Accounting for AV/CV in Long-Range Plans Using Current Travel Models

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Even with the most optimistic forecasts, the impact of autonomous vehicles and connected vehicles (AV/CV) is not easily quantifiable. Long-range travel demand models have long been the tool used to document system deficiencies and to test alternative systems (e.g., rail) and enhancements (e.g., additional highway lanes). Travel demand models are calibrated to matched observed behavior –using surveys and traffic counts- and are carried forward into the future. Public reactions to AV/CV technology have yet to be observed and the widespread market penetration has yet to be realized or even initiated. However, the horizon for many of these innovations within the public domain may be realized within the typical 20 to 30 year planning period of most metropolitan transportation plans (MTPs). Forecasting travel demand in an autonomous vehicle environment and potential impacts to available capacity, mobility, and legacy systems is difficult at best using current modeling conventions. However, the transformative potential of AV/CV technologies is possibly significant by improving the efficiency, reliability and safety of personal travel. Therefore, how do Metropolitan Planning Organizations (MPOs) attempt to address and acknowledge these impacts using current tools, without significant, expensive and time consuming investment and upgrades to existing tool sets, to support the development of upcoming long-range transportation plans?

The Texas Department of Transportation (TxDOT) attempts to answer these questions to support long-range plan development in the state and the possible inclusion of AV/CV scenario planning. Research project 0-6848, *Transportation Planning Implications of Automated/Connected Vehicles*, tested six different scenarios in an effort to study the long range implications of AV/CV technology and quantify the potential impacts to vehicle miles of travel, travel time speeds and delay. The project used the current Capital Area (Austin, Texas) travel demand model to develop approaches that could be adopted in the state, including 3-step models for small-to-medium sized MPOs.   The presentation will describe and identify the challenges associated with using current demand models and will offer potential options that could be easily implemented throughout the state - using current tools. Ultimately, the project is directed at developing a common system by which Texas MPOs can use to study the impacts of these technologies on demand in a scenario planning context using existing long range planning models.