

Benefits of Intent-sharing for platooning

Toyota Motor North America

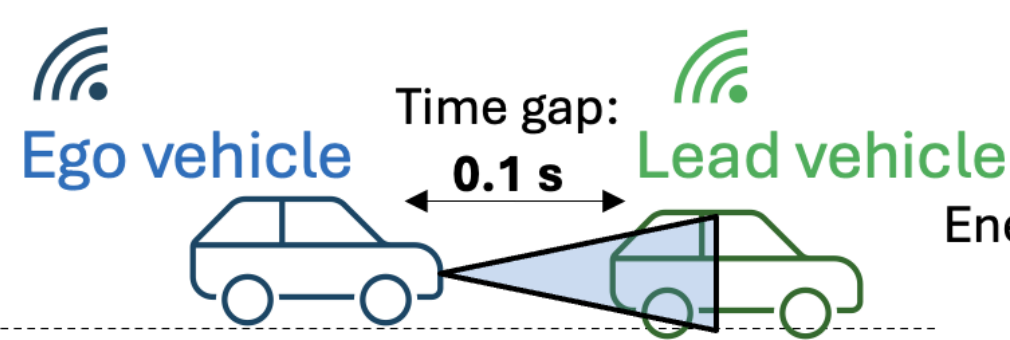


Goal

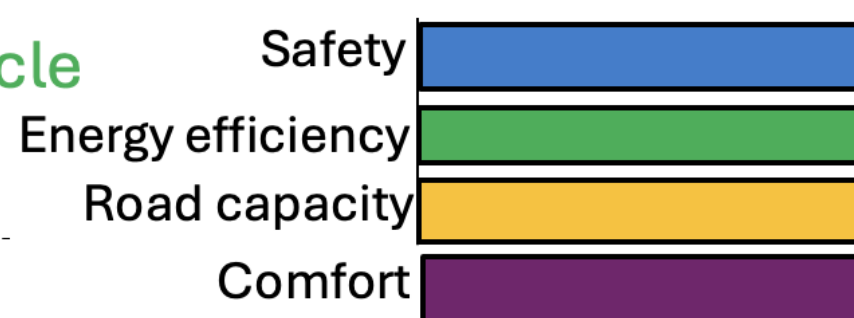
Leveraging intent-sharing communication for **small-time gap** platooning to improve **energy efficiency** and **road capacity**

Vision

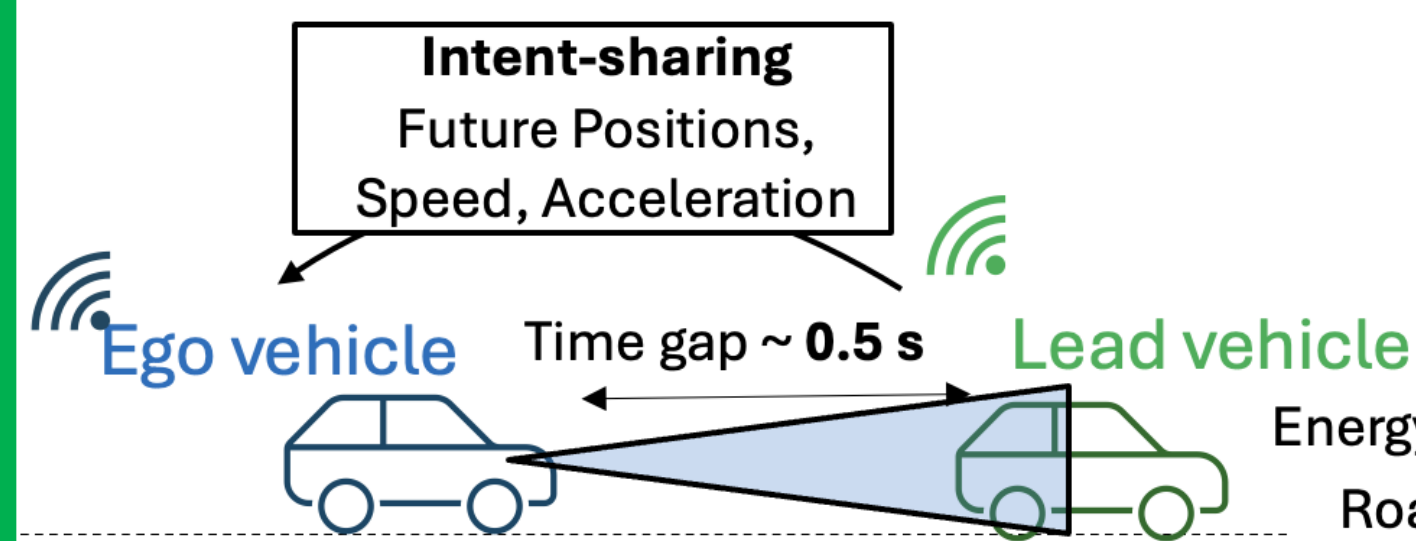
Ideal



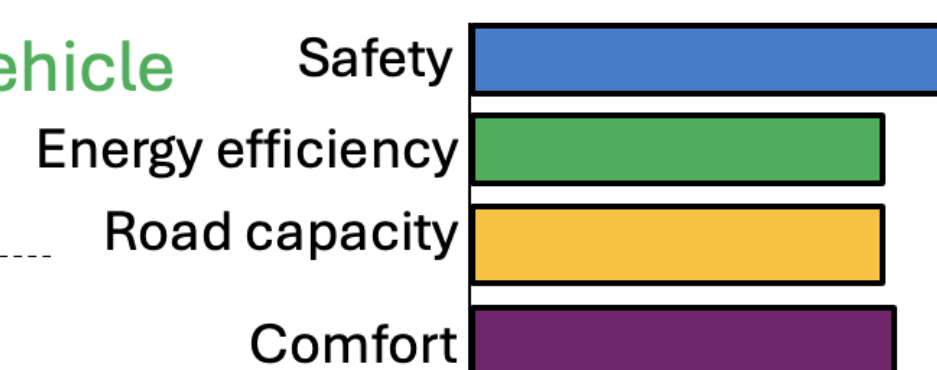
Benefits



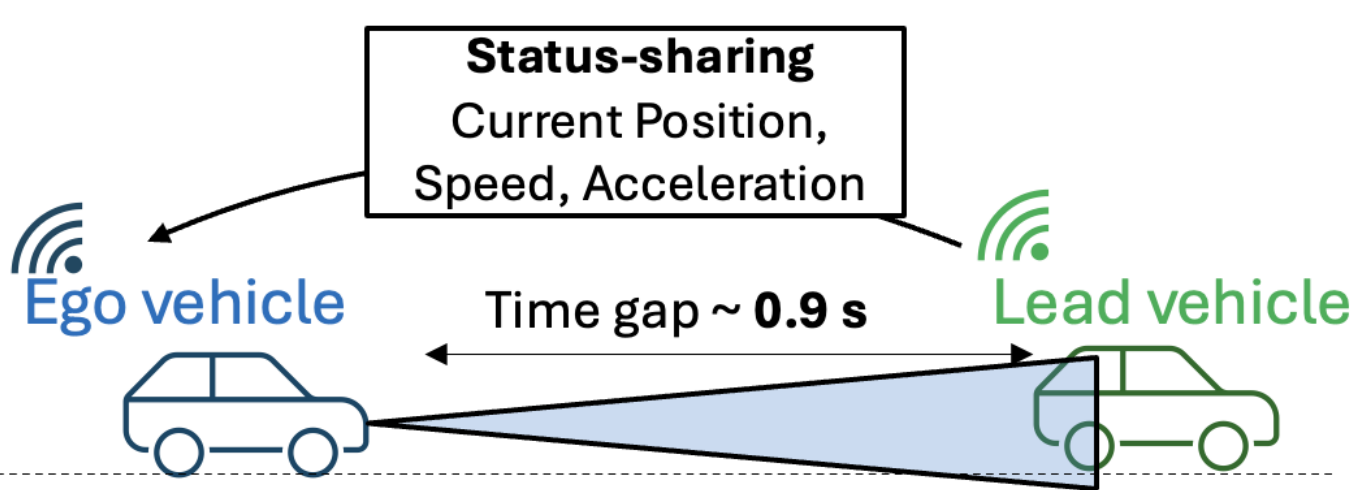
Our approach: Intent-based platooning



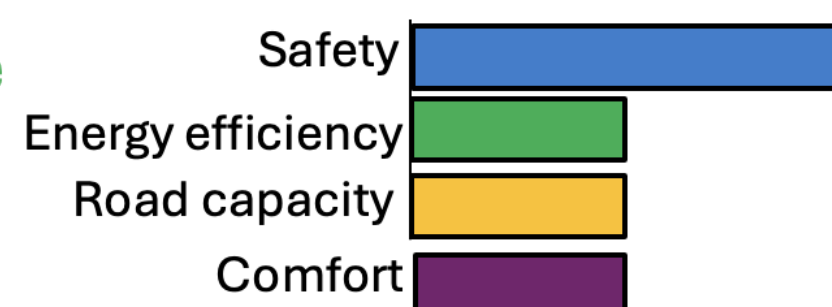
Benefits



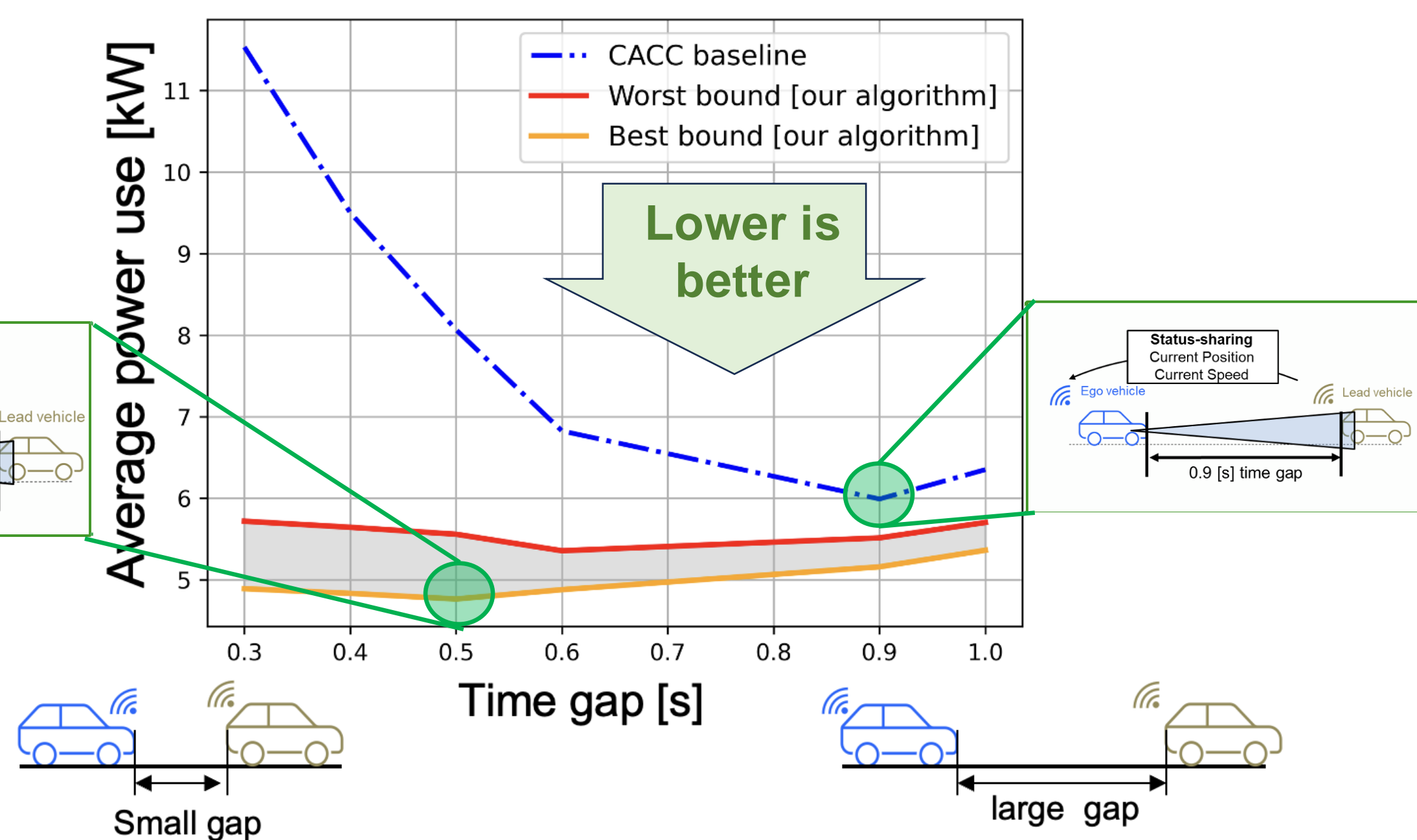
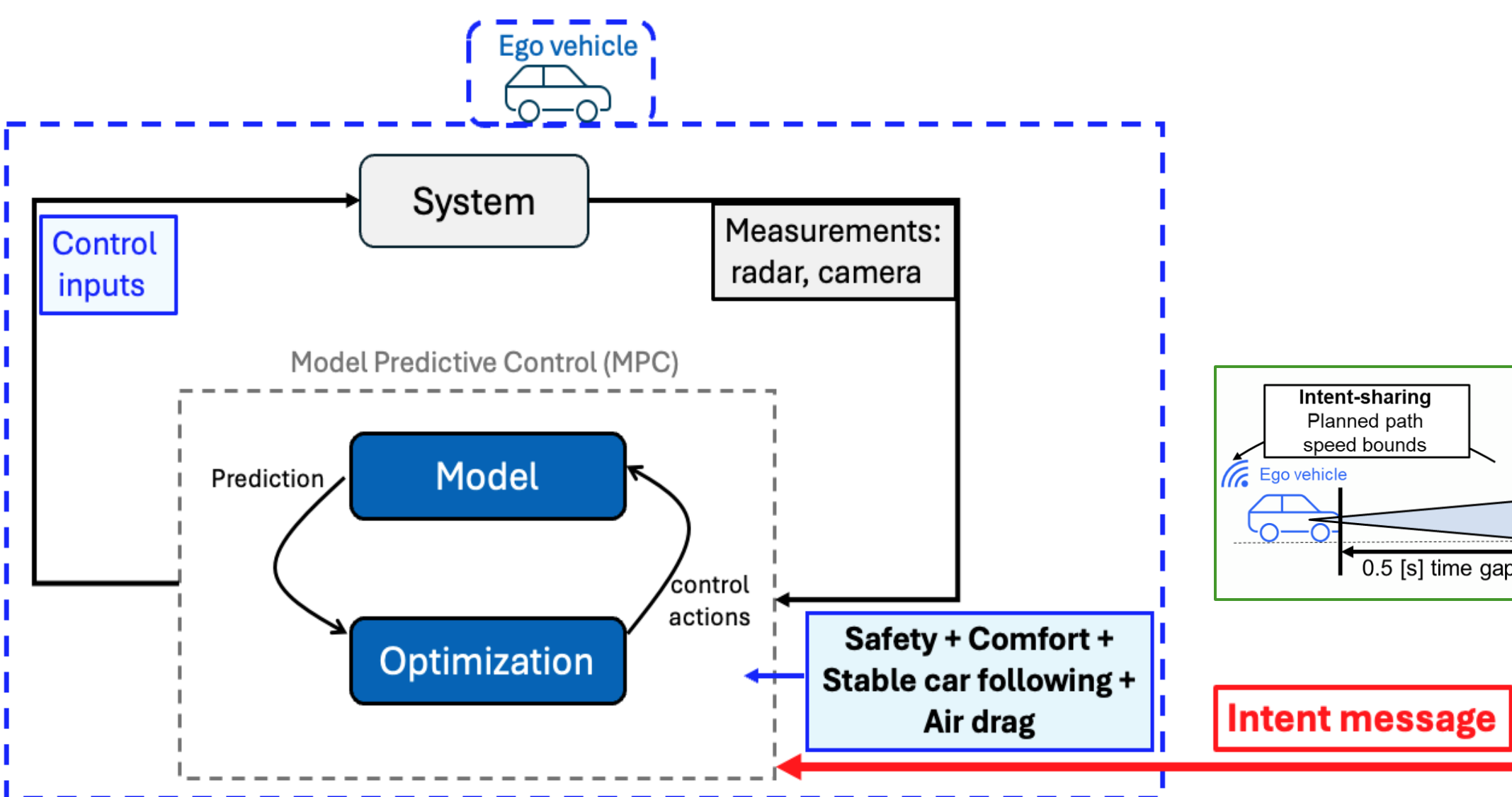
Cooperative Adaptive Cruise Control (CACC)



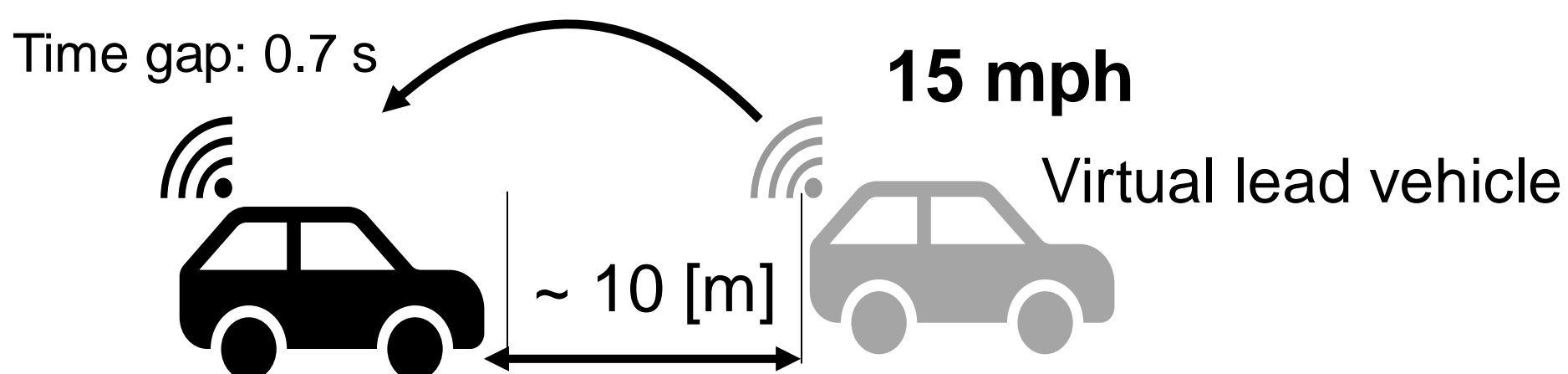
Benefits



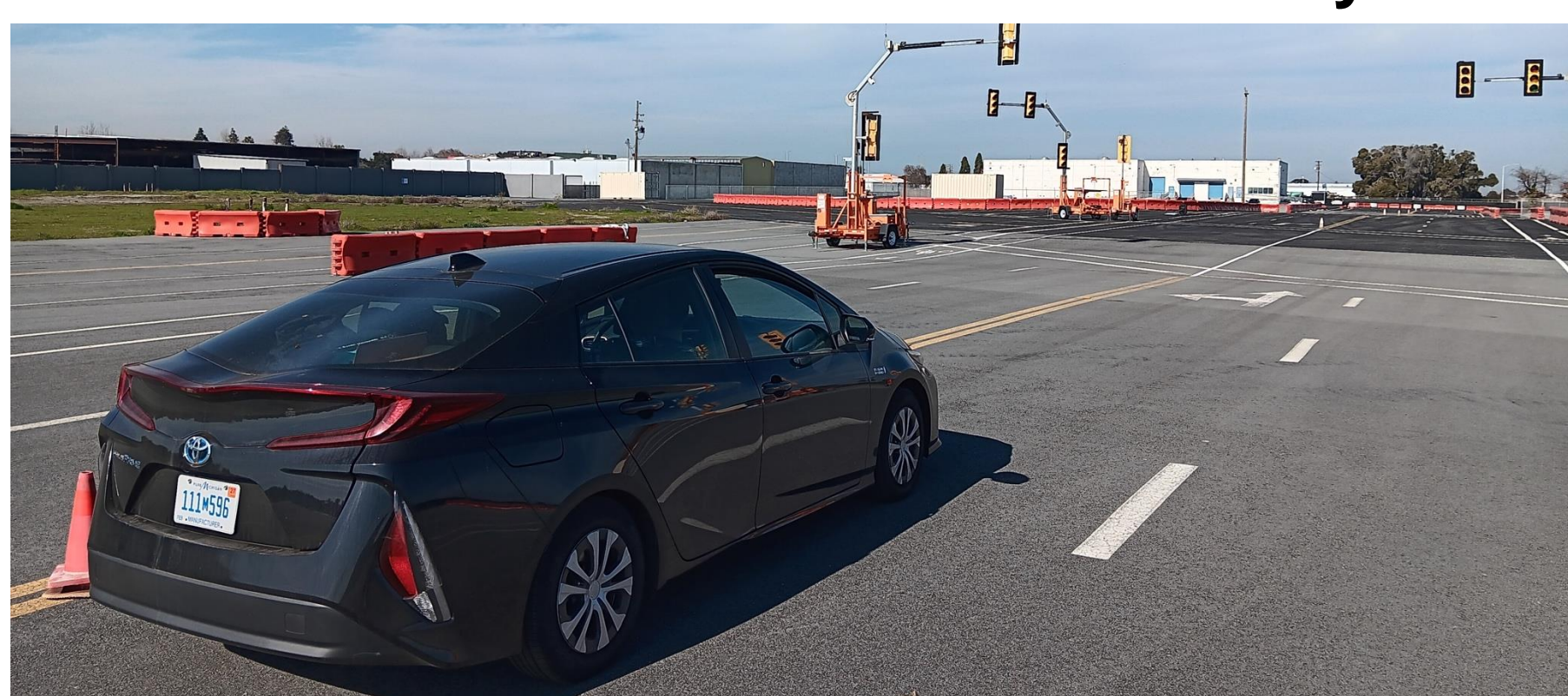
Framework and simulation results based on highway data (NGSIM)



Test set up

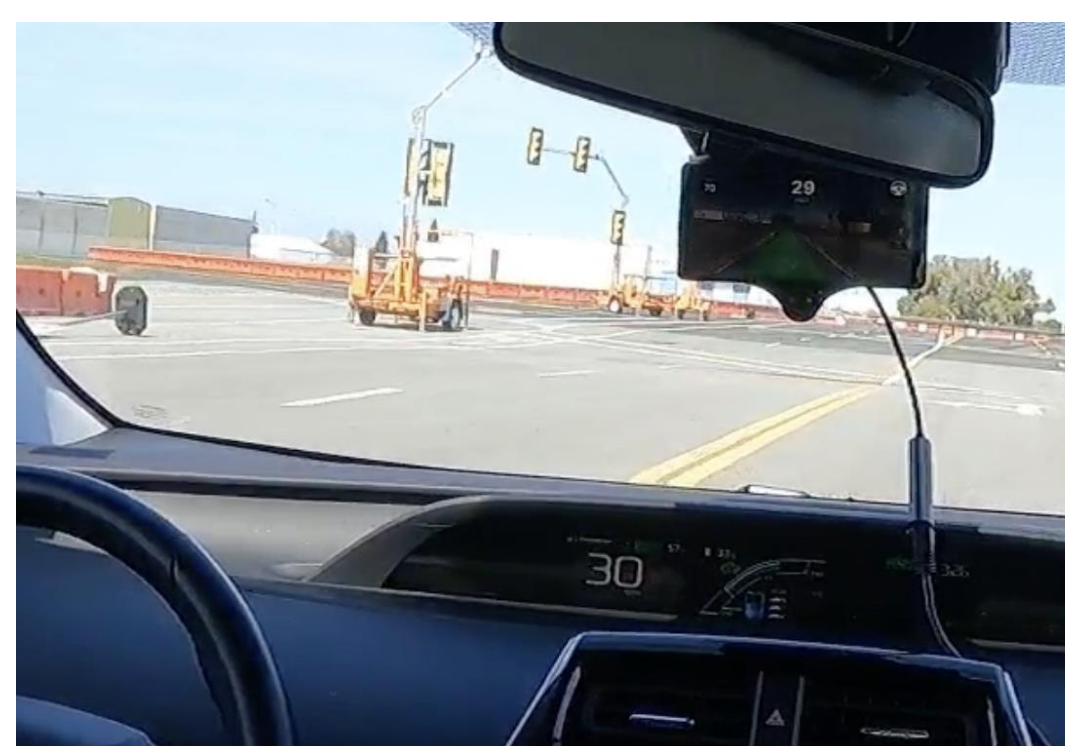


Our test vehicle at closed test facility



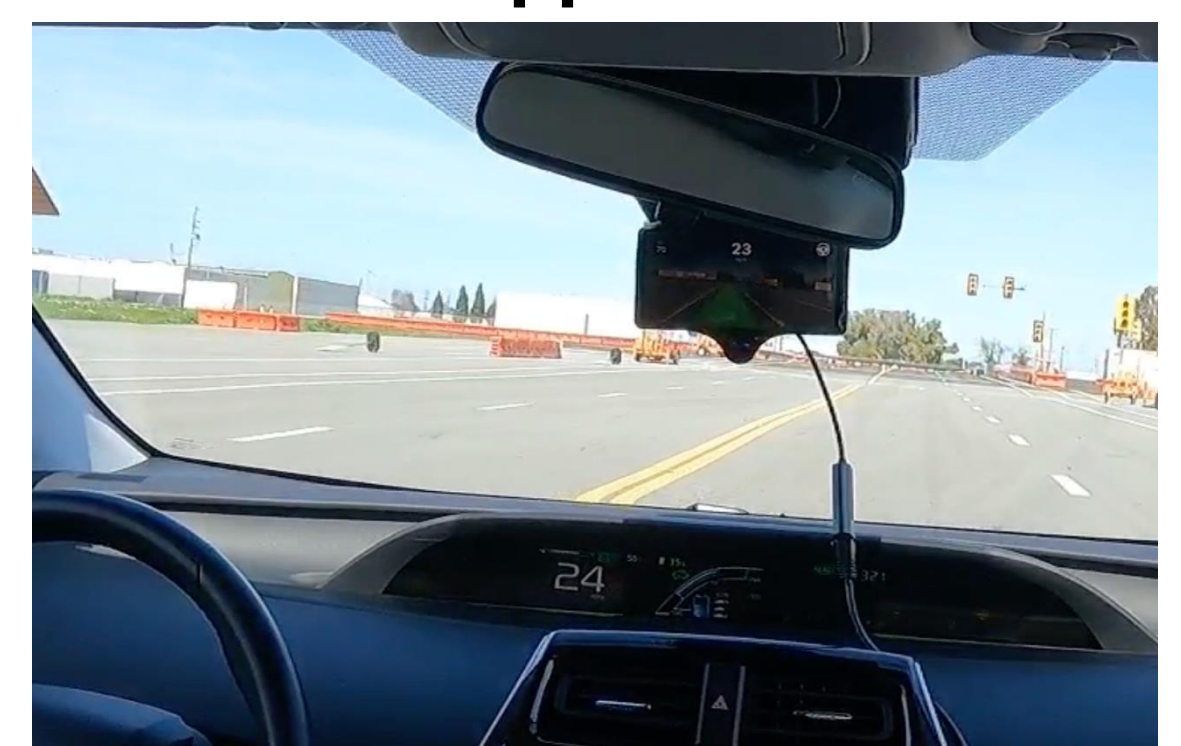
Test Results

Baseline CACC



Speed overshoot: 30 [mph]
Powertrain
power consumption: 78.6 (kW)

Our approach



Speed overshoot: 24 [mph]
Powertrain
power consumption: 62.1 (kW)

Energy improvement: 20.5 %