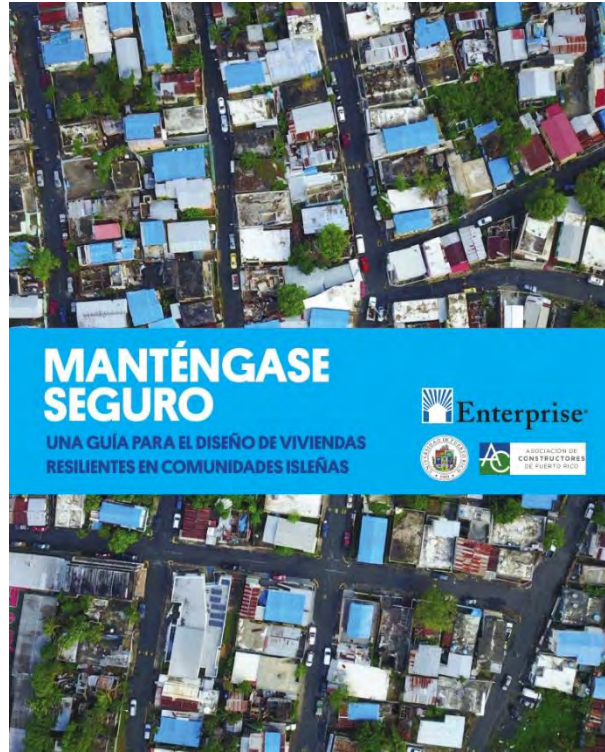
Credit: NASA Goddard Space Flight Center

RATE OF CHANGE

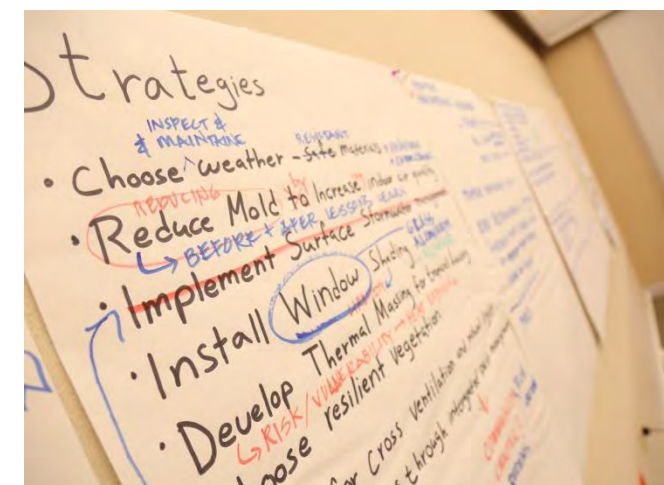
↑ **3.3**

millimeters per year





Resiliency Manual Convening: April 2018





Objective of Keep Safe Program



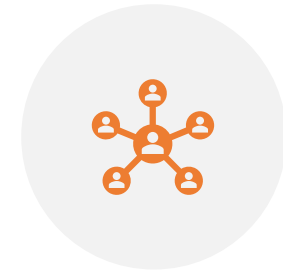
RAISE AWARENESS
ABOUT SAFE
REBUILDING HOME
SAFELY THROUGH
FEATURED
SOLUTIONS AND
BEST PRACTICES;



CALL ATTENTION
TO MULTIPLE RISKS
FACED BY
COMMUNITIES;

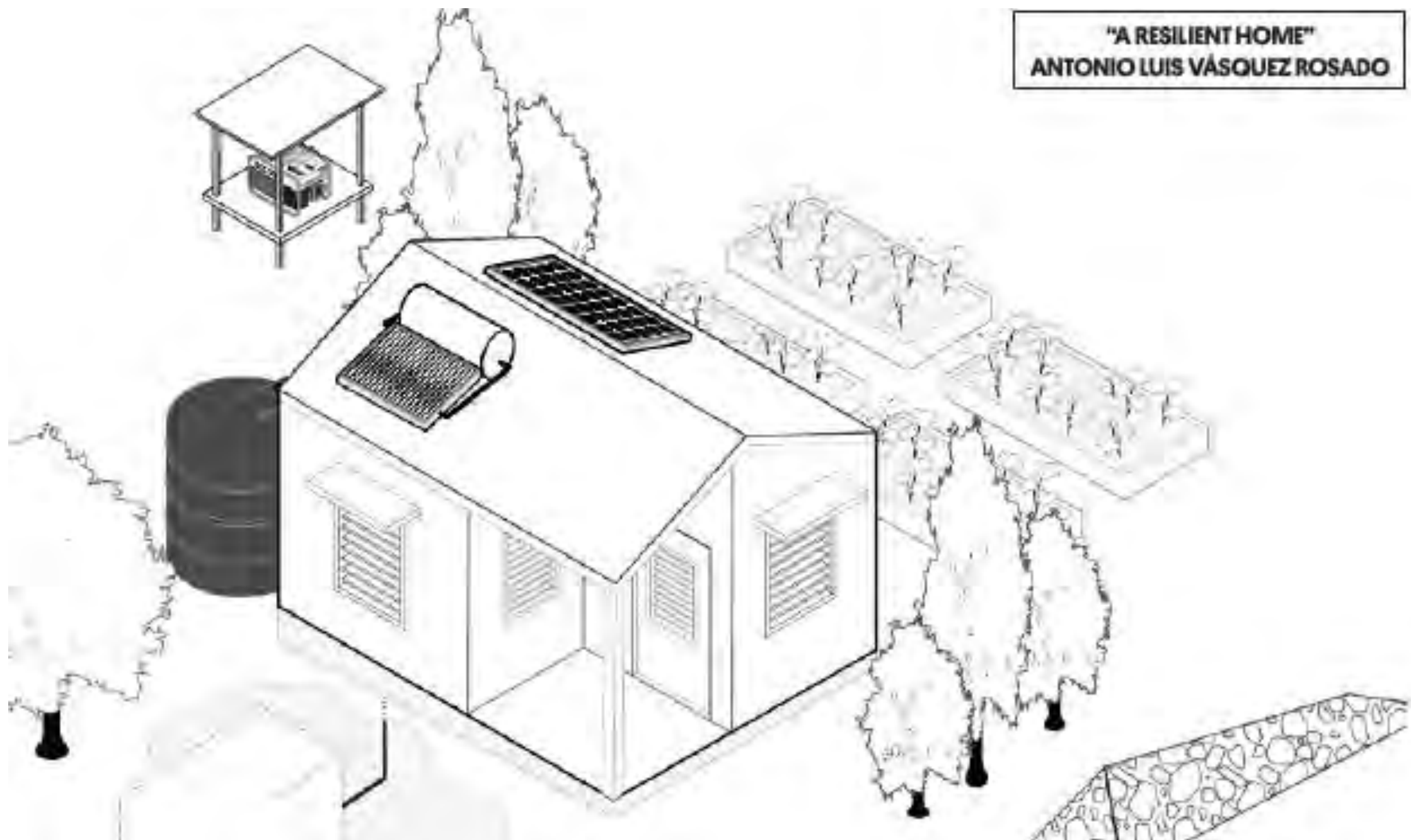


BUILD COMMUNITY
AROUND RESILIENT
HOUSING TO #KEEP
SAFE;



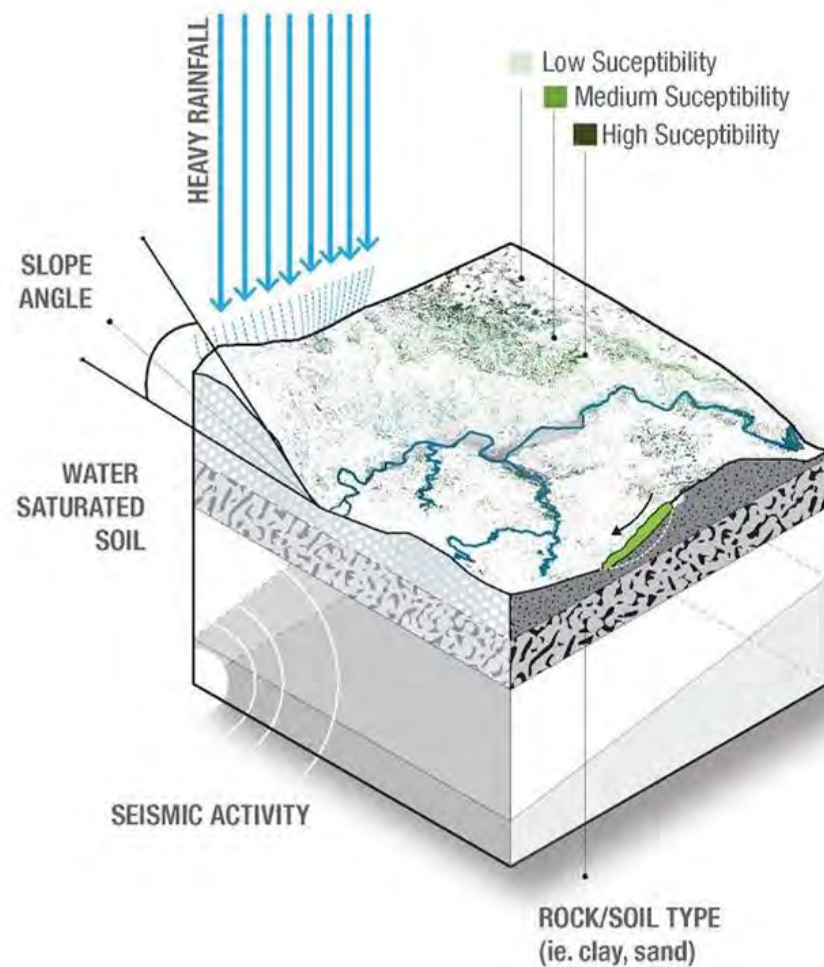
IDENTIFICATION OF
COMMUNITY
NEEDS TO
ENCOURAGE
MULTI-SECTOR
RESPONSE
STRATEGIES.

"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
- Dagua, 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





ATMOSPHERIC AIR



HIGH WINDS



DROUGHT



FIRE



EXTREME
TEMPERATURE

GEOLOGIC LAND



COASTAL
EROSION



LANDSLIDE



EARTHQUAKE



SUBSIDENCE



LIQUEFACTION



HYDROLOGIC WATER



HEAVY
RAINFALL






























































































STORM
SURGE



TSUNAMI

HAZARDS AND STRATEGIES

HIGH WINDS	DROUGHT	FIRE	EXTREME TEMPERATURE	HEAVY RAINFALL	STORM SURGE	Tsunami	COASTAL EROSION	LANDSLIDE	FLASHFLOOD	SUBSIDENCE	LIQUIFICATION			
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 1: Reinforce Your Site	Page 000	●-●●●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 3: Plant in Little Garden	Page 00	●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 4: Assess the Potential for Your Home or Building Structural Condition Prior to Flood	Page 00	●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 15: Reduce your Energy Use	Page 00	●-●●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 16: Integrate Solar Technology	Page 00	●-●●●●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 17: Integrate Solar Thermal Energy	Page 00	●●-●●●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 18: Install Energy Backup	Page 00	●●-●●●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 19: Reduce your Water Consumption	Page 00	●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 21: Develop a Household Emergency Plan	Page 00	●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 24: Choose a Space to Keep Your Family Safe	Page 00	●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 25: Develop a High Household Recovery	Page 00	●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 26: Develop a Community Plan	Page 00	●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 27: Identify a Prepared Safe Community Shelter	Page 00	●-●●
●	●	●	●	●	●	●	●	●	●	●	●	Strategy 28: Develop Risk		

HIGH WINDS	DROUGHT	FIRE	EXTREME TEMPERATURE	HEAVY RAINFALL	STORM SURGE	FLASHFLOODING			
									
							Strategy 2: Reinforce Site with Vegetation	Page 000	●
							Strategy 5: Build a Strong Foundation	Page 00	●●
							Strategy 6: Build Stronger Walls	Page 00	●-●●
							Strategy 7: Build a Strong Roof	Page 00	●●-●●●●
							Strategy 8: Anchor, Seal and Protect Window Openings	Page 00	●-●●
							Strategy 9: Flood Proof Home	Page 00	●-●●●
							Strategy 10: Reduce Heat Gain	Page 00	●-●●●
							Strategy 11: Increase Home Ventilation	Page 00	●-●●
							Strategy 12: Benefit from Natural Light	Page 00	●-●●
							Strategy 14: Manage Pests	Page 00	●-●●
							Strategy 20: Collect and Use Rainwater	Page 00	●-●●
							Strategy 21: Improve Septic Waste Disposal System	Page 00	●●-●●●
							Strategy 22: Prevent Wastewater Backflow in Homes	Page 00	●

Interior Air Quality (Passive Habitability)

Moisture=Mold



Mold=Respiratory problems



Safe Water Treatment (Resilient Water)

Filtration

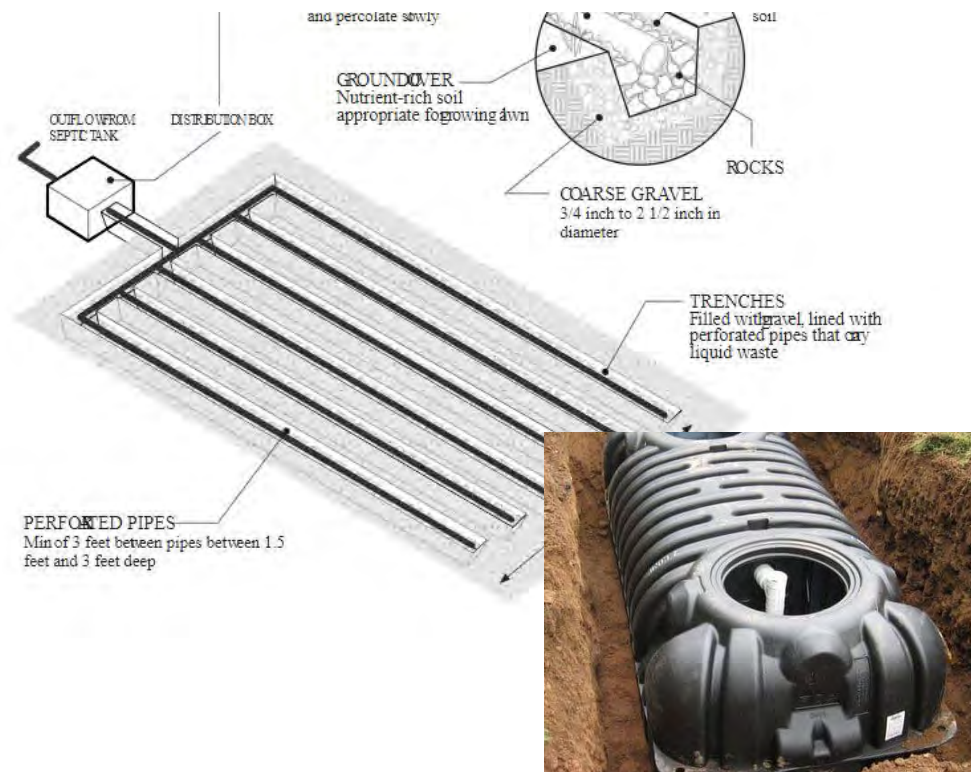


Water Catchment



Safe Waste Water Treatment (Resilient Water)

Septic System



Failed System=Community Impacts

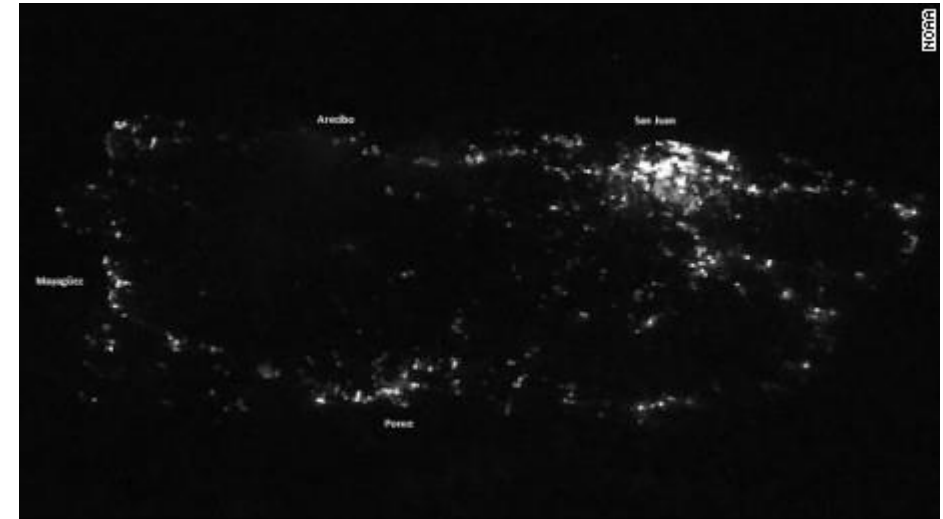


Safe Energy Backup (Resilient Energy)

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.



COMUNIDADES UNIDAS

GUÍA PARA EL DISEÑO DE CENTROS COMUNITARIOS
RESILIENTES EN COMUNIDADES ISLEÑAS

Systems of a Community Resilience Center

COMMUNICATIONS

- KP4.
- Satellite phone.
- Loudspeaker.
- Wifi/Data access for social media/ community bandwidth access for communication.
- Community-based radio station.
- Analogue telephone line.
- GoTenna mesh system- allows texting and GPS without internet.

STRUCTURAL

A professional structural engineer should be consulted to verify the building meets code requirements for seismic movement. Depending on location, ensure the structure can withstand forces caused by storm surge produced by hurricane or tsunami events.

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—is connected.

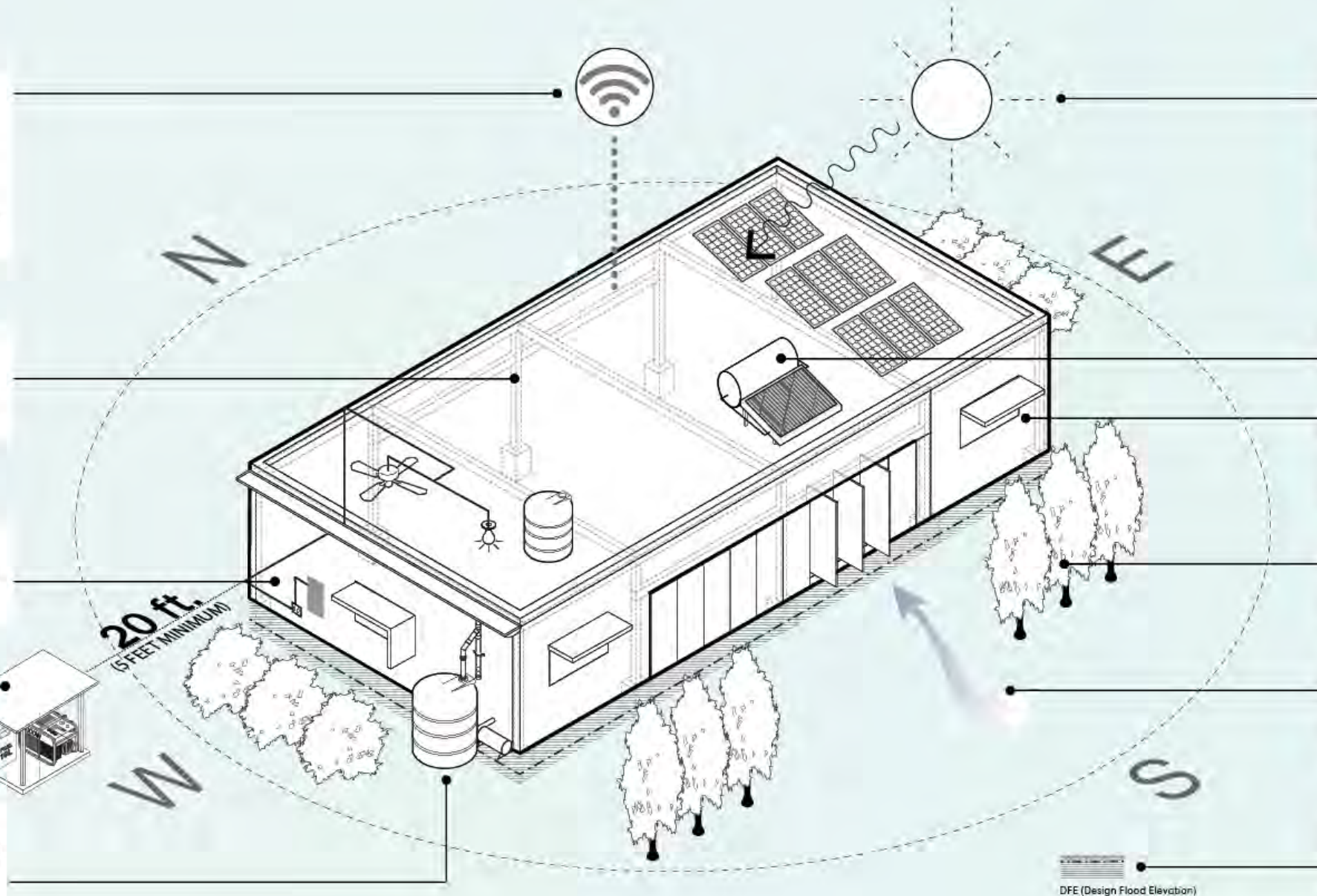
ENERGY GENERATOR

Have a backup energy generator for emergencies. Ensure that the generator is placed outdoors, at least 20ft from the structure, and is protected from debris.

RAINWATER COLLECTION

Install a rainwater collection system for non-potable water use, such as irrigation, flushing toilets and cleaning. If purified, water can be used for drinking.

Rainwater storage tank could be located on the roof or ground.



SOLAR POWER

Install 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), and/or other forms of renewable energy. Other recommendations for the community center or individual houses: portable solar charger for mobile phones, solar lamps, portable solar power generators, dedicated solar panels for critically ill patients (for example, requiring dialysis or respirators), solar refrigerators, or back-up diesel generator.

SOLAR THERMAL HEATER

Use solar energy to heat up water.

OPENINGS

Design using operable windows and doors, that allow cross breezes and ventilation. Maximize space by allowing the exterior areas to be used. Shade openings to reduce amount of sunlight and heat gain entering the building.

VEGETATION

Use native vegetation to increase shade, mitigate excessive sunlight, reduce heat gain, and generate breeze, thereby reducing energy costs.

VENTILATION

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

If new construction, place the building above the Design Flood Elevation (DFE). If it is already built, ensure equipment that might get damaged with water is stored above the DFE.

DFE (Design Flood Elevation)



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 Ischoeman@enterprisecommunity.org

