Title: Modeling the recycling infrastructure, flows, and associated greenhouse gas emissions across the state of Connecticut

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Abstract (255 words)

A detailed and localized understanding of the recycling infrastructure, recycling flows, and their associated emissions from processing and transportation provides valuable information for recycling agencies and industry. Such information can help guide regulation and policy decisions on optimizing recycling streams and improving material recovery, recycling, and monitoring. This study builds on a comprehensive REMADE model developed for California (CA)'s recycling infrastructure that includes the mass flows of the major material streams (metals, plastics, fibers, electronic scrap), geolocated by their origin and destination, together with their associated energy use and greenhouse gas emissions. In fact, this study serves as a pilot and proof of concept to test the transferability of the CA model and study structure to other U.S. states, namely to Connecticut. To demonstrate the flexibility of the tool and acknowledging differences in statistical data availability, the Connecticut study will focus on a slightly different set of recyclables, adding glass and food waste while omitting end-of-life vehicles. Recycling flow data tracked by the Connecticut Department of Energy & Environmental Protection are used to map the quantities of recyclables and waste that is moving across facilities. The emissions associated with the collection and the movements of these material streams will be calculated using the On-Road EMFAC emissions model by standardizing it for Connecticut. This model will be an online tool that will illustrate the different recycling flows across facilities and collection points. The Connecticut submodel will be optimized for transferability to other states to allow a broader application of the developed recycling model in the future.