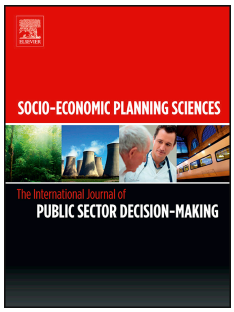
Accepted Manuscript



Effective and equitable supply of gasoline to impacted areas in the aftermath of a natural disaster

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PII: S0038-0121(16)30020-9

DOI: 10.1016/j.seps.2016.08.001

Reference: SEPS 538

To appear in: *Socio-Economic Planning Sciences*

Received Date: 25 January 2016

Revised Date: 30 July 2016

Accepted Date: 4 August 2016

Please cite this article as: Li X, Batta R, Kwon C, Effective and equitable supply of gasoline to impacted areas in the aftermath of a natural disaster, *Socio-Economic Planning Sciences* (2016), doi: 10.1016/j.seps.2016.08.001.

Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster

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Revised: May 2016
Second Revision: July 2016

Abstract

The focus of this research is on supplying gasoline after a natural disaster. There are two aspects for this work: determination of which gas stations should be provided with generators (among those that do not have electric power) and determination of a delivery scheme that accounts for increased demand due to lack of public transportation and considerations such as equity. We develop a mixed integer program for this situation. Two case studies based on Hurricane Sandy in New Jersey are developed and solved in CPLEX. As expected, increasing equity increases cost and also tends to place generators to stations with large initial inventories. It is further observed that CPLEX can solve the largest instances of the problem for a 5 percent tolerance gap, indicating that the model is efficient.

Keywords: humanitarian logistics, disaster operations management, location, allocation