NEW ZEALAND INTERMODAL FREIGHT NETWORK AND THE POTENTIAL FOR MODE SHIFTING

Janice Asunciona a Stacy Rendall a Rua Murray b Susan Krumdieck a

a University of Canterbury, Department of Mechanical Engineering
b University of Canterbury, Department of Mathematics

1. Introduction
The most prevalent mode of freight transport in New Zealand is by road. According to the New Zealand Business Council, freight volumes may increase by 70-75% over the next 30 years.1

In light of peak oil and climate change issues, the sustainability of over-reliance on road freight is questionable. A shift to less energy intensive and lower emissions modes, such as rail and coastal shipping, may address these problems.

2. Hub-and-Spoke Approach
The hub-and-spoke method is used in the development of the Geospatial Intermodal Freight Transportation (GIFT) Network which is built using ArcGIS.

3. Case Studies
Two scenarios are investigated:

A. Distribution of 1 TEU from Auckland to Wellington

B. Distribution of 1 TEU from Auckland to Christchurch

4. Modal Shift Benefits
The model was used to asses the benefits of increasing rail share for shipping Steel from Auckland to Wellington. Steel is non-perishable product, thus timeliness of deliveries may be traded for energy and emissions savings.

References: