

VicRoads

Electronic braking and stability control system eliminates rollovers

Rollovers before:

40 a year (average 2006-2009)

Rollovers after:

Nil (B-doubles, where technology fitted)

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PROGRAM**

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Case Study:

***EBS with stability control stops rollovers
in logging industry***

Key Outcomes:

- The introduction of Electronic Braking Systems with stability control has virtually eliminated truck and trailer rollovers in key areas of the Victorian logging industry
- Since the safety system was introduced as a condition of access permits for forestry heavy vehicles, no vehicle fitted with the system has rolled
- Demonstrating the value of new safety systems dramatically reduces resistance, and can result in industry advocates who become proponents for change
- Consulting industry as part of the introduction of new technology helps drive acceptance and ensures relevant regulations are introduced
- Involving technical experts who can talk to operators 'in their own language' helps engage industry with change

Synopsis:

Introducing Electronic Braking Systems with stability control in key Victorian logging areas has eliminated rollovers. While opposed by an industry over-represented in rollover statistics, the success of the safety system has turned opponents into advocates and driven widespread adoption of the technology.

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An Integrated Approach

Victorian transport authority VicRoads plays a substantial and varied role in improving road safety in Victoria. For example, it has a history of funding and operating community road safety councils, delivering education programs for school children, and supporting development and implementation of road safety campaigns.

VicRoads plays a key role in heavy vehicle safety through permit systems that control vehicle access to specific areas. Road safety is a governing principle in many of the permit conditions the authority imposes.

Requiring the installation of the safety technology on B-double trailer configurations has virtually eliminated rollovers...resulting in widespread industry acceptance and installation of the system.

This case study will focus on one of the conditions that VicRoads has introduced as part of access permits for heavy vehicles operating in many Victorian forests and that has delivered outstanding safety results: Electronic Braking Systems (EBS) with stability control. Requiring the installation of the safety technology on B-double trailer configurations operating in specific areas has virtually eliminated rollovers, which were occurring with alarming regularity previously, resulting in widespread industry acceptance and installation of the system.

Combined with existing heavy vehicle safety initiatives, such as the Heavy Vehicle Rollover Prevention Program and a Code of Behaviour for drivers, this initiative reflects an integrated and comprehensive Safe Systems approach to road safety, with a particular emphasis on safe vehicles, safe road use and safe speed elements.

Time to Take Action

Truck and trailer rollovers were occurring with alarming frequency in Victoria in the mid-2000s, across industries and vehicle configurations, including fuel and other tankers, concrete mixers and logging vehicles.

Anecdotal evidence suggested one particular industry was over-represented in the number of rollovers – logging. Between 2006 and 2009, the primary trailer manufacturer and repairer servicing operators in the Black Spur logging area east of Melbourne, for example, had repaired about 40 damaged trailers each year. Logging trailers' high centre of gravity, which makes them more susceptible to a rollover, was combining with driver behaviour, including speed and uneven loads, to be the main causes of rollovers.

In response, VicRoads had already begun rolling out a Heavy Vehicle Rollover Prevention Program. The program focussed on driver behaviour and educating drivers about safe practices. While it was gaining traction, the program's effectiveness rested on its ability to engage industry and translate education into action: if driver behaviour does not change then you will not reduce rollovers.

Coincidentally, the development of a new trailer configuration that improved productivity for the logging industry presented an opportunity for VicRoads to address rollovers in the industry and, by taking a safe vehicles approach, go beyond driver behaviour in eliminating rollovers.

While agreeing to approve forest access permits for the new trailer configuration for 23m B-doubles – a long first trailer and short second trailer, reversing the traditional configuration – VicRoads took the opportunity to make installation of an Electronic Braking System with stability control on trailers an access condition for forest permits.

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Industry Resistance

Not surprisingly, VicRoads' decision was met with resistance from the industry. Operators opposed the cost and inconvenience of having to fit the technology, while drivers believed it would interfere with driving practices, particularly on approach to inclines.

While never backing down from its commitment to mandate the safety system, the first step in its introduction was VicRoads hosting meetings to discuss the technology with logging operators. Russell Greenland (Manager, Transport Safety Services at VicRoads) advocated the benefits, explained the system and also educated operators about the causes of rollovers, including: drivers not knowing the trailer will roll until it's already happened and the influence of centre of gravity. For example, a 'slosh' factor when carting liquids causes the centre of gravity to constantly change as the load moves.

The proposed new permit conditions were clearly outlined, with companies operating B-double vehicles in specific Victorian logging areas told that to have permits approved they would need to fit EBS with rollover stability to trailers within 12 months and update their trucks to also include electronic braking systems within five years. The shorter timeframe for trailers reflected that they were easier to retrofit than prime movers, with the intention being that trucks would be upgraded as part of natural fleet turnover.

Feedback from follow-up meetings showed installing the technology on trucks was of more concern than trailers. VicRoads reconsidered the five year timeframe for prime movers in light of industry feedback and the impending introduction of the National Heavy Vehicle Regulator, which would take over responsibility for heavy vehicle safety. EBS with stability control technology also delivers significantly more safety benefits in trailers than prime movers because in a rollover, the trailer usually rolls first. With all these factors in mind, VicRoads removed its proposed permit access condition to update prime movers.

Instant Success

The introduction of electronic braking with stability control on trailers was an instant success: it has eliminated rollovers in key Victorian logging areas involving B-double configurations. The technology eliminates driver error by braking individual wheels when sensors detect the trailer is not in a 'controlled situation,' such as if wheels are off the ground or locked up.

The system's effectiveness converted industry resistance into support, with 'early adopters' becoming advocates for the system. Over time, operators also began introducing EBS with stability control across their fleet, beyond heavy vehicles that were subject to access permit conditions.

Logging contractors have since contacted VicRoads acknowledging the preventive value of the system, indicating they had 'got their money back' from the initial outlay.

While small numbers of rollovers continued on semi-trailers that were outside VicRoads' permit jurisdiction, no vehicles fitted with EBS with stability control have rolled. Logging industry figures consistently tracking about 40 rollovers a year were reduced to eight semi-trailer rollovers and no B-double rollovers in the year following the introduction of the safety system.

While eliminating B-double rollovers had achieved VicRoads' primary goal of improving operator, driver and community safety, the introduction of EBS with stability control also resulted in massive productivity gains for the logging industry.

While it costs \$4000 to fit the system to one trailer, rollovers come with a much greater cost to companies. Trailers involved in a rollover are usually 'off the road' for several weeks, causing severe productivity losses, and rollovers can increase the cost of insurance premiums.

So the initial cost investment of \$4000 may save more than \$40,000 from a rollover if EBS with stability control was activated. Logging contractors have since contacted VicRoads acknowledging the preventive value of the system, indicating they had 'got their money back' from the initial outlay.

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Industry Feedback

"With younger drivers in particular, I feel it gives you some real security – peace of mind that if someone does have a hiccup, the system will help them out"

"I'm very impressed with it, and I've told people that if I had a multiple heavy vehicle fleet with drivers I would have it on every truck"

"As for cost-effectiveness, if you don't roll over that's a big saving because the costs of tipping over are horrendous – your downtime, your insurance premiums, and the safety issue, of course."



Industry Acceptance

The acceptance of the system by logging operators it applies to has been as swift as their initial opposition was fierce. Operators now see the cost as a small price to pay for preventing rollovers, and the peace of mind that the technology brings. While it has changed the way drivers operate vehicles, particular on approaches to inclines, operators contacted for feedback as part of this case study said they adjusted to the system very quickly.

Logging contractor Mick Brady, who operates MJ&MJ Brady Pty Ltd and has worked in the logging industry for two decades, wishes the system had been introduced earlier. He has experienced a low-speed rollover first-hand, due to a top-heavy load, and is convinced the rollover would have been prevented if the trailer had EBS with stability control fitted.

Typical of the industry, Mick's initial reaction was 'who's going to pay for this?' Now he insists on having the system fitted to any new trailer the company purchases, regardless of whether it is required as part of permit or contract conditions. The technology provides peace of mind to operators, and is 'reasonably priced' considering the significant potential costs of a rollover.

"With younger drivers in particular, I feel it gives you some real security – peace of mind that if someone does have a hiccup, the system will help them out," Mick said.

Another logging industry veteran, Neal Morris, also believes the true value of the EBS with stability control system is the peace of mind it provides drivers and operators. It prevents potentially major downtime and insurance costs and drives significant benefits for driver safety.

It only took Neal, who operates Wesburn Transport, a week to get used to driving with the system, and he believes it 'tends to make you drive a lot smoother'.

"I'm very impressed with it, and I've told people that if I had a multiple heavy vehicle fleet with drivers I would have it on every truck," Neal said.

"As for cost-effectiveness, if you don't roll over that's a big saving because the costs of tipping over are horrendous – your downtime, your insurance premiums, and the safety issue, of course. "I do have a driver in my truck at night time and that's one thing I don't have to worry about."

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Beyond Expectation

EBS with stability control has been so successful in addressing rollovers in the Victorian logging industry, it has had significant flow-on benefits beyond original expectations. Many operators have gone further than the required conditions, insisting on installing the system across their fleets and on any new trailers, not just those subject to the access permit condition.

VicForests, which governs logging contracts in Victorian forests, has followed VicRoads' lead and is now insisting the technology is also installed on semi-trailers as a condition of contracts it awards. In this way, VicForests is using its sphere of influence to ensure and improve road safety. In fact, the authority considers it so important it is varying contract conditions to compensate operators for complying.

This means that before long virtually every trailer operating in Victorian logging areas will be fitted with EBS and rollover technology.

Operators outside the logging industry are also having it installed on their trailers. A leading Victorian trailer manufacturer, for example, has filled orders from as far away as Western Australia to install the system on semi-trailers for a non-logging transport company. None of those vehicles have rolled, and the trailer manufacturer believes operators across industries are realising the cost benefits of preventing rollovers. "As soon as a trailer is off the road for any length of time, it doesn't matter how much the system costs to install because the operator's not going to be making any income."

Overcoming Resistance – Lessons Learned

While the introduction of EBS with stability control on trailers was a safety initiative that the logging industry simply had to accept, VicRoads still went to significant lengths to engage industry and encourage compliance and acceptance:

- Regular industry meetings were held to explain the proposed system and its benefits, and to allow operators to provide feedback direct to the authority.
- While VicRoads made its commitment to introducing the safety system on trailers clear, the consultation process resulted in the high cost but low impact proposal for prime movers to be upgraded within five years being reconsidered. While this decision made practical sense, VicRoads' willingness to listen helped break down opposition towards the initiative.
- Having technical expertise on hand was another crucial factor in increasing the effectiveness of consultation. In this case Steve Anderton, a UK mechanic employed in VicRoads' compliance section, who had significant experience with European models that had EBS with stability control fitted, was able to talk to operators about the technology and answer questions from first-hand knowledge. Steve has subsequently joined WorkSafe as an inspector.
- Importantly, a leading local trailer manufacturer and repairer well known in the logging industry also supported the scheme, adding weight to arguments outlining its value.
- When introducing a system in the face of strong resistance, having a vehicle fitted out with the system, which allows operators to experience the system and learn how it works, is likely to lessen reluctance to change.

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Assistance for Industry

While the introduction of EBS with stability control addressed a specific issue in a particular industry, VicRoads has historically also played a key role across heavy vehicle safety.

The Heavy Vehicle Rollover Prevention Program, for example, provides organisations with information to run their own training and awareness presentations for staff. The presentation is an important part of understanding what causes crashes and how, by working together, they can be prevented.

VicRoads provides practical, relevant consulting services to industry groups, individual companies or owner operators with a range of heavy vehicle safety and compliance-related services, including implementation of the Heavy Vehicle Rollover Prevention Program and train-the-trainer sessions.

The program is also now available in a packaged eight part video series ideal for training, toolbox sessions and refreshers. Over 200,000 DVD packs have been ordered, with the program translated into four languages and delivered in 50 countries.

It won the Australian Freight Industry Award for Best Safety Program in 2011. The VicRoads Heavy Vehicle Rollover Prevention Program has resulted in significant crash reductions overall for companies, not just rollovers, and increases in productivity. For more information, visit vicroads.vic.gov.au/truckrollover.

The program is supported by other safety initiatives like a driver Code of Behaviour, which is enforced as another condition of access permits. The codes promote positive driver behaviour such as letting other vehicles pass, and communicating via the radio network to avoid two trucks meeting on tight switchback corners.

