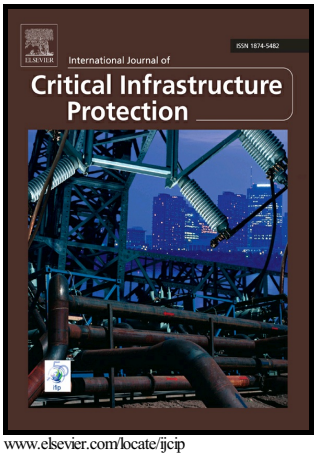

www.elsevier.com/locate/ijcip

Using geographic information science to evaluate legal restrictions on freight transportation routing in disruptive scenarios

Marc R. Fialkoff, Olufemi A. Omitaomu, Steven K. Peterson, Mark A. Tuttle

PII: S1874-5482(15)30034-2
DOI: http://dx.doi.org/10.1016/j.ijcip.2016.12.001
Reference: IJCIP210

To appear in: *International Journal of Critical Infrastructure Protection*

Received date: 6 October 2015
Accepted date: 1 December 2016

Cite this article as: Marc R. Fialkoff, Olufemi A. Omitaomu, Steven K. Peterson and Mark A. Tuttle, Using geographic information science to evaluate legal restrictions on freight transportation routing in disruptive scenarios, *International Journal of Critical Infrastructure Protection* http://dx.doi.org/10.1016/j.ijcip.2016.12.001

Using geographic information science to evaluate legal restrictions on freight transportation routing in disruptive scenarios

Marc R. Fialkoff,[a,b] Olufemi A. Omitaomu,[a,c1] Steven K. Peterson,[a] Mark A. Tuttle[a]

[a] *Geographic Information Science and Technology Group, Oak Ridge National Laboratory, 1 Bethel Valley Road, Oak Ridge, Tennessee 37831, USA*
[b] *School of Public and International Affairs, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061, USA*
[c] *Department of Industrial and Systems Engineering, University of Tennessee-Knoxville, Knoxville, Tennessee 37996, USA*

Abstract

Disasters have consequences and freight transportation is not immune to these consequences. In the aftermath of disasters, planners and policymakers have to utilize scarce resources and work within legal frameworks to ensure that inoperable infrastructure assets return to normal operations. In the case of freight transportation, the challenges associated with freight rerouting due to inoperable infrastructure assets are beyond the physical dimension – the challenges include overcoming some legal barriers involved with intermodal freight transportation. This paper presents an application of transportation routing analysis to evaluate routing options for freight transportation during disasters. The paper also evaluates the legal implications of the Merchant Marine Act of 1920 (also known as the Jones Act) on short sea shipping between coastal points in U.S. territorial waters. Using the closure of the Port of New York and New Jersey during Hurricane Sandy as a case study, various modal studies are performed that highlight the different routes and provide insights into the challenges of the modal restrictions imposed by the Jones Act.

Keywords

[1]Corresponding author: Olufemi A. Omitaomu (omitaomuoa@ornl.gov)