RTBU

RTBU Submission to House of Representatives Standing Committee on Infrastructure, Transport and Cities

Inquiry into Automated Mass Transit

7 December 2018

Introduction

The Rail, Tram and Bus Union (RTBU) is an all grades industrial union comprising 35,000 members in the rail, tram and bus industries Australia-wide. The RTBU was formed in 1993 following the amalgamation of three previous rail unions together with the tram and bus employees' union. The RTBU is organised on national, state and divisional lines and is well unionised with over 85 per cent of eligible employees being a member of the union.

The RTBU thanks the Committee for the opportunity to make this submission.

This submission is divided into a number of key sections:

- The context in which this discussion is taking place, including the importance of investment in public transport and current trends in automation and technology within the industry;
- The thematic choices politicians and decision makers have to make about the role of public transport and how to implement technological change;
- The impact of these trends on workers, including the importance of mobility and retraining rights, early retirement schemes and negotiation;
- The impact of these trends on the quality of public transport systems;
- The impact of these trends on safety; and
- The issues relating to point-to-point, on-demand and Mobility-as-a-Service systems.

The submission also makes a number of recommendations about workforce support and planning, the role of government in urban planning and urban policy, safety and the regulation of on-demand and MaaS-style systems.

Recommendations

Recommendation 1

The RTBU calls on the Federal Government develop and fund a Future of Transport Work strategy to position workers for the transport jobs of the future, and to develop a contemporary workforce development strategy for the industry. State governments must be part of this strategy given their role in public transport funding, operating and planning.

The strategy will have a focus on future needs and opportunities for transport workers and changes needed to ensure that all stakeholders in the sector agree to long term development of the workforce, to meet the national interest in building and maintaining critical transport infrastructure. This strategy will integrate capabilities and skills into a process for the management of new technologies in the rail, tram and bus systems in the next 20 years and beyond.

This strategy will focus on job enhancement, rather than job replacement, including:

- **Skills** – New jobs will require a wide-ranging suite of new skills. It is important to specify and catalogue the requirements for these new jobs. The existing workforce should have access to upskilling and retraining opportunities to develop these skills.
- **Mobility** – Support must be provided for existing workers to fill new positions which arise in the course of technological change. This requires access to training and strong redeployment rights.
- **Long-term multi-site planning** – The role of government in public transport means it is possible to achieve long-term transition planning, and an integrated multi-location approach to facilitating redeployments and exits.
- **Negotiation** – Workers must have a genuine say in how changes are implemented, including information sharing, consultation and negotiation.
- **Labour standards** – Minimum standards around pay, conditions and safety are maintained.

Recommendation 2

The RTBU calls on the Federal Government to introduce a new approach to urban planning and transport planning, including:

- Federal funding for urban transport projects within a funding model that determines priorities based on long-term growth strategies that better analyse how a project integrates and connects with an entire transport network, rather than in isolation;
- Ensuring public ownership and operation of rail projects constructed with federal funding;
- Reducing the discount rate used in cost-benefit analyses to at least 5 per cent – the existing approach promotes road over rail and low-cost projects that do not necessarily achieve benefit; and
- Utilise innovative funding models like value capture.

Recommendation 3

The RTBU calls on the Federal Government to mandate that projects receiving federal funding are appropriately staffed and resourced to keep the travelling public safe. This should be developed through the Transport and Infrastructure Council. We also call on the Federal Government to ensure that the Office of Future Transport Technologies is required to collaborate with transport workers in the development of clear regulations regarding the implementation of new technology and artificial intelligence. Any harmonised, purpose-built national law must also be developed in consultation with workers and their representatives.

Recommendation 4

The RTBU recommends that the Federal Government, through the Transport and Infrastructure Council, ensure that point-to-point/MaaS style transport models (whether autonomous or not):

- is only ever implemented following genuine consultations with transport workers and upholds the highest forms of safety standards, including a human driver always being present;
- ensures workers have access to the same minimum labour standards as traditional people employed in traditional forms of work;
- is only used as a supplement to public transport investment, rather than an alternative; and
- is coordinated and as much as possible operated by government-owned transport agencies.

Executive Summary

Policy judgements and the decisions of political leaders will shape Australia's future public transport industry and the nature of work in this industry. Before making these decisions, it is essential that leaders first consider a number of basic threshold questions.

These questions are:

- What do we, as a society want our transport networks and services to provide?
- What should be the role of government in providing transport infrastructure and services?
- How is worthwhile change introduced to the sector in a planned way that fosters stable and quality jobs.

To that end, the RTBU maintains that the goals of our public transport systems should be to:

- Ensure the effective and efficient transport of people around the country;
- Make our cities more liveable, productive and sustainable;
- Enable people to participate in the economy and their communities; and
- Generate meaningful and sustainable employment opportunities for people.

The use of new technology has the potential to help governments and public transport operators achieve these goals. This is why it is important to have a sensible public discussion about the application of these technologies.

However, there is little chance of a sensible discussion when governments and transport operators see technology as a way to reduce costs and cut jobs. There is also little chance of a sensible discussion when the process is led by multinational corporations accountable to overseas shareholders, rather than by governments accountable to the public. Automation and new technologies should not be used for ideological reasons. It should not undermine the quality, standards and conditions of transport work. Nor should it be used as cover for the further outsourcing and privatisation of public transport.

That is why all Australians deserve a say in how change is implemented, and rail, tram and bus workers must be at the forefront of these discussions. These workers are the custodians of our public transport systems. Thus, protecting the interests of transport workers is not simply an end in itself. Rather, it is the key to ensuring that our public transport systems are reliable, safe and efficient.

If applied wisely, new technologies can ensure, in the words of economist Jim Stanford, that –

> ***"Technology [is] an ally, not the problem, in our shared effort to build a high-quality, modern, accessible and democratic public transit system – one that, embodies core commitments to serving the public and environmental interest, maximises its economic and social benefits, and continues to be a source of high-quality, stable employment."***

That is what this Committee's final report and recommendations must aim to achieve.

The current context

Australian cities are under sustained pressure after the failure of successive governments – state and federal - to invest in vital infrastructure. Governments and developers have allowed our cities to sprawl and new suburbs have been built without any connection to public transport.

The current context: Why public transport matters

56 per cent of the population living in the outer suburbs (20 kilometres from the CBD) of Australia's mainland capital cities do not have walking access (800 metres to heavy rail and 400 metres to other services) to medium to higher frequency public transport (four or more weekday AM peak services). By contrast, only 19 per cent of people in middle sector suburbs (10-20 kilometres from the CBD) and 4 per cent in inner sector suburbs (up to 10 kilometres from the CBD) are without walking access.[1]

Poor access to public transport exacerbates existing socio-economic challenges, as communities in the outer suburbs typically have lower levels of income. It forces people into cars which increase greenhouse gas emissions and makes urban congestion even worse. Urban congestion is estimated to cost the Australian economy over $16 billion a year and this is expected to rise to up to $37 billion by 2030.[2] This does not include the social and emotional effects for people who spend hours commuting to and from work at the expense of quality time with family.

The multiplier effects of public transport projects are effectively self-financing. This is because spending directed at enhancing the provision and delivery of public transport directly raises the productivity of public transport, in turn making it more accessible to users. This has important implications for longer term economic growth throughout the economy because more people are being transported more efficiently enabling greater output and profits, while social, environmental and congestion costs are reduced.

The National Institute of Economic and Industry Research estimates that the economy wide benefits of a $100 million public transport investment would be equivalent to around $400 to $700 million a year.[3] That is, once all the direct and related benefits of more productive public transport are factored in, there is a return of around four to seven times per annum on the initial investment.

Put simply, investing in public transport is good for the economy, communities and the environment. This principle should underpin public transport policy, including the recommendations of this Committee.

1 https://infrastructureaustralia.gov.au/policy-publications/publications/files/Outer-Urban-Public-Transport_WEB_FA_low_res.pdf

2 Traffic and congestion cost trends for Australian capital cities, Bureau of Infrastructure, Transport and Regional Economics (2015), p1.

3 Rail, Tram and Bus Union, *The Free Ride's Over,* 2014, page 8.

The current context: Automation of public transport

Much of the public and policy discussion in relation to transport industries focuses on the implementation of driverless technologies. The Federal Government has provided $9.7 million to fund an Office of Future Transport Technologies "to help prepare for the pending arrival of automated vehicles and other transport innovations." Driverless shuttles are being trialled across Australia and the NSW Transport Minister has predicted driverless buses will be rolled out over the next 15 years. In 2019, Australia's first fully driverless train is scheduled to commence operation in Sydney on the new North-West Metro. Automation is also occurring across other functions within the transport industry, such as signalling, ticketing, security, public safety and maintenance.

According to the International Association of Public Transport, also known as UITP (the international representative body of publicly and privately-owned transport operators), in 2016 there were 55 fully automated metro lines in 37 cities across the world. The UITP projected that by 2025, there will be 2,300 kilometres of fully automated metro lines.

Transport technologies have also contributed to the rise of new service delivery models, including on-demand, point-to-point transport and shared mobility services. These models are often viewed as synonymous with the expansion of autonomous vehicles. Commuters can request and access transport options via real-time data and book transport through smartphone apps. Mobility-as-a-Service (MaaS) is a service model based on the concept of 'connected mobility'. MaaS models aim to integrate access to different mobility providers into a single booking and payment platform. The rise of these new models has been driven primarily by technology companies. There is also very little evidence that these models are being developed in response to demand from the public.

These trends raise broader questions about whose interests are being served when governments and operators choose to implement technological change and automation. There is no such thing as technological determinism. The nature of change and its impact will be shaped entirely by the choices our political leaders make.

The choice for governments

There is a clear choice for policy makers when it comes to these issues. At the heart of this choice is the threshold issue of what governments see as the role of mass public transport, and what is driving automation and technology in public transport.

What is the role of public transport?

Is public transport the key to well-planned cities, reducing congestion and ensuring our cities are best placed to meet the challenges of population growth?

Is it a "cost item" for governments that should be minimised, or is it a driver of economic growth, and social and environmental progress?

Is it simply another commodity that can be left to run at the whim of market forces, or an essential public service that should be run in the interests of the community, not for private profit?

How governments answer these questions will determine the impact automation and technology has on workers, passengers and the wider community.

It is clear that too many governments are making poor decisions because they simply see public transport as a cost-item in the budget. This attitude was recently reinforced by an Infrastructure Australia (IA) report that, despite acknowledging that too many Australians had poor public transport access, argued that increased investment should not be the priority of governments.

This is because, according to IA, public transport is "expensive to build", "requires ongoing subsidy" and "most additions to a transport network will add to that network's operating costs." In other words, the costs outweigh the benefits.[4]

This short-sighted attitude ignores the significant economic, social and environmental benefits. It will prevent governments using innovative funding models like 'value capture' which allows for the spreading of tax load over the beneficiaries of infrastructure development. It means governments will continue prioritising congestion-causing toll roads at the expense of congestion-busting railways. And importantly, in the context of this inquiry, it means governments and operators will ignore important questions in the automation discussion around how to support the workers who keep our trains, trams and buses moving.

4 https://infrastructureaustralia.gov.au/policy-publications/publications/files/Outer-Urban-Public-Transport_WEB_FA_low_res.pdf

What is driving automation and technology in public transport?

The impact of technological change is often portrayed as representing "disruption" to the transport industry. People who question the application of these trends are therefore often dismissed as being resistant to progress. For instance, in NSW, Transport Minister Andrew Constance has taken an aggressive stance in support of technological change and the evolution of the public transport sector towards a fully privatised industry:

> ***"In 10 to 15 years' time, government will not be in the provision of transport services. It will all be on demand, private sector driven, underpinned by innovation in technology."*** [5]

Furthermore, Mr Constance has publicly enthused about the potential for driverless technologies to replace human workers, and therefore damage his political opponents:

> ***"As a Liberal Minister I'm not going to have to deal with the rail union anymore because we're going to have driverless trains here. And guess what? The union and the Labor Party are opposed to Metro because there are no more train drivers, no more union members."*** [6]

Mr Constance clearly sees the introduction of new technologies to the transport sector as part of a broader ideological agenda of privatising, de-unionising and eliminating public sector workers from the transport industry. In this sense, rhetoric around automation and technological disruption is being used as code for undermining the rights and jobs of transport workers.

By adopting such an aggressive and ideological approach, governments and transport operators will inevitably ignore the legitimate prerequisites and barriers that must be considered and negotiated as part of automation and technological change. These include: regulation, infrastructure and capital investment, workforce planning and transitioning, proof of safety, social acceptance, management adequacy, lag times to phase in new equipment and, in the case of greenfield projects, integration with existing networks.

If these issues are ignored, public transport workers will lose out. And protecting the interests of transport workers is not simply an end in itself – it is the key to ensuring communities have access to safe, reliable, quality and transparent public transport networks.

5 https://www.afr.com/technology/tech-will-end-government-supplied-transport-nsw-minister-andrew-constance-20170315-guydph

6 https://www.smh.com.au/national/nsw/we-wont-need-train-and-bus-drivers-transport-ministers-prediction-20170816-gxxhsp.html

What does it mean for workers?

The RTBU believes that extreme caution should be exercised in projecting that the advent of new technology should or will lead to a dramatic or immediate displacement of labour. That's why it is so important that change is managed properly.

If managed properly, while some specific tasks could be automated, few existing jobs could have their full spectrum of requisite tasks automated. This would in turn lead to an inventory of tasks, which machines cannot satisfactorily perform (or should not perform), being organised into refined roles which consist of those tasks combined with specific new tasks that have arisen as a result of technological deployment.

In other words, the automation of some tasks does not necessarily mean that workers will no longer be needed – rather there will be a restructuring of job roles to accommodate existing (and new) tasks that require human input. Redefining these roles, and managing the transition process, will need a collaborative approach from employers and their employees. This requires workers and their union to have the ability to negotiate change.

Currently, the ability of workers and their union to negotiate change is severely constrained by the attitudes of governments and transport operators. It is an attitude best summed up by NSW Transport Minister Andrew Constance when he claims that he would no longer have to deal with the rail union because of driverless trains. Not only is this statement factually incorrect, more importantly, it exposes an underlying assumption that dealing with workers and their industrial representatives is a burden for governments.

Of course, it does not have to be this way. Governments should see technological change as an opportunity to improve public transport, not merely cut costs. And this needs to be demonstrated through action, not simply rhetoric.

What does this look like in practice?

Change must be managed so that:

- Existing workforces are given strong rights to training/retraining in skills that will allow them to take advantage of or progress into new jobs;
- Support is provided for existing workers to fill new positions with strong redeployment and job mobility rights;
- Change is managed by providing better support for older workers who are seeking to retire with bridging benefits and other incentives;
- Workers are given a genuine say in how changes are implemented and managed, including through provision of information, consultation and negotiation; and
- Labour standards around pay, conditions and safety are maintained.

Even fully-automated public transport systems require significant workforces. Staff will be required to have a deep knowledge of key operating systems and their functional interactions. Operational control staff with high-level qualifications will also be required to Operational control staff with high-level qualifications

will also be required to perform emergency operations. Specialised skills will be required from workers in maintenance roles. Commuters will also expect some degree of personal customer service.

There are opportunities for workers to be better remunerated as they develop new skills. For instance, an international survey of 23 automated metros found that automation did not result in reduced staffing costs because the multi-skilled staff employed to operate the lines are paid more.

However, there appears to be very little planning to to prepare the transport workforce for the jobs of the future. And if it is going on, it is clear that workers and their unions are being excluded from the process. Governments have cut funding for vocational education and training, making it harder for workers to retrain and upskill. At the same time, private companies are spending less on employee training than they were 15 years ago.[7] At a recent discussion about automation and skills, RTBU representatives were shocked to hear a manager at one transport operator admit that supporting a just transition for at-risk workers was "not my problem".

We are not opposed to technological change. Rail, tram and bus workers are passionate about their industry. Working in the industry is seen as a vocation. When technological change has a proven capacity to improve the quality of transport work and services, it will be embraced. However, workers have every right to be concerned about and oppose change when governments and operators try to implement it with limited consultation, simply engage in perfunctory consultations, or worst of all, boast about and dismiss the impacts of job losses.

If this anti-worker and anti-union approach continues, the consequences for governments, transport operators and the community will be drastic.

Rising inequality

Technological change will cause inequality (and its social, political and economic impacts) to worsen, unless it is managed in the interests of workers. While technology can boost productivity, any gains should not simply result in higher profits and bonuses for transport executives. Increased productivity should lead to wage rises and help fund retraining and reskilling programs.

Unless at-risk workers have access to these programs, the income gap between those who benefit from technological change and those who do not will widen dramatically. We also know from experience that people forced into structural unemployment can find it very difficult to get back into the workforce. Those who do find work often earn significantly less than they did before losing their job.

Skills shortages

Technological change will also create significant skills shortages for the transport industry, unless governments and operators engage constructively with workers and unions to prepare for change.

The Australian Industry Standards Rail Industry Reference Committee forecasts that automation and technological change mean rail workers will

7 https://www.smh.com.au/business/the-economy/prepare-for-automation-or-risk-greater-inequality-mckinsey-20180211-p4yzx7.html

require new skills in technology, remote operations, diagnostics, maintenance, communications, data-analytics and problem solving.[8] A recent report commissioned by the employer-group, the Australasian Railway Association (ARA), identified the following as areas of future skills shortages in the industry: systems engineering; cloud-based signalling; cyber security; remote condition monitoring; simulator and virtual reality trainers; different customer service skills (for autonomous systems); risk and assurance professionals; and big data analytics.[9]

Governments must take the lead in developing a response to avoid potential skills shortages. But it will become increasingly difficult for governments to do so if they continue privatising public transport systems, rely on privately-owned companies to provide training and cut funding for TAFE in favour of private companies. Transport operators – public or private – are also simply paving the way for future skills shortages when they outsource key functions to labour hire companies, renowned for high employee turnover. These decisions may help cut costs in the short-term, but they will inevitably cause severe shortages in the supply of skilled labour that is required to build, operate and maintain transport systems in the medium and long terms.

Even the ARA has recognised that –

> ***"One of the consequences of [short term cost cutting] has been the collapse in investment in training and skills development of the people to build our infrastructure and operate and maintain first class rail services. This is a clear case of market failure."***[10]

Given this market failure, it beggars belief that some politicians are advocating further marketisation and privatisation of public transport.

In order to respond to skills shortages, workers and unions must be involved in the process. We are willing and ready to work constructively with governments and operators to develop upskilling programs for existing workers. This includes receiving notice, support and access to programs to ensure workers can adapt their capacities in line with emerging opportunities.[11]

What is the international experience?

Governments around the world are faced with a choice about how to manage automation and technological change in rail, tram and bus industries.

The Singapore Government has undergone a process of developing Industry Transformation Maps to ensure automation and technological change is managed in way that benefits workers, employers and the economy as a whole. The Land Transport Industry Transformation Map was developed by the Government's Land Transport Authority in partnership with the National Transport Workers' Union and the country's rail and bus operators. The strategy outlines planned technological changes, initiatives to improve transport services for commuters, increase productivity and future-proof the workforce with extensive upskilling and reskilling programs.[12]

8 Australian Industry Standards, Rail Industry Reference Committee, 2018 Rail Skills Forecast.

9 Australasian Railway Association and BIS Oxford Economics, *Australasian Railway Association Skills Capability Study, Skills Crisis: A Call to Action*, Nov 2018.

10 Ibid.

11 Technology, Work Organisation and Employment in Public Transport, Centre for Future Work, 2017, p87.

12 https://www.mti.gov.sg/-/media/MTI/ITM/Trade-Connectivity/Land-Transport/Land-Transport-ITM---Press-release.pdf

Despite automation, the number of jobs in the industry will continue to increase. The kinds of jobs will change, but the government, operators and the union are working together to prepare the workforce. This includes: developing a Public Transport Skills Framework to identify current and emerging skillsets; identifying training gaps and develop upskilling programs for workers; and establishing government-run training academies, known as the Rail Academy and the Bus Academy, to help the workforce upskill and reskill to take on new jobs as the industry changes. Like Australia, the Singapore rail and bus industries are forecasting skills shortages. But unlike Australia, rather than making the situation even worse by making workers redundant, Singapore is investing in its existing workforce.

Germany's first automated metro line opened in 2008. This line is part greenfield and part conversion of a heavy rail line. The relevant union and Works Council were intimately involved in the planning process, to mitigate any adverse impacts arising from the conversion. Not only were there were no forced redundancies, but the number of people employed on the line has increased over the past 10 years and labour costs have increased as the workforce developes new skills. German unions have also reached collective agreements with transport operators about how technological change can be implemented, including the need for training programs and pilot projects to objectively assess the impact of potential automation. These agreements also ensure productivity gains are not simply used to boost profits, but lead to higher wages and fund retraining and upskilling programs.

Why is engaging with workers important?

Managing change in the interests of workers is critical to maintaining quality public transport systems. Every day, a skilled, dedicated and hard-working workforce ensures the efficient, safe and reliable operation of Australia's complex and multi-line/route transport networks. The knowledge required to make this happen is held as a collective consciousness shared between people on the job. This collective consciousness captures the social and technical knowledge dimensions of transport-related work.[13] It is knowledge that cannot simply be taught in formalised classroom training – it is passed on from one generation of transport workers to the next.

One of Australia's leading industry experts on transport and logistics issues, Professor Daryll Hull has written extensively on this topic, noting that –

> ***"It is specious and arrogant to suggest that the thousands of years of knowledge contained in the heads of railway workers is 'one year of knowledge repeated a thousand times.' Anyone who has walked a section of track, watched a train controller in action, or explored Wynyard during peak hour knows that railway knowledge is cumulative, every-changing and often problematic. The basic systems may take you to a place, but there is a never-ending stream of unique situations every day…the balancing act of social and technical forces on a daily and hourly basis in the railways requires high levels of confidence, continuity, and a willingness by people take action based on their own judgement."***[14]

13 Daryll Hull, W*inning the Skills Battle and Losing the Knowledge War in the Railways: Reflections on Changing Culture in a Complex System, and the Impact on Learning and Development* (August 26, 2012). UNSW Australian School of Business Research Paper No. 2012 IRRC 03.

14 Ibid.

Governments and transport operators are on notice. They should be under no illusion that they will lose vital pieces of technical and social knowledge if change is not managed in the interests of workers. And if they lose this knowledge, the quality of our public transport systems will ultimately suffer. Further, if technological change is simply used as a means of reducing labour costs and de-unionising the sector, any financial benefits will quickly dissolve as transport operators will inevitably be forced to scramble to compensate for lost knowledge.

If the objective of this inquiry is to review how automation can make mass transit "better, stronger and faster", it must recognise this crucial fact. Getting this right requires more than simply consultation.

There can be no automation without negotiation.

Recommendation 1

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- **Long-term multi-site planning** – The role of government in public transport means it is possible to achieve long-term transition planning, and an integrated multi-location approach to facilitating redeployments and exits.
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The impact on the quality of public transport

The media release announcing this inquiry claimed that "international experience of automated metro systems shows what they could do to improve connectivity within our rapidly growing cities." Generalised statements such as this ignore the fact that metro rail serves a very specific purpose in "highly-populated, densely trafficked commuter areas over short journey times" and are "designed to move people between high-density areas and employment centres such as the CBD."[15] They are not suited to long, park and ride journeys.

It is also poor public policy to assume that what may work overseas can easily be replicated in Australia. In most instances, Metro lines in other countries operate over short-intervals in densely populated city centres, such as Singapore and Hong Kong. By contrast, Australian cities are characterised by low-density, urban-sprawl. **A cookie cutter approach to public transport planning is simply a recipe for disaster.**

Moreover, metros should be seen as a supplement to existing heavy rail, not as a replacement. The construction and expansion of metro lines should not come at the expense of heavy rail's capacity to expand and cater for increased growth, especially when heavy rail continues to serve the majority of commuters.

There are major flaws with the NSW Government's Metro project, which is the apotheosis of the application of automation in public transport. If done right, the north-west link has the potential to improve Sydney's entire rail network and prepare for population growth over the next 40-50 years. A rail line to Sydney's north-west is a long overdue and essential component of the city's rail network. The lack of any rail connection is a textbook example of the failure by successive governments to ensure infrastructure keeps pace with population growth.

The project, however, is not being done right. Four of Australia's most experienced rail planners warned the NSW Government's transport agency the project will:

- Not relieve network capacity issues that will be at saturation point by 2021;
- Cause significant disruption to the efficient operation and flexibility of the network; and
- Increase the likelihood that the network will become "gridlocked and unworkable".[16]

15 See John Brew, Ron Christie, Bob O'Loughlin and Dick Day, Submission to Transport for NSW, 3 July 2015; https://www.smh.com.au/national/metro-a-12b-disaster-says-buried-report-20080730-gdso94.html

16 John Brew, former Chief Executive of State Rail; Ron Christie, former Co-ordinator General of Rail, RailCorp; Bob O'Loughlin, former Director of Rail Safety and Operations, State Rail; and Dick Day, former General Manager of Planning and Timetable Development, RailCorp. In 2015, they prepared a submission to Transport for NSW outlining significant concerns about the NSW Government's Metro plan.

When a previous Government announced similar plans 10 years ago, one of the world's most respected transport consultants, Jim Steer, warned at the time that the project would not ease congestion on Sydney's busiest rail lines.[17]

The design of the Sydney Metro, which includes a second harbour rail crossing, effectively prevents future capacity expansion of the existing heavy rail network. While a second harbour crossing is essential to improving the network's capacity to cater for future growth, building this crossing as a separate and privately-owned metro service cannibalises and constrains the rest of the network.

Even the Government's own report into Sydney's rail future warned that a separate metro system would "not deliver significant benefits to the wider rail network" and "create a separate system that would divert funding away from service improvements on the existing rail network and only provide benefits to customers who use the new lines."[18]

So why did the Government go down the path of an automated metro, despite these warnings? It argues the Metro will be faster, more reliable and able to carry more people. The Government has been unable to produce independent evidence to support these claims, which have also been consistently debunked by transport experts.[19] There is no reason why train control systems and signalling improvements cannot be deployed to increase capacity on the heavy rail network. Furthermore, a lack of seats on single-deck trains will inevitably cause discomfort for commuters.

The government also claims the Metro is cheaper to build and operate than heavy rail. It will be privately owned and operated, and tunnelling and station excavation costs are cheaper for single-deck rolling stock than double-deck. Yet once again, this argument is incredibly short-sighted. For instance, it conveniently ignores the fact small tunnels designed for single-deck trains make it impossible to cater for larger capacity trains as Sydney grows. It is an approach that stems from viewing public transport as a cost-item, rather than as a driver of economic, social and environmental progress. As a result, the quality of Sydney's rail network will suffer.

The Sydney Metro case study offers some important lessons for governments. They should be very careful when making generalised statements about the benefits of automated metros, without first considering the geographical context and specific needs of public transport networks in Australian cities.

We have similar concerns in relation to spending by governments and transport operators on automated vehicles. Every dollar governments spend rolling out automated vehicles and shuttle pods, is one less dollar for new or improved mass rail, tram or bus systems. It also means more cars on our roads, making traffic congestion even worse.

The RTBU strongly believes that transport funding priorities should be determined according to the community's interest. Projects that best improve and integrate with existing systems, deliver the best outcomes in terms of social and economic outcomes and best increase to our national economic

17 https://www.smh.com.au/national/metro-a-12b-disaster-says-buried-report-20080730-gdso94.html
18 https://mysydneycbd.nsw.gov.au/sites/default/files/user-files/uploads/rail-future-web.pdf
19 https://www.abc.net.au/news/2014-04-11/barry-ofarrell-sydney-trains-claim-doubtful/5371446

productivity, should be given priority. At the moment, however, investment is being driven by an ideological obsession with automating jobs or the latest technological crazes. Governments simply cannot adopt a mode-neutral approach when they are blinded by these obsessions.

Moreover, we need to challenge the view among many decision-makers that public transport is simply a budget cost-item. This approach is stifling investment in rail and leading to short-sighted decisions about projects, such as the design of Sydney's North-West Metro. This means reducing the discount rate used in cost-benefit analyses and utilising innovative funding models like value capture.

Recommendation 2

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- Federal funding for urban transport projects within a funding model that determines priorities based on long-term growth strategies that better analyse how a project integrates and connects with an entire transport network, rather than in isolation;
- Ensuring public ownership and operation of rail projects constructed with federal funding;
- Reducing the discount rate used in cost-benefit analyses to at least 5 per cent – the current approach promotes road over rail and low-cost projects that do not necessarily achieve benefit; and
- Utilise innovative funding models like value capture.

Impact on safety

The safety of public transport workers and commuters must be the priority for all governments and operators. The safest public transport systems combine the benefits of technology with the benefits of human involvement. Therefore, if technological change implemented in the interests of workers and commuters, there is no reason it should cause wide-scale job losses.

Automation of non-driver grades and safety

The automation of ticketing functions, the expansion of CCTV and installation of "help point buttons" have been used to justify cuts to station and security staff across public transport networks. Operators claim that cameras and sensors installed on new rolling stock can replace train guards.

From a safety perspective, stations, trains or trams where there are fewer people around are precisely where safety risks to passengers are higher and where the need for staff presence is greatest. Customer-facing transport workers have safety critical and first-aid training and are the first responders in emergency situations. Even Infrastructure Australia, which has adopted a cost-minimisation approach to the delivery of transport projects in recent years, argues that "assistance from staff can make a very real difference in people's experience and whether they are willing to catch public transport."[20]

It is simply not possible to automate the important public and customer service functions transport workers perform. Automation should not be used as an excuse to cut these jobs – the security and safety risks far outweigh any short-term costs savings.

Safety issues associated with driverless trains and vehicles

Driverless passenger trains around the world operate on standalone lines. They run on closed underground or high overground lines, designed to avoid potential obstacles. By contrast, the nature of Australia's metropolitan rail lines means it is not safe for trains to operate without a driver. Train drivers are integral to keeping the network safe and operational and reacting quickly to emergencies.

Driverless systems are not infallible. In September 2018, a runaway, out of control driverless freight train derailed in Tasmania after it did not respond to remote control equipment or the remote system's emergency stop features.[20] The train was forcibly derailed by the control centre, injuring two people. Had this been a passenger train, the consequences would have been catastrophic.

Driverless train systems also have more complex, specialised and demanding maintenance requirements. However, in recent years, governments and transport operators have devalued the importance of rail maintenance, choosing to outsource and contract out much this work to labour hire companies. Labour hire companies have very high attrition rates and are notorious for restricting their employees' access to

20 https://infrastructureaustralia.gov.au/policy-publications/publications/files/Outer-Urban-Public-Transport_WEB_FA_low_res.pdf

21 https://www.atsb.gov.au/publications/investigation_reports/2018/rair/ro-2018-014/

quality training. If this trend continues, the rail industry will eventually lose vital knowledge. Based on this trajectory, it is difficult to see how the future workforce will have the skills and experience necessary to maintain complex automated systems.

Numerous trials of other autonomous vehicles around the world have caused serious injuries and even deaths due to automation failure. In this year alone, we have already seen multiple headlines of fatal incidents caused by automated vehicles: 'Uber suspends self-driving car tests after vehicle hits and kills woman crossing the street in Arizona', and 'Tesla's autopilot was involved in another deadly car crash'.

How will an automated vehicle detect a commuter flagging down a bus, or running to catch it? How will it detect when an elderly passenger or parent with pram requires further time to board? Who will assist passengers in evacuating if there is a bus or tram fire? For these reasons and more, the RTBU continues to hold serious concerns for commuter safety in the mad dash for vehicular automation.

The abovementioned safety issues also highlight the need for clear regulations over the implementation of new technology and artificial intelligence. Serious thought needs to be given as to how computers are programmed to respond to life and death issues. More consideration must also be given to the cyber security risks associated with these changes, such as hacking, security breaches and terrorism. We note that the Federal Government established an Office of Future Transport Technologies in October to examine these issues.

However, while ever this process is led by private companies such as Uber and Lyft, rather than by governments, these issues are unlikely to be resolved and insufficient regulatory and legal protections will be in place. These companies have made no secret of their desire for governments to introduce "light-touch" regulations.

Earlier this year, Secretary of Transport for NSW, Rodd Staples, said in relation to automation, that he wants his department to be "much more loose" on how it worked with industry and to remove "prescriptive tendering practices."[22] In other words, he is happy to be guided by private companies accountable to shareholders, not by governments accountable to the public. This approach may save money in the short-term but will lead to significant medium-long term costs if and when an accident, fatality or serious incident occurs.

Recommendation 3

The RTBU calls on the Federal Government to mandate that projects receiving federal funding are appropriately staffed and resourced to keep the travelling public safe. This should also be developed through the Transport and Infrastructure Council. We also call on the Federal Government to ensure that the Office of Future Transport Technologies is required to collaborate with transport workers in the development of clear regulations regarding the implementation of new technology and artificial intelligence. Any harmonised, purpose-built national law must also be developed in consultation with workers and their representatives.

22 https://www.afr.com/business/nsw-embraces-automated-trains-and-cars-says-rodd-staples-20180725-h134h5

Mobility-as-a-Service and point-to-point transport

Autonomous vehicles are often seen as synonymous with the rise of on-demand, point-to-point and Mobility-as-a-Service (MaaS) systems. These terms are popular buzzwords among technology executives, politicians and transport operators, but there is very limited evidence of public demand for the widescale expansion of "Uber-style" mass transit services.

For instance, privately-owned on-demand shuttle bus services (such as those owned by Bridj) have been a consistent failure around the world.

Ultimately, any potential benefits of these systems can only be realised if governments address a number of issues relating to safety, employment, accountability, accessibility and privacy.

Firstly, autonomous point-to-point transport should only be contemplated if and when governments address the regulatory, ethical and safety issues discussed in the previous section. Indeed, even if these issues are addressed, there should still always be a human driver in the vehicle.

Secondly, workers providing on-demand, point-to-point and MaaS services must be entitled to the same minimum labour standards as transport workers in traditional forms of work. On-demand transport services have created a legal 'grey zone' whereby it is not clear if workers are contractors or employees. Companies like Uber have shifted their capital and operating costs and risks onto workers who cannot negotiate rates.

Thirdly, these new modes of transport must be seen as a supplement to public transport, not as a replacement. We are concerned that governments may use private mobility services as an excuse to underinvest and underfund public transport. This approach will simply result in fewer people using public transport and more cars on the road, making the issue of traffic congestion even worse. There is also no evidence to suggest that so-called "shared mobility" services result in much sharing. For instance, a recent study has revealed that the average occupancy of an Uber vehicle in traffic in California was 1.66 people, including the driver.[23]

Even advocates of the "Uberisation" of transport recognise that -

> *"Relying on autonomous vehicles to reduce congestion is also a flawed logic. No matter how narrow the lanes or how well-platooned the autonomous vehicles are, a freeway will never be as efficient at moving people as a rail line or bus rapid transit (BRT), since even a fleet of autonomous pods cannot create similar passenger density as a fixed route bus at full or near capacity."*[24]

A smarter approach would be to organise first-and-last-mile initiatives around core, high-quality and well-funded public transport services and interchanges. Better yet, governments could recognise the importance of investing in quality public transport

23 https://www.cubic.com/sites/default/files/Maas_Final_Whitepaper.pdf
24 Ibid.

in under-serviced areas, especially in the outer suburbs of our cities. It is simply unfair that people in our cities' inner and middle suburbs have walking access to multiple high to medium frequency services, while politicians and bureaucrats tell people in outer suburbs their best solution is to book an Uber or shuttle pod from your nearest train station.[25]

Finally, governments and public transport agencies – not private, for-profit companies - need to have ownership over the process. There is no reason why the expansion of on-demand, point-to-point, MaaS systems (whether autonomous or not) should lead to an increase in private ownership and operation of transport services. Publicly-owned transport operators should operate on-demand systems. Public ownership will protect the large amounts of data that will be collected through these systems. The community has every right to be concerned about the possibility that private multinational corporations will collect and own personal data and potentially sell this data for profit. Public ownership will also help prevent exploitative labour practices that have taken place across ride sharing platforms.

Recommendation 4

The RTBU recommends that the Federal Government, through the Transport and Infrastructure Council, ensure that point-to-point/MaaS style transport models (whether autonomous or not):

- is only ever implemented following genuine consultations with transport workers and upholds the highest forms of safety standards, including a human driver always being present;
- ensures workers have access to the same minimum labour standards as traditional people employed in traditional forms of work;
- is only used as a supplement to public transport investment, rather than an alternative; and
- is coordinated and as much as possible operated by government-owned transport agencies.

25 This criticism is based on a 2018 Infrastructure Australia report about the lack of walking access to public transport for people in the outer suburbs of Australia's five mainland capital cities.

Conclusion

The judgements and decisions of political leaders will ultimately determine whether Australians enjoy access to a public transport system that ensures the effective and efficient transport of people, supports social, economic and environmental progress, and provides decent, stable and high-quality employment opportunities.

If applied wisely, new technologies and automation have the potential to help Australia achieve these objectives. But, technological change should not rushed, nor should it be used to pursue an ideological agenda of privatisation and economic rationalism. Such an approach is bad for workers, bad for transport commuters and bad for communities in general.

That is why all Australians deserve a say in how we best manage change to minimise the costs and maximise the benefits of new technologies.

And workers must be at the forefront of these discussions.

RTBU

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