

### 5.3.2

#### GIS and Remote Sensing Support for Evacuation Analysis

**Presenter**

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Natural and manmade disasters such as hurricanes, forest fires, nuclear reactor failure, toxic gas releases, or acts of terrorism highlight the needs for evacuation planning. To support evacuation planning, information related to road networks, traffic control characteristics, and population distributions is required in order to delineate emergency areas, estimate at-risk population, determine evacuation routes, and identify vulnerability and capacity constraints of the road infrastructure. Traditional ways of collecting and integrating data are time-consuming and, in many cases, can not assure data accuracy and currency. This presentation will introduce approaches that make use of Remote Sensing and GIS technologies to facilitate efficient data acquisition and management for evacuation analysis. Particularly, remotely sensed imagery and GIS databases are utilized to prepare road networks, estimate population distributions during daytime and nighttime, and integrate with traffic simulation models to analyze traffic conditions and assess evacuation strategies. The applicability of the proposed approaches will be demonstrated with a case study for the Sequoyah Nuclear Power Plant site in the Hamilton County of Tennessee.