

# MODELING THE DISASTER TIMELINE

WEDNESDAY: SESSION 4, TRACK 2

## SESSION CHAIRS

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- Ray Byrne, Sandia National Laboratories
- Elaina Sutley, University of Kansas

## SPEAKERS

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- Andrea Staid, Sandia National Laboratories, *Threat modeling for multi-sector resilience analysis*
- Brian Pierre, Sandia National Laboratories, *Optimizing for Grid Resilience while Considering Initial Transient Impacts and Long-term Restoration*
- Sara Hamideh, Stony Brook University, *Interdisciplinary Housing Recovery Modeling Considering Households*

## SESSION ABSTRACT

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This session will describe state of the art in modeling resilience across its different stages (identify, protect, respond, recovery), considering community and human factors. Our built infrastructure systems are subject to a wide range of threats, both natural and intentional. Understanding the full impact of these events requires a detailed understanding of how threats may impact system performance at all levels and the population, both today and looking forward into the future. We present an overview of threat modeling and its role in consequence analysis for adverse events. In order to protect infrastructure, we need optimization models that help identify the optimal set of investments to achieve the targeted level of resilience. We then discuss the use of these models and analysis techniques in modeling community resilience. The session ends with the presentation of a predictive model that captures the housing recovery process for households. The model demonstrates how different physical and social factors influence different recovery trajectories enabling targeted interventions for improving overall community recovery.