

## Research project:

Developing and Testing an ECO-Cooperative Adaptive Cruise Control System for Buses

## What's the issue?

As anyone who has been stuck behind a bus at an intersection knows, they are slow to accelerate, and traffic backs up behind them. Due to their weight and size, buses have poor fuel efficiency, especially in stop and go conditions.



## What did the research discover?

The ECO-Cooperative Adaptive Cruise Control System (Eco-CACC) imparts information to bus drivers so that buses can traverse the intersection without stopping. Using field data

gathered from the Blacksburg, Virginia, transit system, the researchers at Virginia Tech calibrated models and developed the system by incorporating bus-specific vehicle dynamic and energy consumption models. The Eco-CACC system has manual and automated modes to control buses. The manual Eco-CACC mode was tested by participants using driving simulators at Morgan State University in different scenarios. The researchers had designed similar systems for cars and light-duty vehicles that were successful, and this system worked equally well for buses. The test results demonstrated that the proposed system could improve transit operations by reducing delay and helping transit agencies save on energy costs, resulting in an improved transit level of service, increased ridership, and improved traffic mobility.

## How can I implement this?

Well, you can't just yet. The system is still in the testing phase, and more connected infrastructure to communicate with drivers will be needed, but in the future buses likely will be equipped with such a system.

## Learn more:

[https://www.morgan.edu/school\\_of\\_engineering/research\\_centers/urban\\_mobility\\_and\\_equity\\_center/research/completed\\_research/eco-cooperative\\_adaptive\\_cruise\\_control.html](https://www.morgan.edu/school_of_engineering/research_centers/urban_mobility_and_equity_center/research/completed_research/eco-cooperative_adaptive_cruise_control.html)

The Urban Mobility & Equity Center is a federally funded research consortium led by Morgan State University and includes the University of Maryland and Virginia Tech. [www.morgan.edu/umec](http://www.morgan.edu/umec)