

**WALLACE, RPI**

**DHS Coastal Resilience Center of Excellence**

**Research Project Work Plan**

**1/1/2016 – 12/31/2017**

1. **Project Title.** Community Supply Resiliency (COMSURE)
2. **Principal Investigator.** William A. Wallace, Yamada Corporation Professor, Industrial & Systems Engineering (ISE), Rensselaer Polytechnic Institute (RPI)
3. **Other Research Participants/Partners.** John Mitchell, Professor, Mathematical Sciences, RPI; Thomas Sharkey, Associate Professor, ISE, RPI; Richard Little, Research Scholar, ISE, RPI
4. **Short Project Description.** The resilience of a coastal community to an extreme event depends upon the resilience of its critical infrastructures, one of which is the system of supply chains that provide the goods and services that make a community livable – Community Supply Resiliency.
5. **Abstract.** The capability of communities to withstand and recover from the disruptions of extreme events will determine, to a large extent, the degree to which the social, economic, and psychological impacts of these events can be reduced. It is well recognized that civil infrastructures (e.g., transportation, power, water supply and sewerage, and communications) are critical to the wellbeing of a community; our past work has focused on these systems. However, it is the social infrastructures (e.g., emergency response, banking, and food distribution) that play a crucial role in societal functioning; the availability of these systems following an extreme event is a key element in determining the resilience of a community. Therefore, the objective of the proposed research is to better understand, describe, and portray the supply chains that provide the goods and services needed to respond to and recover from an extreme event, such as a hurricane impacting a coastal community. With this knowledge, models and algorithms will be developed to support emergency management in planning, community development, training and education, thereby enhancing community supply resiliency.