Toll Group submission on "*Effective Fatigue Management*", National Transport Commission May 2019

Sarah Jones | General Manager Road Transport Safety and Compliance
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Purpose

To articulate Toll's perspective on the existing and potential legal framework for fatigue management in Australia

Introduction

With over 125 years' experience, Toll Group, proudly part of Japan Post, operates an extensive global logistics network across 1,200 locations in more than 50 countries. Our 40,000 employees provide a diverse range of transport and logistics solutions covering road, air, sea and rail to help our customers best meet their global supply chain needs.

Toll Group welcomes the opportunity to provide feedback on the second paper released as part of the Review into the Heavy Vehicle National Law (HVNL). The *Issues Paper* produced by the National Transport Commission (NTC) is comprehensive and considered and Toll is in broad agreement with its observations.

Our response to the 12 questions posed by the NTC is laid out in this paper. The main points are:

Findings

- There is a clear imperative to manage impairment by fatigue. But, as yet, an empirical test for impairment by fatigue does not exist. We need to be open to the possibility that a reliable, objective test may be available at some future time.
- In the absence of such a test, prevention and mitigation need to centre around sufficient restorative rest, fitness for duty and competence.
- Toll's data suggests that existing legal settings for continuous, stationary rest may be insufficient.
- Greater importance and emphasis needs to be placed on the central role of sleep in safety critical roles.
- We must continue de-stigmatising mental health issues and recognise the potential psychological and physical impacts of professional driving, including exposure to crashes, vehicular suicide and acting as a first responder.
- The fatigue "body of knowledge" has grown and changed since the NTC's *Fatigue Guidelines* (2007) and Western Australia's *Code of Practice* (2004) were released. Updated material is required and should be developed with industry involvement.
- Records related to work and rest should be corroborated against other evidence as this is a far better predictor of risk than nominal compliance with rules.
- Standard hours and the WA system do not sufficiently manage the risk associated with night-time driving.
- Outcomes-based rules should be placed in primary legislation while prescriptive rules belong in Regulations which can be revised more efficiently.
- Guidelines describing how outcomes can be met should be developed collaboratively with industry.
- Fatigue monitoring technology can supersede work and rest hour requirements.

Recommendations

1. We must rectify the impression in the HVNL that fatigue management training is only mandatory for drivers and schedulers enrolled in Basic Fatigue Management (BFM) and Advanced Fatigue Management (AFM).
2. Vehicles 4.5 tonne and above engaged in commercial enterprise should be subject to fatigue rules, as currently occurs in Western Australia.
3. Record keeping rules should be uniform and compliance tools like Electronic Work Diaries should be mandatory by 2025, regardless of radius from base and nature of task.
4. Offences related to record keeping must have a clear relationship to imminent risk or a demonstrated pattern of non-compliance. The record keeping offences with only a tenuous link to risk (commonly referred to as "administrative offences") should be removed from the statute.
5. Counting time rules should be revised to remove multiple, overlapping 24 hour periods.
6. Rather than rest being defined as "not work", we suggest that "work" be defined as "not rest". This will remove technical "loopholes" that exist in the current law.
7. Road transport requires fitness for duty standards such as exist in rail, maritime and aviation. The law should mandate fitness for duty standards similar to those in the rail, maritime and aviation sectors.
8. The most pressing need for rest areas on the network needs to be addressed as a matter of urgency.

9. Toll does not accept the inevitability of multiple state-based systems. A two-tiered system providing a prescriptive option and an outcomes-based, bespoke option can reflect and improve on the best features of the existing systems.

Question 1: How can we change our approach to fatigue management so we reduce fatigue-related incidents and deliver Australia's road transport task efficiently and safely?

The insoluble problem of fatigue management is that drivers and others are required to prevent driving while the driver is impaired by fatigue,[1] but there is currently no empirical test for impairment by fatigue. Unlike speeding or blood alcohol concentration fatigue, and the level of impairment it represents, cannot be measured. What's more, the persons who may be impaired by fatigue have a lowered capacity to recognise their own impairment.[2]

In the absence of an empirical test Toll Group's data suggests that for prevention and mitigation to be effective the law must centre around:

- Restorative rest;
- Enforcement and compliance;
- Fitness for duty; and
- Competence.

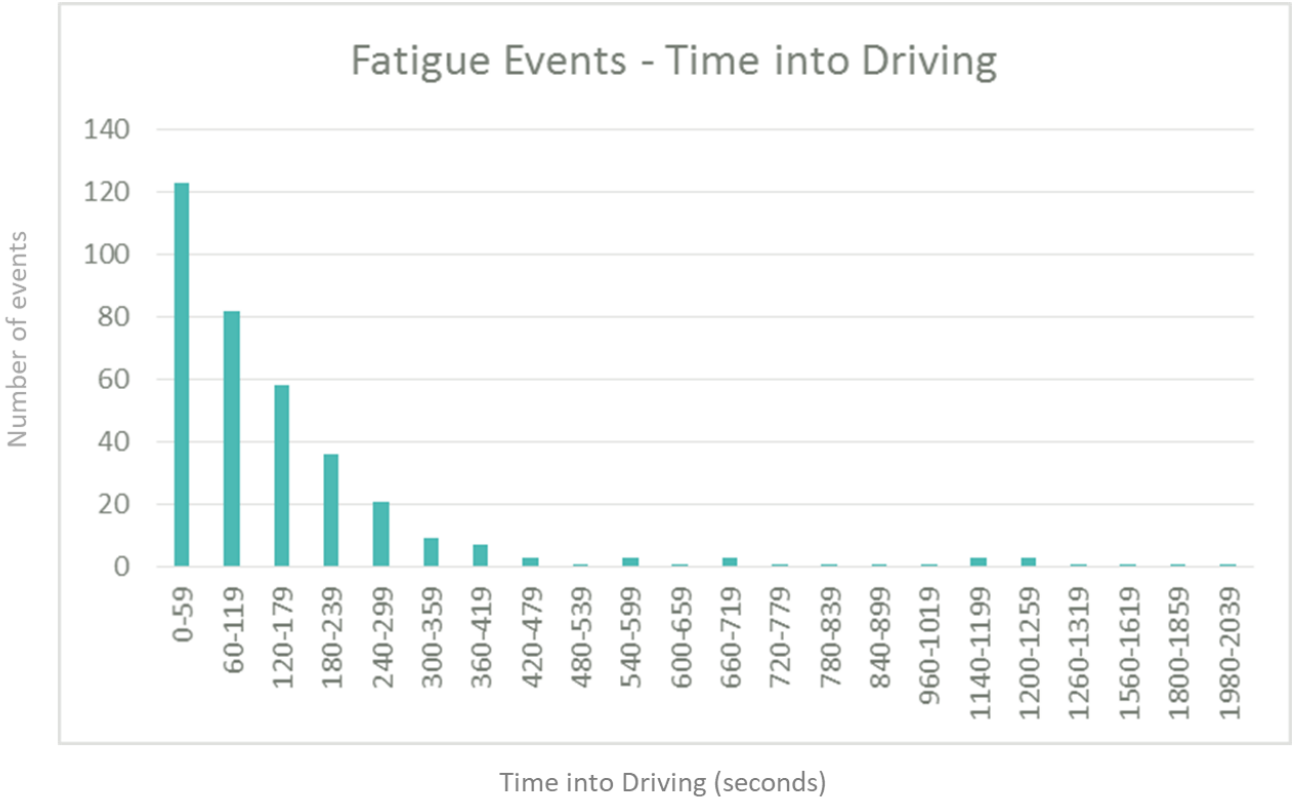
Restorative rest

Through the use of Driver State Sensing (DSS) technology Toll can detect evidence of impairment by fatigue. This evidence takes the form of increased blink rate, head-rolling and eye-closure all of which can presage micro-sleep. As indicated in chart 1 below, our data suggests that most of our fatigue-related incidents happen in the early part of the journey, or early part of a particular leg of the journey.

[1] In the Heavy Vehicle National Law this requirement is set out in sections 26c and 228. In the Western Australian law the requirement is inferred in r.3.130 OSH Regulations 1996 which requires that the driver's fitness for work must be established.

[2] "Fatigued people are unaware that they are not functioning as well or as safely as they would if they were not fatigued", National Transport Commission, *Guidelines for Managing Heavy Vehicle Driver Fatigue,* August 2007, p.6; "Importantly, fatigue impairs a driver's judgement of his or her own state of fatigue. This means the effective management of fatigue should not be the responsibility of the driver alone", Commission for Occupational Health and Safety, *Code of Practice: Fatigue Management for Commercial Vehicle Drivers,* 2004, p.5

Chart 1: Time into driving of fatigue events (Data from November 2018 to April 2019)



This suggests that, counter-intuitively, drivers experience fatigue in the early part of the shift or soon after a break rather than later in the shift or work period. Toll cannot definitively state why this is. We speculate that the minimum legislated hours of continuous, stationary rest may be insufficient for drivers to be rested and alert at the commencement of their shift or following a short or major rest break. Or, it may be that the breaks are sufficient but that drivers are not utilising them appropriately, i.e. prioritising sleep over other activities. Another possible explanation is are sleep lethargy (i.e. insufficient time to wake up before commencing the task).

The table below summarises the “sleep opportunities” available under the fatigue regimes in Australia.

Table 1: Sleep opportunities in the current regulatory framework

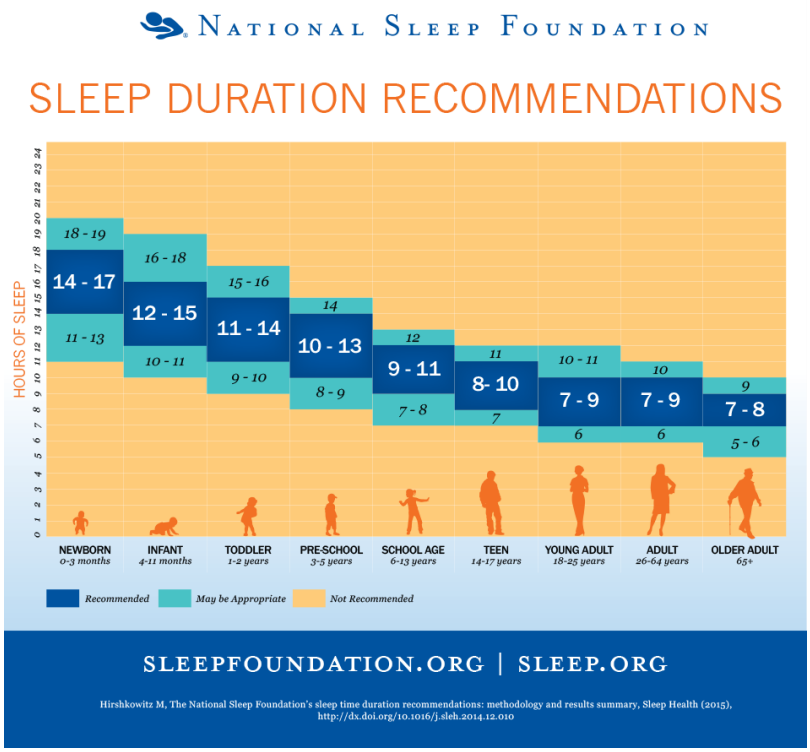
	HVNL			**WA**	**NT**
	Standard Hours	**BFM**	**AFM**		
Maximum hours of work in 24	12	14	17	17	18
Minimum hours of stationary rest in 24	12[3]	10	7	7 [for 2 days]	6
Minimum hours of continuous, stationary rest in 24	7	7	n/a	7	n/a

[3] It is actually technically possible to work 16.25 hours in 24 through working a ‘nose to tail’ shift though the practice is discouraged.

	HVNL			WA	NT
	Standard Hours	**BFM**	**AFM**		
Minimum rest in 72 hour period	n/a	n/a	n/a	27 [of which there must be at least 3 periods of at least 7 consecutive hours rest]	n/a
Minimum minutes that constitute 'rest'	15	15	n/a	30[4]	n/a
Maximum hours of work in 7 days (168 hours)	72	36 long/night work time	n/a	n/a	n/a

A seven hours rest opportunity does not equate to seven hours of sleep. When eating and ablutions are factored in, it is likely that the driver is actually sleeping for around five hours. This is much less than the recommended minimum of between seven to nine hours for the average human adult as shown in chart 2 below.[5]

Chart 2: National Sleep Foundation Sleep Duration Recommendations



It is worth noting that the data in chart 1 relates to Linehaul drivers who are scheduled for nine hours' continuous, stationary rest – as opposed to the legislated minimum of seven – and still we are seeing fatigue events in the early part of the journey/leg of the journey.

A person regularly receiving six hours sleep a night is vulnerable to chronic sleep deprivation. Research suggests that such individuals experience performance decrements consistent with persons

[4] Additionally, WA rules require that for every five hours of work time, breaks from driving totalling at least 20 minutes be taken. This is not counted as 'rest' but as 'work'.

[5] https://www.sleepfoundation.org/excessive-sleepiness/support/how-much-sleep-do-we-really-need

that are acutely sleep deprived.[6] However, unlike the latter population the chronically sleep deprived have an unrealistic appraisal of how they are actually performing.

Toll recommends that consideration be given to extending minimum, continuous hours of stationary rest in the new law. Relatedly, we suggest that rather than rest being defined as - effectively - "not work", it makes more sense for "work" to be defined as "not rest".[7] As the NTC points out, the current definition of work as being "in relation to the heavy vehicle" allows technical, but unsafe, loopholes. Toll experienced a fatality in 2015 involving a subcontractor that permitted a driver to engage in a two-up task after eight hours of yard-work on the grounds that the yard-work was not "in relation to the heavy vehicle". If the obligation was on sufficient rest, rather than work, this could potentially have been avoided. Similarly, technicalities such as "public road or road related area" in the HVNL and the definition of commercial vehicle driver in Western Australia would be unimportant.[8]

Fitness for Duty

The HVNL and the Western Australian law make it clear that fatigue must be managed *regardless* of whether the cause arises at work. This creates a potential tension between "personal time" and "work time". Operators cannot force drivers to sleep, to exercise, eat well, meditate or any of the myriad things that improve health and fitness for duty. However, more can be done to emphasise the central role of sleep (and the principles of good health more generally) in safety critical roles. We attach a copy of one of our recent internal newsletters as an example of how we communicate such information.

The law would benefit from being more explicit about what constitutes fitness for duty, recognising that it incorporates restorative rest but goes beyond it to include medical fitness, wellbeing and "headspace".

As Toll pointed out in its submission on Regulatory Approaches, we have concerns that the absence of fitness for duty standards in road transport is having a negative effect on driver health and wellbeing. Around 12% of the on-road and driver fatalities that involve Toll are caused by non-work related issues.[9] These principally relate to drivers' cardiovascular health.

The approach to cardiovascular health in Assessing Fitness to Drive (AFTD) is limited in that it largely relies on driver self-report, does not include screening for diabetes or hyperlipidaemia, and does not include an ECG. This may account for why many drivers that die as a result of cardiovascular disease have no prior knowledge of the presence of the condition.[10]

The Australian Trucking Association has also been critical of AFTD on the grounds that it is insufficiently predictive in regards to sleep apnea,[11] which is correlated with on-road fatigue incidents. Our view is that the law should mandate fitness for duty standards similar to those in the rail, maritime and aviation sectors. Over the past two years Toll has worked with medical consultants to develop fitness for duty standards and is prepared to make these publicly available.

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[6] Carmel Harrington, "Chronic sleep deprivation and its connection with distraction", National Road Safety Partnership Program, 2018

[7] For example, "rest" could be defined as: (1) "continuous rest" – a period of time devoted to preparation for and actual sleep (2) "short rest" – a break from a sustained activity related to the driving and road transport task; attendance on bodily needs and "life administration".

[8] The WA law captures "commercial vehicle drivers" as follows: a person who drives a commercial vehicle in the course of work and whose work time is (a) more than 60 hours per week; or (b) for more than once per week – is more than 10 hours in any 24 hour period; or (c) for more than once per week – includes the period from midnight to 5am.

[9] Based on Toll internal data from 30 June 2007 to 6 February 2019

[10] Routley, Staines, Brennan et al, *Suicide and Natural Deaths in Road Traffic – Review,* MUARC, August 2003, p. 20

[11] See http://www.truck.net.au/advocacy/submissions/sleep-apnoea-test-submission

Competence

The current HVNL implies that training in fatigue management and associated skills such as counting time and effective management are required only for drivers and schedulers enrolled in Basic Fatigue Management (BFM) and Advanced Fatigue Management (AFM). It does this through the standards for BFM and BFM which stipulate training for drivers and schedulers.

Yet as the NTC's data shows, BFM and AFM account for a minority of the transport task by operator. The HVNL is silent on the competencies expected of drivers working to standard hours and those that schedule them.[12] The industry would benefit from updated, evidence-based guidelines on fatigue management, especially considering that the NTC's *Guidelines* were released in 2007 and the WA *Code of Practice* in 2004. The fatigue "body of knowledge" has grown and changed in the interim.

Enforcement and Compliance

There will always be operators in the system that repeatedly breach fatigue laws and seek to intentionally avoid detection by doctoring Written Work Diaries (WWD). A WWD may appear compliant, but bear little relation to the driver's actual activity.

For transport tasks that involve considerable driving time, Electronic Work Diaries (EWDs) are useful in that they indicate when drivers are driving and, therefore, not resting.[13] EWDs also take the "guess work" out of rules relating to work and rest and so are an important compliance tool for drivers. The immediacy with which they detect breaches has more impact than managers having to wait for drivers to return from trips to engage them on identified breaches. This can be a gap of ten days.

Introducing mandatory Electronic Work Diaries in Australia should be a focus of the Review into the HVNL given the significant productivity, safety and compliance benefits that come with them. EWDs were mandated in the European Union in 2006 and the United States in 2017. Canada has committed to make them mandatory in 2021. There are a range of studies that have found net benefits from EWDs including:

- A US study found that the introduction of EWDs could result in a 15.63 per cent reduction in crashes on average due to operators increasing their compliance with fatigue laws[14].
- A US analysis of the Electronic Logging Device (ELD) Mandate (US version of EWDs) found that drivers increased compliance with intentional violations declining by 43.0% for independent owner operators, and 46.9% for firms operating between two and six trucks[15.] The study did note that an unintentional consequence of mandatory ELDs was the propensity for drivers to speed which would need to be carefully managed in the Australian context.[16]
- The US Department of Transportation found that mandatory ELDs would result in an estimated net benefit of $844 million, reflecting $3.1 billion in benefits versus $2.3 billion in cost.[17]

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[12] Noting that s. 18 makes it clear that WHS takes precedence over the HVNL and requires people to be appropriately trained.

[13] Toll acknowledges that this is not the case for all transport tasks. Furniture removalists, for example, would often spend less time driving than loading and unloading.

[14] Operational Pilot of EWDs, NSW Transport Roads and Maritime Services https://roadsafety.transport.nsw.gov.au/downloads/electronic_work_diaries_oct2013.pdf

[15] Did the Electronic Logging Device Mandate Reduce Accidents? Michigan State University https://www.researchgate.net/publication/330425892_Did_the_Electronic_Logging_Device_Mandate_Reduce_Accidents

[16] Unlike the United States, the primary duty at 26C explicitly recognises the potential for "trade off" between speed and fatigue

[17] Regulatory Evaluation of ELD, US Department of Transportation https://www.dot.ny.gov/divisions/operating/osss/bus-

- In Canada a report commissioned by Transport Canada found that the present value of the net benefit of mandatory ELDs is approximately $288.0 million and $127.5 million under two take-up scenarios modeled. [18]

At Toll the administrative cost savings from transitioning to EWDs would be significant. Currently four administration officers process and audit Written Work Diaries across the Linehaul task.

To progress mandatory Electronic Work Diaries in Australia, the NHVR must educate and inform smaller operators of the benefits and address the disincentives created by the existing lack of "tolerance" parity.

Toll presented a paper to the Australian Trucking Association General Council meeting in July 2019 and the following motion was subsequently endorsed:

That the ATA General Council supports considering implementing mandatory technologies to manage fatigue (for example Electronic Work Diaries (EWDs)) by 2025, provided the following conditions are met:

- The successful implementation of practicable voluntary fatigue management technologies like EWDs.
- A further review and decision no later than mid-2020 following the release of the HVNL review policy paper.
- Regulatory changes in the policy paper, which are to be advocated by the ATA, including:
    - Laws that ensure parity between Written Work Diaries (WWDs), EWDs and compliance & enforcement policies. For example, introducing 15 minute tolerances rather than 1 minute currently in the law (HVNL, s 246A); and
    - Removing outdated legislative references, such as the reference to a driver having more than one EWD (s 326(2)(b)) given app and cloud based solutions could involve multiple devices.
    - Ensuring that enforcement agencies and police implement the NHVR's work diary and fatigue enforcement policies
    - Incentives for uptake to ensure adoption is low cost or cost neutral for small operators.
    - Ensuring compatibility between different devices and that data can be transferred without vendor lock in.

Question 2: What fatigue risks that are currently out of scope for the HVNL should be brought into scope? What is in scope that shouldn't be?

Toll believes that fatigue laws should be applied to all heavy vehicle drivers, not simply those that drive vehicles 12 tonne and above. Section 26C in the HVNL imposes the same risk management obligations for 4.5 tonne as for 12 tonne vehicles so the continued definition of "fatigue-regulated heavy vehicles" as only those 12 tonne and above makes little sense. The mass of any vehicle above 4.5 tonne poses a risk to drivers and other road users in the event of a rollover, single vehicle or multi-vehicle crash.

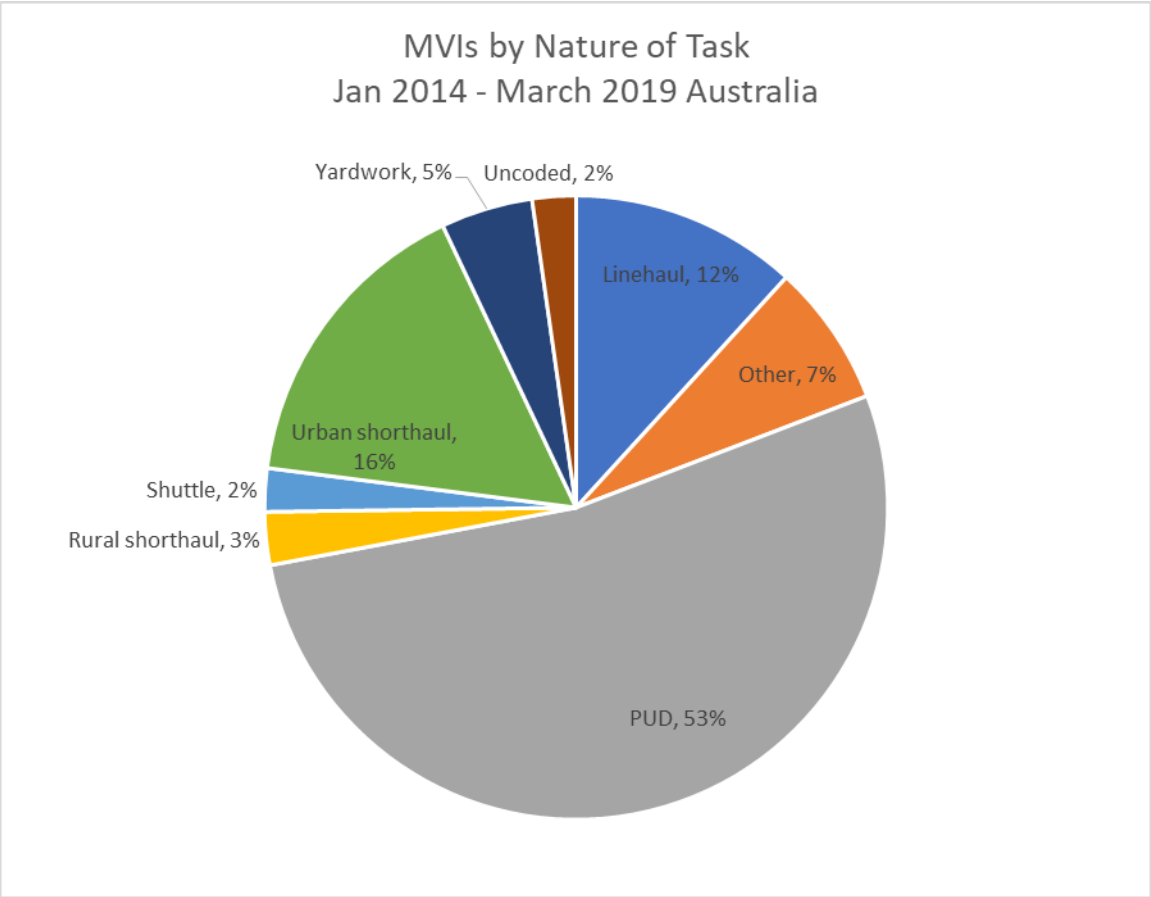
As shown in the chart 3 below, our experience suggests that motor vehicle incidents are a far more likely in aggregate terms for pick-up and delivery (PUD) than for Linehaul tasks. PUD activities are typically undertaken in smaller vehicles and over shorter distances than for Linehaul. The graph should be interpreted with caution, because it does not show frequency rates nor does it disaggregate

repository/Regulatory_Evaluation_of_Electronic_Logging_Devices_and_Hours_of_Service_Supporting_Documents_Final_Rule.pdf

[18]Transport Canada ELD for Commercial Drivers Cost Benefit Analysis http://www.obac.ca/sitespice/files/misc/ELD%20COST%20BENEFIT-English.pdf

fatigue as a causal factor in motor vehicle incidents from other factors. Nonetheless, we should be open to the possibility that fatigue risk is not appreciably different for drivers of 4.5 tonne and drivers of 12 tonne vehicles.

Chart 3: Motor Vehicle Incidents (MVIs) by Nature of Task



We recognise that expanding the scope of the vehicles captured by fatigue rules could inadvertently capture caravans and motorhomes. This can be managed by defining the transport task as one linked to commercial enterprise.

We also suggest that record keeping requirements should be uniform, regardless of nature of task or radius from base. Record keeping requirements should focus on evidence that drivers have sufficient opportunity for rest and are utilising those opportunities for sleep. In this sense, records of work are relevant to the extent that they indicate rest is not being taken, rather than being material in themselves. The record keeping offences with only a tenuous link to risk (commonly referred to as "administrative offences") should be removed from the statute. Instead, record keeping offences should focus on systematic non-compliance with rules and deliberate falsification of records to create an impression of compliance.

Toll Group requires that a sample of at least 50% of work records over a 28 day period be checked for compliance with the rules. This helps to identify where drivers do not understand the rules and where we have scheduling issues. However, we also require that a sample of 10% of trips per quarter be audited against corroborating evidence to confirm that the driver was in fact where they said they were. This exercise unearths a different profile to the driver who simply doesn't understand the rules or has made a mistake: it locates those that are deliberately falsifying records and therefore unlikely to share our commitment to safety. We recommend that the record keeping rules include a requirement to corroborate a proportion of rest/work records. EWDs can be important in this context.

Methods of counting time need to be simple and efficient. The current system whereby multiple 24-hour periods are created whenever a major rest break is taken has the perverse outcome of discouraging drivers from taking rest when they may need it. We have anecdotal evidence that drivers struggle to manage the contingencies created when multiple, overlapping 24-hour periods are in play

and so they don't take rest. Mandatory Electronic Work Diaries will improve driver understanding of multiple, overlapping 24-hour periods, however reform to reduce complexity is still required.

Question 3: What are the key risk factors associated with long hours, night shifts and other work schedule factors? How do we account for the fact that not all work hours have the same risk without introducing excessive complexity?

Working during the window of circadian low is commonly acknowledged to be the single-greatest influence on driver fatigue – more than on-duty duration or time on task.[19] Around 23% of Toll's on-road and driver fatalities occur between midnight and 5am. This is a risk that Toll cannot entirely control because it cannot influence the fatigue risk of other drivers on the road at this time.

The risk of working at night needs to be balanced against risk posed by traffic congestion, though as the NTI's modelling makes clear even when adjusted for freight volumes the risk of driving between midnight and 6am is over triple that of the daily average.[20]

Toll's view is that the current legal framework does not sufficiently manage the risks associated with night driving. Standard hours and the Western Australian system are entirely silent on night time driving restrictions, although the *Guidelines/Code of Practice* supporting both systems do reference the risk. Only Basic Fatigue Management explicitly controls night-time driving risk. Yet, as the NTC paper makes clear, only 5.14% of operators utilize this option. There is nothing to prevent a Standard Hours driver working the entirety of their available twelve hours at night without corresponding controls. Our view is that Standard Hours – or the prescriptive scheme that replaces it – should better manage risks associated with night work.

Question 4: How should a new HVNL address driver health and lifestyle factors? What kinds of controls could be effective?

In addition to our response to question 1, Toll makes the following observations:

As an industry, we need to approach fatigue more holistically as both a cause and effect. The interplay of fatigue, mental health and long-term health outcomes for truck drivers is becoming increasingly apparent.[21] A driver exposed to the long term effects of fatigue may be more vulnerable to physical *and* mental health decrements. Consistent with the obligations in the primary duties, we need to proactively address these decrements. Accordingly, Toll makes Chaplaincy and Employee Assistance Program services available to its drivers and other employees. We are actively building a culture that acknowledges the impact of mental health on safety performance and encourages disclosure. While Toll appreciates that it may not be feasible for smaller operators to supply similar resources they should be encouraged towards mental health facilities that exist in the wider community.

Drivers are vulnerable to the occupational hazards that come with professional driving, including exposure to crashes, vehicular suicide and being a first responder. These can be traumatic events, with lingering psychological and physical impacts. Smaller operators and their drivers may not be aware of the support that exists. For example, Western Australia funds Road Trauma Support WA through the Road Trauma Trust Account.[22] Road Trauma Support WA is a state-wide service assisting anyone affected by road trauma, regardless of when the incident occurred or what level of

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[19] Canadian Sleep Institute, *Development of a North-American Fatigue Management Program for Commercial Motor Carriers Phase II (Pilot Study),* January 2006, p. 4

[20] National Transport Insurance, *Major Accident Investigation Report: Covering Major Accidents in 2017,* 2019, p.21

[21] Garbarino, Guglielmi, Sannita et al "Sleep and mental health in truck drivers: descriptive review of the current evidence and proposal of strategies for primary prevention", *International Journal of Environmental Research and Public Health,* vol. 15, August 2018

[22] https://www.rtswa.org.au/about/

involvement the person had, direct or indirect. Counselling sessions are delivered free of charge and no referral is required. While not funded by infringement revenues, the new National Office of Road Safety could explore similar mental health support services.

Question 5: How do we ensure the HVNL is agile enough to adopt best practice fatigue management as it emerges? How do we encourage continuous improvement? Can training help?

Legal agility is best secured through a judicious mix of primary legislation, standards and Guidelines. Primary legislation is the place for high level outcomes and rules that are unlikely to be materially affected by technology, innovation or structural change in the near future. All other rules should be placed in Regulations as they can be adapted more efficiently.

Guidelines should be produced with examples of how outcomes can be achieved. Not being bound by parliamentary process such Guidelines can be produced relatively quickly and mirror technological advancement and industry best practice more closely than primary legislation.

Any such Guidelines must be developed co-operatively with industry. The model adopted by the National Road Safety Partnership Program for its safety case studies and thought leadership is a useful model.

Question 6: How can we better accommodate emerging technologies? How can the new HVNL get the best value from technology and data? Do you think monitoring technology can supersede work and rest hour requirements?

As argued throughout this submission, sufficient quality rest is key to successful fatigue management. The law needs to be open to technologies/devices that:

- Reliably measure sleep
- Empirically test for fitness for duty
- Are predictive of micro-sleep and other risks at the level of individual driver's bio-rhythms

Toll's view is that fatigue monitoring, prevention and prediction technology can effectively supersede the need for prescriptive hours of work and rest for some operators. As algorithms and future state artificial intelligence advances are made and interfaced with onboard systems, this could enable the driver to work for longer or shorter periods depending up the real time conditions.

There will always be a need for prescriptive hours of work and rest for smaller operators that may not have access to fatigue monitoring technology or the ability to test for fitness for duty. In these cases, and where the task is driving-centric, a mandatory Electronic Work Diary will be required to best manage fatigue and compliance.

While technology is important, and we should remain open to future possibilities, government cannot resile from its obligations to develop and maintain suitable rest areas. Drivers find themselves increasingly competing for suitable rest stops both with other truck drivers and leisure travellers. As a matter of urgency we must identify the critical gaps in rest bay infrastructure on the road network and take action to remedy them.

We also suggest that Vehicle Standard (Australian Design Rule 42/04 – General Safety Requirements) 2005 be reviewed to ensure that cabin design takes account of rest and wellbeing.

How can the new HVNL meet the needs of all Australian states and territories? What should the new HVNL adopt from Western Australia and the Northern Territory, other transport modes and other industries' fatigue management approaches?

Toll believes that with sufficient political will, a sound evidence base and some policy creativity a genuinely national approach to road transport regulation – including fatigue – is possible and desirable. The current system creates confusion for interstate operators who are bound by competing legal frameworks and is a disincentive for operators to expand beyond their state/territory boundaries.

Of the three existing fatigue regimes, Toll works within the HVNL and the WA system. Toll does not operate to the Northern Territory (NT) system because permitting drivers to work 18 hours in 24 (allowing a rest opportunity of only 6 hours) is contrary to the available evidence about restorative rest and fatigue management. Instead, Toll requires that NT operations be conducted as per WA rules (if operating between the NT and WA) or BFM (if operating entirely within the NT, or between the NT and the Eastern States).

Historically, Western Australia has resisted changes to its fatigue management system on the grounds that its geography necessitates driving very long distances and that "flexibility" works best for drivers and operators.

The 17 hour work opportunity in a 24 hour period[23] possible in WA has the advantage of flexibility. The WA system privileges common sense over hide-bound prescriptive rules and in this regard is very popular with drivers. For example, a driver who is nominally "out of hours" but only thirty minutes from home can travel to their home base without fear of enforcement penalty. This freedom to "choose the lesser of two evils" (in this case, between being grounded in a rest bay where quality of restorative rest may be poor and going beyond advisable limits to reach the comfort of home) is a strength of the WA system.

Toll also supports the mandatory nature of operator accreditation in Western Australia and, with it, the compulsory fatigue module. As noted earlier, we feel the WA approach of regulating drivers of vehicles 4.5 tonne and above is the right approach.

However, the industry and community must ask itself: because a driver can legally work 17 hours in 24 for two consecutive periods, should they? It is quite clear in the WA Code of Practice that working 17 hours in 24 was not intended to be the default scheduling position:

> *"…the flexibility provided for under the operating standard is designed to allow extended hours of work in well-managed circumstances. This should not be taken as support for regularly setting schedules at the upper limits of the regulations".*[24]

Seventeen hours was supposed to be the outlying option when no "lesser evils" were available or feasible. *This flexibility may have hardened into standard practice because of economic pressure, tight margins, insufficient/inadequate rest areas and competition.*

A driver who has worked 17 hours (albeit with breaks during the day) over a two day period would have a maximum 14-hour sleep opportunity in 48 hours. Once eating, social activity and ablutions are factored in the worker would skirt close to 12 hours' sleep in 48 hours which is one of the recognised high-risk zones for fatigue as follows:

- Workers face heightened fatigue risks where they have:
    - obtained less than 5 hours sleep in the previous 24 hours, or
    - obtained less than 12 hours sleep in the previous 48 hours, or
    - by shift end, been awake for a period exceeding their total sleep time in the previous 24 hours[25]

Data collected by the NTI for the 2015 year showed that 30% of fatigue-related incidents arising in losses of over $50,000 occurred in Western Australia, making it the worst performing of any state

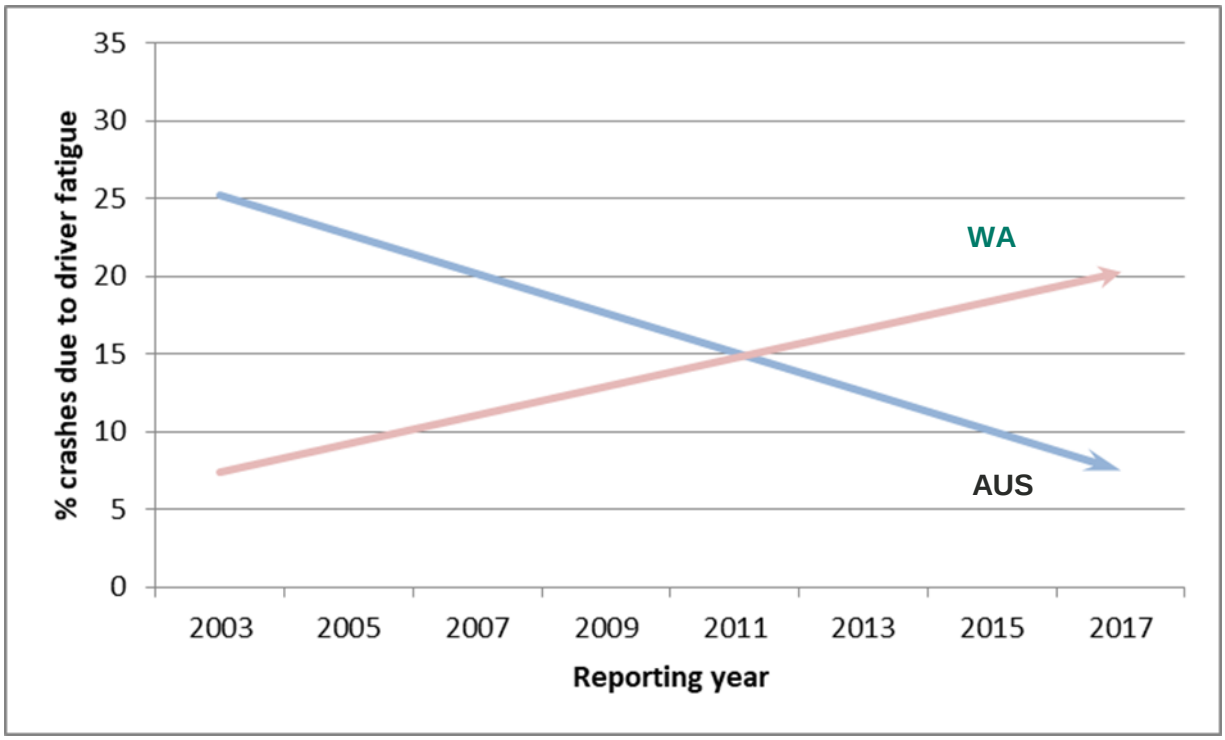
[23] It should be noted that the WA system prevents 17 hour shifts from being worked every day. For example, it is not possible to work three consecutive 17 hour shifts without violating the rule that requires at least 27 hours non-work time in any 72 hour period. There are also complicated rules around 144 hour and 168 hour rosters designed to ensure long rest opportunities.

[24] Commission for Occupational Health and Safety, *Code of Practice: Fatigue Management for Commercial Vehicle Drivers,* 2004, p.1

[25] Safety Institute of Australia, *Psychosocial Hazards: Fatigue,* April 2012, p.3

from a fatigue incident perspective in that year.[26] (It should be noted, however, that this may partly be a function of larger combinations with higher values and therefore higher losses in the WA fleet). In the 2017 data WA's relative performance improved, with NSW the worst-performing of the states. However, while the proportion of fatigue-related incidents is declining in the HVNL states it is increasing in WA as shown in chart 4 below.

Chart 4: Percentage of crashes caused by heavy vehicle driver fatigue: comparison between WA and the HVNL States[27]



Toll suggests that these figures are driven by the fact that WA does *not* have a requirement for "reasonable steps" or, more latterly, a primary obligation in their transport law to ensure "so far as is reasonably practicable" the safety of the transport task.[28] Therefore, there is not necessarily a motivation/incentivisation to utilize fatigue monitoring and prevention technologies.

Another key weakness in the WA approach is that there is no explicit obligation placed on customers and other members of the supply chain to manage fatigue. Customers receive all the benefits of flexibility and productivity in the WA system while bearing none of the obligations. This is odd when one considers that CoR obligations are in place for mass, dimension and load restraint in Western Australia. In fact, they are in place for *all* loads, not simply those carried on heavy vehicles.

In 2018 Toll Group conducted a thorough investigation of its WA interstate runs to see if reconfiguring the routes consistent with BFM hours was possible (i.e. 14 hours of work in a 15.5 hour shift). Of the 86 runs conducted, all bar 5 could be reconfigured to run at BFM through a mix of strategies including:

- commencing the trip earlier
- taking rest breaks at different times
- loading and unloading managed by parties other than the driver

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[26] NTI, *Major Accident Investigation Report*, 2017, p.25

[27] Andreas Blahous, National Heavy Vehicle Regulator, from NTI, *Major Accident Investigation Report*, 2019 data

[28] Toll applies the "ensure" test for safety of the transport task as per s.26C HVNL across all of its operations.

- rescheduling 3-day trips into 4-day trips
- redistributing work hours across trips
- adopting two-up driving
- utilizing customer facilities/amenities when unforeseen contingencies arise

In the 5 trips that could not be reconfigured to BFM hours it was because doing so created a secondary risk at least as great as that of working for 17 hours in 24 (e.g. shifts commencing in the window of circadian low and long rest breaks taken in places of minimal amenity and security). The point here is that trips that currently work to a 17 hour schedule can – in many if not most instances – be reconfigured to reduce the driver's fatigue risk. It simply takes will and a preparedness to challenge existing ways of doing things. Working to seventeen hours in twenty-four should only be done where it is the lesser of the present evils, *not* as standard practice simply because the law permits it. A two-tiered system of prescriptive and bespoke schemes should enable WA to sign up to the HVNL.

The final point we would make about the limitations of the WA system relates to enforcement. In a 2013 review by the National Transport Commission, Western Australia had by far the fewest percentage of total successful fatigue prosecutions over a 3 year period, *despite* their figures being inflated by three years' worth of extra data relative to the other states.[29] Since 2013, Toll is aware of one successful fatigue prosecution in Western Australia.[30]

There are two ways of interpreting the comparatively low fatigue prosecutions: that fatigue enforcement is limited compared to other states; or that non-compliance is rare because the rules are more conformable. Toll cannot definitively state which interpretation is the more correct. However, the NTC's findings are worth reproducing at some length because of what they suggest about the weakness of fatigue enforcement in WA:

"Currently, the OH&S law is enforced by WorkSafe inspectors. WorkSafe has two inspectors dedicated to fatigue offences in a geographical area 10 times the size of the UK. WorkSafe inspectors do ***not*** *have the authority under the Road Traffic Act 1974 to intercept vehicles for inspection, nor do they have the power to issue infringements. Instead, they can issue prohibition notices (which require drivers to cease activity for seven hours) and improvement notices (which require operators to improve their trip and rest records).*

The enforcement task is complicated by non-prescriptive record keeping regulations. There is no requirement within the regulations to maintain a logbook or trip diary; there is simply a requirement for the driving record to be 'set out in a clear and systematic manner'. The record is required to detail 'work time, breaks from driving, and non-work time' and be kept for a period of three years. The record could be written on the back of a receipt, and this would be considered a legitimate record of fatigue management. There is no requirement to complete the records in a timely manner or for the driver to complete the records. Rather, the regulations stipulate a 'responsible person'. The lack of standardised format complicates enforcement and makes it administratively burdensome.

Most heavy vehicle enforcement in Western Australia is handled by transport officers employed by Main Roads Western Australia (MRWA) or the Department of Transport. However, these officers have no authority under the Occupational Health and Safety Act 1984 to intercept a vehicle where the driver is suspected of breaching fatigue regulations. So the officers with jurisdiction over OH&S (WorkSafe inspectors) have no power to intercept heavy vehicles, while the

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[29] National Transport Commission, *Heavy Vehicle Compliance Review Consultation Draft,* September 2013, p. 76

[30] https://prosecutions.commerce.wa.gov.au/prosecutions/view/1465

officers with intercept powers have no jurisdiction over fatigue (other than in the context of reviewing fatigue records for accreditation purposes). In effect, this means that fatigue enforcement requires joint operations between WorkSafe and the MRWA, which can be challenging to coordinate. The enforcement challenges probably account for the comparatively low number of successful fatigue prosecutions in Western Australia compared with other states". [31]

Question 8: Are prescriptive rules desirable in a new HVNL? If so, how can we simplify rules in the HVNL to make them easier to understand so that they're easier to comply with?

Question 9: Would the compliance options described in section 4.5 be a more effective approach to regulating fatigue management? If so, what should be included in the HVNL, its subordinate documents, or elsewhere, such as in work health and safety laws? How would the appropriate fatigue management option be allocated to an operator – by self-selection or other means?

Question 10: should the new HVNL give operators the option of taking full responsibility for risk management? What would be the roles of the regulator and roadside enforcement in such a system?

We are bundling our response to questions 8, 9 and 10 as they are inter-related. Toll is supportive of exploring a two-tiered approach to fatigue management such as exists in aviation. Tier 1 would be prescriptive and feature clear, readily-understood rules, based on hard limits of work and rest. Tier 2 would be outcomes-based with the onus on operators to develop bespoke systems, based on reliable evidence and leveraging from technology, that meet those outcomes.

Compliance with Tier 1 would be demonstrated through road-side enforcement and supply chain investigation a while Tier 2 would require accreditation at entry and ongoing, regular reporting to the NHVR (or accrediting body) to an evidentiary standard.

A two-tiered system recognises the diversity of the industry and can provide equitable outcomes for small and large operators:

"Large firms working with complex technologies prefer, and can cope with, flexible goals, outcome-based rules, and risk-management process rules, which give them the freedom to devise their own detailed solutions on the strength of their expertise and knowledge of their technology…Small businesses operating less complex technologies, who may regard regulation at best as a necessary evil to be kept to the minimum prefer clear, easily accessible rules, formulated in a concrete way…Where outcome rules can be formulated in a concrete, measurable way, such rules may provide an optimum solution for both small and large companies".[32]

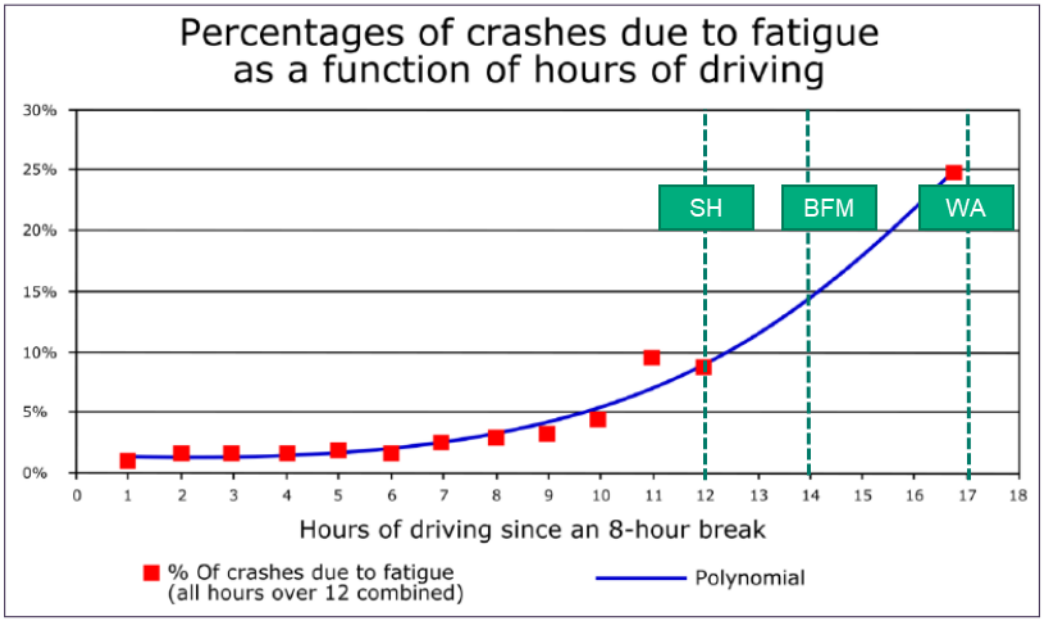
[31] National Transport Commission, *Heavy Vehicle Compliance Review Consultation Draft,* September 2013, p. 75-76

[32] Hale, Borys and Adams, "Safety regulation: the lessons of workplace safety rule management for managing the regulatory burden", *Safety Science*, volume 71, Part B, January 2015, pp. 112-122

Tier 1: Prescriptive

The prescriptive system should broadly reflect the reality of human physiological capacity, i.e. most human beings are designed to sleep at night and be active during the day and experience performance decrements after long periods on a single task. Chart 5 below maps driving performance decrements to existing available work hours:

Chart 5: Crashes due to fatigue as a function of driving hours mapped to existing systems[33]



The limit of 12 hours of work established by Standard Hours is already subject to the polynomial upswing. We must remind ourselves that a 12 hour shift is a long shift by Australian workplace standards.[34] We have habituated to accepting this as "normal" and "acceptable" for truck drivers and are therefore perhaps not as attentive to risk control as we should be. Tier 1 would allow a maximum of 12 hours work in 24 as per existing Standard Hours but impose controls on night-time driving.

Tier 2: Outcomes-based

Any operator seeking to work outside of Tier 1 parameters would need a robust system that speaks to both prevention *and* mitigation of risk. This tier would be for tasks that cannot be done within the 12-hour envelope without introducing a secondary risk of comparable gravity. Further, operators would require some form of accreditation to demonstrate their system is defensible and capable of producing auditable evidence.

An example of the desirable outcomes and how they could potentially be demonstrated is suggested in table 2 below:

[33] Based on Professor Ann Williamson, 'Fatigue: causes and effects', Presentation to Chain of Responsibility and Heavy Vehicle Safety Conference, Sydney, December 2015

[34] https://www.abs.gov.au/ausstats/abs@.nsf/featurearticlesbyCatalogue/67AB5016DD143FA6CA2578680014A9D9?OpenDocument

Table 2: Potential outcomes in Tier 2 and how they can be demonstrated

Outcome	Example
Well-rested drivers that are fit for duty	Fitness for duty standards Drug and alcohol testing Doctors, dieticians, physiotherapists etc available at larger sites Schedules that enable drivers to sleep in their own beds Sleep-monitoring technology Residential facilities for long-distance drivers Access to counselling/employee assistance services Use of EWDs Appropriate vehicles (e.g. bonneted prime movers which are more comfortable for drivers) Well designed sleeper berths
Identification of drivers that are impaired by fatigue and appropriate intervention	DSS and fatigue intervention plan
Systems that do not incentivise speeding or driving while impaired by fatigue	Safe driving plans/journey management plans or similar that demonstrate schedules are based on reasonable and contemporary transit times and that appropriate rest areas are accessible enroute. Speed monitoring IAP Contracts/Agreements with customers that reflect cost of compliance and articulate customer obligations and responsibilities Performance metrics that include safety as well as efficiency
Well trained, competency-assessed staff	Training needs assessment linked to incidents and individual skill sets Online and face-to-face training modules and assessment Records of training completed Review of effectiveness of training/ competency
Continuous improvement	Regular, reliable reporting on safety metrics Incident and near-miss investigation Targeted toolbox talks Appropriate disciplinary intervention Triggered and scheduled audits that include customers and others in the supply chain*
Safe systems	Modern (below ten years of age), efficient fleet that increases the survivability of a crash

Outcome	Example
	Rollover stability control Intelligent lane assist Vehicle service and maintenance schedules

*To date, customers have been ignored in the accreditation framework. They receive the benefits of increased productivity and presumably more competitive prices but have not been required to demonstrate their commitment to the fatigue management of their operators. The influence of customers is managed solely through 26C in the HVNL states and not at all in Western Australia. The primary duty placed on customers at 26C can be enlivened in a safety management system whereby customers must demonstrate they are up-holding their end of the bargain if they want the benefits that come with schedules outside of the prescriptive tier.

Operators would be required to report regularly to the Regulator/accrediting body. Sizeable fines/sanctions must be in place where the reporting does not meet evidentiary standards or is in any way misleading, false or incomplete.

The advantage of the outcomes-based approach is that it recognises that certain loads and routes cannot be managed within the prescriptive model without creating a secondary and competing set of risks. For example, risks associated with animal welfare, dangerous goods security, time-sensitive freight and indeed driver security and welfare on some routes. As happens now, the Regulator could publish examples/templates of how outcomes-based approaches can be achieved. This could include geographically-specific examples, focusing on regional zones that cut across borders.

The comparative effectiveness of the two tiers could be monitored through incident tracking.

Question 11: How can we get the best overall value from a compliance and enforcement strategy for fatigue management? How scare resources are best allocated, and what tools do regulators need? What provisions in the law do operators need?

As the NTC's *Fatigue Issues Paper* makes clear, enforcement activity is disproportionately directed at record keeping and work rule offences, some of which have only a tenuous relationship to safety risk. That only eleven charges have been brought in NSW against the more difficult to prove (but more telling) duty to avoid driving while fatigued is concerning.[35] This disproportion feeds industry fears that enforcement is not necessarily about safety and the management of imminent risk. Unfortunately such fears fuel a reluctance to embrace fatigue-monitoring technology and electronic work diaries.

If the two-tiered approach outlined above were adopted, enforcement would need to adapt to a data-driven, intelligence-based approach for Tier 2 operators. Operators would need confidence in the integrity of the reporting system because they are unlikely to embrace such high levels of transparency without it. The differentiated system carries the risk that sub-par operators at Tier 1 can continue to evade/avoid enforcement and detection while well-intended Tier 2 operators carry all the financial and reputational risk of detection and sanction. The introduction of mandatory Electronic Work Diaries could help with this imbalance and assist in compliance and enforcement.

Toll welcomes the publication by the NHVR of prosecution outcomes on its website. A belief that the rules can be and are enforced is important for general and specific deterrence. More importantly, operators can learn from industry mistakes.

[35] This is in no way intended as a criticism of NSW which continues to lead the way in commitment to, and enforcement of, road transport safety.

Question 12: What else would you like to tell us about effective fatigue management?

Use of fatigue monitoring data has made the extent of the problem of distracted driving clear to us. We experience significantly more distracted driving events than fatigue events. We would not have detected this without the use of DSS technology.