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Project Information Form

Project Title:	Analysis and Optimization Methods for Centralized Processing of Chassis
University:	California State University, Long Beach
Principal Investigator:	Anastasios Chassiakos
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Funding Source(s) and Amounts Provided (by each agency or organization):	USDOT – $98,725.00
Total Project Cost:	$98,725.00
Agency ID or Contract Number:	DTRT13-G-UTC29 CSULB-DOT-206
Start and End Dates:	January 1, 2016 – February 28, 2017
Brief Description of Research Project:	The twin ports of Long Beach (POLB) and Los Angeles (POLA), consisting of fourteen individually gated terminals, combine to create the largest container port complex in the United States. In 2015, the combined ports handled 15.4 million 20-foot equivalent units (TEUs), a 56% increase since 2000, and it's expected to grow higher in the future. This large number of containers and the associated trips to/from the ports, result in traffic congestion, noise pollution, and greenhouse gas emissions in the vicinity of the ports. This project studies the concept of "Centralized Processing of Chassis", and the possibility of using it to mitigate some of these problems. This concept revolves around an off-dock terminal (or several off-dock terminals), referred to as Chassis Processing Facilities (CPFs). A CPF is located close to the port, where trucks will go to exchange chassis, thereby reducing traffic at the marine terminals, resulting in reduced travel times and reduced congestion. This project develops the required analytical framework for the modeling and optimization of the CPF use. The developed analytical model is applied to a case study in the Los Angeles/Long Beach port area. The study identifies sixteen locations in the vicinity of the ports that can be potentially used as CPFs, and examines several scenarios of container pickup/drop-off transactions. The study presents comparisons between the case when chassis exchanges occur at the CPFs versus the case when chassis exchanges occur at the marine terminals. It is shown that a reduction of up to 20% in total travel time can be achieved when using the CPFs, as compared to using only the marine terminals. The study also shows that using up to three of the potential sixteen CPFs will have significant improvements to total travel time, but using more than three CPFs will have insignificant additional benefits. Moreover, a discrete event simulation model is developed and used for detailed simulation

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	scenarios, as well as for examining and evaluating the performance of heuristic methods.
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/analysis-and-optimization-methods-for-centralized-processing-of-chassis/