

Breakout Session 06: Planning-Level Capacity Adjustments for CAVs: The Future is Now

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Session Focus

For transportation planning agencies, the future is now. As agencies prepare for a future that will include connected and automated vehicles, there is an immediate need for answers to the following questions:

- How wide should roadways be built to accommodate future traffic demand?
- How will connected and automated vehicles affect the capacity of roadways?

This session provided a summary of current research and points of view from several perspectives. It included presenters from the planning community, the TRB Committee on Highway Capacity and Quality of Service and researchers from the U.S. and Europe who are looking into the roadway capacity implications of CAV's. A focus of the session was a status report on pooled-fund research sponsored by the Oregon to provide planning-level capacity adjustments for CAV's. Attendees were able to hear initial results of this study and provide comments to the researchers. The session also included discussion of potential future research in this area including a current research problem statement to determine procedural changes in the Highway Capacity Manual to accommodate CAV's.

Session Summary

Following is a summary of key points:

- Planning for Metropolitan Transportation Plans and major transportation corridors usually has a horizon of 20 to 25 years.
- Therefore, transportation planners need to make estimates now on the capacity implications of CAV's (if any) for up to 25 years in the future.

- We learned that organizations such as the Institute of Transportation Engineers and the American Planning Association are forming partnerships to address this issue and related concerns.
- Researchers from the CoEXist project in Europe and at the University of California – Berkeley are using simulation to estimate the capacity effects of CAV's.
- Research is currently underway sponsored by the Oregon DOT to address the broader issue of the capacity effects of CAV's on all roadway facility types.
- Our researchers pointed to the potential for significant incremental (but not dramatic) increases in capacity assuming relatively high levels of market penetration of CAV's.
- However, for vehicles that are automated but not connected, lower capacities can be expected than are currently achieved by human drivers.
- Although much of the previous research has focused on basic freeway segments with no on ramps and off ramps, locations with on and off ramps are the most complicated to study and have the largest capacity constraints.

Suggested Action Items

- Capacity increases have been shown to be the greatest on roadways with 100% CAV market penetration. Should we set aside CAV-only roadways?
- Additional research is needed for unusual roadway conditions such as a high occurrence of heavy trucks.
- The TRB Highway Capacity Committee has developed a research problem statement to provide structural changes in the Highway Capacity Manual to incorporate CAV's into the manual.
- The operational algorithms used by CAV's will have important implications on the increase (or decrease) in capacity. Is it time for highway capacity analysts to discuss this situation with developers of CAV operating algorithms?