

Graham, R. L., W. Liu, M. E. Downing, C. E. Noon, M. Daly, and A. Moore. 1997. The Effect of Location and Facility Demand on the Marginal Cost of Delivered Wood Chips from Energy Crops: A Case Study of the State of Tennessee. *Biomass & Bioenergy* 13(3):117–123.

Abstract:

Cost-supply curves for delivered wood chips from short rotation woody crops were calculated for 21 regularly spaced locations spanning the state of Tennessee. These curves were used to systematically evaluate the combined effects of location and facility demand on wood chip feedstock costs in Tennessee. The cost-supply curves were developed using BRAVO, a GIS-based decision support system which calculates marginal cost of delivering wood chips to a specific location given road network maps and maps of farm-gate prices and supplies of wood chips from short, relation energy crops. Marginal costs of delivered chips varied by both facility location in the state and facility demand. Marginal costs were lowest in central Tennessee, unless the facility demand was greater than 2,700,000 dry Mg/y (3,000,000 dry t/y) in which case west Tennessee was the lowest cost region. Marginal costs rose rapidly with increasing facility demand in the mountainous eastern portion of the state. Transportation costs accounted for 18–29% of the delivered cost and ranged between \$8 and 18/dry Mg (\$7 and 16/dry ton). Reducing the expected farmer participation rate from 100 to 50 or 25% dramatically raised the marginal costs of feedstock supply in the east and central regions of the state. The analysis demonstrates the need to use geographically-specific information when projecting the potential costs and supplies of biomass feedstock.

Contact:

R. L. Graham, Oak Ridge National Laboratory, Environmental Sciences Division, P.O. Box 2008, Oak Ridge, TN 37831, USA