

The background image shows a street scene with significant structural damage. A two-story brick building has a partially collapsed roof, with wooden rafters exposed. A large pile of red bricks and debris is in the foreground. To the right, another building with arched windows and a sign that says "LUMBER" is visible. A utility pole stands on the left, and a street lamp is on the right.

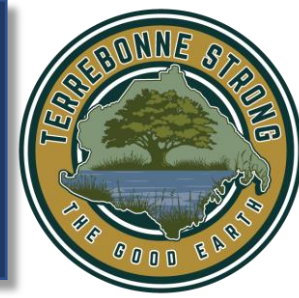
TERREBONNE PARISH HAZARD MITIGATION PLAN UPDATE 2023

STEERING COMMITTEE MEETING #3
August 31, 2022

Office of Homeland Security and Emergency Preparedness

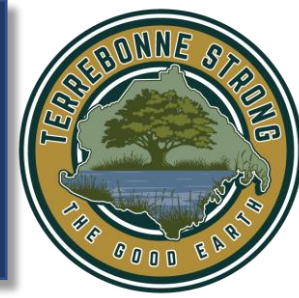
Presented by: Bill Bohn

Assessing the Problem



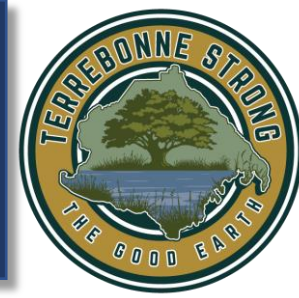
- Review critical facilities
- Review Hazus approach
- Identify what is impacted
- Identify who is impacted
- Discuss next steps

Update Critical Facilities



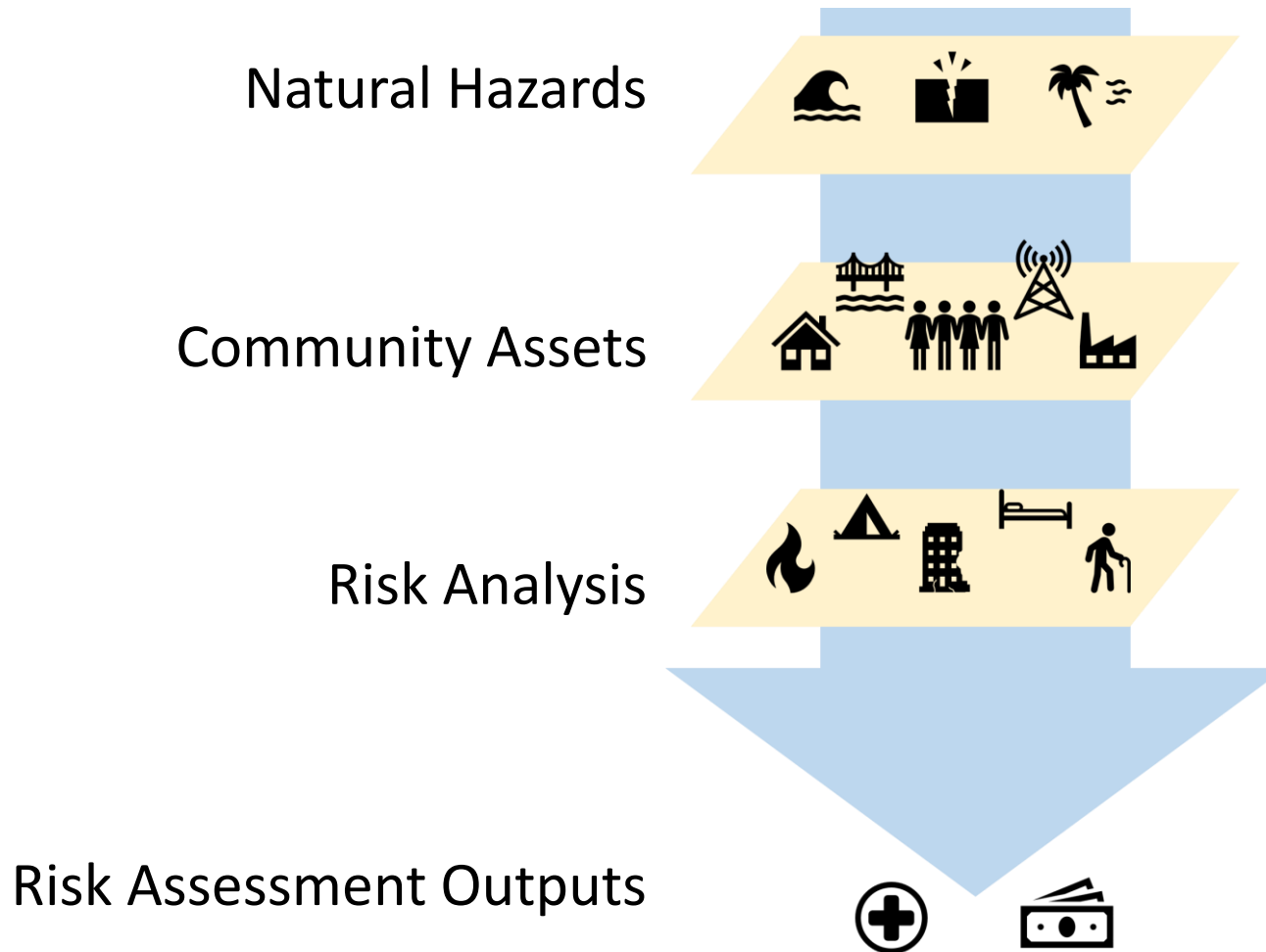
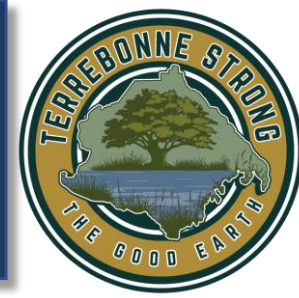
- Hospitals
- Assisted living
- Home health
- Medical
- Emergency operations centers
- Police centers
- Fire stations
- Schools
- Parish-owned buildings
- Childcare
- Civic center
- Utilities

Critical Facilities to Consider



- Gas stations
- Pharmacies
- Grocery stores
- Health clinics/urgent care
- Jails
- Others?

Hazus



Hazus



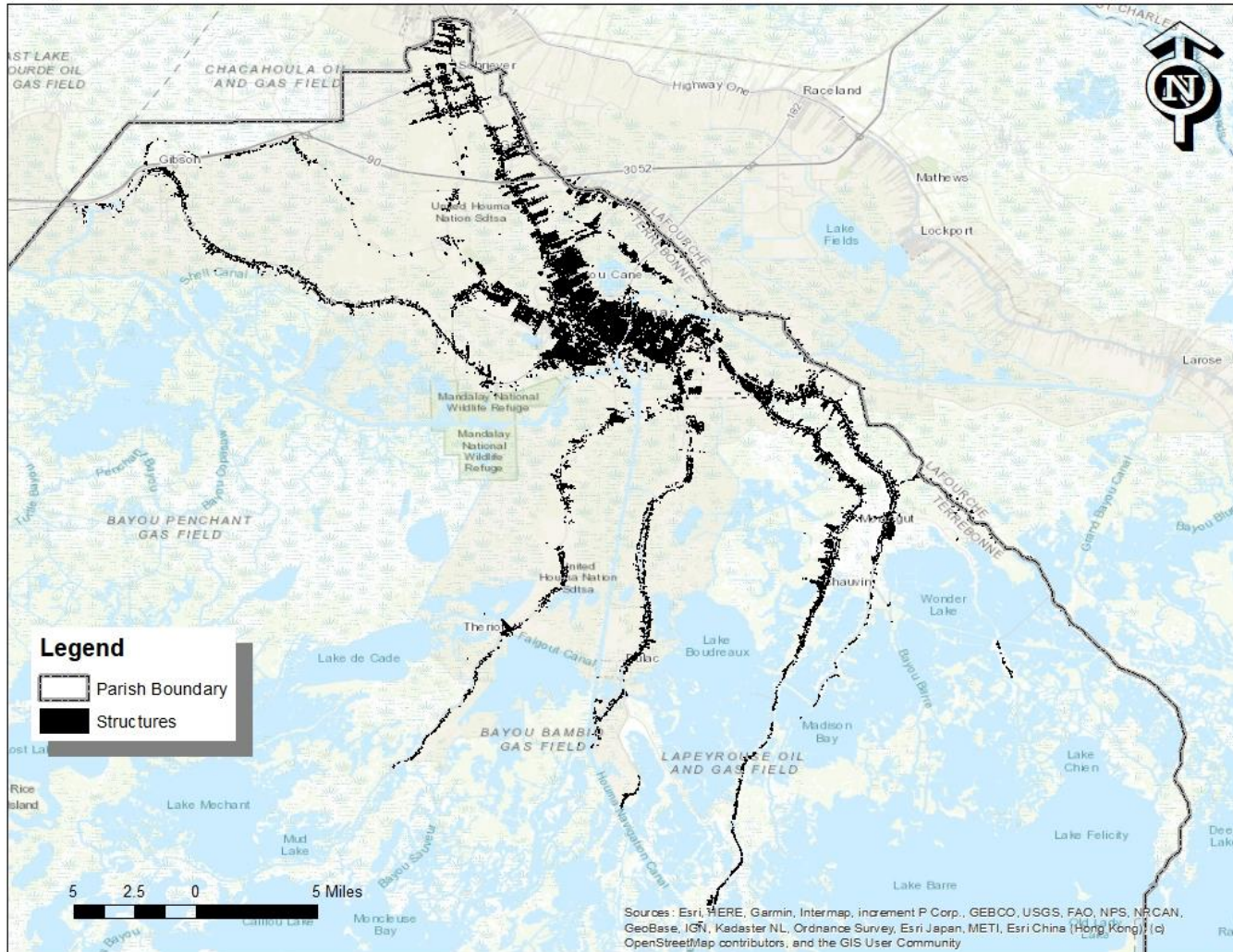
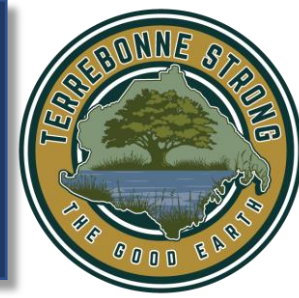
- Supports flood, hurricane, and earthquake risk assessments
- Provides outputs on structural and content damages and losses, business interruption losses, displaced population, and short-term shelter requirements using tables and maps

Hazus Approach for Parish

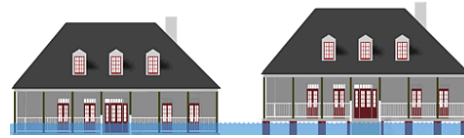
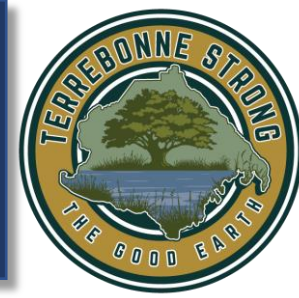


- Modeling done at site level using building footprints and parcel data
- LiDAR used to get building heights (for depth damage function) and grade adjacent to buildings
- Building footprints and heights used to get total square footage if not available from Parish or FEMA data
- Occupancy from address points and site data provided (critical facilities, hotels/motels, apartments, etc.)
- Valuations from square footage, occupancy, and RS Means
- Elevations from elevation certificates
- Foundation types from neighborhood sampling using Google StreetView

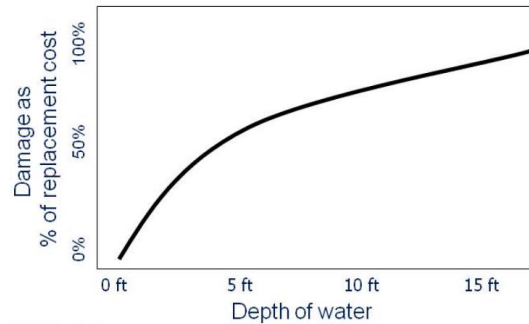
Modeling Each Structure



Site Level Methodology



Infrastructure characteristics



Hazus damage and loss functions



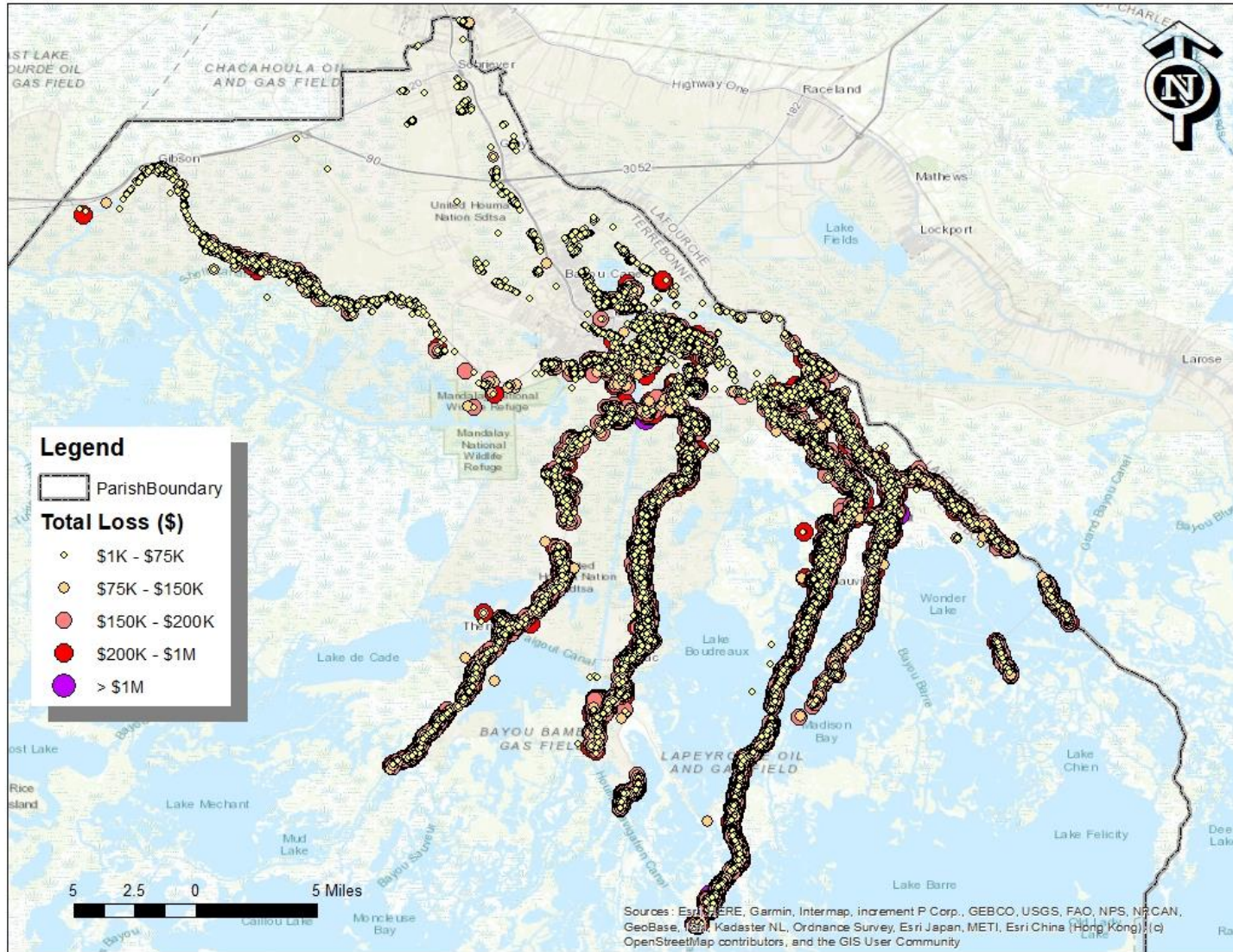
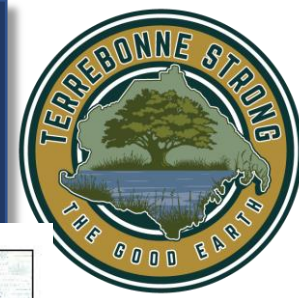
Economic Loss

Hazus Scenario Development

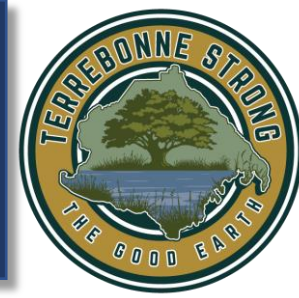


- Flood
 - 100- and 500-year
- Levee breach scenario
- Hurricane
 - 100-, 500-year, deterministic scenario
 - Wind and surge scenarios
- Sea-Level Rise scenarios

100-Year Flood Loss (Hazus)



100-Year Flood Loss (Hazus)

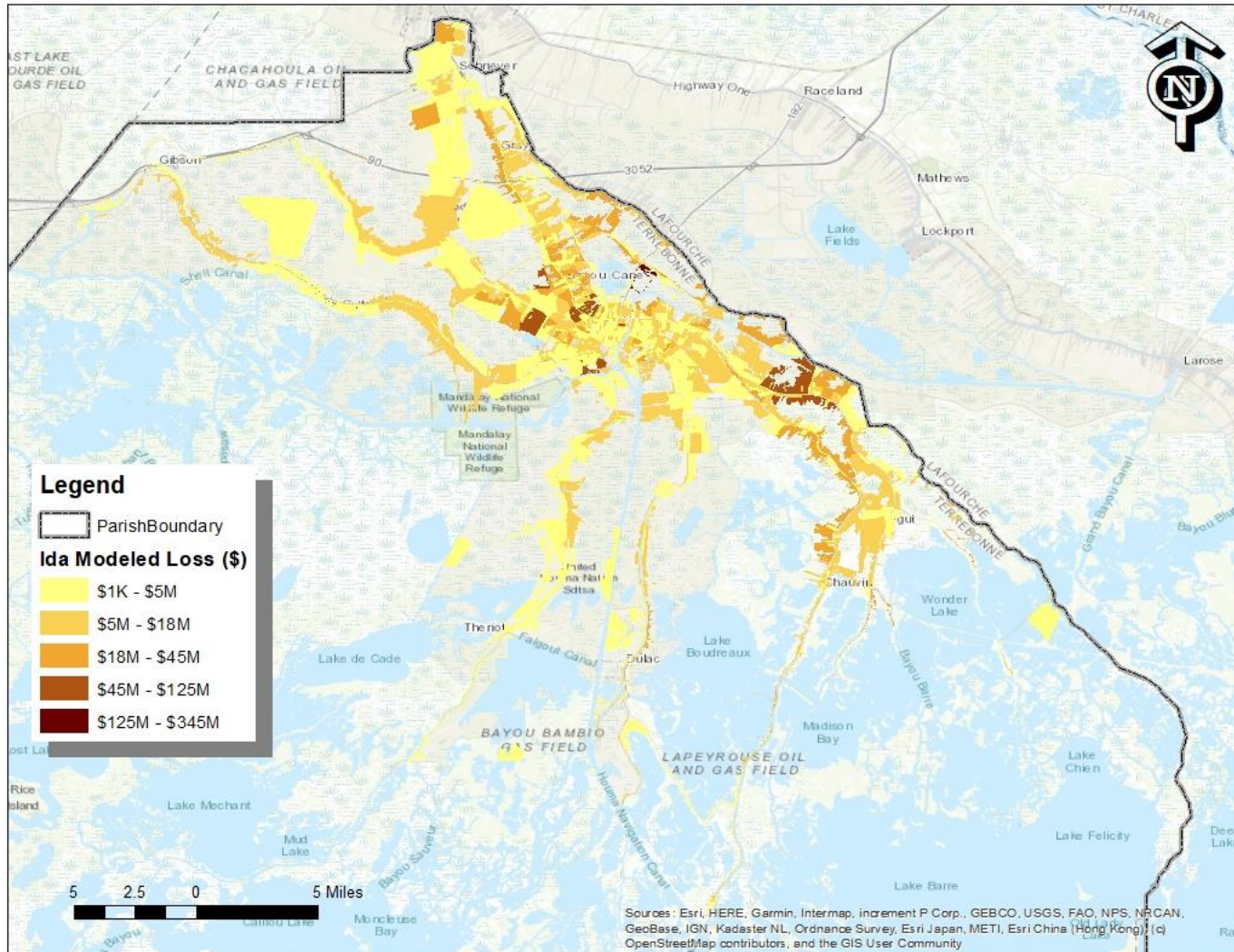
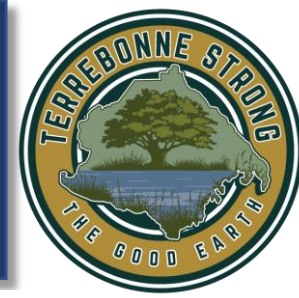


	Structure Loss (\$)	Content Loss (\$)	Inventory Loss (\$)
Residential	1,857,975,527	934,868,189	0
Commercial	327,579,761	1,046,683,241	113,326,250
Other	19,759,852	57,684,284	0

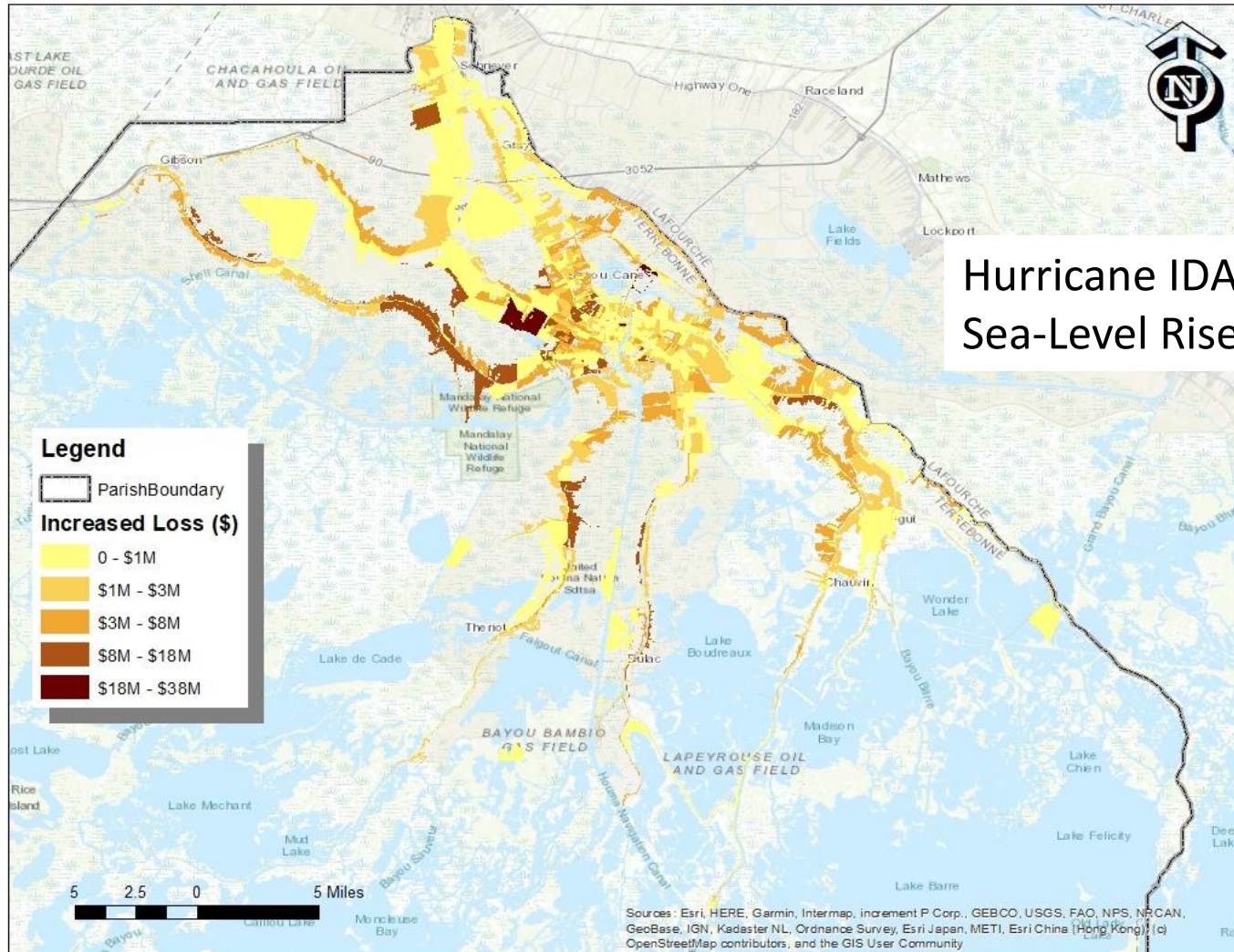
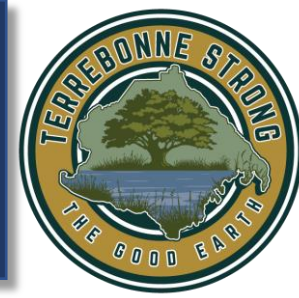
	Debris - Finish (tons)	Debris - Structure (tons)	Debris - Foundation (tons)
Residential	156,901	68,331	262,812
Commercial	44,270	19,412	10,303
Other	1,568	1,842	1,513

	Income Loss (\$)	Relocation Loss (\$)	Rental Income Loss (\$)	Wage Loss (\$)
Residential	26,090,720	390,965,489	216,632,040	62,064,289
Commercial	540,254,621	171,349,413	128,512,060	604,762,636
Other	98,273,928	49,136,964	5,459,663	272,983,134

Modeled Hurricane IDA – Wind and Storm Surge Loss (Hazus)

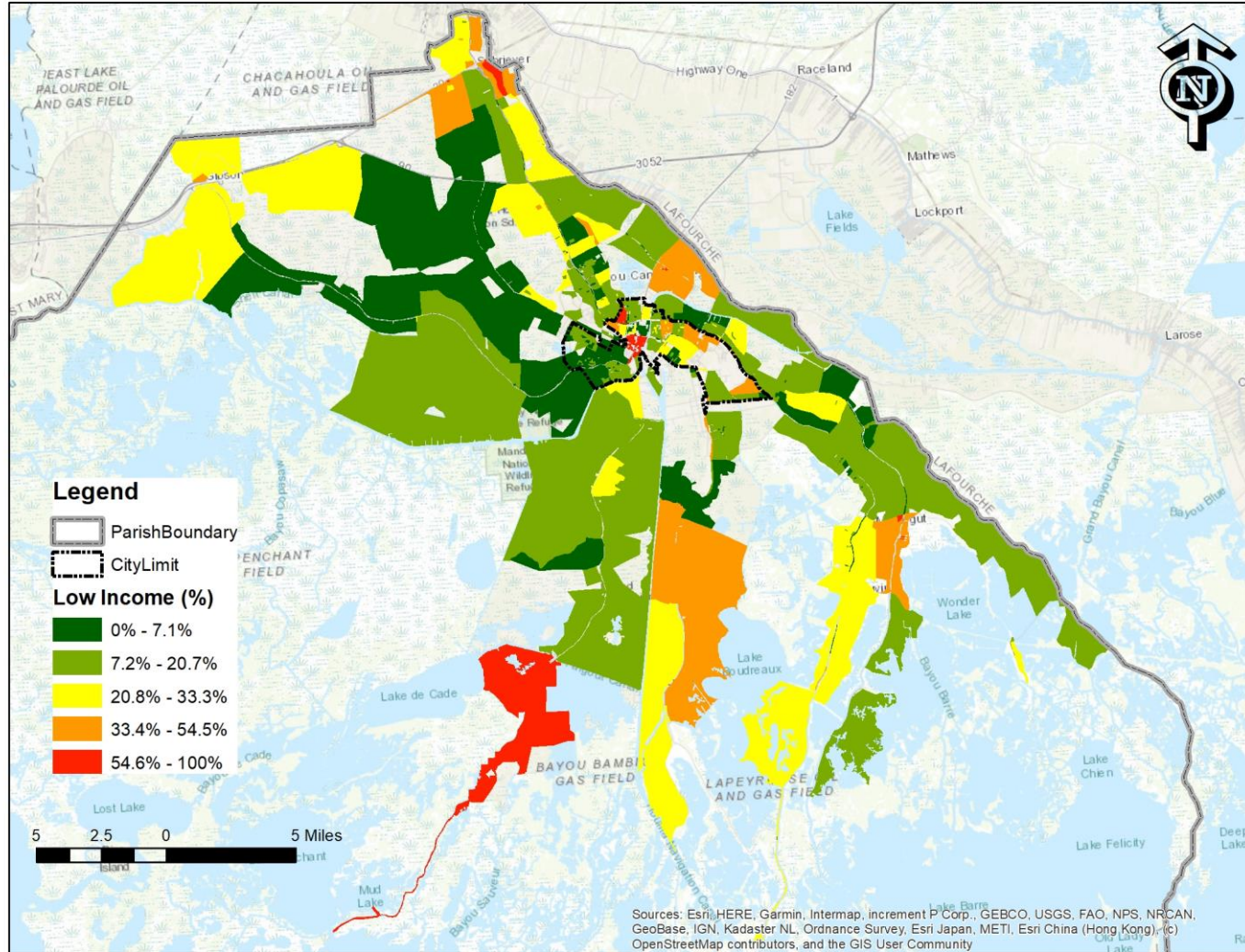
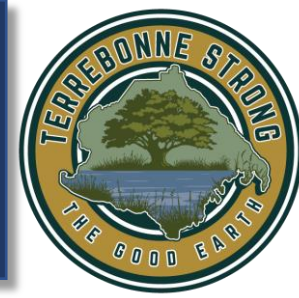


Hurricane Ida with Sea-Level Rise Wind and Surge Loss (Hazus)

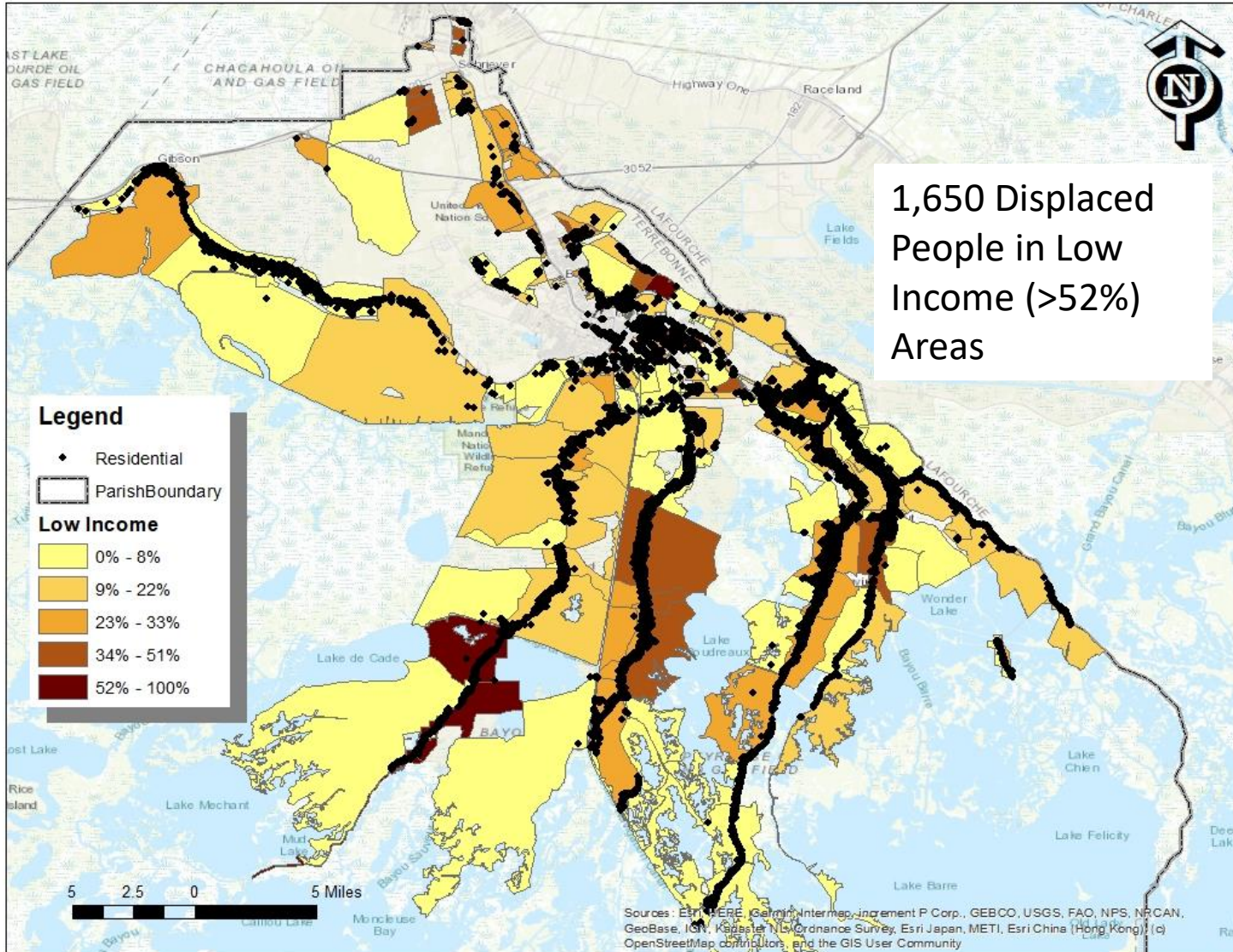
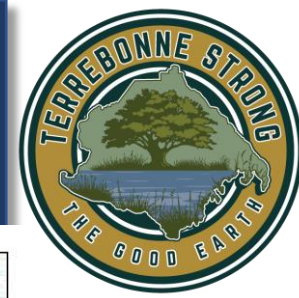


Hurricane IDA with 2' of
Sea-Level Rise: +\$2B

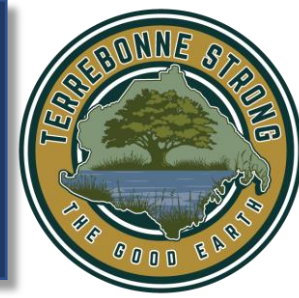
Who is Impacted?



Social Impacts



Social Vulnerability Indicators



- Household – age, race and ethnicity, language, renter, single-parent household
- Poverty – below poverty line, unemployment rate, no vehicle access, public assistance, median income
- Health – disabled, diabetes, high blood pressure, obesity, no health insurance
- Sources – 2020 Decennial and ACS Census data, CDC health data

Hurricane Ida Impacts



- What went well
- What didn't go well, and lessons learned



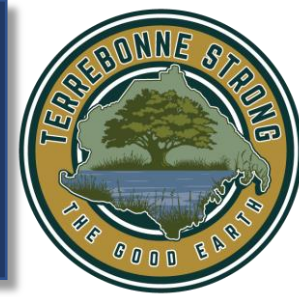
28 Aug 2021 13:50Z NOAA-NESDIS/NOAA/CI/Climate/Day/AviCloud

Flood Impacts



- Type of flooding experienced
- Warning and evacuation
- Public health
- Critical facilities and infrastructure
- Economic

Other Hazard Impacts



- Hurricanes – \$1.66B, 10 events (not including Ida)
- Tornadoes - \$12.8M, 4 injuries or fatalities, 28 events
- Lightning - \$680K, 3 injuries or fatalities, 15 events

- Extreme heat - \$0
- Drought - \$0, 3 events
- Wildfire - \$0, no events
- Winter Storms - \$0, 3 events
- Hail - \$0, 23 events
- Earthquake -\$0, no events
- Sinkholes
- Expansive Soil

Next Steps



- Review risk assessment outputs and findings
- Review and identify mitigation goals and objectives (early October)