

**Project Information Form**

Project Title	Modeling Integrated Bioenergy Supply Chain Systems Under Uncertainty
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PI Contact Information	Email: rgli@ucdavis.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	National Center for Sustainable Transportation
Total Project Cost	\$ 25,000
Agency ID or Contract Number	
Start and End Dates	Fall 2016 – Fall 2017
Brief Description of Research Project	<p>Biofuels has been promoted by governmental policies for reducing fossil fuel dependency and greenhouse gas emissions as well as facilitating regional economic growth. Sophisticated model analysis is needed to study the economic and environmental impact of developing bioenergy production systems, and the effectiveness of relevant biofuel policies. For cellulosic biofuel supply systems, existing models have not simultaneously addressed the competition between multiple participating agents (e.g., farmers, biofuel industry) and the uncertain/risk issues in the system. This dissertation develops an integrated modeling framework for advanced biofuel production system from dedicated energy crops under uncertainty. The goal of this framework is to support strategic infrastructure development and policy making for bioenergy production systems. The model will be implemented in large-scale case studies for the Pacific Northwest U.S. region. The proposed framework uses a multi-agent setting to model the competition between biomass feedstocks and agricultural crops, and captures the interaction between cropland allocation and biorefinery siting decisions in the system. Hence, such a framework enables comprehensive comparisons for policy combinations that are targeted at different participants 1 in the supply chain. The framework is also enhanced by using stochastic programming to improve the robustness and resilience of the optimized solutions and policy analyses.</p>
Describe Implementation of Research Outcomes (or why	



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not implemented)  (Attach Any Photos)	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links <ul style="list-style-type: none"><li>• Reports</li><li>• Project website</li></ul>	<a href="https://ncst.ucdavis.edu/research/dissertation/">https://ncst.ucdavis.edu/research/dissertation/</a>