能源消耗模式與氣體排放模式之建構與應用

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摘要

Due to the development of industry and commerce, the transportation demand increases dramatically. According to Energy Statistics Annual Report of Bureau of Energy, Ministry of Economic Affairs in Taiwan, the percentage of energy consumption of transportation has reached 13% (the second highest) in total energy consumption. The increasing demand of oil will worsen the air pollution problem.

In the process of assessing energy consumption and emission reduction, we have to collect enough information to prove the performance of traffic network under different traffic management strategies. The traffic data could be obtained by models and simulations. How to establish a suitable estimation model is an important issue. This research constructs an estimation model and provides adequate information to assess the traffic management strategies of energy consumption and emission reduction.

In this research, we focus on the estimation of energy consumption and emission under traffic management. Two estimation methods, including link-based estimation method and trip-based estimation method, are proposed to compute energy consumption and emission. Numerical experiments are conducted to analyze traffic management strategies by these two models. There are three scenarios in the experiments, including the scenario under real time information provision, adaptive signal control, and the scenario under variable message signs provision.

關鍵字：Energy Consumption, Emission, DynaTAIWAN