The Challenges of Implementing Side Traffic Activated Rural Speeds (STARS)

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Abstract

One of the highest risk areas on rural roads is intersections, particularly where smaller side roads intersect with main roads. To find a low cost, effective treatment for high speed intersections Safe System Road Infrastructure Program is piloting Side Traffic Activated Rural Speeds (STARS) which is based on the Rural Intersection Activated Warning Signs (RIAWS) program that operates in New Zealand. Three intersections at Wahring, Yalca and Barnawatha have been selected for the Victorian-first trial and were switched on in December 2017. This article outlines the challenges that were identified and the practical solutions developed to overcome these challenges.

Background

One of the highest risk areas on rural roads is intersections, particularly where smaller side roads intersect with main roads. The speed at which a vehicle approaches and enters an intersection has a significant effect on crash likelihood and severity.

To find a low cost, effective treatment for high speed intersections Safe System Road Infrastructure Program is piloting Side Traffic Activated Rural Speeds (STARS). This treatment is based on the Rural Intersection Activated Warning Signs (RIAWS) program that operates in New Zealand. Vehicles approaching the intersections trigger an electronic speed limit sign on the main road, reducing the speed limit by 30km/h. This reduced speed limit will be active for as long as there are vehicles waiting to enter or cross the main road.

In early 2017 three intersections in rural north east Victoria were identified as good sites for the pilot. These are located in Wahring, Barnawartha and Yalca. Each intersection is unique, and was deliberately selected based on factors such as crash statistics and traffic volumes to ensure the pilot can be assessed under multiple conditions.

Problem statement

After visiting each site with a concept design in mind, it was clear that implementation would not be as simple as expected. Each site had its own set of challenges but some of the common ones were power supply, vegetation, and sign placement.

Another issue that arose at all three sites was that vehicles were not all necessarily travelling over the pavement where the loops were to be installed. At many of these rural roads there are gravel shoulders and vehicles often cut corners. In addition, there was also a challenge related to the pavement quality and use of detector loops.

Developed Solution

The Wahring site had a pre-existing mains power connection, but the Yalca system is fully solar powered, while Barnawartha uses a combination of solar and wind. Location of the electronic signs was driven by a combination of factors, from the location of the power source to minimise voltage drop, to visibility due to vegetation and site geometry. At all three sites safety barrier was installed to protect at least one of assets from nuisance hits.

Multi-loop detectors were installed at some sites to ensure that vehicles would be detected. On the side roads in-ground detector loops were chosen to deactivate the system by registering vehicle departure. At Yalca the pavement was already in poor condition at the intersection and there were concerns installation of the detectors would cause it to fail. Alternative detection systems were not viable, however so far there has been no sign of deterioration as a result of installing the loops.

Conclusion

These challenges were overcome and installation of the first pilot were completed in December 2017, with an evaluation conducted in mid 2018. Learnings from the initial pilot sites will be used to select and deliver a wider trial in Victoria, and further roll out of the treatment if successful.