[redacted]

During my SULI internship I worked with the Fuels and Products team at Argonne to evaluate the potential environmental benefits deploying co-optimized fuels and vehicles for the light and heavy-duty transportation sectors. This work is in support of the U.S. Department of Energy Co-Optimization of Fuels & Engines (Co-Optima) initiative which studies how simultaneous innovations in biofuels and engines can improve fuel economy and vehicle performance while reducing emissions. As a part of this effort, we expanded on the functionalities of Bioeconomy AGE (Air emissions, Greenhouse gas emissions, and Energy consumption), an Argonne scenario-based spreadsheet model that projects energy use and environmental impacts of transportation and energy systems at scale. AGE estimates the sectoral-level life cycle environmental impacts of deploying these co-optimized bioblendstocks in a variety of powertrains, integrating data from other modelling platforms including Automotive Deployment Options Tool (ADOPT), Biomass Scenario Model (BSM), the U.S. Energy Information Administration (EIA), Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies (GREET). I worked with Argonne staff to add several novel features to AGE such as: (1) incorporation of supply and demand constraints for Co-Optima fuels, (2) an option for users to define their own, custom, bioblendstocks, and (3) disaggregated fuel categories to enable a higher level of model resolution. I also worked on initial efforts to incorporate resource availability from the Billion Ton Study. During my internship I worked closely with a variety of project teams, gaining valuable hands-on experience communicating technical information and exchanging relevant results and data-sets.