

## PUBLIC-PRIVATE PARTNERSHIPS: KEY DRIVERS OF DISASTER SUPPLY CHAINS

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### 1. Introduction & Background

This paper focuses on the *Information Sharing* theme of the workshop, and identifies research challenges in organizational culture, legal, trust, and management structures that need to be addressed in order to facilitate public-private collaborations.

America's national security and economic viability are dependent upon a vast network of highly complex, interdependent, aging and increasingly vulnerable critical infrastructures and key resources (CIKR). These infrastructures support supply chains that produce and distribute energy, enable communications, facilitate transportation, ensure the availability of food and water, both in peace time and during disasters. Since 2001, the United States has attempted to improve its capacity in homeland security and emergency management at every level. Private industry owns 85% of CIKR and drives 98% of the nation's supply chains. Unfortunately, to a large extent the private sector does not have a seat at the table at Emergency Operations Centers across the Nation. Likewise, private sector plans do not reflect the public emergency management structure nor do they draw upon the strengths and systems of the public sector.

Through the establishment of public-private partnerships, the NIMSAT Institute at the University of Louisiana seeks to mitigate the risks we face as a nation due to the intricate interdependencies between CIKR assets and the public and private sector supply chains that depend on these assets. The NIMSAT Institute has advocated public-private partnerships since the experiences of hurricane Katrina in 2005. These efforts have culminated successfully in the establishment of the Louisiana Business Emergency Operations Center (LABEOC). The Institute has been tasked by the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) to develop public-private partnerships in Louisiana to support the LABEOC mission and has been designated by the Governor as the "LABEOC Incident Commander". This paper presents an overview of the research agenda currently underway at the NIMSAT Institute, summarizes the progress being made in Louisiana towards addressing these issues, discusses an illustrative example of these efforts as part of a US Department of Energy funded energy assurance project, and concludes with research challenges that must be overcome in order to successfully implement and replicate this model in Louisiana, Gulf of Mexico and the nation.

### 2. Research Agenda

The LABEOC mission of *enhanced resource and information management* will be accomplished by facilitating communications between public and private sectors, enabling businesses and industry organizations to identify critical roadblocks to their recovery and reducing overall economic impacts to Louisiana business and industry by mobilizing government resources, as *appropriate*. But, what is appropriate? The proposed research will address such questions as:

- *Can government resources be utilized to speed up the recovery of private sector firms? If so, under what circumstances? Does this apply only critical infrastructure and key resources (CIKR) operators whose products and services are essential for the government to respond to a disaster, or can all firms benefit from government resources?*
- *What types of information are useful and able to be shared? What mechanisms are effective in the sharing of such information?*
  - *Government-to-Business Information Sharing: When the government provides information and shares resources with private sector, it is likely to provide competitive advantage to firms participating in such public-private partnerships over non-participants. This raises concerns of legality, anti-trust, market monopolies and oligopolies that need to be addressed in order to truly be successful in leveraging private sector capabilities for disaster management.*
  - *Business-to-Government Information Sharing: What safe guards exist, if any? What is protected? Regardless, what are the concerns and impediments to the private sector sharing critical information with government?*
- *What are the motivators and roadblocks for such partnerships? What is a governance structure that public, non-profit and private partners could utilize in engaging with their counterparts and other stakeholders responding to disaster? How does the private sector address such issues within and across their supply chain partners? How can standards such as Collaborative Planning, Forecasting, and Replenishment (CPFR) framework be adapted from the commercial business sector which moves goods everyday? The team has been involved with the development and implementation of the CPFR industry standard framework that specifies how supply chain partners should collaborate in the accomplishment of their common goals.*
- *What is the capability maturity model for such partnerships; how do you transition from one level of collaboration to another that would allow us to manage relatively simple events like a train derailment to complex, multiple overlapping events such as Katrina/Rita; and Gustav/Ike? How do you account for variations in the types of interaction and the levels of maturity in measuring the performance of such public-private partnerships?*

We believe that the aforementioned research challenges must be addressed during peace-time so that when activated during a crisis, the operational goals of the LABOEC and other such partnerships are achieved. Other salient public-private partnerships include the Business Force in New Jersey, Georgia, Kansas City, San Francisco Bay Area and Los Angeles/Orange Counties; the Safeguard Iowa Partnership; the State of Washington partnership; ESF-18 in Florida; the Colorado Emergency Preparedness Partnership, among others.

### **3. A Sector-Specific Illustrative Example**

Under agreement DR-OE000077, the Department of Energy and the State of Louisiana have engaged the NIMSAT Institute to enhance the state's energy sector resiliency through improved information sharing from "the platform to the pump." The Institute through the Louisiana BEOC is accomplishing this goal by developing public-private partnerships that enable communications across the energy supply chain to facilitate the processing, delivery, and distribution of energy, thereby enhancing the State Energy Profile.

Hurricane Gustav was the largest power event in the history of Louisiana. Although many plants had cogeneration capability, what they lacked was the information sharing needed to facilitate a “smart grid” that could share this excess power with refineries and chemical plants that needed redundant power for startup and shutdown. This dependence of the fuel supply network on the electric grid is also found in the pipeline and retail sections of the fuel supply chain. Pipelines need electricity to power pumping stations, and gasoline retailers need electricity to power their retail gas pumps. From the “platform to the pump” the fuel and electricity distribution systems are interdependent, and dependent on information sharing.

Hurricane Gustav illustrated an additional energy assurance need – the need to monitor and respond to fuel supply system shortages. Two days before hurricane Gustav made landfall, the NIMSAT Institute learned from Wal-Mart that the State would not have enough summer fuel to make a large-scale evacuation possible. The NIMSAT Institute worked with the Louisiana Department of Natural Resources (DNR), ESF-12, state and federal agency partners to allow for additional fuel supply through the marketing and distribution of winter fuel blends. Information sharing with the private sector and monitoring fuel supply systems enabled the state to respond to potential shortages and safely evacuate 2 million people – the largest evacuation in State history, averting potential loss of life.

Through the DOE funded project, the Institute is developing an Energy Supply-Demand Model that predicts fuel supply requirements during large-scale evacuations based on fuel demand due to historic evacuation patterns and real-time traffic sensor data. This model is enabled by information sharing with the private sector that enables fusion of data from the diverse fuel monitoring systems currently in use at gas stations; information from the public sector that provides an understanding of the fuel demand based on the location and time of evacuations (mandatory versus recommended, data from State police and the Department of Transportation). With the integration of supply and demand data enabled by information sharing between public and private sector stakeholders, emergency managers have comprehensive situational awareness of gasoline availability and the ability to channel additional public and private sector supply chain resources where needs are unmet.

#### **4. Conclusions and Future Research**

Public-private partnerships are inarguably the potent force that fuel disaster supply chains, ensuring that the right product is at the right place and at the right time, so that as a nation we reduce the loss of life and property due to disasters. This paper presented a compelling case for the establishment of public-private partnerships and has presented overview of the efforts currently underway in the State of Louisiana, through the establishment of the Louisiana Business Emergency Operations Center (LABEOC). While describing the multitude of potential benefits that accrue due to such partnerships, the paper outlined major research issues that need to be addressed in order for these partnerships to be realized in a systemic and systematic manner. The research identifies standards and solutions that exist within private sector supply chains and explores their applicability to the domain of public sector, vis-à-vis public-private partnerships. Finally, the paper presented a real-life example of the NIMSAT Institute’s efforts within the energy sector that serves as a case study for the development of public-private partnerships to enhance the nation’s energy security and reliability.