Emerging Mobility Technologies Policy

March 2020

RACT Policy – Emerging Mobility Technologies

Mobility Strategy Pillar: Future Mobility and Sustainability

Future mobility is the second component of RACT's mobility strategy. Within this pillar, RACT's vision is to:

- Have a rage of mobility options available that are efficient, increase flexibility and keep our community, especially our more vulnerable road users, safe.
- Prepare for a future where vehicles will be semi or fully autonomous

Sustainability is the third component of RACT's mobility strategy. Within this pillar, RACT's vision is to:

- Embrace the sharing community through new vehicle ownership models, such as car sharing and ride sharing programs.

Policy statements

Emerging mobility technologies explained

- Emerging mobility technologies include autonomous vehicles, Cooperative Intelligent Transport Systems (C-ITS) and Mobility as a Service (MaaS) models. These technologies will be seen in Australia in the next few decades.
- Autonomous vehicles have the ability to increase safety and efficiency on our roads and are defined by a range of levels.
- C-ITS technology facilitates improved traffic flow and network efficiency, or allows vehicles to communicate.
- Mobility as a Service involves a shift away from private vehicles towards mobility solutions that are consumed as a service, including public transport, autonomous vehicles, car and ride sharing. These can all be facilitated by a smartphone app.

Purpose of this policy

- As Tasmania's peak motoring body, RACT is an advocate for emerging mobility technologies.
- This policy will discuss RACT's position around autonomous vehicles, Intelligent Transport Systems as well as Mobility as a Service (MaaS) principles – including car and ride sharing.
- This policy will inform how the organisation will advocate for emerging mobility technologies in Tasmania through liaison with all levels of government, key transport stakeholders and the media.

Relevance to RACT

- Emerging mobility technologies have the potential to increase the safety and efficiency of Tasmania's roads.
- Therefore, RACT believes it is vital to explore these technologies and educate Tasmanians along the way.

Background, evidence and position

Background

Autonomous vehicles

- Autonomous, or self-driving, vehicles have the ability to provide safer, more efficient and sustainable transport options. They can reduce serious casualty crashes, significantly improve road network efficiency (congestion) and enhance transport access for the mobility challenged (Infrastructure Partnerships Australia, 2017 and RAC, 2019).
- The internationally-based Society of Automotive Engineers (SAE) has identified six levels of autonomous vehicles (SAE, 2018)
    - Level 0: No automation (present day vehicles where human driver controls all driving)
    - Level 1:Driver assistance (lane guidance, cruise control and parallel parking)
    - Level 2: Partial automation (adaptive cruise control and lane centring)
    - Level 3: Conditional automation (vehicles performing all critical safety functions)
    - Level 4: High automation (vehicles performing all the driving-related operations)
    - Level 5: Full automation (driverless vehicle with no steering wheel)
- The NRMA anticipates that autonomous vehicles (AVs) of varying levels will be on Australian roads in the next decade.
- Autonomous vehicles incorporate: cameras to detect colours of lane markings, signs and traffic lights, LIDAR to create 3D rendering of vehicles, pedestrians, curbs and buildings through pulsed laser light, radar to detect obstacles and speeds, GPS and the internet for accurate positioning and navigation date, and a computer to process the information and drive the vehicle (Infrastructure Partnerships Australia, 2017).
- Autonomous vehicles come in two forms: autonomous only vehicles (AOVs), which find their way using on-board sensors, or connected and autonomous vehicles (CAVs) which communicate with other vehicles and with road infrastructure While AOVs operate in isolation from other vehicles and the road network, CAVs will optimise travel choices for route, speed and location (IPA, 2017).
- Cooperative Intelligent Transport Systems (C-ITS) technology is used to facilitate CAVs. This technology supports vehicle-to-everything (V2X) communications, including vehicle to vehicle, to infrastructure, to devices, to grid, to pedestrian and to home (IPA, 2017 and TCA, 2016). This is discussed further into this policy.
- However, a comprehensive 5G network with significant data capacity will be needed to run these technologies as AVs rely on GPS and the internet for long-range systems. These systems include: accurate positioning, navigation data and up-to-date situational data, including vehicle communications, maps, road condition reports and emergency messages (IPA, 2017).
    - Additionally, there is a need for wireless and Wi-Fi networks to support short-range systems, including V2X near intersections and more built up areas. Wi-Fi connectivity for V2X will reduce the load on the main 5G network and can act as backup systems if it crashes.
- The benefits of autonomous vehicle technologies include (IPA, 2017):
    - Improved safety by eliminating human error as a factor in road crashes.
    - More efficient road use as AVs move succinctly through connected technologies, keeping cars away from congested areas traffic and crashes.
    - Allowing youth, disabled or elderly people the chance access transport.
    - Enhancing worker productivity by eliminating the need to drive and navigate.
    - Electric AVs are cheaper to operate compared to internal combustion engines.
    - Introduction of “drop off zones” in place of on-street parking and park and ride.
    - Customised public transport journeys, rather than a timetabled service.
- The challenges of autonomous vehicle technologies include (IPA, 2017):
    - Law changes regarding the definition vehicle control, in terms of road rule consistency. Laws need to be consistent across Australia to enable AVs to be driven anywhere across the country.

- Ethical issues arising from changing laws, including crash liabilities as vehicles are self-driving, or how an operating system would decide to deal with a crash scenario involving the occupant, other motorists, cyclists or pedestrians.
- Physical and digital infrastructure that allows AOVs to read signage, and connected technology at intersections for the operation of CAVs. This includes signage, line marking, road conditions, C-ITS and data management.
- The need to replace 4G with higher-speed/capacity 5G networks to operate vehicles. The 5G network will be available in major Tasmanian centres and main roads. However, outside these areas AVs will find it difficult to navigate at highway speeds due to a lack of this technology in the immediate future.
- Short range wireless and Wi-Fi networks can operate separately from 5G to enable V2V and V2X signalling. However this is a short-range solution, meaning a central network will be needed to communicate past that range. However, failures of the 5G network will create the need for backup wireless or Wi-Fi systems to help AVs navigate.
- Data privacy and security and the need to clarify laws about data collection regarding user journeys. This relates to the security of infrastructure in order to prevent breaches and corruption of the network. For example, the corruption of traffic light readings to cause crashes.
- Community trust regarding AV safety as well as the need for crash testing to focus not only on front-facing passengers but those seated side on. Trials to better understand AVs will not only improve understanding of the technology, but also build community trust (RAC, 2019)
- Some studies show CAVs can move away from congested areas, but there are also arguments that increased use of AVs through ease of travel could increase congestion (TCA, 2016).

- The National Transport Commission (NTC) is in the midst of developing a legislative framework for the introduction of autonomous vehicles (NTC, 2020). It will include:
  - The implementation of national AV trial guidelines and a review of exemption powers to ensure legislation can support on-road trials.
  - Clarifying the enforcement of AV control as well as driver laws for AVs and AV system entities.
  - Safety assurance systems for AVs and a compulsory third party insurance review for those impacted by a crash involving an AV.
  - Access to automated vehicle data to balance road safety, enforcement and efficiency with privacy.
- The NTC identifies numerous potential barriers to AVs in Australia that surround the need to change laws requiring a driver to have proper control of a vehicle. Other key issues surround physical and digital infrastructure and road operations, as mentioned.
  - RACT actively participates in discussions and reviews of proposed changes to legislation through the Australian Automobile Association and the Tasmanian Government.
- At the time of writing there were a multitude of AV trials underway across the world and across Australian states and territories.
- RACT, the City of Hobart and the Tasmanian Government undertook the state's first AV demonstration in Hobart in late 2019.
  - The Hobart demonstration involved the trial of a NAVYA Autonom shuttle, which has first and last mile applications, meaning it can connect people from their homes to public transport options.
- The primary AV developers around the World include:
  - Waymo (owned by Google), which has launched a fleet of Level 4 automated Chrysler minivans as a taxi service in some US cities. They can navigate streets and reach highway speeds. Waymo also plan to add Jaguar I-Paces to the fleet and are in the midst of testing automated heavy vehicles.
  - General Motors has a fleet of Chevrolet Bolts that can navigate the streets of San Francisco, Arizona and Michigan at up to 40km/h. GM also has to start a ride-hailing service with an AV with no pedals or steering wheel
  - Other notable players include: Ford and VW with Argo AI, Aptiv, Mercedes-Benz (Daimler Bosch), Tesla, Intel-mobileye, Baidu, Toyota, the Renault, Nissan and Mitsubishi alliance, Audi, BMW, Volvo as well as Peugeot and Citroen (PSA Group).

- RAC WA argues that the application of automated vehicle technology can enhance the quality and coverage of urban and regional public transport systems.

Cooperative and Intelligent Transport Systems

- Intelligent Transport Systems (ITS) refer to a broad range of information and communications technologies used across the transport system that provide intelligence on the roadside or in vehicles (European Transport Safety Council, 2017 and Transport Certification Australia, 2016).
    - Cooperative Intelligent Transport Systems (C-ITS) focuses on the communication between those systems and enable real-time wireless communication between vehicles, roadside infrastructure and, mobile devices.
    - C-ITS systems are closely linked to CAVs, smart cities and smart infrastructure (Transport for NSW, 2017).
    - Managing the demand on transport networks at peak times, through C-ITS, can manage congestion and enable a safer and more efficient transport system. Sharing this data publicly can also influence travel behaviours (RAC, 2019).
- Cooperative Intelligent Transport Systems (C-ITS) technology supports vehicle-to-everything (V2X) communications, including vehicle to vehicle, to infrastructure, to devices, to grid, to pedestrian and to home (IPA, 2017 and TCA, 2016).
    - These enable CAVs to wirelessly share real-time data with other vehicles and roadside infrastructure. This relates to their location, speed, movement and direction, which combine to formulate up to date situational awareness.
    - It also relates to vehicles and infrastructure communicating traffic warnings relating to congestion, hazards, weather or an impending crash. C-ITS devices can send and receive information from other equipped devices 10 times a second International (Transport for NSW, 2017).
    - Integration of C-ITS into CAVs also allows vehicles to move closer together while accelerating and stopping in uniformity. This increases the safety and efficiency of the transport network – including reductions in crashes, congestion and road/vehicle maintenance (Transport for NSW, 2017).
    - C-ITS trials have indicated these systems can improve safety and reduce congestion (Transport for NSW, 2017).
- Examples of C-ITS applications include sensors, cameras and traffic counters that detail real-time congestion, collision, hazard and weather warnings relating to location, speed and journey times (TCA, 2016 and Transport for NSW, 2017).
    - Road users can receive information and alerts of traffic information through a smart phone or vehicle infotainment systems. This information can also help road authorities improve road efficiency.
    - Other examples include adaptive traffic signals that facilitate improved traffic flow based on vehicle volumes.
    - Parking can also be managed through sensors that scan vehicles to communicate with meters and record illegally parked cars. Drivers can also be alerted to vacant car spots to increase journey efficiency.
- Secure and trusted data is paramount for C-ITS. Insufficient or compromised security can range from a minor incident, such as: (TCA, 2016)
    - The temporary denial of a non-essential service
    - Compromised privacy through an intercepted payment for parking using C-ITS
    - Personal injury or life-threatening incidents, such as unreliable crash-avoidance or safety-critical communications, remote hacking and identify spoofing.
- Security of C-ITS technologies is achieved via the Cooperative Credential Management System (CCMS). For Australia to adopt this security solution, five principles need to be adopted (TCA, 2016):
    - Confidentiality, integrity and availability
    - Future thinking

    - Flexibility and interoperability
    - Smart cities scalability
    - Management and accountability
- The European Commission outlined its plan for the coordinated deployment of C-ITS in Europe in its European Strategy on Cooperative Intelligent Transport Systems, in which it also states that the full-scale deployment of C-ITS services and C-ITS enabled vehicles is expected to start in 2019 (European Union, 2020 and ETSC, 2017).
    - This includes the adoption of the appropriate legal framework at EU level by 2018 to ensure legal certainty for public and private investors.
    - It also includes consideration of EU funding for projects, as well as international cooperation with other main regions of the world on all aspects related to cooperative, connected and automated vehicles.
    - C-ITS is also expected to be deployed in the United States and European Union in 2020, with Australia well behind this timeframe (TCA, 2016).
- AusRoads' 2017 report on C-ITS and autonomous vehicle applications in Australia and New Zealand identified six key C-ITS applications:
    1. Collision avoidance and hazard detection (Intersection Movement Assist, Right Turn Assist, Queue Warning).
    2. Vulnerable road user safety (Motorcycle Approaching Indication, Pedestrian Detection).
    3. In-vehicle signage (Speed Zone Warning, Stop Sign Warning).
    4. Road weather alert systems (Spot Weather Impact Warning).
    5. Post-crash notification systems (eCall).
    6. Mobility and eco-driving (Parking Spot Locator).
- At the time of writing, there were also a range of C-ITS trials underway across the world as well as Australian states and territories, but not Tasmania (AustRoads, 2020).

Mobility as a Service (MaaS), car sharing and ride sharing

- Collaborative consumption, as part of the sharing economy, is an economic arrangement whereby people share access to products or services, rather than having individual ownership (RAC, 2019).
- MaaS is the concept that people can plan, book, and pay for all their transport needs in real-time through a single on-demand, integrated and ticketless smartphone platform. MaaS systems offer customers personalised access/subscriptions to multiple transport modes through this platform (Infrastructure Tasmania, 2020 and Routledge Transport Reviews, 2017).
    - A road user would select a MaaS provider to access all local modes available as needed, including public transport, car-share, ride-share and active transport modes like bike-share and walking.
    - MaaS improves choice, access, costs and network capacity by reducing the need for private vehicle ownership and therefore congestion. This also improves environmental, health and social outcomes.
    - Further, MaaS is an alternative to building more roads and parking spaces, which will also worsen congestion (Deloitte, 2017).
    - In the long term, self-driving and autonomous vehicles will operate through MaaS. This will save costs and fuel, decreasing crashes, congestion and emissions and provide more options for elderly, young and disabled drivers.
    - Non-networked forms of transport do not meet the needs of the modern traveller. Commuters are more likely to try new forms of travel, which emerging MaaS modes can capitalise on (Deloitte, 2017)
- To work effectively, MaaS requires widespread penetration of smartphones on 3G/4G/5G networks, which are already in existence in Australia, as well as high levels of connectivity, secure and up-to date information on travel options and schedules as well as cashless payment system (Deloitte, 2017).
    - Key players in the MaaS space include mobility and data management bodies, telecommunication companies, payment processors, public and private transportation providers and local authorities with responsibility for transport and city planning.

  - Public-private partnerships are essential to MaaS and should involve the private sector developing integrated solutions that meet commuter needs.
  - Transport planners should also integrate physical infrastructure that enables transfer between transport services, such as bus interchanges with bike and car sharing spaces.
- The first ever MaaS provider ever trialled was UbiGo, in Swedish city Gothenburg for six months between 2013 and 2014, with the platform re-launched in 2019 (the Conversation, 2018 and University of South Australia, 2018).
- MaaS Global is the world's first MaaS operator, launching the "Whim" app in Helsinki in 2017, as well as Birmingham and Antwerp in 2018 and Vienna in 2019. Whim is a MaaS provider that gives people access to public transport, taxis, bicycle, car sharing, taxis and e-scooters (Routledge Transport Reviews, 2017 and Whim, 2020).
  - These modes can be accessed through a single subscription, either on a monthly or pay as you go basis.
  - At the time of writing, MaaS providers were also active (either commercially or in trial form) in Paris, Barcelona, Eindhoven, Montpellier, Vienna, Hanover, Los Angeles, Las Vegas, Hamburg, Stuttgart, Boston, Portland, Austin, Denver, Singapore, Utrecht, Auckland as well as Switzerland, Italy and China.
  - MaaS Australia is an investor in MaaS Global and is working towards solutions in Australia.
- While there were no commercially available MaaS providers in Australia as of March 2020, RACT research showed that ride share companies available in Australia include:
  - Uber, DiDi, Bolt, Ola and GoCatch, with Uber and Ola the only schemes available in Tasmania. Car share companies include Car Next Door, GoGet, Drive My Car, GreenShareCar, Fleixcar and Popcar.
  - However, research also showed that there were a range of MaaS-related trials undertaken in NSW between 2019 and 2020, through a NSW Government initiative. This includes the Whim app.

Evidence

Autonomous vehicles

- On average, more than 300 people are seriously injured or killed as a result of crashes on Tasmanian roads each year, with human error the primary cause of crashes. Tasmania's Towards Zero Strategy has a target of reducing the number to fewer than 200 by 2026 (Department of State Growth, 2020).
- Human error accounts for 95% of current vehicle crashes, and congestion increasing, self-driving vehicles have the potential to provide both safer and more efficient travel options (IPA, 2017).
  - The inquiry into the National Road Safety Strategy 2011-2020 estimated the cost of road trauma nationally was $30 billion per year, with the Tasmanian Road Safety Strategy 2007-2016 estimating the cost of Tasmanian road trauma at $500 million
  - A major benefit of AVs could be significant improvements in road safety. Eliminating human error as a factor in road accidents would see far fewer deaths and injuries, resulting in lower human and economic costs.
- An AustRoads analysis of Australian real-world crash types demonstrated the following reductions in targeted crash types and serious casualty crashes (SCCs), based on two autonomous vehicle applications (AustRoads, 2017):
  - Lane keep assist saw a reduction of up to 40% of SCCs for vehicles running off the road or colliding head on, a projected prevention of up to 2210 fatal and serious injury crashes each year.
  - Autonomous emergency braking saw a reduction of up to 50% of SCCs for vehicles travelling in the same direction, a projected prevention of up to 1865 fatal and serious injury crashes each year.
- Research jointly commissioned by ANCAP, the Australian Government and Euro NCAP revealed low-speed autonomous emergency braking (AEB) technology led to a 38% reduction in real-world rear-end crashes per year, with benefits also for cyclist and pedestrian avoidance (ANCAP, 2015).

- Australian research shows that electronic stability control (ESC), which was mandated for all new vehicles in Australia in 2012, reduces the risk of single car crashes by 25% and single four-wheel-drive crashes by 51% per year (TAC, 2018).
- The Australian Automobile Association's (AAA) Transport Affordability Index assesses costs associated with insurance, registration, licensing, fuel, public transport and Roadside Assist (AAA, 2019).
    - The latest iteration of this report states that Hobart is the most expensive capital city relative to income, spending 16.8% of its weekly income on transport. This was higher than Brisbane (16.3%), Melbourne (15.2%) and Sydney (14.3%).
- Traffic congestion in Australian cities could cost $53.3 billion per annum by 2031 in economic and social effects, according to Infrastructure Australia (IPA, 2017).
    - Hobart is the fourth most congested capital city in terms of free-flow traffic, with 95% of traffic travelling at free-flow speeds. This was on par with Sydney (92%), Perth (93%) and Melbourne (94.5%) (AAA, 2018)
    - Congestion in Hobart costs the Tasmanian economy approximately $90 million per year, based on personal time costs, business time costs, extra vehicle operating expenses and vehicle emission costs. This is expected to rise to up to $160 million by 2030 (BITRE, 2015).
    - Research from the UK shows that with a 100% take up rate of CAVs, average travel delays and average journey times would both decrease by 30%, while journey time variability would decrease by more than 90% (IPA, 2017).
- Running costs for electric AVs are 70% less per kilometre than a traditional vehicle. Autonomous long haul freight vehicles could save 10% in fuel costs by travelling in a close convoy to reduce air drag and resistance (IPA, 2017).
    - AVs could also reduce or remove labour costs in freight and public transport. The cost of travelling "the last mile", from the train station or bus stop to work or home is estimated to account for about 28% of overall transport costs.

Cooperative Intelligent Transport Systems

- European estimates suggest that C-ITS applications might yield up to a 16% reduction in fatalities and 9% of injuries, while AustRoads estimates suggest reductions of 23% of fatalities and 28% of injuries under an aggressive introduction scenario (AustRoads, 2017).
- An AustRoads analysis of Australian real-world crash types demonstrated the following reductions in targeted crash types, and serious injuries based on four C-ITS applications (AustRoads, 2017):
    - Cooperative forward collision warning (V2V) saw a reduction of up to 30% of crashes for vehicles moving in the same direction, a projected prevention of up to 805 fatal and serious injury crashes each year.
    - Curve speed warning (V2I) saw a reduction of up to 30% of crashes for vehicles running off road or colliding head, a projected prevention of up to 115 fatal and serious injury crashes each year.
    - Intersection movement assist (V2V) saw a reduction of up to 50% of crashes for vehicles travelling in the opposite direction, a projected prevention of up to 1470 fatal and serious injury crashes each year.
    - Right turn assist (V2V) saw a reduction of up to 40% of crashes for vehicles turning right, a projected prevention of up to 825 fatal and serious injury crashes each year.
- At the time of writing, Australian Governments and road authorities were using telematics, ITS/C-ITS and other technologies to harness data, deliver real time information and achieve safety, productivity and environmental outcomes (TCA, 2016).

- Through ITS, motorways are being used to reduce stop-start travel and make travel times more predictable. In Melbourne, the Monash Freeway uses managed motorway technology to reduce travel times and greenhouse gas emissions by 42% and 11% respectively, and saves $2 million per day by cutting travel time and delays.

- The Cooperative Intelligent Transport Initiative (CITI) is Australia's first C-ITS testing facility in the Illawarra region of NSW. International C-ITS trials have indicated that these C-ITS systems can improve safety. The trial has fitted C-ITS technology to a range of vehicles and roadside locations or infrastructure. (Transport for NSW, 2019):
  - Drivers in participating vehicles receive the following alert messages on an audio-visual display units fitted in their vehicles:
    - Intersection collision warning.
    - Harsh braking ahead warning.
    - Red light alert when light is red or amber.
    - Speed limit information.
    - Level crossing warning.
  - The trial allows the NSW Government to:
    - Research the road safety benefits and challenges of C-ITS in Australia.
    - Allows C-ITS research and development in an Australian setting.
    - Allows hardware and software developers to test their systems.
    - Offers a diverse set of locations, including remote, mountainous and industrial areas and a mixture of freeway and suburban roads.
    - Builds our knowledge and experience in the deployment and maintenance of C-ITS in Australia.
- C-ITS technologies can reduce congestion and as mentioned, Hobart is the fourth most congested capital city in terms of free-flow traffic, behind only Sydney, Perth and Melbourne (AAA, 2018)
- Traffic congestion in Australian cities could also cost $53.3 billion per annum by 2031 in economic and social effects, according to Infrastructure Australia (IPA, 2017).
  - Congestion in Hobart costs the Tasmanian economy approximately $90 million per year, based on personal time costs, business time costs, extra vehicle operating expenses and vehicle emission costs. This is expected to rise to up to $160 million by 2030 (BITRE, 2015).

Mobility as a Service (MaaS), car sharing and ride sharing

- The development of the Australian MaaS sector has evolved over the past decade due to consumers embracing new mobility options and the sharing economy. (Deloitte, 2017 and AusTrade, 2018).
  - Across Australia, car share membership is expected to grow by 14,000 members per year from 2016. New South Wales, Victoria and Queensland accounted for more than 80% of the car share market in Australia.
  - Car sharing had nearly 5 million members worldwide in 2014, up from around 350,000 in 2006, and is projected to exceed 23 million members by 2024.
  - There are more than 1,000 public bike share schemes in more than 50 countries, up from the 11 cities in 2004.
  - Ride-hailing services have seen similarly rapid growth. In six years of operation, Uber's has expanded to more than 500 cities in more than 70 countries.
  - UbiGo received 83 subscriptions by 195 people during its 2013-2014 trial. Most of the customers (80%) wanted the trial to continue, with the platform re-launched in 2019 (the Conversation, 2018).
  - As of 2019, Whim has amassed more than 3 million trips, with more than 70,000 users (Whim, 2019).

- In 2018, the University of Sydney provided examples of weekly MaaS plan fees in comparison to travel costs in NSW. Costs for private car use, public transport, taxi and Uber fares added up to $345 per fortnight.
    - In comparison a MaaS plan, which included car and ride sharing, public transport, discounted Uber and taxi fares and the ability to buy credit came to between $115-$150 per fortnight, with a pay-as-you-go plan at $15 a fortnight.
- The other motivating factor is the estimated value of the MaaS market. Projections suggest a market worth $AU800 billion in the United States, European Union and China by 2025. Others have projected that the global market for MaaS will exceed $US1 trillion by 2030 (the Conversation, 2018).
- MaaS platforms can reduce congestion and, as mentioned, Hobart is the fourth most congested capital city in terms of free-flow traffic, behind only Sydney, Perth and Melbourne (AAA, 2018)
- Traffic congestion in Australian cities could also cost $53.3 billion per annum by 2031 in economic and social effects, according to Infrastructure Australia (IPA, 2017).
    - Congestion in Hobart costs the Tasmanian economy approximately $90 million per year, based on personal time costs, business time costs, extra vehicle operating expenses and vehicle emission costs. This is expected to rise to up to $160 million by 2030 (BITRE, 2015).

Position

Autonomous vehicles

RACT

- Urges all levels of government to develop well-defined and streamlined legislation, regulations and processes that ensure autonomous vehicles can operate in Tasmania, particularly in trial form in the short term.
    - This legislation should consider the benefits and challenges of AVs, impacts on infrastructure (C-ITS, specifically V2X communications) and mobility platforms (MaaS), and RACT's report to the NTC on its driverless electric bus demonstration.
- Urges all levels of government to ensure Tasmania and its road users are prepared for this legislation and the introduction of AVs, including the above impacts on infrastructure and mobility platforms, through community education. These technologies will help manage congestion, improve network efficiency and enhance mobility outcomes.
    - RACT will also educate the Tasmanian community on the impacts of autonomous vehicles.
- Urges all levels of government and key stakeholders to lead initiatives that support AV technologies, such as trials, and to facilitate deployment and uptake in Tasmania.
    - Governments must also ensure that these technologies, such as autonomous shuttle buses for first and last mile applications, complement rather than compete with traditional public transport.
- Will, alongside governments and key stakeholders, continue to explore additional and more semi-permanent future mobility trials in Tasmania following the successful delivery of the state's first autonomous vehicle demonstration in Hobart.
    - This could be in the form of a more long-term autonomous vehicle trial, or linking AVs with C-ITS technologies and MaaS platforms when feasible.
    - These trials will not only improve understanding of the technology, but also build community trust.
- Urges the Tasmanian Government and Metro Tasmania to pursue autonomous bus solutions in the future as the technology becomes more available and feasible. This must enhance the quality and coverage of urban and regional public transport systems.
- Urges all levels of government to exercise caution with AV technology to ensure drivers use these features appropriately and that they do not inadvertently increase driver distraction, inattention or complacency.

Cooperative Intelligent Transport Systems

RACT

- Urges all levels of government and relevant stakeholders to develop, trial and then implement ITS and C-ITS technologies in Tasmania in order to manage congestion, improve network efficiency and enhance mobility outcomes.
    - This technology must be integrated into private, public and active transport, roads and infrastructure, as well as connected autonomous vehicles (CAVs) as the technology becomes available.
    - These systems should inform road users of road and traffic conditions across the existing network, as well as available parking, to help improve decision making and minimise congestion.
    - The introduction of these technologies along highways and major arterials should be prioritised over increasing physical road capacity. Furthermore, they should not be used primarily as an enabler for increasing such capacity.
- Urges all levels of government to trial and then establish data collection mechanisms to benchmark and explicitly measure how transport networks are used, including through C-ITS and CAV data.
- Urges all levels of government to investigate and consult with industry and the community on a framework around permitted usage of data collected by emerging technologies to support deployment, build community trust and increase uptake.
    - The collection, storage and use of mobility-related data must be protected and personal and/or sensitive information should be encrypted and de-identified. It should then be shared publicly in order to influence a change in travel behaviours.
- Urges all levels of government to fund public education and behaviour change programs as part of the implementation of such C-ITS network management technologies and associated road modifications. This will enhance road user understanding and encourage the use of C-ITS technologies.
    - RACT will also educate the Tasmanian community on the impacts of C-ITS technologies.

Mobility as a Service (MaaS), car sharing and ride sharing

RACT

- Urges the Tasmanian Government and local government to develop, trial and then implement a single on-demand, integrated and ticketless MaaS platform in Tasmania. This will help manage congestion, improve network efficiency and enhance mobility outcomes. Such a platform must:
    - Enable users to plan, book, and pay for transport journeys through a smartphone app in real-time, including public and active transport and ride and car sharing.
    - Be facilitated through a government partnership with a well-regarded provider that offers affordable plans and the provision of discounts for certain modes.
    - Consider a range of key transport operators, including: Metro Tasmania buses, Uber and Ola ride sharing, taxis, bike sharing and any future transport modes (ferries, rail corridors or autonomous vehicles).
        - These operators must also be able to use T2/T3 lanes, to increase efficiency of the transport network.
    - RACT is eager to be involved in the development, trial and implementation of such mobility platforms and will introduce member programs and provider discounts to support their uptake.
- Urges the Tasmanian Government and local government to regulate MaaS platforms, in particular new modes of transport – such as ride and car sharing – to ensure they supplement, not weaken, existing transport networks.

- Urges the Tasmanian Government and local government to undertake education and behaviour change programs as part of implementing a MaaS platform in Tasmania. This will enhance road user understanding and encourage use of MaaS platforms.
    - RACT will also educate the Tasmanian community on the impacts of MaaS.

Scope

Policy application and ownership

This policy applies to:

- Tasmanian road users
- The Department of State Growth
- The Tasmanian Climate Change Office
- Local government
- Metro Tasmania
- The University of Tasmania
- Australian Government ministers
- Tasmanian Government ministers
- The Australian Automobile Association
- State and territory auto clubs

The ownership and responsibility of this policy is with the RACT Board.

Approvals

Date of approval: [insert date]
Date of review: [insert date]
Signature of CEO: [insert signature]