

SEMINAR SERIES
Department of Quantitative Analysis and Operations Management
College of Business Administration
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**Modeling Network Flow Problems with Piecewise Linear Costs, with an Application in
Supply Chain Management**

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Friday December 3, 1999
12:30 p.m.
214 Lindner Hall

Generalized network flow problems with linear costs have been well studied, but many applications of network flows possess more complicated cost structures. We address the network flow problem with non-convex piecewise linear costs. These cost structures arise in many telecommunications and transportation applications.

We show how to model the problem with a mixed-integer formulation. Unfortunately, this basic formulation can be quite weak. We use a variable disaggregation technique to strengthen the formulation and develop a specialized algorithm that efficiently solves the resulting model.

In this talk, I will discuss a logistics application which we call the merge-in-transit problem. I will provide a problem description, show our basic formulation and how we applied this variable disaggregation technique, describe the solution algorithm and provide some computational results.

Keely L. Croxton is an Assistant Professor of Logistics in the Department of Marketing at Ohio State University. She received her Ph.D. from the Operations Research Center at MIT in 1999. Her research interests are at the intersection of optimization and supply chain management. She is interested in developing and applying mathematical models to issues in logistics, supply chain management, and transportation. Whether aimed at the strategic, tactical, or operational level, these optimization models can have significant operational and financial impact.

Keely's industry experience is in the automotive, paper and packaging, and third party logistics industries. She was the recipient of a National Science Foundation Fellowship and an Eisenhower Fellowship from the Department of Transportation.