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Multimodal Freight Performance Analysis Tools – A GIS-T Approach

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The Multimodal Freight Analysis Tool (MFAT) is a concept to bridge a significant gap in existing policy analysis approach within FHWA; specifically, the ability to evaluate potential freight-related policy implications across modes in an interactive GIS-T environment. Battelle's internal research and development programs focus on the development of technologies and tools that are important to client's missions and needs. One such effort relevant to this request is the Battelle Multimodal Freight Analysis Tool (MFAT). MFAT is a GIS-based tool that works across highways, railroads, waterways, terminals, and intermodal facilities. Battelle developed this freight analysis tool as part of an ongoing effort, funded by Battelle's internal research and development funds, which builds on the knowledge learned from Federal Highway Administration's Freight Analysis Framework (FAF) project. Analyzing "what-if" scenarios with this tool allows a user to expand evaluation beyond mode-specific impacts, such as the following:

- Routing assignment of truck/freight to highway, rail, water, and intermodal connectors.
- Documenting and characterizing the capacity deficiencies, delays and congestion based on forecasted freight demand and routing.
- Comparing and characterizing parallel corridors-either multimodal or intermodal and assessing the impact of mode split on capacity.
- Integrating other FHWA tools such as HERS-ST (cost-benefit) or ITIC, to analyze freight diversions and forecast economic implications of capital funding requirements to improve the deficiency.
- Evaluating the impacts of truck size and weight regulations or other policy initiatives on highway and rail capacity.
- Developing infrastructure profiles for highways, railroads, and waterways for a selected route that describes the characteristics of each route in terms of all available attribute information (physical, operational, and regulations) attached to the route.

Each MFAT module uses a built-in GIS window interface to define or select a selected route or identifying an alternate route under several constraints (regulation, operational, or physical limitations) for analysis.