**In-Use Emissions Testing and Fuel Usage Profile of On-Road Heavy-Duty Vehicles**

Cavan McCaffery, cmcca006@ucr.edu, Hanwei Zhu, hzhu035@ucr.edu, Jiacheng Yang, jyang055@ucr.edu, Kent C. Johnson, kjohnson@cert.ucr.edu, Georgios Karavalakis gkaraval@cert.ucr.edu, George Scora (gscora@cert.ucr.edu), Kanok Boriboonsomsin (kanok@cert.ucr.edu), Thomas D. Durbin, durbin@cert.ucr.edu, Michael Sabisch (Michael.Sabisch@erg.com), Carl Fulper (Fulper.Carlr@epa.gov), and Adewale Oshinuga, aoshinuga@aqmd.gov.

Air quality is a critical factor in human health, and achieving air quality goals remains a challenge in many California areas. Heavy-duty diesel vehicles (HDDVs) and heavy-duty diesel engines (HDDEs) are the largest sources of NOx emissions, which is one of the most critical pollutants in terms of meeting air quality standards. Considerable progress has been made in reducing NOx emissions from HDDVs, particularly with the introduction of selective catalytic reduction (SCR) aftertreatment that became widely implemented in 2010 for on-highway vehicles. Although SCR technologies provide important NOx reductions, there is still uncertainty as to how effective these technologies are under a wide range of in-use driving conditions.

The study represents one of the most extensive studies of HDDV emissions to date. The testing includes 200 PAMS, 100 PEMS tests, 60 chassis dynamometer tests, and 10 real-world tests with a mobile trailer conducted in conjunction by UCR and WVU. The test matrix includes vehicles from vocations including transit buses, school buses, refuse trucks, delivery trucks, and goods movement trucks fueled with a combination of alternative fuels, conventional and alternative diesel fuels, and dual fuels. In addition to the emissions testing, a technology assessment will be performed to evaluate the technology impact, issues, improvement, and benefits. A comparison will be made between the in-use emissions measurements and emissions estimates obtained from the EMFAC model. This presentation will provide an overview of the results to date for this study.