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Preparedness & Response

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## CCPR Project: **Public Infrastructure Support For Protective Emergency Services**

Project start / DHS approval date: 8/30/04

Principal investigator: Rae Zimmerman

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Summary of Objectives and Approach: Protective emergency services, such as emergency management, health, police and fire protection, routinely depend upon a wide range of traditional infrastructure support services, including transportation, energy, water, environmental protection, and communication infrastructure, to provide and deploy human resources, goods, and information in times of crisis. This project identifies relationships between these two types of service areas – traditional infrastructure and emergency services – and vulnerabilities and choke points created at interconnection points among them during emergencies. The purpose is to provide resources to prepare managers and operators of both traditional infrastructure services and emergency services with ways to incorporate each others' needs into the design of their respective services. The project goal is to help develop easily communicated emergency procedures for infrastructure managers that focus on the key interconnections between traditional infrastructure and protective services and the vulnerabilities in these linkages created by emergency conditions. The outputs include: criteria to identify interconnections between emergency services and other infrastructure; two workshops to obtain input from practitioners and academicians; a demonstration of actual interconnection points in selected geographic areas and service sectors and a review of prototypical interconnections and vulnerabilities; and methods to disseminate results.

### Accomplishments:

1. Identification of a preliminary set of case-based parameters (criteria) and representative data for key linkages among critical infrastructures and between those infrastructures and emergency services using literature and case reviews and analysis
2. Initial development of a sample set of measures of key interdependencies among telecommunications, transportation, and electric power for applicability to interdependencies with emergency services
3. Identification of databases and maps of infrastructure location from other sources to initiate overlays of infrastructure geography to identify areas of potential interdependencies
4. Identification of networks of protective emergency service providers and users for selected geographic areas, meetings with such providers, and visits to facilities
5. Engagement of a web designer for website design and enhancement for database and education access (draft work is being edited, and the main site revisions should be ready for launching in 2006-2007).
6. Publication of research related to this project by the PI, for example, PI publications in the *Journal of Urban Health* (2005), *International Journal of Critical Infrastructures* (2006), and *The McGraw Hill Handbook on Homeland Security* (2006)
7. Conference presentations by R. Zimmerman and co-authors:

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- Hurricane Katrina Roundtable participation. “Hurricane Katrina: Societal Impacts of Civil & Environmental Infrastructure in New Orleans,” New York, NY: NYU-Wagner, April 18, 2006.
- Invited presentation for a panel on NYC and critical infrastructure at a symposium on terrorism, The New School, June 28, 2006
- “Connectivity and Consistency of Environmental Decision Tools for Community Planning,” Association of Collegiate Schools of Planning (ACSP) 2006 Annual Conference, Fort Worth, TX, November 10, 2006.
- Invited participant for “Terrorism & the University” conference, group on “The NYC Region and the University,” John Jay College, November 11, 2006.
- Invited panelist, “University Research in Transportation Security Planning,” Transportation Research Board annual conference, Washington, DC, January 22, 2007.

8. Media mentions: Altman, Daniel, “Terror-Proof, Except for All the Vulnerabilities,” *New York Times*, August 20, 2006, Business Section, p. 3.

<http://www.nytimes.com/2006/08/20/business/yourmoney/20view.html>

9. Project Report: “Infrastructure Support for Emergency Response: Preliminary Criteria and Indicators for Infrastructure Linkages to Emergency Services,” by Rae Zimmerman. Draft Working Paper, 27 pp., July 10, 2006.

### Future Plans for the Remainder of the Project Period

Activities and deliverables to be produced with the remaining funds are:

- Continue critical updates to literature, case reviews, and project databases to incorporate infrastructure interdependencies associated with terrorist attacks on urban infrastructure with implications for emergency services that occurred around the time the project period. Examples are the Madrid and London subway bombings of March 11, 2004 and July 7, 2005 respectively and natural hazards that affected infrastructure critical to the support of emergency services such as the Gulf Coast hurricanes of August-September 2005.
- Revise and expand a prototypical system of interconnections for a specific geographic area as a demonstration of principles developed
- Refine understanding of interconnections and the means to reduce adverse effects of interconnections at an initial workshop
- Evaluate and demonstrate interconnections and obtain inputs to scenarios for improving linkages by means of a second workshop mechanism, involving infrastructure and emergency services professionals
- Prepare outputs as monographs, journal articles, workshop reports, an educational curriculum outline, and web links for dissemination and education (ongoing), including invited article for the forthcoming Wiley *Encyclopedia of Quantitative Risk Assessment*.

The deliverables for these activities are a white paper or monograph and publications covering interconnections between traditional infrastructure and emergency services, criteria for improving these interconnections, a demonstration or application of the criteria, literature and case reviews that support these findings, and an educational curriculum and design of a web portal to house this information for dissemination of research and education.

