

CONFORMITY: HOW VMT-SPEED DISTRIBUTIONS CAN AFFECT MOBILE EMISSION INVENTORIES

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Abstract.

Transportation conformity requires that transportation modeling be integrated with air quality modeling. Consequently, every change to either modeling process is undertaken with great scrutiny by the regional governments, who have to use the models for demonstrating conformity. This paper explores the “trip versus link debate,” which stems from the fact that the standard travel demand models used by most metropolitan planning organizations are primarily link oriented, while the air quality models have been primarily trip oriented. Using the Sacramento region we examine the effects on mobile source emissions inventories when speed-VMT distributions are constructed using the trip and link-based philosophies. The results of our study indicate that trip-based VMT-speed distributions produce consistently lower emissions estimates than the link-based distributions. We use the results to assert that deciding between a trip-based or link-based conformity modeling process involves more than the technical difficulty of the change or the potential political ramifications, it involves assessing which method will provide the most accurate estimates of regional motor vehicle emissions. We also examine ways to think about constructing mobile source emission inventories.