**Activity data of off-road engines in construction**

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Off-road diesel equipment represents one of the most important sources of emissions in California, and a key area where NOx and PM reductions are needed to meet air quality standards. Construction and agricultural equipment is estimated to contribute about 8% of the NOx emissions in the State in 2016, and this relative contribution is expected to increase as emissions continue to decline from on-road heavy-duty vehicles. Understanding the contribution of the off-road diesel engines to the emissions inventory is critical to developing effective regulations for the off-road sector, and in evaluating what emissions control strategies are needed. For this, it is important understand the activity patterns for off-road equipment that can be used to accurately portray their in-use operation. Although some studies of off-road construction activity have been conducted over the years, the available data for off-road equipment is still considerably more limited compared to on-road mobiles sources. Additionally, the activity estimates being used in the current version of the OFFROAD model are based on survey data from before 2010, with much of that data not being specific to California fleets.

The objective of this study is to collect and analyze activity data from a comprehensive array of equipment types and engine power ratings for construction equipment, and potentially later extending the collection to agricultural equipment. For this study, activity measurements will be made from at least 10 pieces of equipment, representing a range of horsepowers, for a range of 10 different equipment types. The data will be analyzed to provide summary statistics, including number of engine starts per day and distribution of soak times, as well as statistics and distributions of durations, load factors, and exhaust temperatures for each vocational use. This poster will provide an overview of the key of this study, and update on the progress of the study, and preliminary results, as available.