



StEER
STRUCTURAL
 EXTREME EVENTS
 RECONNAISSANCE

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PRIORITY RESEARCH AREAS: HURRICANE IDA

Release Date: 19 January 2021

Event Summary: Between August 2020 and August 2021, a series of hurricanes/tropical storms impacted Louisiana, including two Category 4 storms (Hurricanes Laura and Ida)

Available Data: Over 330 miles of street-level panoramas were collected by StEER ([Mapillary](#)), with additional data available from the RAPID EF and SiteTour 360 and over 300 door-to-door performance assessments ([FulcrumApp.com](#))

Available Briefings/Reports: [Laura](#) | [Delta](#) | [Ida](#)

Priority Proposal Topics: StEER members have been encouraged to develop proposals in the following topical areas.  = Structural Engineering Study;  : Interdisciplinary Study

TOPIC 1: Relationship between wind damage and evolving construction practices and regulatory environment		
Unsolicited Proposal Opportunity	<ul style="list-style-type: none"> Examine correlation between code edition (statewide building code inaugurated in 2007) and building performance Compare outcomes for infrastructure exposed to multiple tropical cyclones within the past twelve months, and the impact of earlier events like Rita 2005. Identify opportunities for code reform, pathways to improve uptake 	
Data Re-Use Opportunity	<ul style="list-style-type: none"> Use existing data to virtually conduct additional structural performance assessments to deepen representative sample in various code eras, building classes 	
TOPIC 2: Encouraging hurricane-resistant renovation, repair and retrofit of buildings within the immediate post-event period		
Unsolicited Proposal Opportunity	<ul style="list-style-type: none"> Conduct human subjects research to examine knowledge of hurricane-resistant construction techniques, particularly those associated with vulnerabilities identified in StEER reports Map homeowners' access to hurricane-resistant construction 	

	<p>techniques and existing knowledge in affected markets, including stakeholders that are key nodes in the market system</p> <ul style="list-style-type: none"> • Identify market and regulatory barriers, propose mechanisms to reduce these barriers and enhance access to mitigation solutions within affected communities (particularly underserved populations) • Document the risk communications surrounding recent hurricanes to identify how these can more effectively support the long-term recovery phase and the Build Back Better philosophy
RAPID Opportunity (Human Subjects)	<ul style="list-style-type: none"> • Interdisciplinary field investigations focused on building owners, contractors, and local officials to identify barriers to Building Back Better during the time-limited recovery period following Hurricane Ida • Document risk communications to building owners in the year following Hurricane Ida • Explore balance between need for short-term re-occupancy and functionality recovery and the opportunity for building back better • Identify barriers to/drivers of action and possible incentives/workarounds
TOPIC 3: Evaluate the premature failure of the transmission and distribution networks of power infrastructure in natural hazards	
Unsolicited Proposal Opportunity	<ul style="list-style-type: none"> • Examine the evolution of power infrastructure systems in the affected areas, initiating with regional failure of power infrastructure 15 years ago following Hurricane Rita and subsequent repeated failures in recent hurricanes • Identify dominant failure mechanisms through the automated processing of StEER street-level panoramas and develop models to better predict these observed responses. • Conduct detailed analyses of power infrastructure performance to evaluate efficacy of changes in design of these systems over period from Hurricane Rita to present
TOPIC 4: Evaluate hurricane impacts on downstream functionality impacts of Critical Facilities, Schools, and Industrial Facilities	
Unsolicited Proposal Opportunity	<ul style="list-style-type: none"> • Use existing data sources to examine performance of critical community infrastructure and the effect of disruptions on community recovery • Examine the impact of infrastructure and critical facility failures on service delivery, developing models for loss and recovery at the individual structure, sector and community-level, including how compound events affect these loss and recovery processes • Examine the compound effects of these hurricanes and the COVID-19 pandemic on critical facilities, including implications for evacuation and recovery for hospitals and other medical facilities



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<p>RAPID Opportunity (Human Subjects)</p>	<ul style="list-style-type: none"> • StEER data lacks empirical data quantifying the impact of exterior damage on the functionality of these critical facilities immediately after the event, as well as the recovery of functionality over the next year • Conduct field research to document functionality loss and recovery through interviews, longitudinal street-level imaging, and other methodologies.
<p>TOPIC 5: Advancing equity through structural mitigation of storm impacts</p>	
<p>Unsolicited Proposal Opportunity</p>	<ul style="list-style-type: none"> • Disproportionate impacts of hazards on low-income and under-served populations is well documented, most recently in Louisiana [Lake Charles, LA repeated losses and disproportionate toll (PBS), Houma Tribe (NPR), La Place, Louisiana – What Next? (NPR)] • Use StEER and other open data to identify patterns in vulnerabilities and losses in low-income and under-served communities • Examine existing construction, reconstruction, retrofit and repair strategies for single-family, multi-family and public housing in low-income and under-served communities of Louisiana • Propose more cost-effective mitigation strategies, particularly to retrofit older construction that often characterizes building inventories in these communities
<p>RAPID Opportunity (Human Subjects)</p>	<ul style="list-style-type: none"> • Conduct interdisciplinary field investigations focused on homeowners and public housing authorities in these communities to identify barriers to Building Back Better during the time-limited recovery period following Hurricane Ida • Collect additional in-depth structural performance assessments in the field to deepen representative sample for various code eras, building classes in these communities • Document repair and reconstruction processes planned/underway in these communities through interviews



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