National Center for Sustainable Transportation

Project Information Form

Project Title:	Dynamic Scheduling of Chassis Movements with Chassis Processing Facilities in the Loop
University:	California State University, Long Beach
Principal Investigator:	Anastasios Chassiakos Co-PI: Hossein Jula
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Funding Source(s) and Amounts Provided (by each agency or organization):	U.S. Department of Transportation (USDOT) - $79,992.00
Total Project Cost:	$79,992.00
Agency ID or Contract Number:	DTRT13-G-UTC29 CSULB-DOT-405
Start and End Dates:	October 2, 2017 to September 30, 2018
Brief Description of Research Project:	This work studies the optimization of scheduling of chassis and container movements at the operational level for individual trucking companies when Chassis Processing Facilities (CPFs) are available for use in the vicinity of a container port within a major metropolitan area. A multi-objective optimization problem is formulated in which the weighted combination of the total travel time for the schedules of all vehicles in the company fleet and the maximum work span across all vehicle drivers during the day is minimized. Time-varying dynamic models for the movements of chassis and containers are developed to be used in the optimization process. The optimal solution is obtained through a genetic algorithm, and the effectiveness of the developed methodology is evaluated through a case study which focuses on the Los Angeles/Long Beach port complex. The case study uses a trucking company located in the Los Angeles region, which can utilize three candidate CPFs for exchange of chassis. The company assigns container movement tasks to its fleet of trucks, with warehouse locations spread across the region. In the simulation scenarios developed for the case study, the use of CPFs at the trucking company level, can provide improvements up to 13% (depending upon the specific scenario) over the cases of not using any CPFs. It was found in this work that for typical cases where the number of jobs is much larger than the number of vehicles in the company fleet, the greatest benefit from CPF use would be in the cases where there are some significant job to job differences with respect to chassis usage.

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Describe Implementation of Research Outcomes (or why not implemented): *Place any photos here*	
Impacts/Benefits of Implementation (actual, not anticipated):	
Web Links • Reports • Project website	https://ncst.ucdavis.edu/project/dynamic-scheduling-of-chassis-movements-with-chassis-processing-facilities-in-the-loop/ https://escholarship.org/uc/item/1gt9w6wc