

## **Hub-and-Spoke Model for Intermodal Transfer in a Freight Network**

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Freight transport is a critical component of economic activity, but it is also a major source of air pollutants and greenhouse gasses. Characterizing and quantifying the emissions from freight transport would assist in formulating policies to address these emissions. Last year, the Laboratory for Environmental Computing and Decision Making reported on the initial stages of development of a GIS based model of intermodal freight transport utilizing Network Analyst to solve for optimal routes in a multimodal transport network. The Geographic Intermodal Freight Transport (GIFT) model allows for route optimization based on emissions, cost, time or other factors. This allows emissions characterization of different routes and modes for shipment as well as analysis of the trade offs between emissions, cost and speed. This presentation discusses the development of the GIFT model particularly, the development and application of a hub-and-spoke architecture for a nationwide intermodal freight network. The development of per-unit emissions factors and policy implications of this architecture in the context of the GIFT model will also be discussed.