

# Cooperative Intelligent Transport Initiative

## About the CITI project

Cooperative Intelligent Transport Systems (C-ITS) allow vehicles to communicate with each other and infrastructure such as traffic signals, that are also fitted with the same system. Drivers can receive alerts about upcoming hazards and traffic signal information. The technology is also referred to as 'connected vehicles'.

## CITI

Transport for NSW has established Australia's first C-ITS testing facility, known as the Cooperative Intelligent Transport Initiative (CITI). So far, CITI has equipped with C-ITS:

- up to 60 trucks
- 11 public buses
- 2 light vehicles and 1 motorcycle
- 3 signalised intersections, broadcasting signal phase information to C-ITS equipped vehicles
- 1 portable roadside unit broadcasting speed limit information to C-ITS equipped vehicles
- 3 portable roadside units receiving and collecting data from C-ITS equipped vehicles.

### How C-ITS works

The C-ITS device sends and receives information to and from other equipped vehicles and infrastructure 10 times a second. It uses that information to determine if a crash is likely, based on comparing its own location, direction and speed to those of the other vehicles. Drivers can be warned of risks on the road ahead, over the crests of hills or around bends. International C-ITS trials have indicated these systems can improve safety.

### Purpose of the initiative

CITI provides an environment:

- that allows testing, research and development in an Australian C-ITS setting.
- where hardware and software developers can test their systems.
- that offers a diverse set of locations, including remote, mountainous and industrial areas and a mixture of freeway and suburban roads.
- to build knowledge and experience in the deployment and maintenance of C-ITS in Australia.
- to conduct research into the benefits and challenges of C-ITS in Australia.

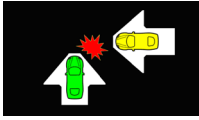


## CITI testbed location

CITI is based in the Illawarra region of NSW, with a particular focus on vehicles travelling to Wollongong and Port Kembla. Transport for NSW holds a licence from the Australian Communications and Media Authority to broadcast on the 5.9GHz radio spectrum in the Illawarra and Sydney.

## Safety alerts

Participating drivers receive the following alert messages on an audio-visual display:



intersection collision shows threat from left or right



harsh braking ahead acts as “electronic brake light”



red light alert when light is red or amber



speed limit information provides heavy vehicle speed limit

More alerts may be added as the project progresses.

A set of Human Machine Interface (HMI) design guidelines were developed together with the Monash University Accident Research Centre (MUARC). These guidelines help ensure the way alerts are presented to the driver maximises positive behaviour changes and minimises any unintended negative effects.

## Future CITI research

Phase 2 of the CITI project is now underway. CITI has been expanded to include up to 50 light passenger vehicles. An additional five signalised intersections will be equipped with C-ITS devices.

## Further information

Email: [CITI.Support@transport.nsw.gov.au](mailto:CITI.Support@transport.nsw.gov.au)

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