

SPATIAL APPLICABILITY OF EMISSION FACTORS FOR MODELING MOBILE EMISSIONS

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ABSTRACT. Driving cycles are used to create mobile emission factors. Emission factors are, in turn, used to estimate mobile source inventories, provide standards for new vehicle emissions testing, and facilitate comparisons of laboratory experiments. This study examines the spatial representativeness of the driving cycles underlying California's CO, THC, and NO_x emission rates that are applied when estimating regional mobile emissions inventories. Sixteen randomly selected light-duty vehicles were tested on a laboratory dynamometer using driving cycles representative of driving in different cities. A total 214 tests, with repetitions, representing six driving cycles, were conducted on the 16 light-duty vehicles. We used a random effects analysis of variance to statistically examine differences in the resulting emission rates. The study results suggest that California mobile source pollutant inventories prepared using emission rates based on the standard drive cycle may be off by as much as 30% for regions where traffic congestion and roadway networks differ significantly from that of Los Angeles.