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Title: Design and development of a U.S. logistics models for residential and commercial biomass pellets

World energy demand has been continuously increasing and there is no indication that will reduce in the coming years. There exist an imperative need for cleaner, sustainable, renewable energy sources. Biomass was identified as part of a long term plan for a more sustainable and environmental approach. Over the past few years wood pellets (combustion and electrical) has been one of the most rapidly growing biomass products; these pellets are now traded internationally and production rate exceeded 6.2 million tons in 2009 (Junginger et al.).

The US is currently experiencing logistics and distribution challenges of pellets in the Northeast. Hanson (2014) discussed that pellet retailers and consumers in some Northeast and Midwest locations have learned a lesson when many ran out of pellets and faced difficulties securing supplies. This indicates that logistics represents an important aspect to study and improve in order to face the future challenges.

Thus, developing a logistic model that helps understanding the dynamic of supply, demand, transportation, production delay, backlog orders, and lead time is critical for a successful and efficient supply chain for both commercial and residential heating and power industries. This research will enable U.S. pellet manufacturers and heat and power users to better understand the main logistics considerations when distributing biomass pellets from Southeast to Northeast US. The aim of this research is to assess wood pellet supply chains from the production of wood pellets to the conversion into heat or power by developing a logistic model for the forthcoming challenges.