

MODAL VEHICLE EMISSIONS AND INDUCED TRAVEL DEMAND**R.B. Noland, M.A. Quddus***Centre For Transport Studies, Imperial College London, London, UK*

One of the major debates in transport and air quality policy has been whether adding road capacity leads to reductions in vehicle emissions. Many have argued that if an expansion of road capacity reduces congestion and stop and go traffic, then total emissions will decrease. This effect occurs primarily from changes in driving behaviour, such as reductions in accelerations and less idling. Measurements of tailpipe emissions have confirmed that hard accelerations do cause a large spike in emissions. The other argument is that increased road capacity will induce new travel. While the complexities of the demand response can be fairly detailed, if new trips are generated this will clearly lead to increased cold start emissions. The key policy question is at what point will the inducement of traffic eliminate any emissions reductions from the road expansion. These effects cannot be measured by conventional emissions modelling procedures (such as the Mobile model or the UK DMRB model) which use average speeds derived from a specified driving cycle. This research uses the recently developed CMEM modal emissions model in combination with a traffic microsimulation model to estimate these effects for a number of generically defined networks. Our procedure is to determine at what level of induced travel any emissions benefits from a capacity expansion may be lost. We also use conventional modelling procedures, in this case the UK DMRB procedure, to evaluate whether it can pick up these same differences in our generic networks.